



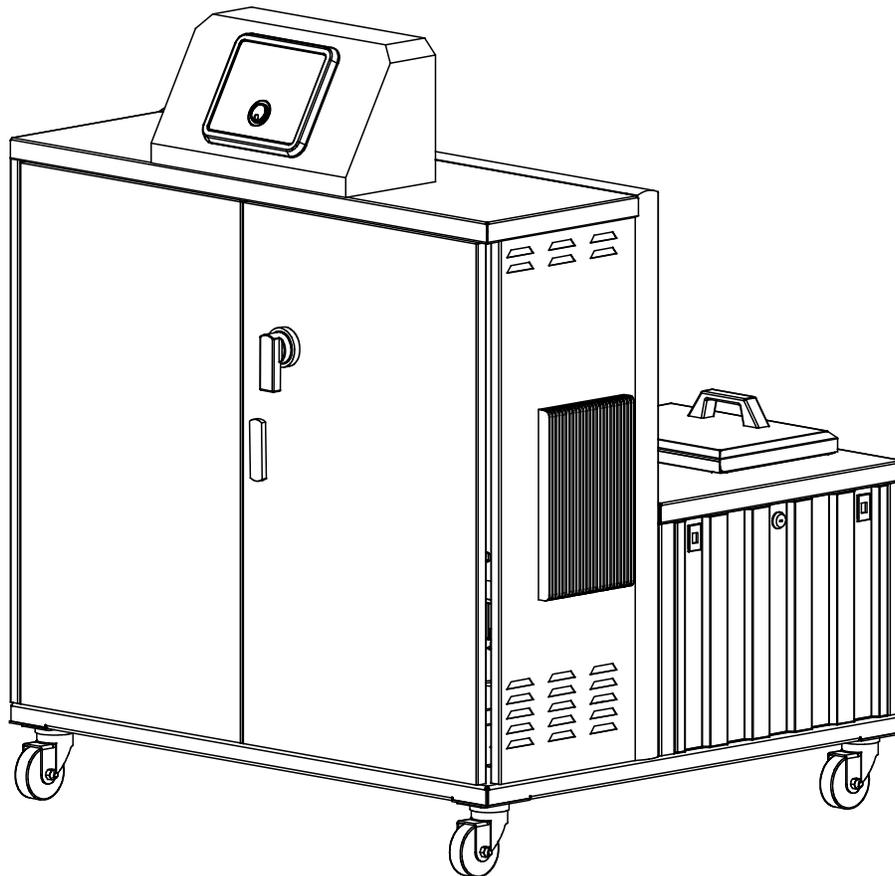
Adhesive Application Solutions | ISO 9001 certified

DYNAMELT D50/D90 SERIES

ADHESIVE SUPPLY UNIT

with V6 DynaControl with LCD or Touch Screen Controller Rev.1.16

Technical Documentation, No.20-68, Rev.9.16



Information about this manual



Read all instructions before operating this equipment!

It is the customer's responsibility to have all operators and service personnel read and understand this information. Contact your ITW Dynatec customer service representative for additional copies.



NOTICE:

Please be sure to include the serial number of your application system each time you order replacement parts and/or supplies. This will enable us to send you the correct items that you need.

ITW Dynatec Service Parts and Technical Service:

AMERICAS	EUROPE, MIDDLE EAST & AFRICA	ASIA PACIFIC
ITW Dynatec 31 Volunteer Drive Hendersonville, TN 37075 USA Tel. +1.615.824.3634 info@itwdynatec.com service@itwdynatec.com	ITW Dynatec Industriestrasse 28 40822 Mettmann Germany Tel. +49.2104.915.0 info@itwdynatec.de service@itwdynatec.de	ITW Dynatec Unit2, B1 Building No.9 Weixin Road SIP, Suzhou, 215122 China Tel. +86.512.6289.0620 info@itwdynatec.cn service@itwdynatec.cn
		ITW Dynatec Tsukimura Building 5th Floor 26-11, Nishikamata 7-chome Ota-ku, Tokyo 144-0051, Japan Tel. +81.3.5703.5501 info@itwdynatec.co.jp service@itwdynatec.co.jp

EC declaration of conformity

according to the EU Machinery Directive 2006/42/EC, Annex II 1. A

Manufacturer

ITW Dynatec
31 Volunteer Drive
US - 37075 Hendersonville

Person established in the Community authorised to compile the technical file

Andreas Pahl
ITW Dynatec GmbH
IndustriestraBe 28
DE - 40822 Mettmann

Description and identification of the machinery

Product / Article	Adhesive Supply Unit
Project number	DM-D V6
Commercial name	Dynamelt D Series V6 (D15, D25, D45, D50, D90)
Function	Melting and delivery of hot melt adhesives

It is expressly declared that the machinery fulfils all relevant provisions of the following EU Directives.

2006/42/EC	Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) (1)
2006/95/EC	Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (codified version) (1)
2004/108/EC	Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC

Reference to the harmonised standards used, as referred to in Article 7 (2)

EN 60204-1:2006-06	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 12100-2012	Safety of machinery - General principles for design - Risk Assessment and risk reduction
EN 349:1993+A1:2008	Safety of machinery - Minimum gaps to avoid crushing of parts of the human body
EN ISO 13850:2008	Safety of machinery - Emergency stop - Principles for design (ISO 13850:2006)
EN ISO 13849-2:2012	Safety of machinery - Safety-related parts of control systems - Part 2: Validation (ISO 13849-2:2012)
EN ISO 13849-1:2008	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2006)
EN ISO 13849-1:2008/AC:2009	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design

Hendersonville, 1/28/2015

Place, Date


Signature
Dave Folmer
Global Director of Innovation

TABLE OF CONTENTS

Chapter 1 Safety Precautions	<i>Chapter - Page #</i>
Safe Installation and Operation	1-1
Eye Protection & Protective Clothing	1-1
Electrical	1-2
High Temperatures	1-2
High Pressure	1-2
Protective Covers	1-2
Service	1-2
Treatment for Burns From Hot Melt Adhesives	1-3
Explosion/ Fire Hazard	1-3
Lockout/ Tagout	1-3
Choice of Adhesives	1-3
Safety Symbols in this Manual	1-3
Special Safety Considerations When Using Reactive HMPUR Adhesives	1-4
Chapter 2 Description & Specifications	
Description	2-1
Specifications	2-2
Installation Dimensions	2-4
Wattage Capacity	2-6
Model Designation Matrix (SDS)	2-8
Chapter 3 Installation & Start Up	
Placing the ASU	3-1
Lifting the ASU	3-2
To Open/ Close Panel Box Door	3-2
To Open Hopper Access Cover	3-2
Installation	3-3
Customer Connections Chart	3-6
Location of V6 Modules & Printed Circuit Boards (PCBs)	3-7
Adding Adhesive	3-8
Changing the Adhesive Formula	3-8
Rear Cover: Hose and Head Electrical and Adhesive Connections	3-9
Adjusting the Pressure Relief Valve	3-10
Adjustment of the Optional Level Control	3-12
Typical Start Up and Shut Down Procedures	3-13
Storage and Disposal of the Application System	3-16
Chapter 4 DynaControl Controller Set-Up	
Temperature Control Functions in General	4-1
Defining DynaControl Temperature Control Terms	4-1
DynaControl V6 LCD Display During Normal Operating Mode	4-3
LCD Error Indication Alarms	4-3
Touch Screen Error Indication Faults & Alarms	4-5
Settings for a Typical Operation	4-7
System Values that are Factory Programmed (not customer accessible)	4-8
Customer Programmable System Values Preset at the Factory	4-8
Default Settings of the DynaControl V6 LCD Controller	4-9
LCD Controller Features	4-10

Helpful Tips for the User 4-10

Chapter 5 Programming of DynaControl Controllers

LCD HMI PROGRAMMING Section 1

DynaControl V6 LCD Interface 5-1
In General 5-1
Overview Screen Reference 5-2
Status Line 5-3
Temperature Zone Symbols 5-3
Bar Graphs 5-4
Scan Mode 5-4
To Navigate Away from Overview Screen 5-5
Setup Your System Parameters 5-6
Temperature Zones 5-6
Pump Settings 5-8
Main Menu 5-10
 Recipe Management 5-10
 Standby/ Setback 5-11
 Setpoint Locking 5-12
 7-Day Scheduler 5-12
 Current Time-of-Day and Day-of-Week 5-14
 Info Screen 5-15
System Configuration Menu 5-16
 Accessing the Parameters 5-16
 Temperature Unit (Celsius or Fahrenheit) 5-17
 Language Selection 5-17
 Zone Configuration 5-17
 Pump Configuration 5-17
 Setpoint Limitation 5-18
 Hi/Lo Alarm Tolerance 5-18
 Standby Configuration 5-18
 Level Detection 5-19
 Heatup Sequence (Priority) 5-20
 Access Code 5-21
 0.5 RPM Increment 5-21
 Temperature Offset 5-21
 Customer Zone Names 5-22
 Logbook/ Fault History 5-23
 Power-On Configuration 5-24
 Global Setpoints 5-25
Controller Messages Troubleshooting Guide 5-26

TOUCH SCREEN HMI PROGRAMMING Section 2

Setup Your System's Parameters 5-29
Input Keyboard 5-29
Main Screen 5-30
Temperature Zones Set Screen 5-34
Pump Overview Screen 5-35
Pump Control, Linear Line Speed 5-36
Extended Pump Mode Settings, Linear Line Speed, Pressure Control 5-38
Pump Control, Pressure Control Screen 5-40
Automatic Ramp Compensation (ARC) 5-42
Control Switch On/Off and Standby Switch 5-44

Systems Screen	5-46
Settings Screen	5-48
Heating Priority Screen	5-49
Temperature Offsets Screen	5-50
Fieldbus Setup Screen	5-51
General Settings Screen	5-52
Temperature Settings	5-52
Standby Settings	5-54
Level Control Settings	5-56
Pressure Zero Calibration	5-57
Calibrating Screen	5-58
Customer Zone Names Screen	5-59
Recipes Screen	5-61
Time & Scheduler Screen	5-62
Log Book Screen	5-65
Security Screen	5-66
System Info Screen	5-68
License Management Screen	5-69
Acknowledge Button	5-70
Faults, Alarms	5-71
Operator Response to Error Indication Alarms	5-71

Chapter 6 Preventive Maintenance

General Cleaning	6-1
Preventive Maintenance Schedule	6-1
Output Filter	6-1
Hose Fittings	6-2
Fasteners	6-2
Primary Filter Cleaning	6-3
Pump Shaft Leak	6-4
Summary of Preventive Maintenance Schedule	6-4
Purging the Filter Manifold of Adhesive and Pressure	6-5
Flushing the System	6-5

Chapter 7 Troubleshooting

General Troubleshooting Notes	7-1
Location of Components	7-2
High-Temperature Redundant Overtemp Thermostat	7-3
Lithium Battery	7-3
DynaControl V6 Modules	7-3
7-Day Scheduler Use with Pendant Controller	7-3
Handling Modules & Printed Circuit Boards	7-4
V6 Base Module	7-5
V6 Temperature Module	7-9
V6 Power Module	7-10
V6 Aux Power Module	7-12
V6 Motor Module	7-13
Motor Speed Control Drive	7-14
Optional Printed Circuit Boards	7-15
Optional V6 Bus Communications Module	7-16
Heater and Sensor Resistance Values	7-16
Resistance Tables	7-17
Error Indication Alarm Troubleshooting Guide	7-18

Adjustable Adhesive Pressure Relief Valve	7-29
Operation of the ASU's Pump	7-30
Pump Output Adjustments	7-30
Troubleshooting the ASU Pump	7-31
Pump Troubleshooting Guide	7-32

Chapter 8 Disassembly & Re-assembly Procedures

Disassembly Procedures	8-1
Remove Rear Cover	8-1
Remove Hopper's Outer Lid	8-1
Lid seal Replacement	8-1
Mechanical (Over-Temperature) or Pump Enable Thermostat Replacement	8-1
To Access the RTD Sensors	8-1
RTD Replacement for ASU	8-1
RTD Replacement for Drop-in Grid	8-1
To Access the Electrical Components	8-2
To Remove Front Electrical Display	8-2
Main On/ Off Switch (Circuit Breaker) Replacement	8-2
Fuse Replacement	8-2
Relay Replacement	8-2
Printed Circuit Board Replacement	8-2
Module Replacement	8-3
Opening Modules	8-3
To Access the Pump or Motor	8-3
Gear Pump and Motor Removal	8-3
Pump Seal (O-ring) Replacement	8-4
Re-assembly Procedures	8-4

Chapter 9 Available Options & Accessories

Pressure Gauge Kit	9-1
Drop-in Grids	9-1
Filter Options	9-1
Pressure Transducer Assembly	9-1
Level Control Assembly	9-1
Pneumatic Pressure Relief Valve (PPRV)	9-1
Pump Options	9-2
DynaControl Options	9-3
Recommended Spare Parts List	9-4

Chapter 10 Component Illustrations & Bills of Material

Cabinet Groups	10-2
Electrical Panel Box Assembly Components	10-4
Front Panel Assembly	10-6
D50 Hopper & Grid Assembly	10-8
D90 Hopper & Grid Assembly	10-10
Filter Manifold Assemblies	10-12
Drive Assembly	10-14
Gear Pumps	10-16
Optional Pneumatic Pressure Relief Valve Kit	10-28

Chapter 11 System Schematics & Engineering Drawings

Head Schematic: all models	11-1
Hose Schematic: all models	11-2
Typical Hydraulic Schematic	11-3
Level Control Schematic	11-4
ASU Wiring Diagrams	end of chapter

Appendix

Gear Pumps	Appendix 1
Signal Isolator	Appendix 2
Pressure Transducer	Appendix 3

Chapter 1 SAFETY PRECAUTIONS

All operators and service personnel must read and understand this manual before operating or servicing equipment.

All maintenance and service on this equipment must be performed by trained technicians.

Safe Installation & Operation

Read this manual before applying electrical power to the equipment. Equipment may be damaged by incorrect electrical connections.

To avoid possible failure of hoses, make sure all hoses are routed to avoid kinking, tight radius turns (8" or less) and abrasive contact. Hot-melt hoses should not have prolonged contact with heat-absorbing surfaces such as cold floors or metal troughs. These heat-absorbing surfaces can alter adhesive flow and cause incorrect calibration. Hoses should never be covered with materials that prevent heat dissipation, such as insulation or sheathing. Hoses should be spaced apart from each other, not making direct contact.

Hoses and cables can present a trip hazard around the machinery. Provide hose/ cable management infrastructure whenever possible.

Do not use adhesive that is dirty or that may be chemically contaminated. Doing so can cause system clogging and pump damage.

When adhesive hand-held applicators or other movable applicators are used, never point them at yourself or at any other person. Never leave a hand-held applicator's trigger unlocked when not actually in use.

Do not operate the hopper or other system components without adhesive for more than 15 minutes if the temperature is 150 degrees C (300 degrees F) or more. To do so will cause charring of the residual adhesive.

Never activate the heads, hand-held applicators and/ or other application devices until the adhesive's temperature is within the operating range. Severe damage could result to internal parts and seals.

Always install the equipment on a flat surface. Never attempt to lift or move the unit when there is molten adhesive in the system.

Promptly wipe up fluid spills to avoid potential slips or falls.

Eye Protection & Protective Clothing

It is very important that you **PROTECT YOUR EYES** when working around hot melt adhesive equipment!

Wear a face shield conforming to ANSI Z87.1 or safety glasses with side shields which conform to ANSI Z87.1 or EN166.

Failure to wear a face shield or safety glasses could result in severe eye injury.



It is important to protect yourself from potential burns when working around hot melt adhesive equipment. Wear protective gloves and long-sleeved, protective clothing to prevent burns that could result from contact with hot material or hot components and to protect against cuts due to potential sharp edges on access panels, doors or lids.

Always wear steel-reinforced safety shoes.

Electrical

Dangerous voltages exist at several points in this equipment. To avoid personal injury, do not touch exposed connections and components while input power is on. Disconnect, lockout and tag external electrical power before removing protective panels.



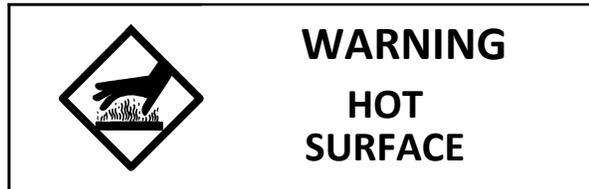
A secure connection to a reliable earth ground is essential for safe operation.

An electrical disconnect switch with lockout capability must be provided in the line ahead of the unit. Wiring used to supply electrical power should be installed by a qualified electrician.

High Temperatures

Severe burns can occur if unprotected skin comes in contact with molten adhesive or hot application system parts.

Face shields (preferred) or safety glasses (for minimum protection), gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.



High Pressure

To avoid personal injury, do not operate the equipment without all covers, panels and safety guards properly installed.

To prevent serious injury from molten adhesive under pressure when servicing the equipment, disengage the pumps and relieve the adhesive system's hydraulic pressure (ie., trigger the heads, hand-held applicators, and/or other application devices into a waste container) before opening any hydraulic fittings or connections.



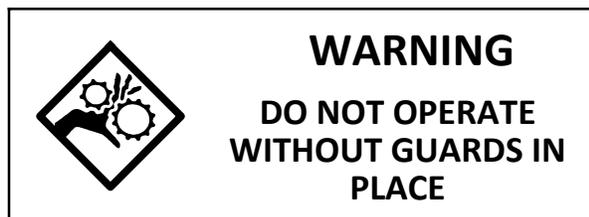
IMPORTANT NOTE: Even when a system's pressure gauge reads "0" psi, residual pressure and trapped air can remain within it causing hot adhesive and pressure to escape without warning when a filter cap or a hose or hydraulic connection is loosened or removed. For this reason, always wear eye protection and protective clothing.

Either of the two High Pressure symbols shown may be used on ITW Dynatec equipment.

Protective Covers

Keep all guards in place!

To avoid personal injury, do not operate the application system without all covers, panels and safety guards properly installed.



Service

Refer all servicing to qualified personnel only. Wear appropriate protective clothing and shut off rotating machinery before performing service. Long hair and loose clothing present a risk around rotating machinery.

Treatment for Burns From Hot Melt Adhesives

Burns caused by hot melt adhesive must be treated at a burn center. Provide the burn center's staff a copy of the adhesive's M.S.D.S. to expedite treatment.

Care should be used when working with hot melt adhesives in the molten state. Because they rapidly solidify, they present a unique hazard.

Even when first solidified, they are still hot and can cause severe burns. When working near a hot melt application system, always wear safety gloves, safety glasses and long-sleeved, protective clothing.

Always have first-aid information and supplies available.

Call a physician and/or an emergency medical technician immediately.

Explosion/ Fire Hazard

Never operate this unit in an explosive environment.

Use cleaning compounds recommended by ITW Dynatec or your adhesive supplier only. Since the flash points of cleaning compounds vary according to their composition, consult with your supplier to determine the maximum heating temperatures and safety precautions.

Lockout/ Tagout

Follow OSHA 1910.147 (Lockout/ Tagout Regulation) for equipment's lockout procedures and other important lockout/tagout guidelines.

Be familiar with all lockout sources on the equipment. Even after the equipment has been locked out, there may be stored energy in the application system, particularly in the capacitors within the panel box. To ensure that all stored energy is relieved, wait at least one minute after removing power before servicing electrical capacitors.

Choice of Adhesive

Substance(s) being processed (e.g., melted, pumped, applied) by ITW equipment is at the discretion of the user and beyond ITW Dynatec's control. Any health effects or other safety-related concerns arising from the melting of those particular substances (e.g., hazardous fumes) is the responsibility of the user to identify and mitigate.

Use of PUR (Polyurethane) Adhesives

PUR adhesives emit fumes (MDI and TDI) that can be dangerous to personnel exposed to them. These fumes cannot be detected by the sense of smell. ITW Dynatec strongly recommends that a power-vented exhaust hood or system be installed over any PUR system.



Consult with your adhesive manufacturer for specifics about required ventilation. See also the Special Considerations for Using Reactive HMPUR Adhesives section in this chapter.

Safety Symbols In This Manual

Workplace DANGERS, WARNINGs and CAUTIONs are found throughout this manual.

DANGER and WARNING mean that failure to observe the specific instructions may cause injury to personnel.

CAUTION means that failure to observe the specific instructions may damage the equipment.

Special Safety Considerations When Using Reactive HMPUR Adhesives

Reactive hot melt PUR (HMPUR) adhesives are known for superior adhesion to numerous substrates and their exceptional heat, cold and moisture-resistance qualities. They are an excellent choice for the difficult-to-bond substrates used in a wide range of environments. HMPUR adhesives chemically cross-link (i.e., cure or thermal-set) to reach maximum bond strength, typically over a period of 24 to 48 hours after being exposed to moisture and/or high temperatures.

The advantages of using HMPURs, however, come with special handling requirements. The adhesive must remain sealed off from the environment and maintained at low temperatures until it is dispensed, otherwise there is a risk that the adhesive will cross-link within the glue application equipment, rendering it impervious to melting when it is re-heated. Most importantly, when over-heated, many HMPURs release gases that can be hazardous to humans. Therefore, adequate ventilation must be available to prevent injury to personnel in the workspace. ITW Dynatec PN 114367 Vent Hood is required.

The following is a list of general operational considerations for the use of HMPURs in ITW Dynatec equipment. In addition, it is important to contact your adhesive manufacturer to discuss and verify precautions that must be implemented to prevent damage to equipment and injury to personnel who are working with their products.

- Assure the workspace has adequate ventilation.
- Assure the entire adhesive delivery system is sealed from the environment to the greatest extent possible to prevent moisture-related adhesive cross-linking.
- Assure all air is evacuated from the adhesive delivery system as soon as possible after it has been introduced (i.e., when changing hoses, replacing filters, changing adhesive supplies, etc.) to prevent moisture-related cross-linking.
- The ITW Dynatec equipment should not be left dormant (sealed at ambient temperature) with PUR inside for longer than recommended by your adhesive manufacturer. The ITW Dynatec system, especially applicators and nozzles, should be thoroughly purged of adhesive using a PUR purge material if the system will be left dormant for extended time periods.
- HMPUR viscosity increases the longer it remains molten within a system and can cross-link due to temperature exposure. Assure the molten adhesive does not sit within the ITW Dynatec equipment at operating temperature for more than a cumulative total of 2 to 4 hours. Utilization of the Temperature Standby feature will ensure a temperature drop occurs automatically.
- Turn off any gear pumps in the system if it will not be used for a period of five minutes or more. Doing so will reduce potential glue degradation.
- When using spray applicators, the nozzles must be thoroughly cleaned on a regular basis to prevent the adhesive from cross-linking inside or on the surface of the air passageways.
- The adhesive applicators must be either fully sealed or thoroughly cleaned with PUR purge material if the system is to be idle for more than two hours. Otherwise, HMPUR adhesive present in the exposed orifices of the applicator could potentially cross-link, clogging them.
- Recommended adhesive application temperatures should never be exceeded. Higher application temperatures may result in higher adhesive viscosities and thermal-related cross-linking.
- The use of air dryers such as ITW Dynatec PN 117944 or 117974 are recommended in humid environments.

There are many advantages to using HMPURs. However, the proper handling of these unique adhesives is imperative to assure success without damage to equipment or injury to personnel. ITW Dynatec equipment has been engineered to minimize the effort required to assure safe and proper handling of HMPURs. **ALLOWING PUR ADHESIVE TO CURE IN A UNIT OR ITS COMPONENTS VOIDS ITW DYNATEC'S WARRANTY.** Please consult with your ITW Dynatec representative to discuss these topics in further detail, if necessary.

Chapter 2 DESCRIPTION AND SPECIFICATIONS

Description

The D50/D90 Series adhesive supply units (ASUs) are computer-controlled hot-melt supply units designed on metric standards. Their “all-icon” control panels, with choice of display languages, are internationally operator friendly.

Each model is available with a choice of single or dual gear pumps. The D50/D90 ASU uses a microprocessor temperature control to closely control the temperature of hot-melt adhesive for up to eight hoses and eight heads. Temperature setpoints are operator-selected for up to 30 zones and the system automatically provides warnings and alarms for operator errors and system malfunctions.

Its DynaControl controller provides accurate, proportionate temperature control for the hopper, hoses and applicators. Sequential heating delays may be programmed for turn-on of the hoses and heads. A “standby” temperature may be programmed so that the temperature zones can be maintained at a lower temperature when the ASU is not in active use, enabling rapid return to normal operation. A seven-day scheduler allows advance programming of daily On/ Off times throughout the work week.

With these flexible temperature programming features, the D50/D90 system increases adhesive life by eliminating prolonged high adhesive temperatures. It reduces energy consumption and brings the system up to normal operating temperatures in the shortest possible time.

The temperature control can interlock the parent machine with preselected adhesive temperatures so that production automatically begins when adhesive temperatures are correct for the application. All system temperature values can easily and quickly be programmed.

Digital readout of system conditions is provided. Optional external audible signals or lights which alert the operator to alarm conditions may be wired in. A security code can restrict access to system programming and parameters. The CPU monitors the electronic circuitry and provides alarms for error conditions.

A choice of single or dual gear pumps, from 0.584 to 8.5 cc/rev is available to assure a smooth and highly precise adhesive flow. The pumps may be driven by a single or dual drive.

The D50/D90's teflon-coated hopper accepts adhesive in all popular forms, including pellets, slugs and blocks. The ASU can accommodate air-actuated automatic applicators (heads), electric applicators, hand-held applicators and/or special applicators. Options available include a color touch screen HMI, pressure gauge or transducer, drop-in grid, level control and digital RPM readout (on touch screen models only).

Specifications

Environmental:

Storage/ shipping temperature	-40° C to 70° C (-40° F to 158° F)
Ambient service temperature	-7° C to 50° C (20° F to 122° F)
Noise emission	< 70 dbA (at 1 meter)

Physical:

Dimensions	see dimensional layouts on following pages
Number of heads/ hoses	4, 6 or 8 heads/ hoses
Number of hopper temperature zones	2 (add 1, 2, 3 or 4 for optional drop-in grids)
Number of pumps	2, 3 or 4 single or dual
Gear pumps (standard)	1.5cc/ rev, 3.2cc/ rev or 4.5cc/ rev
Enclosure	rectangular steel, dust and splatter resistant
Hose connections	universal 15-pin Amphenol connectors at ASU, wrench-secured fluid fittings (#6 JIC)
Hopper (tank) capacity	D50 = 50 kg/ 110 lb D90 = 90 kg/ 200 lb
Hopper construction	welded aluminum, cast-in heaters, TFE Teflon coated
Filtration	hopper bottom screen and large pleated pump outlet filters
Weight, empty	D50 = 300 kg/ 661 lb. D90 = 354 kg/ 780 lb.
Fluid outputs	1 to 4 metered, 6 non-metered
Optional drop-in grids	D50, dual hopper = 1 or 2 available D50, single hopper = 3 D90, dual hopper = 1, 2, 3 or 4 available D90, single hopper = 3 standard, additional 3 optional
Adhesive form	accepts most forms

Electrical:

Service Requirements	200-240 VAC/ 125Amp*/ 3p/ 50-60 Hz (Delta) 380-400 VAC/ 60 Amp*/ 3p/ 50-60 Hz (Wye, Y)
Power consumption, system maximum	53,400 watts
Power consumption, hopper	5,000 watts
Hopper heater type	cast-in tubular
Temperature control	microprocessor-based proportional integral derivative (PID)
Temperature sensors	100 Ohm Platinum RTD
Electrical connectors	durable, latching connectors
Motor	two, three or four 1/4 hp, alternating current motors, direct drive, horizontal orientation
Maximum wattage available for each hose or head	1200 watts
Maximum wattage available for each auxiliary	2400 watts
External electrical connectors	4 (6 or 8) hose, 4 (6 or 8) head, 4 (6 or 8) aux

* actual circuit breaker current depends on ASU configuration

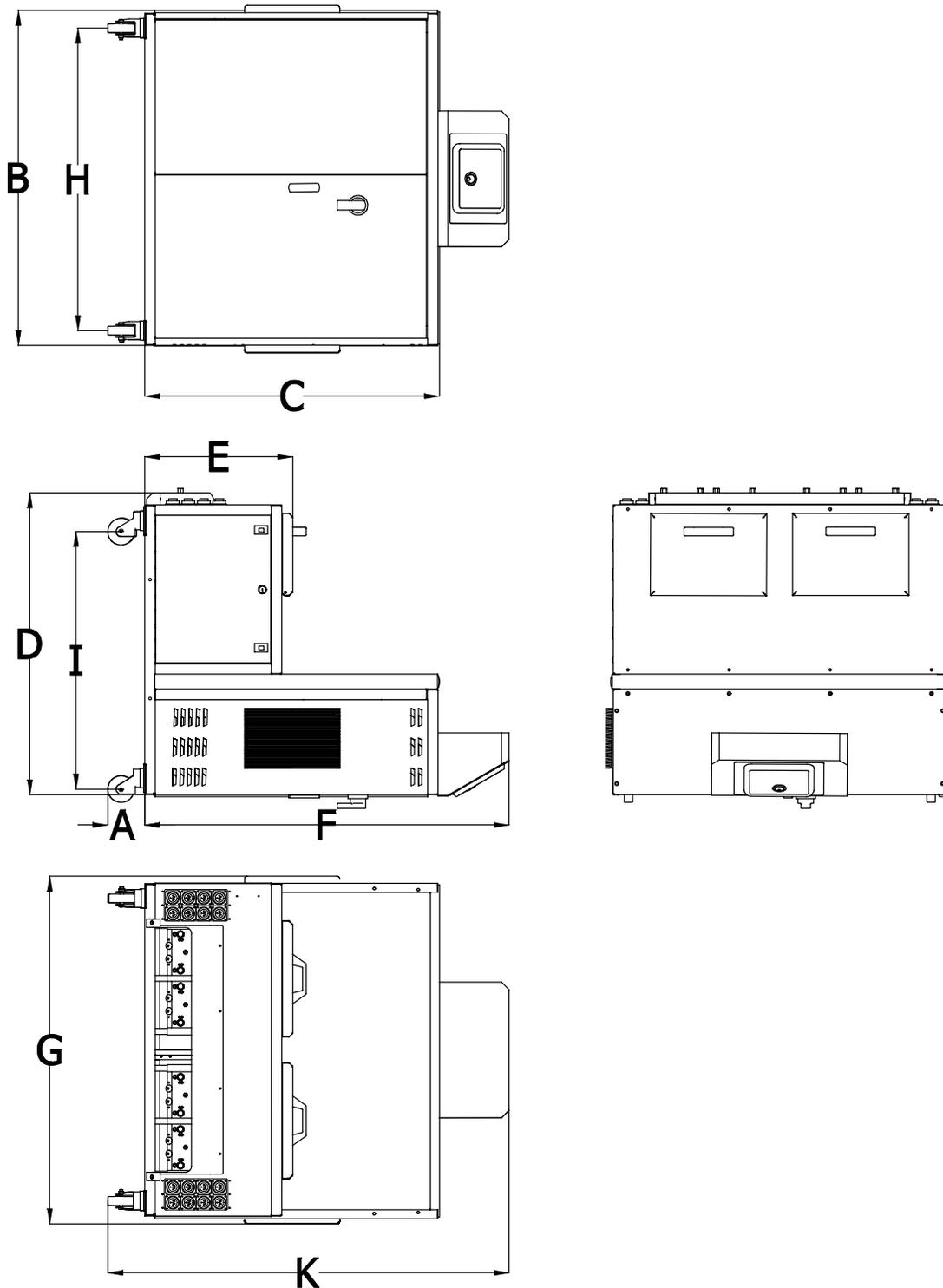
Performance:

Operating temperature range	38°C to 218°C (100°F to 425°F)
Adhesive temperature control accuracy	± 1°C (± 1°F)
Standby adhesive temperature range	up to 80°C (150°F) lower than setpoint
Hopper ready adhesive temperature deviation (factory set/ field adjustable)	± 20°C (36°F) from setpoint
Over-temperature cutoff for hopper	218°C (425°F)
Adhesive viscosity	1000 to 50,000 centipoise or 50,000 to 100,000 cps at reduced melt rate
Warm-up time, full hopper	approximately 0.5 hour
Adhesive delivery rate, open line	0.38 kg/min (0.83 lb/min)(4.5cc gear pump)
Typical adhesive melt rate (depends on adhesive used)	D50 or D90 (without grid) = 45kg/hr (99 lb/hr) per hopper D50 or D90 w. 1 optional grid = 105kg/hr (231 lb/hr) per hopper D90 w. 2 optional grids = 165kg/hr (364 lb/hr) per hopper
Adhesive pressure	up to 68 bar (1000 psi) maximum
Maximum recommended pump speed	90 revolutions per minute (gear pump)

Fuses 5x20 mm, hose/ head: T6.3AL time delay

DynaControl V6 Controller

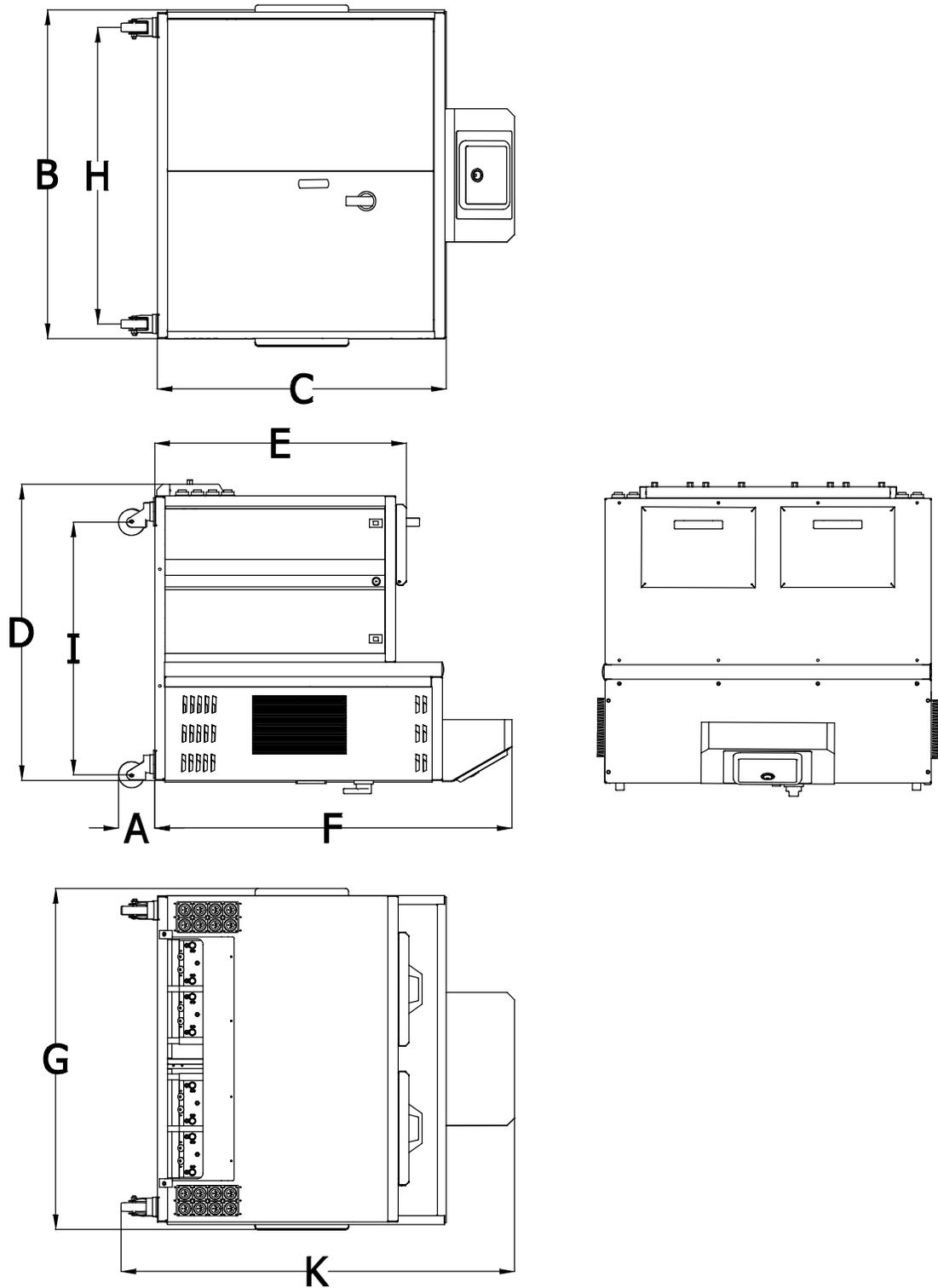
Power board	5 zones per board, modular construction
Auxiliary board	5 zones per board, modular construction
Temperature control zones	5-15 triac-output
Fuses	13 on main power board, 10 on each auxiliary power board: 10 Amp
Display languages	English, German, Spanish, French, Japanese, Chinese
Operator interface (standard)	LCD graphic display with rotary-knob controller and simple icons
Operator interface (option)	color touch screen with expanded features
Temperature standby	yes
High and low temp alarms	yes
Ready interlock	yes
Password protection	yes
Sequential heating	yes (hopper, hose, head staged heating)
Sensor open alarm	yes
Remote communications capable	yes
Seven-day scheduler	yes
Adhesive level sensor	yes
CE approval	yes



D50 ASU OUT DIMENSION

DIMENSION	A	B	C	D	E	F	G	H	I	K
D50 MM	120	1118	985	1015	500	1225	1143	1017	790	1345
D50 INCHES	4.72	44.0	38.8	40.0	19.6	48.2	45.0	40.1	31.1	53.0

Installation Dimensions: D50



D90 ASU OUT DIMENSION

DIMENSION	A	B	C	D	E	F	G	H	I	K
D90 MM	120	1118	985	1015	870	1225	1143	1017	790	1345
D90 INCHES	4.72	44.0	38.8	40.0	34.3	48.2	45.0	40.1	31.1	53.0

Installation Dimensions: D90

Total System Wattage Capacity

WATTAGE	D50	D90
Hopper	5000w	5000w
Up to 4 Optional Drop-in Grids (2500 w each)	5000w	10,000w
Hose + Applicator 1 & 2 (maximum)	3500w	3500w
Hose + Applicator 3 & 4 (maximum)	3500w	3500w
Hose + Applicator 5 & 6 (maximum)	3500w	3500w
Hose + Applicator 7 & 8 (maximum)	3500w	3500w
Up to 8 AUX Zones (2400 w each)	19,200w	19,200w
Total System Wattage:	43,200 w	48,200w

Wattage Chart

The following table shows the wattage and circuit breaker amps for each configuration of the D50 and D90 ASUs.

3-Phase, 240/400V ("Y", "Wye", 5-wire connection)					
D50/90 4 Hoses					
	No grid	one grid	two grids	three grids	four grids
total wattage	21600	24100	26600	29100	31600
max amp	31.18	34.79	38.39	42.00	45.61
circuit break (AMP)	60	60	60	60	60
D50/90 6 Hoses					
	No grid	one grid	two grids	three grids	four grids
total wattage	29900	32400	34900	37400	39900
max amp	43.16	46.77	50.38	53.98	57.59
circuit break (AMP)	60	60	60	60	60
D50/90 8 Hoses					
	No grid	one grid	two grids	three grids	four grids
total wattage	38200	40700	43200	45700	48200
max amp	55.14	58.75	62.36	65.96	69.57
circuit break (AMP)	60	60	60	125	125
3-Phase, 240V ("Delta", 4-wire connection)					
D50/90 4 Hoses					
	No grid	one grid	two grids	three grids	four grids
total wattage	21600	24100	26600	29100	31600
max amp	54.00	60.25	66.50	72.75	79.00
circuit break (AMP)	60	60	125	125	125
D50/90 6 Hoses					
	No grid	one grid	two grids	three grids	four grids
total wattage	29900	32400	34900	37400	39900
max amp	74.75	81.00	87.25	93.50	99.75
circuit break (AMP)	125	125	125	125	125
D50/90 8 Hoses					
	No grid	one grid	two grids	three grids	four grids
total wattage	38200	40700	43200	45700	48200
max amp	95.50	101.75	108.00	114.25	120.50
circuit break (AMP)	125	125	125	125	125

Dynamelt D XX V6X X X XXX XXX X DX FX - X X X X X...

HOPPER SIZE:

50 = 50kg (110 lb)
 90 = 90kg (200 lb)

CONTROLLER:

V6L = LCD controls (standard)
 V6T = Touch screen controls

GRID CONFIGURATION:

N = No additional grids (standard)
 G = Additional drop-in-grid
 O = Omit grid

NUMBER OF HOSES:

4, 6 or 8

PUMP(s):

GAS = Gear pump 1.5cc sngl	ZLS = Precision gear pump 0.160cc sngl
GBS = Gear pump 3.2cc sngl	ZES = Precision gear pump 0.584cc sngl
GCS = Gear pump 4.5cc sngl	ZFS = Precision gear pump 1.168cc sngl
GAD = Gear pump 1.5cc dual	ZGS = Precision gear pump 2.92cc sngl
GBD = Gear pump 3.2cc dual	SHS = Precision gear pump 8.5cc sngl
GDD = Gear pump 0.55cc dual	ZED = Precision gear pump 0.584cc dual
GGD = Gear pump 0.15cc dual	ZDD = Precision gear pump 0.297cc dual
GGs = Gear pump 0.15cc sngl	ZFD = Precision gear pump 1.168cc dual
GDS = Gear pump 0.55cc sngl	ZDS = Precision gear pump 0.297cc sngl
GES = Gear pump 10cc sngl	SGD = Precision gear pump 2.92cc dual
	ZLD = Precision gear pump 0.160cc dual

VOLTAGE:

2 = 200 - 240v/ 3 phase/ 50-60 HZ
 3 = 380 - 400v/ 3 phase/ 50-60 HZ with neutral

MOTOR/ DRIVE GROUP:

D2 = 2 Drives (2 pumps/ 4 hoses)
 D3 = 3 Drive (3 pumsp/ 6 hoses)
 D4 = 4 Drive (4 pumps/ 8 hoses)

FILTRATION:

F1 = 150-mesh filter
 F2 = 100-mesh filter

OPTIONAL ACCESSORIES:

C = Pendant controller	P = Pneumatic pressure relief valve
D = Digital pressure control	R = Digital rpm readout (Touch screen models only)
G = Analog pressure gauge	S = Multi-system HMI software license (Touch screen models only)
K = KBSI signal isolator	T = Aux/ Temperature zones (2)
L = Adhesive level control sensor	U = Multi-system client (Touch screen models only)
M = EtherCat communication	V = Swirl kit, 1 hose, 240v, 1 motor
N = Profibus communication	W = Swirl kit, 2 hoses, 240v, 1 motor
O = EtherNet IP communication	

EXAMPLE:

D50V6LN4GASGBS2D2F2-GL = D50 ASU with 50 kg hopper, LCD controller, without drop-in grid, 4 hoses, a 1.5cc and a 3.22cc single gear pumps, 240 volts/ 3 phase, two drives, 100-mesh filters with optional analog pressure gauge and level control.

Chapter 3 INSTALLATION

Placing the ASU

The D50/D90 SERIES ASU can stand alone on flat surfaces. Access is needed for the main electrical power and the communication connections to come in from below the unit and to connect to the V6 Base Module (which is inside the panel box). There is a cutout in the ASU's base plate, directly below the pump shaft, which allows adhesive to drain.

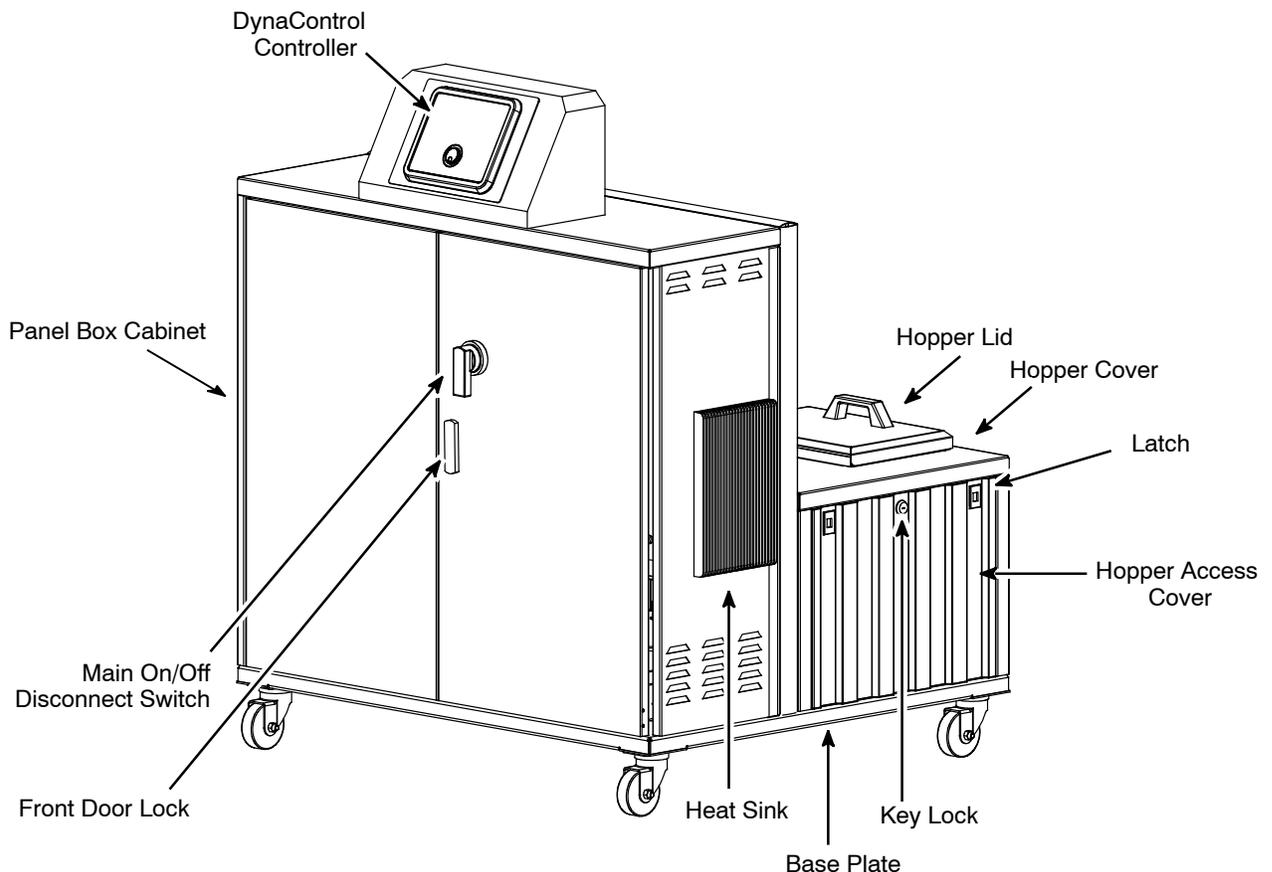
The ASU's hinged hopper lid may be rotated 90 degrees, so that it can be set up to open in the most convenient direction.

For installation dimensions, see illustrations on page 2-4 and 2-5.



DANGER INSTALL ON FLAT SURFACE

Typical equipment configuration includes wheels and brakes, which should be engaged whenever the equipment is not being transported. **DO NOT** install equipment on a sloped surface. Transportation of equipment over a sloped surface presents an increased risk of injury in the event of uncontrolled rolling.



D50 ASU



WARNING LIFTING THE ASU

The unit must be lifted by two persons, using proper lifting technique, one person at either end. Securely hold it under its base plate. No belts or hooks should be used. Never allow anyone to stand on the ASU.

To Open/ Close Front Panel Box Door

1. Slide up the cover on the covered keylock.
2. Insert the front door key (supplied) into the covered keylock and turn counter-clockwise to unlock front panel box door. Remove key.
3. Turn the Main On/Off switch clockwise, then counter-clockwise, and pull front door open.

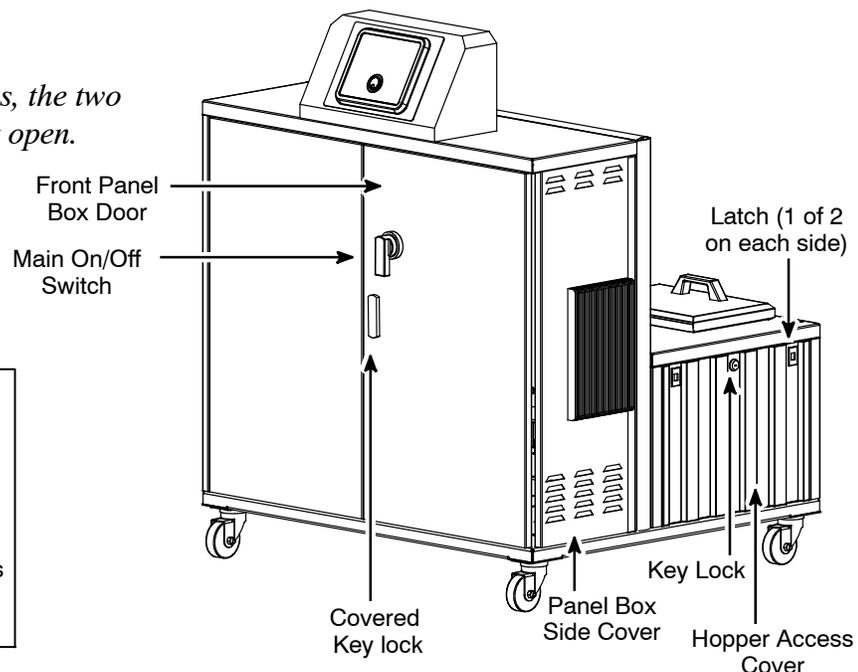
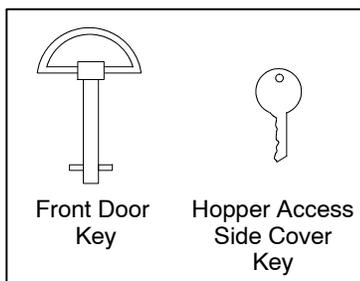
To close and lock:

1. Close front door.
2. Insert front door key and turn clockwise, then counter-clockwise.
3. Turn Main On/Off Switch counter-clockwise.
4. Remove front door key and return Main On/Off key to upright position.

To Open Hopper Access Covers

1. With the key (supplied), unlock the lock on the left or right hopper access cover.
2. Insert a finger in each of the right or left side cover's two latches and push down. The side cover will drop off from the top.
3. Be aware of the grounding wire attached to the cover.

Note: for safety considerations, the two Panel Box Side Covers do not open.



Installation

Note: Re-read Chapter 1 “Safety Precautions” before performing any installation procedures. All installation procedures must be performed by qualified, trained technicians.

After the D50/D90 SERIES ASU has been properly mounted, the following general sequence should be followed for installation:

1. Make sure that incoming line power to the ASU and that the unit’s Main Power Switch are turned OFF.



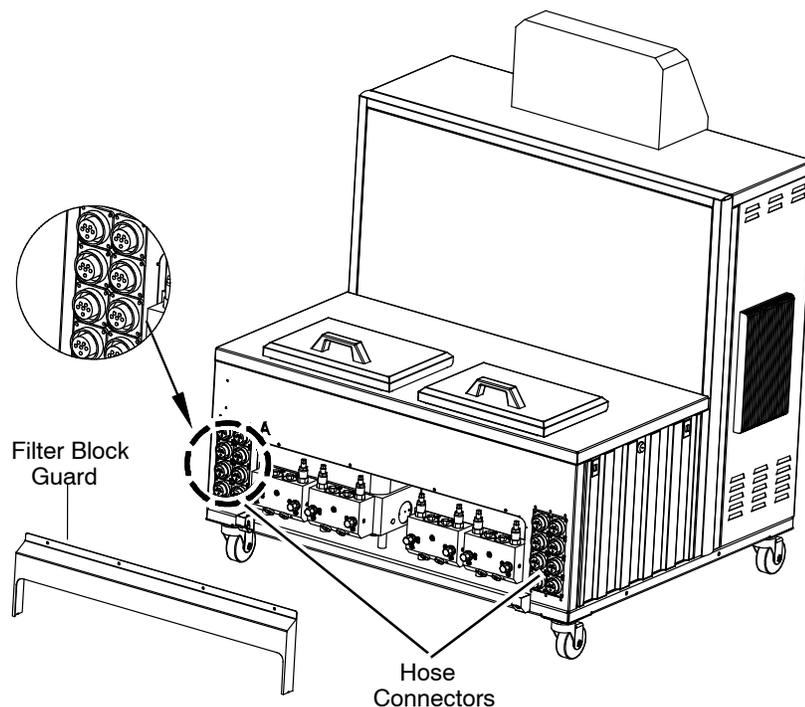
DANGER HIGH VOLTAGE

Disconnect and lock out input power to the application system before starting any installation procedures. Make sure there is no electrical power on the leads you will be connecting.

2. Open the panel box door. Select correct plug for your ASU’s amperage (refer to instructions on the following page). Run the power cord through the hole in the bottom of the base plate. In the panel box, attach the power cord at the incoming connectors. Attach ground wire to ground lug provided in the base plate.



CAUTION: Grounding conductors never carry electrical current. The use of a neutral conducting wire as earth ground is incorrect and may cause damage to the Dyna-Control controller.



D50 ASU: Rear View

3. A voltage configuration connector(s) (plug), appropriate for your order, has been installed in your ASU. Before proceeding, verify that this plug is correct for your operating voltage.



CAUTION: Using the incorrect power configuration connector may cause serious damage to the unit.

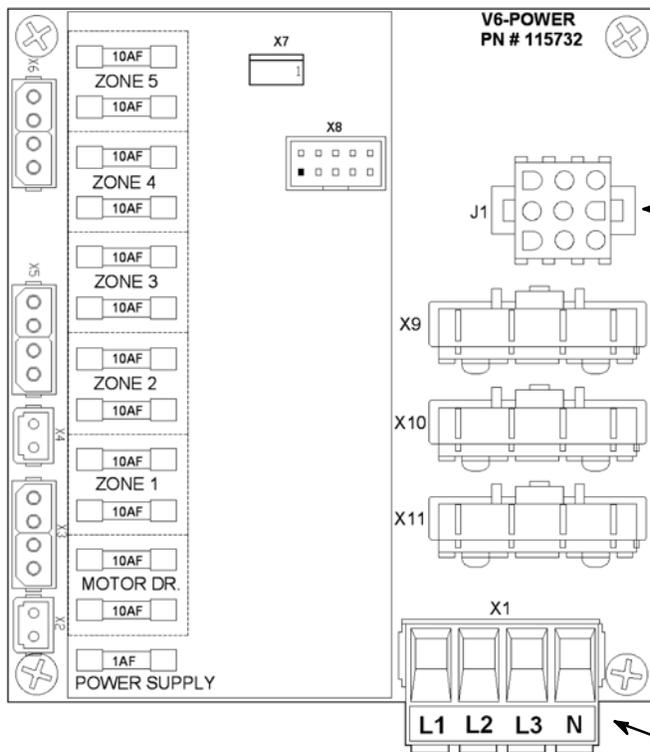
The voltage configuration connector is installed on the DynaControl V6 Power Module (see module illustration below). For location of the module, see illustration on page 3-7. If two Power Modules are installed on the unit, both require a voltage configuration connector.

There are two different voltage configuration connectors available:

240V Three phase = P/N 115725 (Violet)

400V Three phase = P/N 115726 (Yellow)

For reference, the schematics of each voltage configuration connector is printed on the next page.

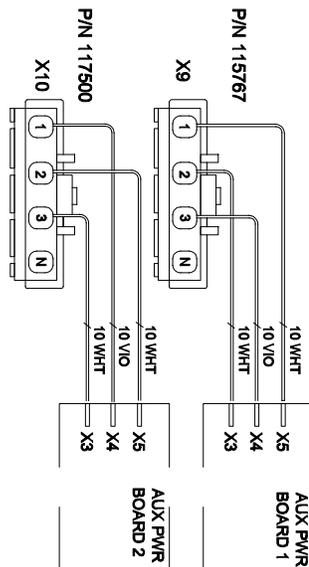
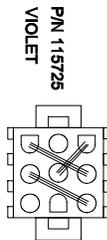
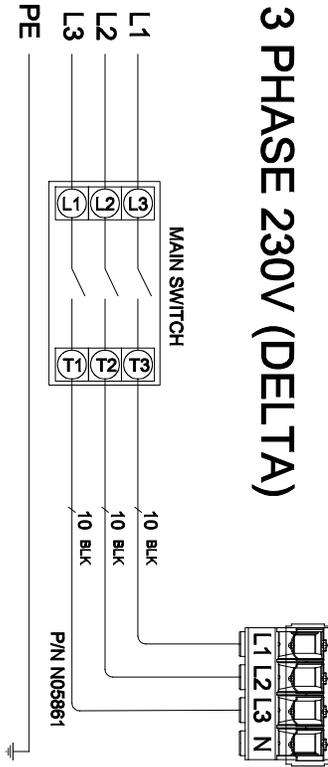


Verify Voltage Configuration Connector according to your voltage :
240V Three phase = Violet
400V Three phase = Yellow

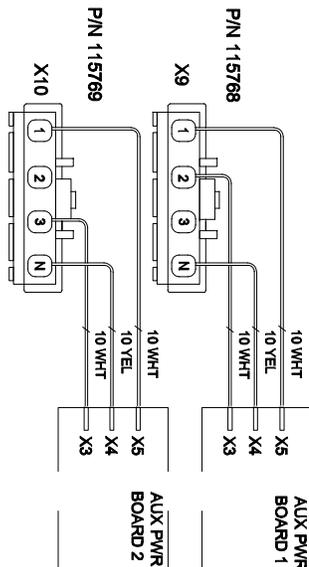
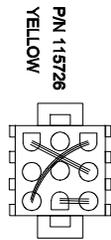
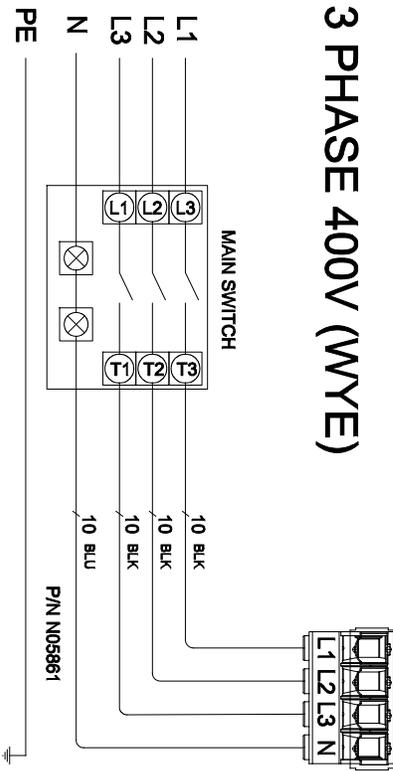
Connect to Main Power ON/OFF Switch according to your voltage (see chart on next page).-

DynaControl V6 Power Module

3 PHASE 230V (DELTA)



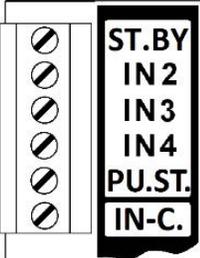
3 PHASE 400V (WYE)

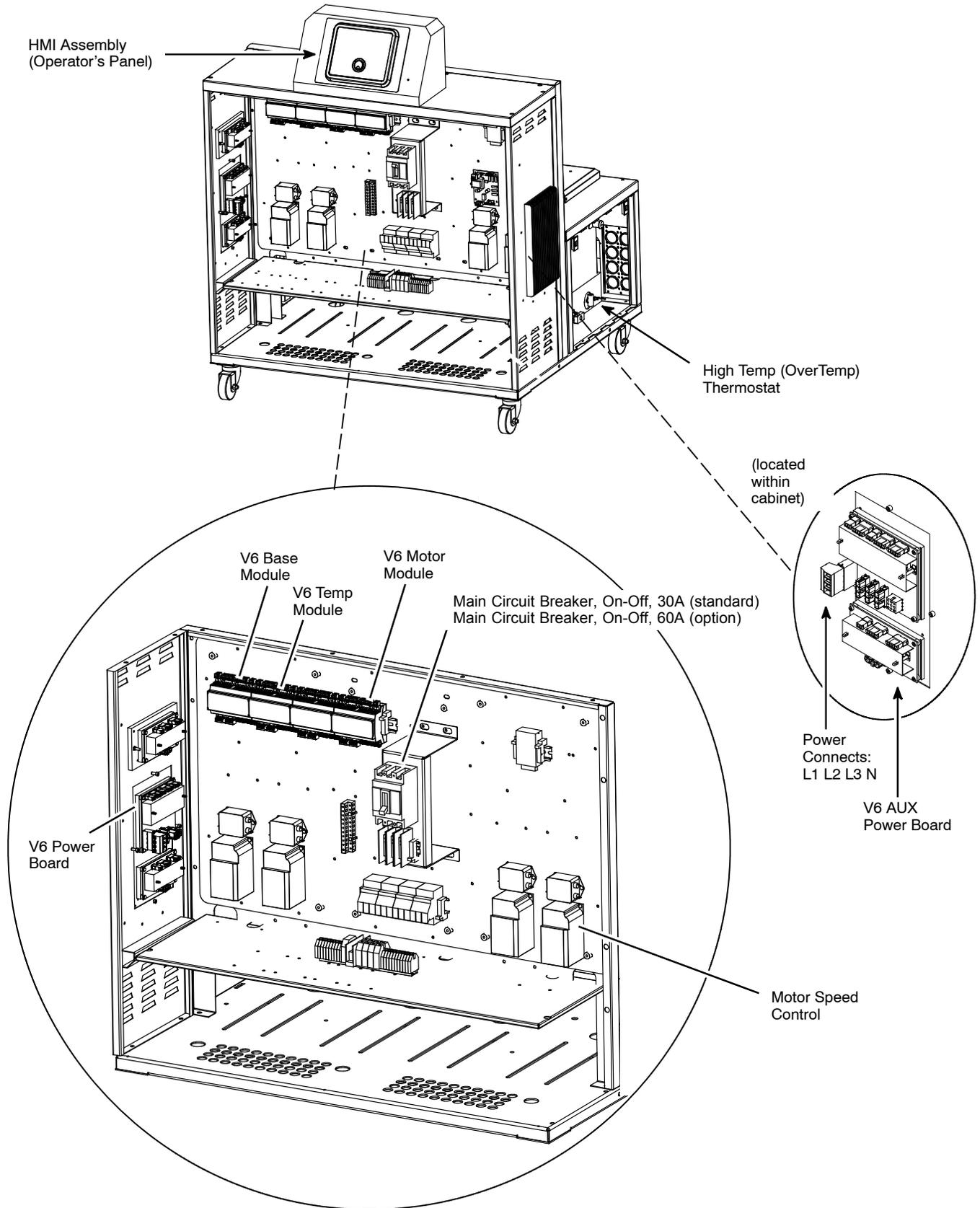


Voltage Configuration Connector Schematics

4. At installation, the customer must make the following terminal connections into the ASU's main power (ON/OFF) switch and modules. The modules do not need to be removed from the ASU in order to make connections.

Refer to the detailed layout drawings of the components in Ch. 7 and/or the schematics in Ch. 11, if needed.

Terminal	Circuit	Location
Required connections for 240VAC, 3 PH Delta ASU:		
-- PE	Input Power from Main Power 240VAC Ground	See terminal block, L1, L2, L3 See terminal block, PE
Required connections for 380/400VAC, 3 phase, WYE ASU:		
-- N PE	Input Power from Main Power, 380VAC Neutral, 380VAC Ground	See terminal block, L1, L2, L3 See terminal block, N See terminal, PE
Non-essential connections; connect if feature is installed:		
RELAY OUTPUT 1	Ready Output Signal (contact closes when ready)	Terminal Block, see R1 R2
RELAY OUTPUT 2	Alarm Output Signal (contact opens when alarm)	Terminal Block, see A1 A2
RELAY OUTPUT 3	Hopper Low Level Signal (contact closes when glue level is low)	Optional 
ST.BY IN2 IN3 IN4 PU.ST. IN-C.	Standby Input Recipe Selection 1 Recipe Selection 2 Reserved External Pump Start/Stop (activate to start pump) Common for Inputs	V6 BASE Module, bottom side: 
LINE COM	Line Speed Tracking Voltage (0-10V)	V6 BASE Module, bottom side: 
G+I or L+I	Line Speed Tracking Signal with Signal Isolator (option)	Optional. Install at the left of the Base Module. Refer to schematic for details.



Location of V6 Modules & Printed Circuit Boards (PCBs)

5. The adhesive hoses are connected to the filter manifolds at the back of the machine (see illustration on the next page).

On a two or four-hose machine, the hose electrical plugs are connected to the bank of receptacles #1 to 4. The optional auxiliary zone cables, if used, are connected to the right bank of receptacles #1 to 4. On a six-hose machine there are no auxiliary zones and hoses #5 and 6 are connected to two receptacles on the right bank.

The left filter manifold (viewed from the back of the machine) corresponds to pump #1 and the right one to pump #2. Each manifold has four adhesive ports for connection of hoses and optional pressure gauges or pressure transducers.

When using a single pump, remove the divider plug from the corresponding manifold and connect hose #1 to port #1 and connect the corresponding electrical plug to hose receptacle #1. Connect hose #2 (if used) to port #2 and its plug to receptacle #2.

When using a dual pump, leave the divider plug in place and connect hoses corresponding with the first glue stream to ports #1 and 3. Connect hoses corresponding to the second glue stream to ports #2 and 4.

Use the same procedures for the second pump and filter manifold, if applicable.

Install hoses with a bend radius of no less than 8 inches. Maintain an air space between hoses to avoid hot spots. Use proper belting-type support. Avoid pinching, clamping, squeezing or anything else that would compress the insulation around the hose, resulting in hot spots which shorten hose life.

6. Install the hose manifold (filter block) outlet cover by sliding it into place and attaching with the two screws provided.

Adding Adhesive

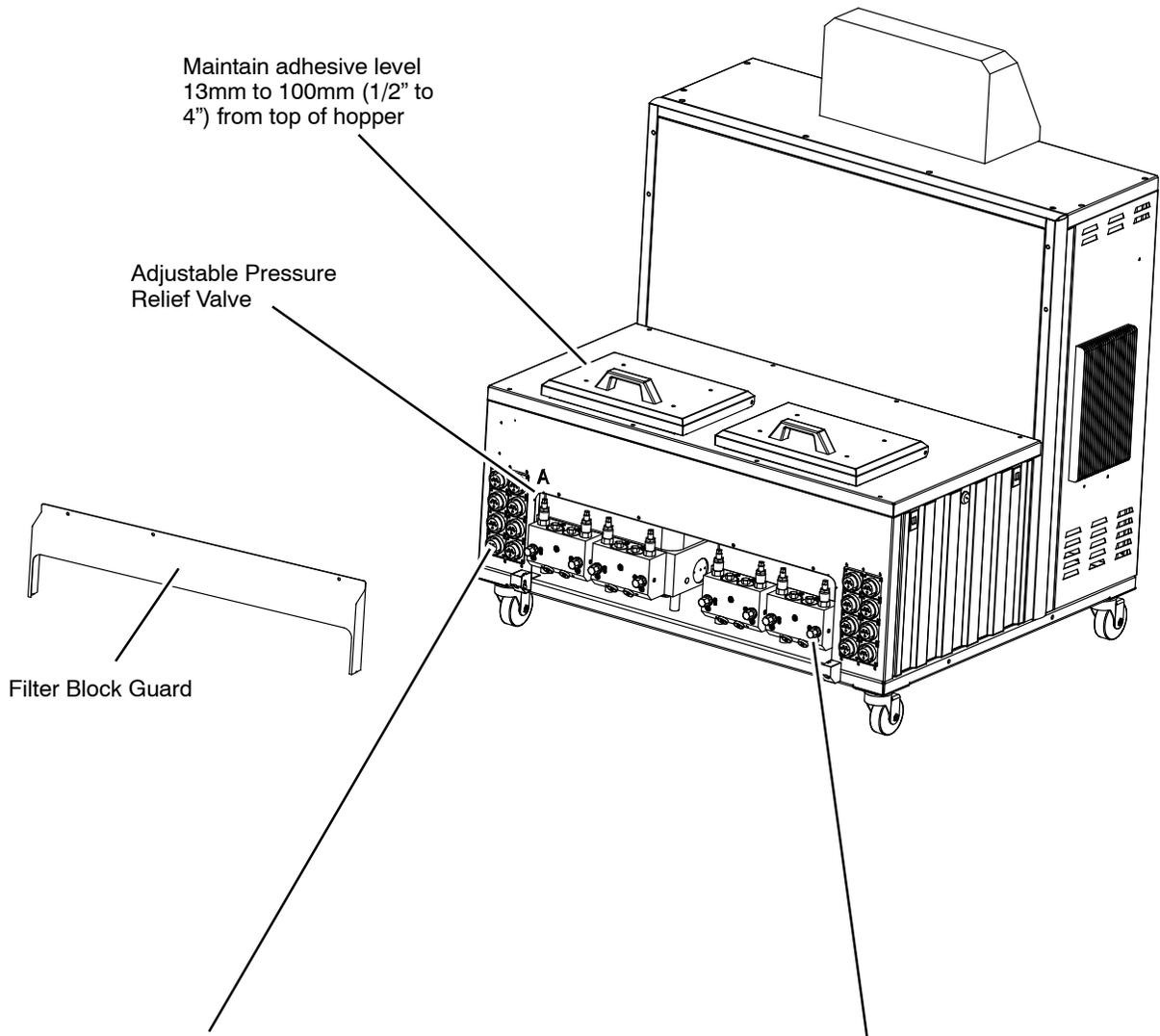


CAUTION: Using adhesive with viscosity over 50,000 centipoise could cause motor stall and/ or pump failure.

The adhesive level in the melt tank should be maintained at 25mm to 100mm (1" to 4") from the top of the hopper. Where applications demand a high output volume of adhesive, add small amounts of adhesive frequently. Adding large amounts of adhesive to an almost empty hopper will lower the temperature of the adhesive in the hopper and may cause the ASU to fall below its READY setpoint.

Changing the Adhesive Formula

If a different adhesive formulation from the one being currently used is needed, the system will have to be flushed if the two formulations are incompatible. See Chapter 6 of this manual for the proper flushing procedure. When in doubt about adhesive compatibility, flush your system.



Hose/Head electrical connections are located on either side of the Filter Outlet Manifolds. There are a total of 8 hose/head/aux connectors.

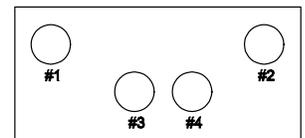
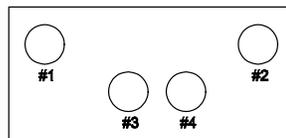
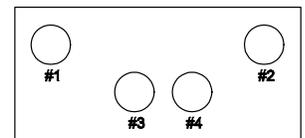
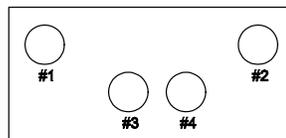
Hose/Head adhesive ports (located on the Filter Outlet Manifolds), for connection of either hose inlets or pressure gauge(s).

Left side (above):

 AUX #5	 Hose/Head #5
 AUX #6	 Hose/Head #6
 AUX #7	 Hose/Head #7
 AUX #8	 Hose/Head #8

Right side (above):

 Hose/Head #1	 AUX #1
 Hose/Head #2	 AUX #2
 Hose/Head #3	 AUX #3
 Hose/Head #4	 AUX #4



Adjusting the Pressure Relief Valve

The function of the pressure relief valve is to protect the gear pump(s) and the pump drive components from overload and to protect other components from potentially damaging pressure levels. The system will allow pressures up to 1000 PSI, however, typical factory settings are 500 PSI.



WARNING HIGH PRESSURE, HOT ADHESIVE

NOTE: The following procedure will require the hot melt adhesive to be at a high temperature and the application system to have substantial pressure. Safety glasses, insulated gloves and long-sleeved protective clothing must be worn to prevent the possibility of serious injury from the molten adhesive. Refer to Chapter 1 and the section entitled "SAFETY PRECAUTIONS" for further details and First Aid information.

To Adjust Pressure Relief:

Note: This adjustment should be done with a melt pressure gauge or a pressure transducer installed. Failure to use proper equipment can result in excessive pressure levels.

The pressure relief valves are located on the filter manifolds, which are located under the rear manifold cover(s), near where the hoses connect to the ASU.

1. Turn the application system ON and raise the temperatures of all components to normal operating temperatures.

Note: Position a heat-resistant bucket or other waste receptacle under the applicator(s) so that adhesive will be collected during the adjustment procedure.

2. At the controller, set the motor speed to "0" so that the gear motor is not turning.

Note: If using a single pump or if using a dual pump with both output streams combined into one, adjust one of the pressure relief valves fully clockwise to close it off and use the other valve to adjust that pump's pressure setting.

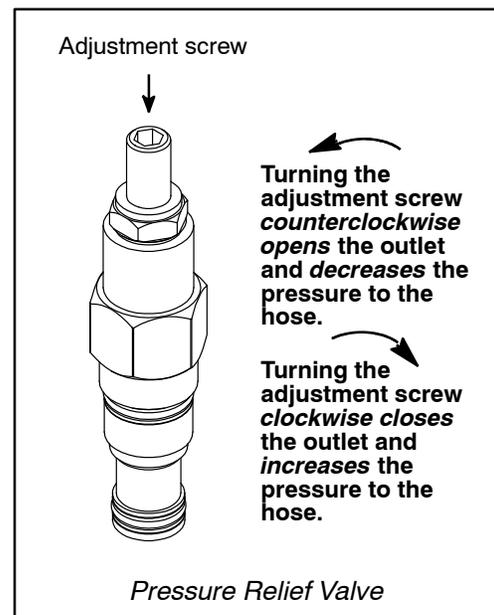
If using a dual pump with separate glue streams, set the pressure of each stream with its respective pressure relief valve.

Reference Note #7 on page 10-3 regarding the plug that separates the two pressure chambers, if using a dual pump. This plug must be removed if combining dual streams into one or if using a single output pump.

3. The pressure relief valve's adjustment screw is at the top of the valve (see diagram). Turn the adjustment screw counter-clockwise until it stops.

4. At the controller, turn the motor ON to its maximum operating speed.

cont.



5. Actuate (open) the valves on the applicator(s) in order to fill them with adhesive and purge air from the system.
6. Close the valves (those opened in the last step) to stop the flow of adhesive.
7. Using a wrench, turn the adjustment screw clockwise to increase the pressure to the applicator(s).



CAUTION: Approach desired pressure with caution. Be aware that the higher the adjusted pressure, the more sensitive the adjustment is (i.e., at higher pressures, smaller adjustments to the screw will make larger changes to actual pressure).

8. After desired pressure is achieved, stop turning the adjustment screw.
9. While the motor is operating at maximum speed and the applicators are valved on, observe the adhesive flow from the applicator(s).
10. Reduce the motor speed, in increments of about 10%, until the adhesive flow begins to decrease.

Note: Though the speed of the motor is reduced, there will be no change in the amount of adhesive flow coming out of the applicator. This is because the pressure relief is designed to allow only a maximum adhesive pressure regardless of the motor speed past a certain point.

Then, increase motor speed in smaller increments (1 to 5%) until adhesive flow returns to the desired amount.

Note: This is the optimum point of operation for the motor, pump and pressure relief. It will also facilitate the best system performance and reduce wear on these components.

The application system is now adjusted for normal operation.

Optional Level Control

The level control device informs the ASU's operator, via a "Level Low" or "Level High" message on the controller's System Status display, that the ASU's hopper needs to be refilled or that it is overfull. It may also be wired to stop production.

Single Point Level Control

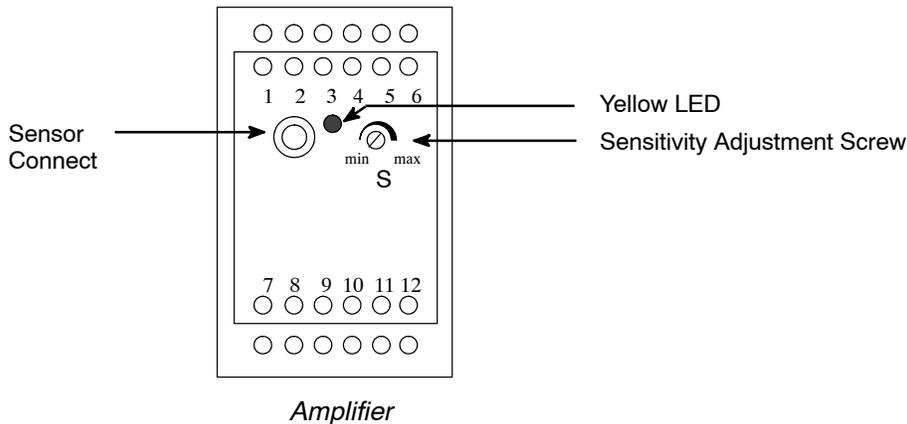
The single point level control monitors either a low or a high adhesive level.

The capacitive sensor is mounted in the hopper. The sensor cable is plugged into an amplifier. DO NOT CUT the sensor cable.

Adjustment of the Single Point Level Control:

To adjust the adhesive level control's sensitivity, access the control's amplifier, located inside the panel box assembly. On the amplifier (diagrammed below) is a sensitivity adjustment screw.

Turn the screw clockwise to increase sensitivity (or counter-clockwise to decrease). The yellow LED lights to indicate the presence of adhesive. When the LED goes out, the audible and visible alarms will activate.



Typical Start-Up and Shut Down of the V6 System Using LCD Controller

The following simplified sequence assumes that the LCD HMI DynaControl V6 Controller has been programmed.

Start Up Procedures

1. Fill the ASU's hopper with clean hot-melt adhesive to within a couple of centimeters (inches) of the top of the hopper. Close the hopper lid immediately to prevent contaminants from falling in. (Cover your bulk supply of adhesive to prevent contaminants also.)
2. Switch ON the Main Switch. The controller display will come on and the ASU will begin to heat up.
3. Allow adequate time (approximately 20-30 min.) for the adhesive to melt and the temperatures of the heated zones to stabilize. The display will indicate when the unit reaches operating temperature:

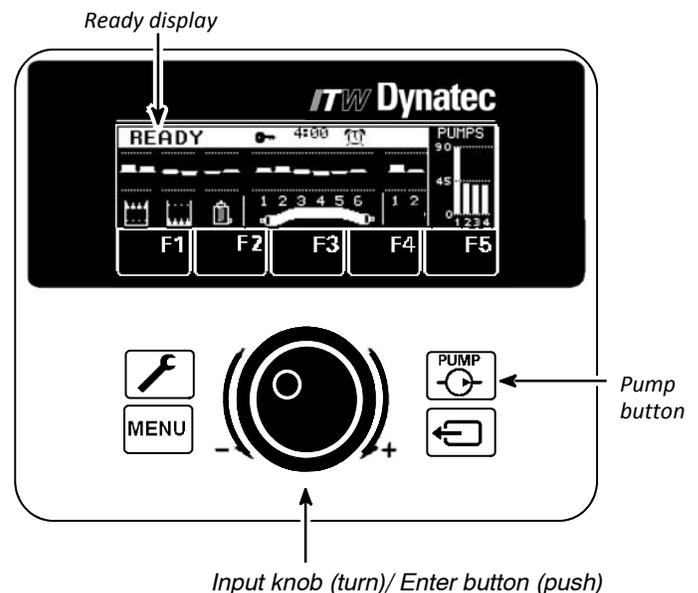
The LCD panel will display "READY" in the upper left-hand corner when all zones are within their hi-lo tolerance range of the setpoint temperature. More information about the display can be found in Chapters 4 and 5.

4. When temperatures are ready, the pump/ motor is enabled to pump adhesive.
 - a. *If Pump is in Auto Program:* Adhesive will begin to pump when the production line begins to operate.

- b. *If Pump is in Manual Program:*
 - i. Press Pump button.
 - ii. Press Manual (F2).
 - iii. Select desired speed by turning input knob or select a pre-set speed (F5).
 - iv. Adhesive will begin to pump after Ready condition is attained.

Shut Down Procedures

1. *If Pump is in Auto Program:* Turn OFF the Main Switch.
2. *If Pump is in Manual Program:*
 - a. Turn OFF the pump/ motor by depressing the Pump button, then scroll to STOP.
 - b. Turn OFF the Main Switch.
3. *If 7-Day Scheduler is in use:* Turn the unit ON and OFF with the Scheduler On/Off:
 - a. Press Menu
 - b. Press 7-Day Scheduler (F4)
 - c. Press F2 for Sleep Mode (Off). (To cancel Sleep Mode, press the Input knob).



Typical Start-Up and Shut Down of the Application System Using the Touch Screen

The following simplified sequence assumes that the DynaControl Controller has been programmed.

Start Up Procedures

1. Fill the ASU's hopper with clean hot-melt adhesive to within a couple of centimeters (inches) of the top of the hopper. Close the hopper lid immediately to prevent contaminants from falling in. (Cover your bulk supply of adhesive to prevent contaminants also.)
2. Switch ON the Main Disconnect (the circuit breaker located on the panel box).
3. The Controller and the Touch Panel will start automatically. All system heaters go ON unless they have previously been de-activated (in which case they will be turned OFF) or if heating priorities have been set.
4. Allow adequate time (approximately 20- 30 min.) for the adhesive to melt and the temperatures of the temperature zones to stabilize. Observe the Status Line display at the Main Screen to see when "Not Ready" changes to "Ready".
5. When temperatures are ready, the pump and motor are enabled to pump adhesive.
6. At the Pump Overview Screen, select Auto or Manual Mode for each pump.
 - a. *If Pump is in Auto Mode, select either Pump Control in Linear Line Speed or Pump Control, Pressure Control.*

To select Pump Control in Linear Line Speed: Adhesive will begin to pump when the production line begins to operate.

- i. Select the pump for programming under the Settings column on the Pump Overview Screen.
- ii. Select Linear Line Speed in the Current Pump Mode menu. Press BACK.
- iii. Set the minimum and maximum setpoint value (RPM). The pump speed is controlled via a 0-10VDC signal provided by an external device (pattern control equipment or parent machine input). The minimum speed is necessary to keep the pump turning in order to maintain a minimum amount of adhesive pressure through the hose and applicator head.
- iv. Select the next pump (if applicable) under the Settings column on the Pump Overview Screen. Repeat steps i through iii until all pumps in the system are programmed.

To select Pump Control, Pressure Control: Adhesive will begin to pump when the pressure setpoint is reached.

- i. Select the pump for programming under the Settings column on the Pump Overview Screen.
- ii. Select Pressure Control on the Current Pump Mode menu. Press BACK.
- iii. Set the minimum and maximum setpoint value (RPM), the pressure setpoint value and the switch point value. The pump speed is controlled via the pressure signal provided by a pressure sensor.
- iv. Select the next pump (if applicable) under the Settings column on the Pump Overview Screen. Repeat steps i thru iii until all pumps in the system are programmed.

b. *If Pump is in Manual Mode:*

- i. Select the pump for programming under the Settings column on the Pump Overview Screen.
- ii. Set the manual setpoint value (RPM) under Manual Mode Settings.
- iii. Select the next pump (if applicable) under the Settings column on the Pump Overview Screen. Repeat steps i thru iii until all pumps in the system are programmed.

Shut Down Procedures

At the pump screen:

1. *If Pump is in Auto Mode:*

- a. Press STOP or ALL PUMPS STOP.
- b. Turn OFF the Main Disconnect Switch.

2. *If Pump is in Manual Mode:*

- a. Press STOP or ALL PUMPS STOP.
- b. Turn OFF the Main Disconnect Switch.

3. *If the Scheduler is in use:*

Turn OFF the unit with the Control Switch On/Off (ie, on the Main Screen, press the Control button. Then, at the Control Switch/ Standby Screen, press On/Off).

Note: If the Scheduler is not in operation, use the Main Disconnect Switch to turn the unit OFF to avoid unexpected ASU activation in the event of a power outage.

Storage and Disposal of the Application System

Temporary Storage of the Unit

1. Flush the adhesive application system with flushing fluid (PN L15653), following the instructions detailed in chapter 6 of this manual.
2. Clean or replace both the outlet filter and the primary filter, following the instructions detailed in chapter 6.
3. Shut OFF all pressure and power sources.
4. Release residual air pressure.
5. Remove all residual adhesive and wipe components clean.
6. Remove all air lines and all power supply cables.
7. Pack the unit in a corrosion-proof manner.
8. Store the unit in such a way that it is protected from damage.

Disposal of the Unit

1. Shut OFF all pressure and power sources.
2. Release residual air pressure.
3. Remove all residual adhesive.
4. Remove all air and adhesive supply hoses and all power supply cables.
5. Dismantle all components and sort into mechanical and electrical components.
6. Arrange for all components to be recycled.

Chapter 4 DynaControl V6 CONTROLLER SET-UP

Temperature Control Functions in General

The DynaControl microprocessor-based proportional temperature control in the ASU performs a number of functions that help to maintain adhesive setpoints in all temperature zones of the DY-NAMELT system. It maintains permanent system values such as the maximum temperature setpoint. It enables the user to program temperature settings and heater on/off sequencing that are appropriate to a specific application. It displays all programmed values, and it includes self-diagnostic malfunction alerts and failure alarms. *Note: Some DynaControl functions are direct temperature conversions between degrees Celsius and Fahrenheit. Other parameters are independently selected values.*

Defining DynaControl Temperature Control Terms

Adhesive Temperature Control Range

The temperature limits within which the ASU, hoses and applicators may be programmed and maintained.

Default Settings

The factory-set programmable system values that will be in effect if the user does not enter new values.

Error Indication Alarms

Controller alarms which indicate that the programmed over-temperature values have been exceeded for one or more hopper, hose or head zones. Alarms may also indicate an open or short-circuited sensor.

Main Power & Aux Power PCBs

The V6 Power Module and V6 Aux Power Module provide power to all the temperature zones in the ASU's system. The standard unit's hopper, hoses and applicators are controlled by the Power Module. Additional hoses and applicators are controlled by the Aux Power Module.

Mechanical High-Temperature Protection

A mechanical, redundant thermostat located on the hopper which turns OFF the system at 218°C (425°F) [or 232°C (450°F) for optional high temperature units].

Microprocessor-based Proportional Temperature Control

The built-in control system that controls, monitors and displays all system temperatures.

Over-Temperature Setpoint

The programmable temperatures that will cause alarms to occur when those temperatures are exceeded. Power is not disconnected, the READY contact opens and the alarm contact opens. If an external alarm has been connected, it will activate. The over-temp setpoint is the upper limit of the ready temperature range of each zone.

RTD Sensors

The standard Dynamelt system uses 100-ohm platinum resistance temperature detector sensors for all temperature controls. Ni120 is available as an option.

Ready Temperature

The programmable temperature which allows the ASU pump to turn ON. The default ready temperature range is a deviation of + 20°C (+ 36°F) from the setpoint. The setpoint minus the deviation is the low limit of the range, and the setpoint plus the deviation is the high limit of the range.

Sequential Heating

The heating sequence which allows the slower-heating hopper to reach operating temperature without unnecessary use of electricity for faster-heating hoses and applicators. Sequential heating is the time period during which the hoses and applicators remain OFF while the hopper (and optional drop-in grid) heats up. Hoses and applicators may be independently programmed. If hopper temperature is above ready temperature when the ASU is turned ON, the hose and applicator sequence is bypassed and they will be turned ON. Sequential heating is restored after Standby is turned from ON to OFF. Sequential heating is not needed for most applications and can delay total system warm-up time.

Setpoints

The temperatures that you have selected and programmed for each of the temperature zones.

Setpoint Limitation

This is a universal maximum temperature for all zones. The programmer cannot program a temperature setpoint higher than the setpoint limitation. If the actual temperature of any zone climbs higher than the setpoint limitation, all heaters will shut down.

Standby Condition

The system condition where the ASU, hose and head temperatures are maintained at predetermined reduced temperature values. Standby temperatures are set lower than setpoint temperatures in order to reduce adhesive degradation and energy consumption when the system is temporarily inactive, and to permit rapid system warm-up when run condition is selected. When standby mode is activated, the controller will display STANDBY.

Temperature Zone Enable

The temperature zone enable allows the operator to disable unused temperature zones in such a way that they do not appear on the controller's display and heating is switched OFF.

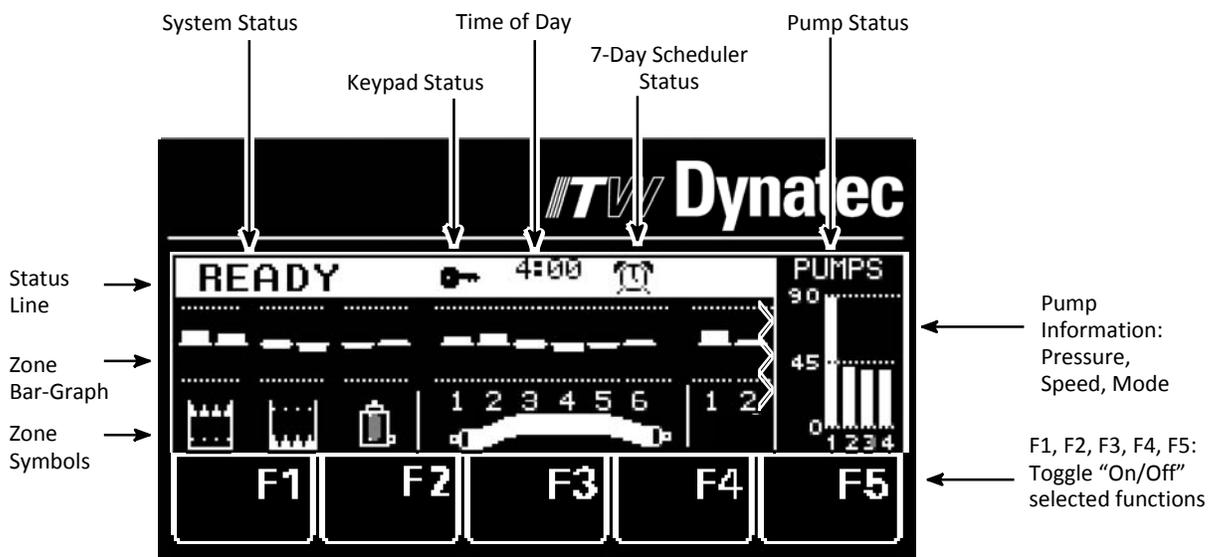
V6 Base Module

The main control module of the system. It controls and communicates with the temperature control module, the operator interface and all auxiliary modules and I/O devices.

V6 Temperature Module

Monitors temperature signals from all heated zones and provides control signals to the Power and Auxiliary PCBs (modules).

DynaControl V6 LCD Display During Normal Operating Mode



LCD Error Indication Alarms

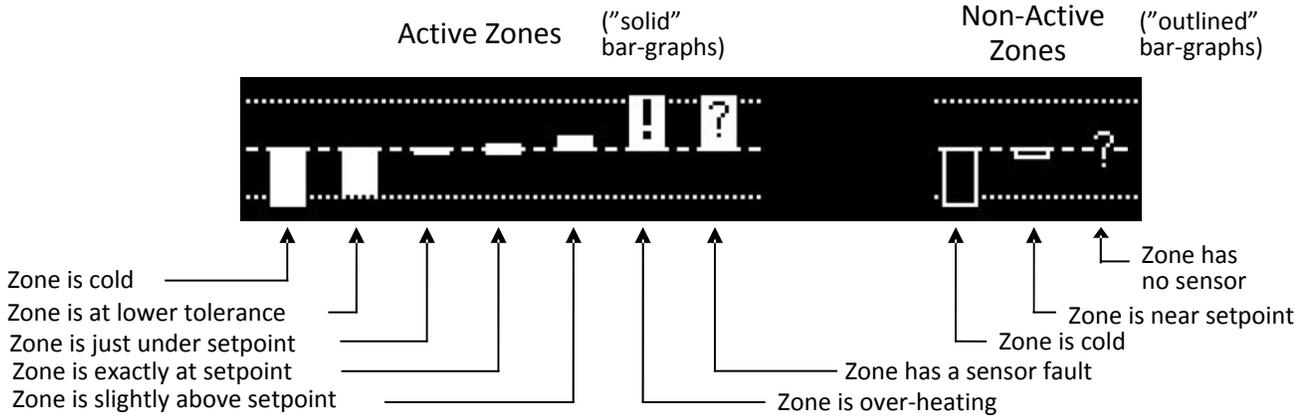
The following illustration shows the display that will be activated when one or more error indication alarm conditions occur. The conditions that will trigger an alarm are:

When a hopper, hose or head has exceeded its selected over-temperature setpoint, which is the setpoint plus its Hi/Lo alarm setting, or when it is below its selected under-temperature setpoint, which is the setpoint minus its Hi/Lo alarm setting .

When a hopper, hose or head sensor has an open circuit.

When an alarm condition occurs, the current display will be interrupted only if a sensor failure occurs. If more than one alarm condition occurs simultaneously, all alarm conditions will be displayed sequentially.

LCD Error Indication Alarm Display Examples



Operator Response to LCD Error Indication Alarms

If an alarm occurs during operation, the controller will switch off the internal power to the heaters and an appropriate error indication display will appear.

Pressing the RETURN button resets the error. If several zones display alarms, each must be acknowledged by pressing RETURN. The alarm display is switched off. The operator must either switch OFF the indicated temperature zone(s) (via the DynaControl keypad) or troubleshoot to correct the problem.

Low temperature alarms will not open the main contactor and are only indicated on the bar-graph display and auxiliary alarm output contacts.

A sensor failure is displayed as a "?" on the bar-graph and power is switched off to the zone.

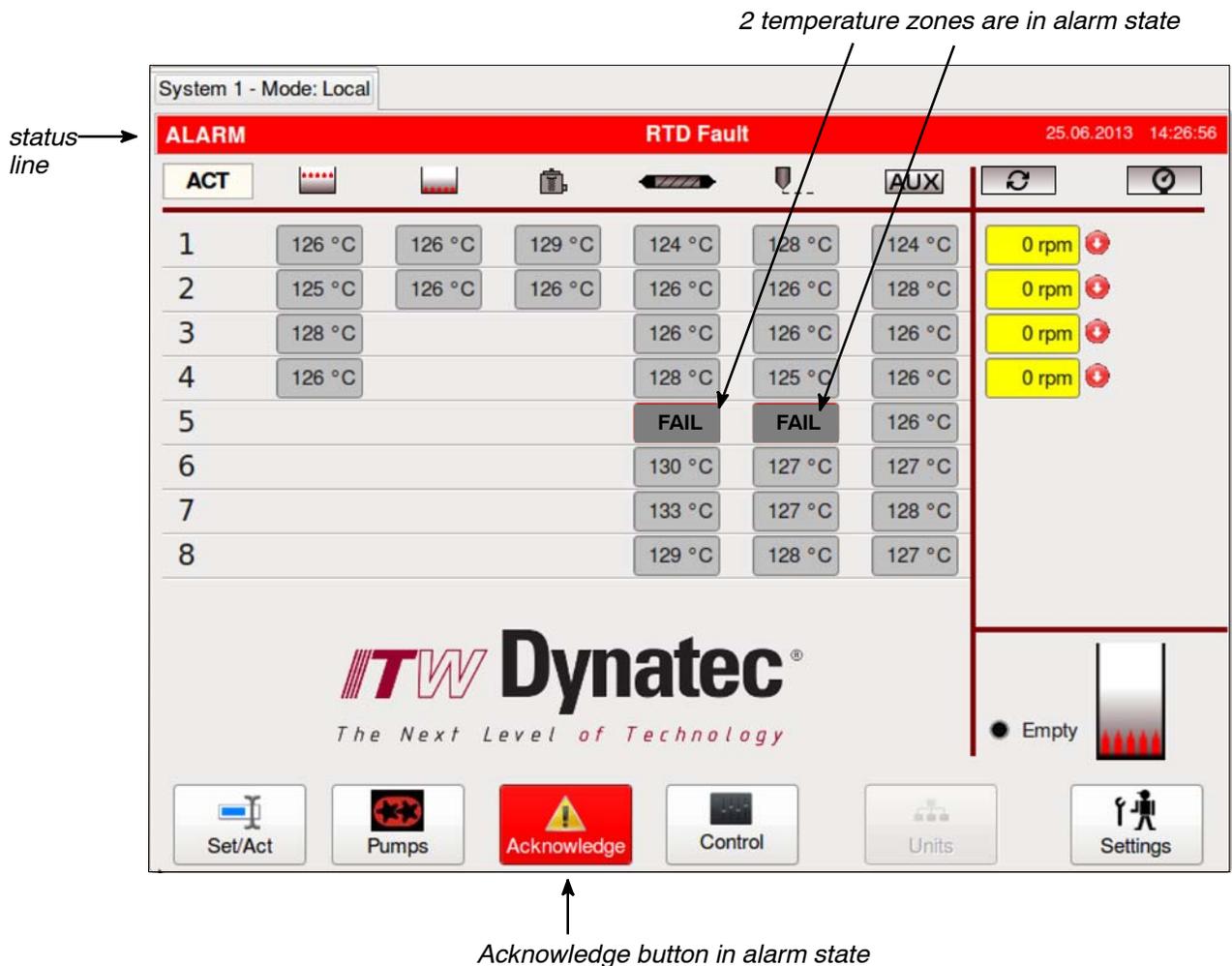
When the actual temperature exceeds the setpoint limitation plus a tolerance of a few degrees, a "!" is displayed on the bar-graph and heater power is switched off.

Touch Screen Error Indication Faults & Alarms

If a fault/ alarm occurs, the Acknowledge button (on the Main Screen) and the temperature zone will be highlighted in red. The controller will turn off the internal power to the heaters and an appropriate alarm indication will appear in the status line of the controller's display.

The operator must either turn Off the indicated temperature zone(s) or troubleshoot to correct the problem. Then press the Acknowledge button in order to turn on the main contactor and reset the error. If more than one alarm condition occurs simultaneously, the alarms will be displayed sequentially and each alarm must be acknowledged.

When an alarm occurs, the current display will be interrupted only if a sensor (or a motor drive) failure has occurred. When the actual temperature exceeds the setpoint limitation (plus a tolerance) the over-temperature alarm is displayed and main power is switched Off.



Error Alarms in Touch Screen Status Line

Among the Faults and Alarms that may be displayed on the controller's status line are:

RTD Fault: a hopper, hose or applicator head RTD sensor has an open circuit.

Temperature Alarm:

1. a temperature zone has exceeded its selected over-temperature setpoint, (which is the setpoint plus the Temperature Alarm Window and Temperature Alarm Hysteresis), or
2. a temperature zone is below its selected under-temperature setpoint (which is the setpoint minus the Temperature Alarm Window and the Temperature Alarm Hysteresis).

Drive Failure: a motor drive (frequency converter) has a fault.

Minimum Level: the adhesive level has dropped below the level sensor and the hopper is empty.

Feedback Failure Motor #: (optional) speed monitor pump addressed.

Over temperature: hardware over-temperature indication.

Communication Error: there is a communication error between the touch panel and controller.

Parameter CRC Error: parameter memory has been lost. Call ITW Dynatec Technical Service.

Other Faults or Alarms: call ITW Dynatec Technical Service.

Touch Screen Controller's Log Book

The controller's Log Book Screen provides a list of the last 100 controller alarms, faults and events.

To go to the Log Book, press the Settings button on the Main Screen. Then press the Log Book button on the Settings Screen.



WARNING USE OF SCHEDULER FEATURE

The controller's Scheduler feature allows automatic start-up and shut-down of the unit's heating and rotating components, which may present an unexpected hazard to those unfamiliar with it. Users, service technicians and others in the vicinity of the machine should be made aware of this possibility in order to mitigate the risk of injury.

Settings for a Typical Operation

Note: The values given here are approximate settings for a typical packaging application. The values you choose will be based on the type of equipment and adhesive you are using and the nature of your particular operation.

If Application Temperature is 177°C (350°F):

Hose and head temperature: 177°C (350°F).

Hopper setpoint temperature: 163°C (325°F).

Hi/ Lo limit deviation: 12°C (20°F).

ASU operating range: 149°C to 177°C (300°F to 350°F).

Standby condition temperature (deviation): 30°C (50°F).

Hopper over-temperature setpoint: 177°C (350°F)

Mechanical thermostat (for the hopper) over-temperature: 218°C (425°F)

For most operations, temperature fluctuations will be very small and of short duration. For these reasons, the settings above are recommended.

System Values That Are Factory Programmed (not customer programmable)

Minimum setpoint value: 10°C (50°F).

Maximum setpoint value (setpoint limitation): 218°C (425°F).

Maximum alarm deviation: 50° (C or F).

Minimum alarm deviation: 5° (C or F).

Maximum standby temperature: 150° (C or F) less than setpoint.

Minimum standby temperature: 30° (C or F) less than setpoint.

“Actual” temperature indication range: 0°C to 260°C (32°F to 500°F).

Customer Programmable System Values Preset At The Factory

ITW Dynatec can set the controller’s system values to customer’s specs, if provided.

If customer’s specs are not provided, the following values will be entered into the DynaControl controller at the factory. They may be changed by reprogramming through the controller. (These are not the “default” settings, see following section).

Language: Chinese (when shipment is to a China destination).

Standby: 82°C (180°F) under setpoint.

All other system values: controller defaults.

Default Settings of the DynaControl V6 LCD Controller

Language: English

Setting for Customer Access Code: “1111”.

Standby temperature for all zones: 66°C (150°F) lower than programmed setpoints.

Hi/ lo limit deviation for all temperature zones: + 20°C (36°F).

Temperature zone offset: 0°C (0°F).

Setpoint limitation: 218°C (425°F).

Automatic sleep mode: Off.

Sequential heat-up: Off.

Power-On motor Stop: No.

Power-On heater start: Yes.

Global setpoints: No.

Minimum pump speed: 0 RPM).

Maximum pump speed: 90 RPM.

The ITW Dynatec factory default settings may be re-loaded in the controller per the instructions given in Chapter 5: Zone Configuration (P1 parameter).

LCD Controller Features

One-button Shortcuts

Press the “F” buttons to go to:

F1 = the Hopper temperature zone

F2 = the Hose temperature zone

F3 = the first Applicator temperature zone

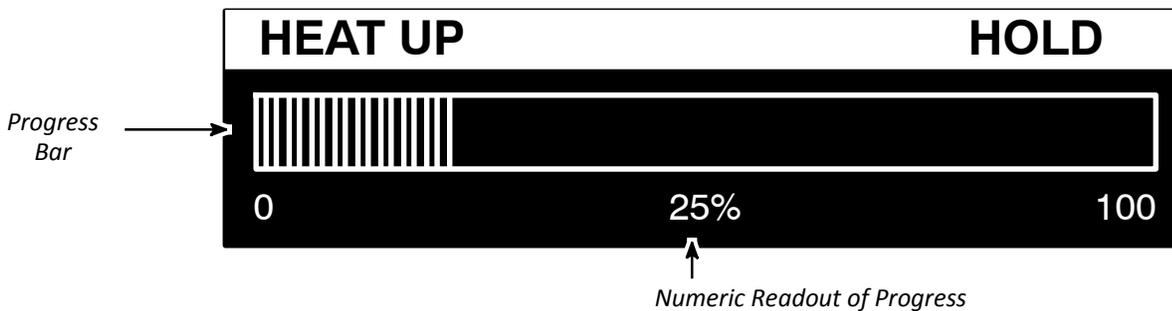
F5 = toggle On/ Off

Shortcut to Advance to System Configuration Parameters

Press the System Configuration button (wrench button) on the Overview Screen once to advance to the System Configuration parameters. Press it again, repeatedly, to advance through the pages of parameters.

Initial Heat-up Progress Bar

During heat up from a cold start, press the Input Wheel/ Knob for 5 seconds to see a progress bar which graphically tracks heat-up until Ready status is attained and production can start. The scale shown is 0% to 100% fully heated.



The ASU illustrated above is one-quarter heated.

If you would like to display the controller’s Scan Mode in order to watch the active temperature zones scroll while the unit is heating, press the Input Knob once more.

Helpful Tips for the User

When the ASU is turned ON, all temperature setpoints and other operating parameters will be exactly where they were when the ASU was turned off.

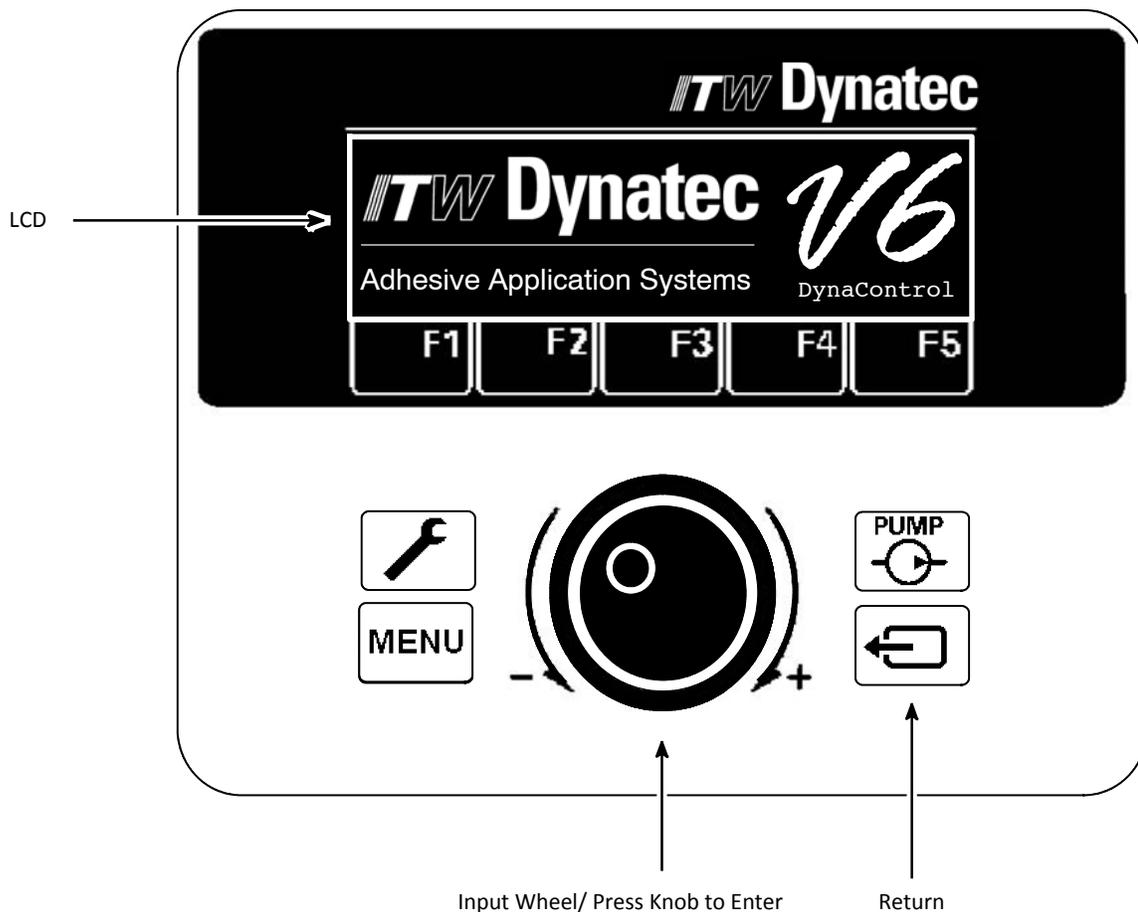
When the ASU is turned ON, all system heaters go ON unless they have previously been de-activated (in which case they will be turned OFF) or if sequential heatups have been set. However, if hopper temperature is above ready temperature when the ASU is turned on, all hose and head sequential heatups will be bypassed and hoses and heads will be turned ON.

Chapter 5, Section 1 PROGRAMMING INSTRUCTIONS, V6 LCD FOR D SERIES ASUs

DynaControl CONTROLLER, V.6.00 and Up

DynaControl (DCL) V6 LCD Interface

DynaControl V6 controller technology is available as a liquid crystal display (LCD), which allows an instant overview of temperature zone and pump status, and with a combination Input Wheel/ Enter Knob to facilitate fast programming. The LCD HMI is the standard controller for the D Series ASUs.



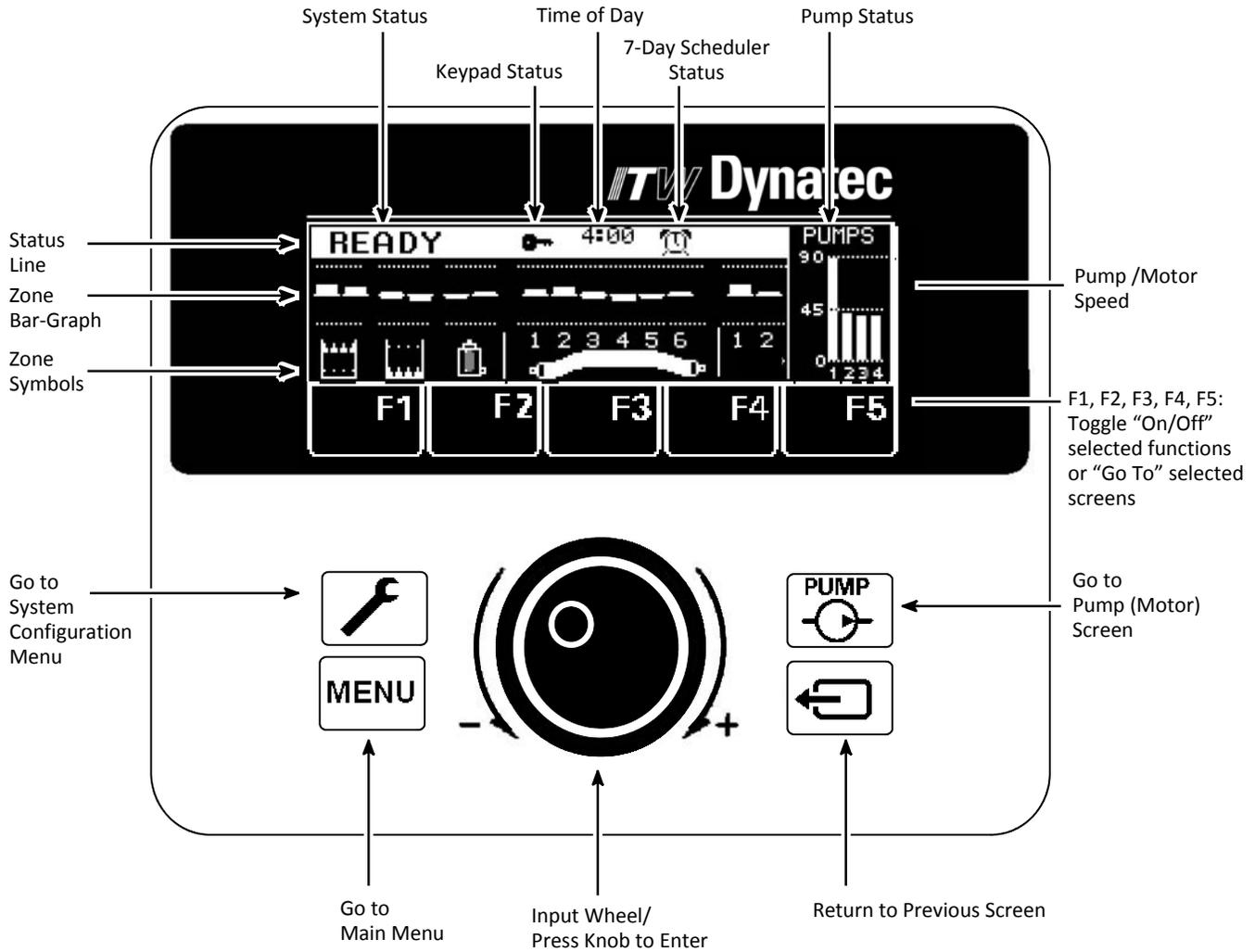
In General

Press the Return button to return to the Overview Screen (seen on next page).

This controller utilizes the graphics (indicating YES or ON or selected) and (indicating NO or OFF or not-selected).

When there is no operator activity on a screen for approximately 30 seconds, the controller will automatically return to the Overview Screen.

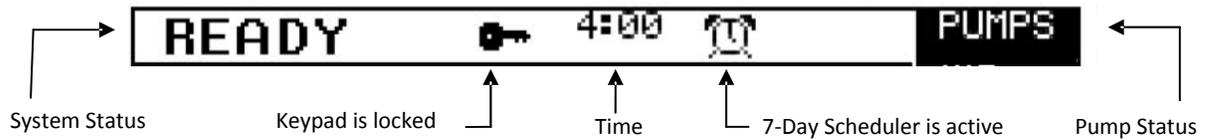
Overview Screen Reference



The Overview Screen gives a comprehensive view of the status of each of the temperature zones and the system as a whole. It gives the status and speed of the pump.

Status Line

The status line is the top line of the display. It always lists the System Status, the Time-of-Day and the Pump Status. It can also include the status of the Keypad (if locked) and the 7-Day Scheduler (if active). An example of an Overview Screen status line is seen below.



System Status

The status of the “system”, ie. the ASU (melter) and its hoses and applicators, is listed as one of the following:

HEAT-UP	No faults present, zones are heating but haven't reached their setpoint window
READY	No faults present and all zones are within the setpoint window
ALARM	At least one zone is outside the setpoint window (over or under temp)
STANDBY	The system is in standby mode
OVER-TEMP	The hopper is in over temperature condition, all power circuits are shut off
FAULT	A temperature zone has a fault and all power circuits are shut off or the motor drive has faulted
HOPPER EMPTY	Adhesive in the hopper is low and must be replenished

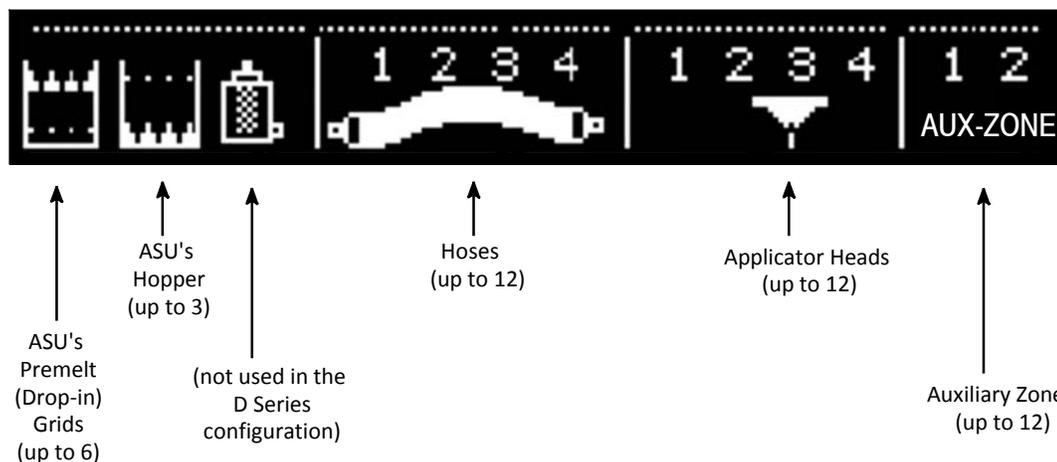
Pump Status

The status of the adhesive pump is indicated as follows:

PUMPS	Pump has start signal and is actually running (seen on Overview Screen, upper right corner)
HOLD	Pump is in Run mode (auto or manual) but a low temperature condition prevents it from running (seen on Overview Screen, upper right corner)
STOP	Pump is in Stop mode (seen on Pump Screen)

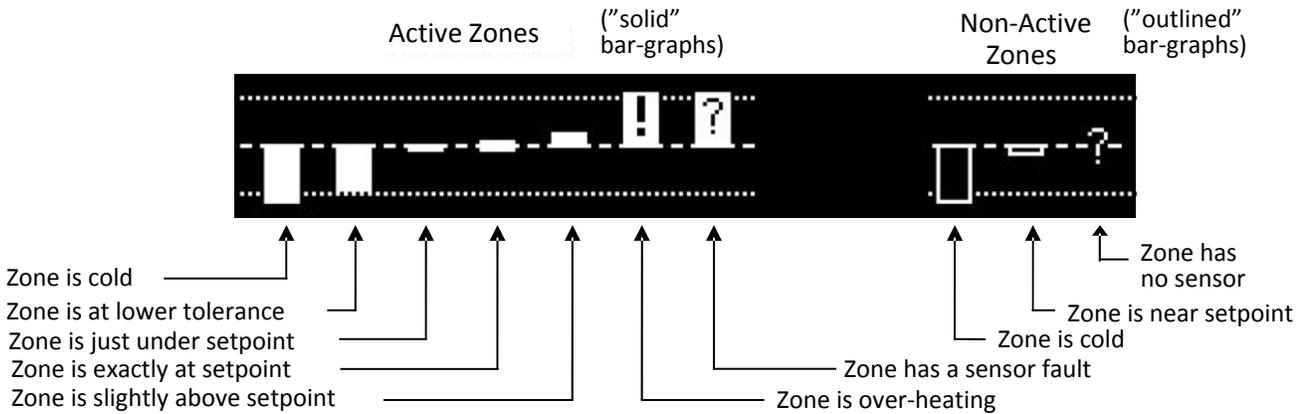
Temperature Zone Symbols

Each temperature zone is represented by a symbol on the display, as follows:



Bar-Graphs

The temperature status of each zone is shown by a bar-graph. A solid bar-graph indicates that the temperature zone is activated. An outlined bar-graph indicates a temporarily de-activated temperature zone. A question mark indicates that the zone's RTD sensor is not valid. An exclamation mark inside a solid bar-graph means that the temperature of the zone is significantly outside its setpoint window.



Scan Mode

Scan Mode allows the operator to watch the currently active temperature zones scroll one at a time on the Overview Screen. Each zone is displayed with its name, programmed setpoint, actual temperature and bar graph.

To activate Scan Mode: On the Overview Screen, push the input knob.

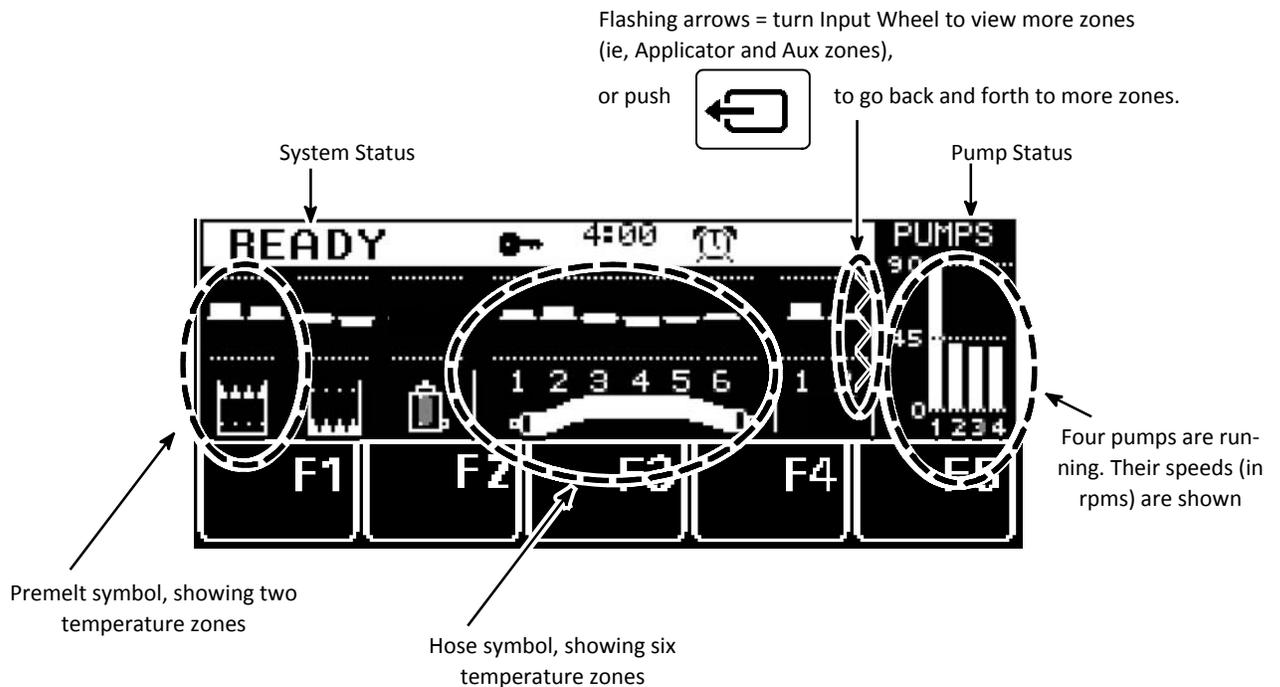
To hold Scan Mode on one particular zone: push the input knob again.

To exit Scan Mode: Turn or push the input wheel.

Overview Screen Example

The Overview Screen illustrated below illustrates an example of a typical system. This melter has two premelt (drop-in) grids and two hopper heaters for a total of four ASU temperature zones.

The screen also shows six hoses and four pump/ motors. There are additional temperature zones in this system, not seen on this screen, as indicated by the flashing arrows.



To Navigate Away from the Overview Screen

Press This Button	To:
System Configuration	Go to the System Configuration Menu to program the temperature unit, language, setpoint limitation, hi/ low tolerance, setback temperature, level control, heat-up sequence, pump enable temperature, access code, 0.5 RPM increments, temperature offset, zone names, power-on configuration or view the logbook.
Menu	Go to the Main Menu screen to program recipes, set-back mode, keypad locking and the 7-day scheduler or to go to the Help Screen
Pump	Go to the Pump/ Motor screen to program pump parameters
Return	Return to the previous screen
F1, F2, F3, F4	Go to the temperature zones (use as shortcuts)
F5	Go to the Pump/ Motor screen (alternative method)

Setup Your System's Parameters

System Parameter Setup refers to the process of programming the controller to meet the specific temperature requirements of your production. Temperature setpoints for each temperature zone must be programmed as well as a standby temperature and high/ low alarm tolerances. Choices must be made for program selection and pump (or motor) conditions. If desired, temperature zone offsets and/ or a temperature zone enable may be selected.

The following is a step-by-step procedure for setting up the DynaControl with your system's parameters.

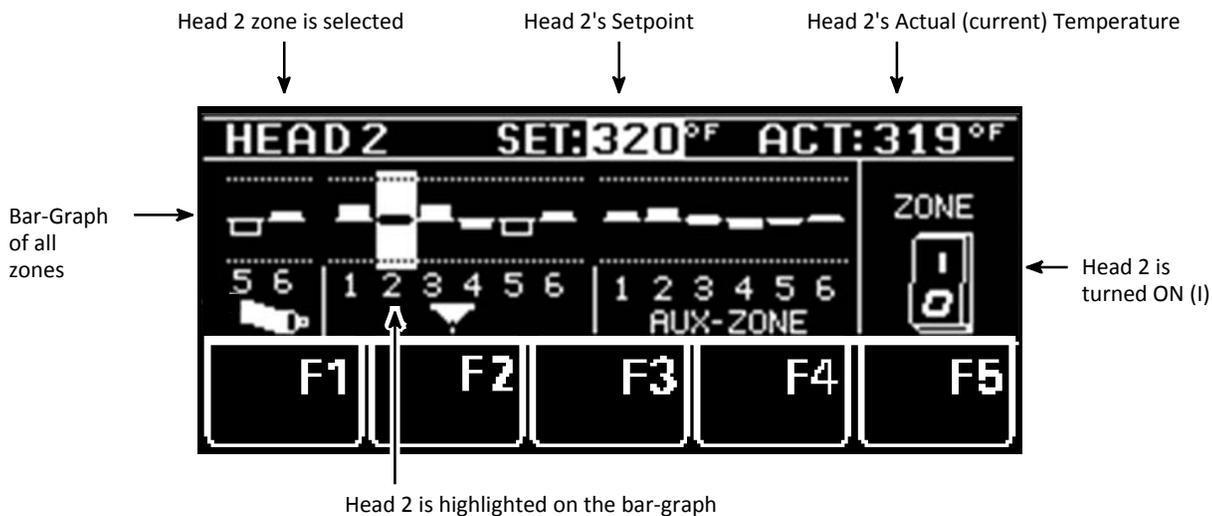
Temperature Zones

Selecting Temperature Zones

From the Overview Screen, turn the Input Wheel slowly to view each temperature zone. As the wheel is turned, you will see the names of the individual temperature zones on the top line of the display. Zone names may be re-programmed to suit the user, but ITW Dynatec's typical D Series zone names are: PREMELT (drop-in grid), HOPPER, HOSE, HEAD and AUX.

To select a zone, simply stop turning the wheel when the desired zone's name appears (example below: HEAD 2). To the right, displayed on the top line, is this zone's programmed setpoint (ex. SET: 320°F) and the actual current temperature of the zone (ex. ACT: 319°F).

Below the zone's name is the bar-graph with the selected zone highlighted. Below the bar-graph you can see that this zone is #2 of the system's applicators. At the far right of the display, you can see that this zone is turned ON.



Selecting Temperature Setpoints

After selecting a temperature zone, press the Enter Knob to highlight the setpoint. Turn the Input Wheel to your desired setpoint value. To enter the new value, press the Enter Knob. Continue programming by entering a setpoint for each zone.

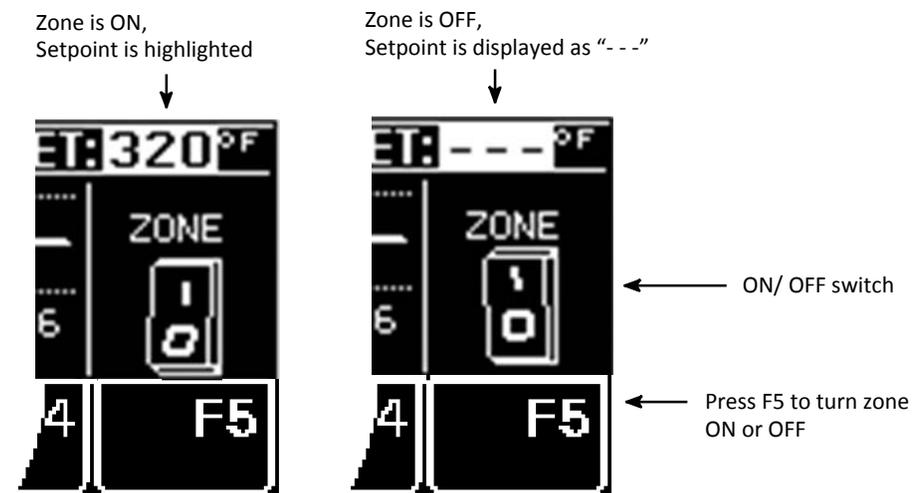
NOTE for systems with multiple ASU zones (ie. multiple Premelt, Hopper and Filter Block zones): each of the ASU zone pairs are individually controlled by RTD sensors, but require only one temperature setpoint. For example, a system with two Premelt zones, two Hopper zones and two Filter Block zones only requires that one Premelt setpoint be programmed, one Hopper setpoint be programmed and one Filter Block setpoint be programmed. NOTE: on the D Series models, there never more than one Hopper or one Filter Block.

Turning a Temperature Zone ON or OFF

When a temperature zone is not used, it can be de-activated (turned OFF). A zone that is turned off no longer heats and is not monitored by the controller for over or under temperatures.

Even when a zone is turned off, the controller remembers its temperature setpoint and it will be restored when the zone is turned back on.

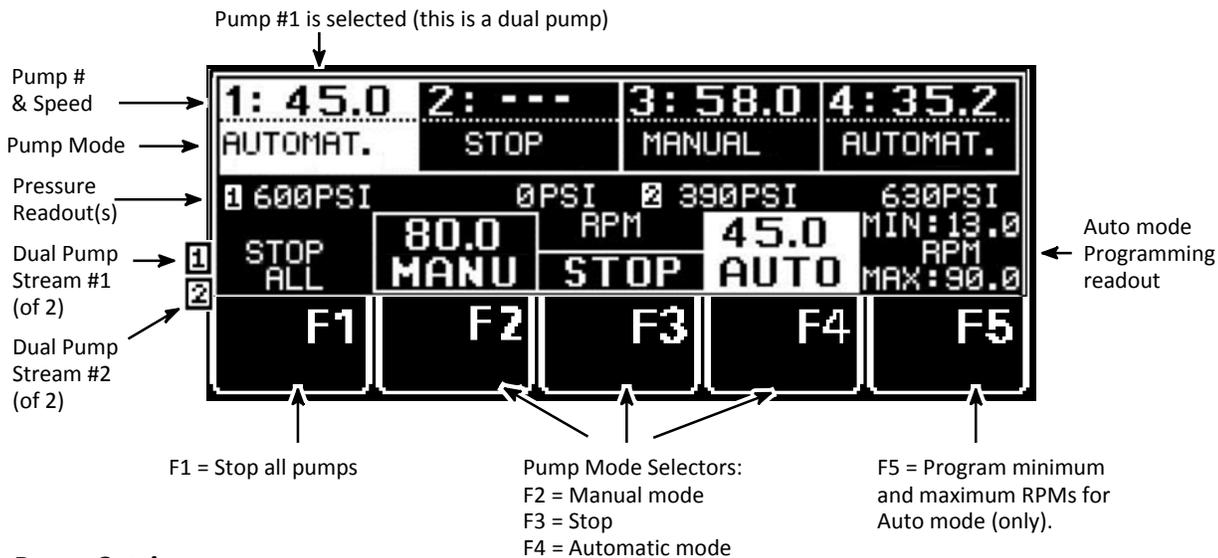
To toggle a temperature zone ON or OFF, press the Enter Knob. Then press F5. You will see the ON/ OFF switch change position. Press the Enter Knob.



Pump Screen

Return to the Overview Screen if necessary, by pressing the RETURN button. Then press the Pump button (or F5) to go to the Pump Screen.

The Pump Screen illustrated below shows the maximum number of pumps (four). The display shows the pump mode and speed for each pump. If the ASU is equipped with the digital pressure readout option, the display also shows the actual pressure (PSI/BAR) of each pump. If dual pumps with pressure readouts are in use, the display toggles between the two pump stream's PSI readouts. In the example below, pumps #1 and 3 are dual pumps. NOTE: on the D25/45 models, two pumps is the maximum and on the D50/90 models, four pumps is the maximum.



Pump Settings

While on the Pump Screen, all changes are immediate; you do not have to press the Enter Knob. The Pump Screen allows you to program the pump mode (Manual, Stop or Automatic) and the pump speed (on a variable speed-equipped ASU only).

Selecting a Pump

Turn the Input Wheel to scroll through the pumps. The selected pump will be highlighted.

Selecting Pump Mode

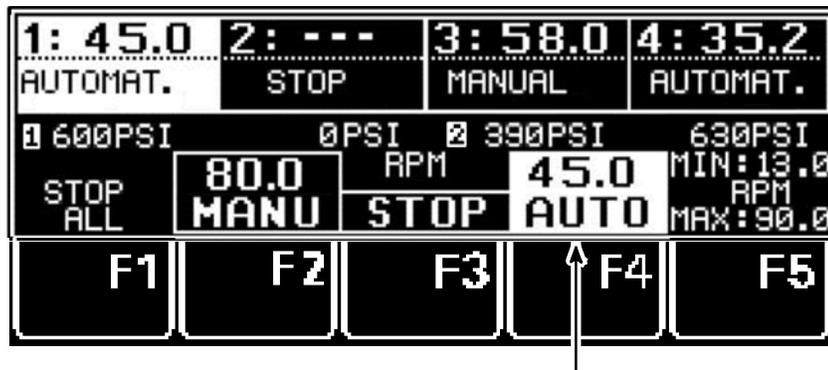
Each pump in the system must be programmed with a Pump Mode. The three choices are:
 AUTO Mode = the pump will be started and stopped by a parent machine (production line).
 MANUAL (MANU) Mode = the pump will be started and stopped manually by an operator.
 STOP Mode = the pump is stopped, until AUTO or MANUAL is selected.

To select a pump mode,

- Use the function buttons:
F2 = MANUAL Mode, F3 = STOP or F4 = AUTO Mode, or
- Use the Input Wheel:

If Auto or Stop modes are desired, simply turn the Input Wheel to highlight that function.

However, to select Manual mode, press the Enter Knob before turning the wheel. Pressing the Enter Knob here toggles between mode selection and RPM selection. Once you are in Manual mode and you have highlighted the RPM selection, turn the Input Wheel to your desired RPM value.



AUTO Mode is selected for Pump #1,
speed is 45.0 RPM

Auto mode readout for
F5 programming

Manual Mode Adjustments

In Manual Mode, press the Enter Knob to program the pump speed. Then turn the Input Wheel to increase or decrease the pump speed. (If desired, you may adjust the RPM increments at the "0.5 RPM Increments" parameter on the System Configuration Menu.)

Or press F5 to scroll through the pre-set speed shortcuts. The presets are 0, 30 RPM, 60 RPM or 90 RPM. Press F5 again until desired pre-set is selected. No entry confirmation is necessary.

Auto Mode Adjustments

The ASU's pump must be programmed with a minimum and maximum percent of full (maximum) speed when Auto mode is used. The maximum speed is used as a scaling factor between the input signal (for example, a PLC or an external 0-10V input) and the percent of full speed value of the pump.

The minimum speed is necessary to keep the pump turning in order to maintain a minimum amount of adhesive pressure through the hose and applicator head.

For instance, if the input signal is 10VDC at 100 meters per minute and the pump percent of full speed is 100% (maximum speed), but the system is putting out too much adhesive, adjusting the MAX value to 50 will allow the pump to slow down and adhesive output will decrease by 50%.

To Adjust: Press the F5 button once to open a minimum RPM input field. Turn the Input Wheel to select desired minimum speed. Press the Enter Knob to confirm. Press F5 again to open the maximum RPM field. Turn the Input Wheel to select desired maximum speed. Press the Enter Knob to enter the value.

F1 = Stop All Pumps

Press the F1 button to stop all the pumps. The controller will memorize the previous setting. Press F1 again and the pumps will re-start accordingly.

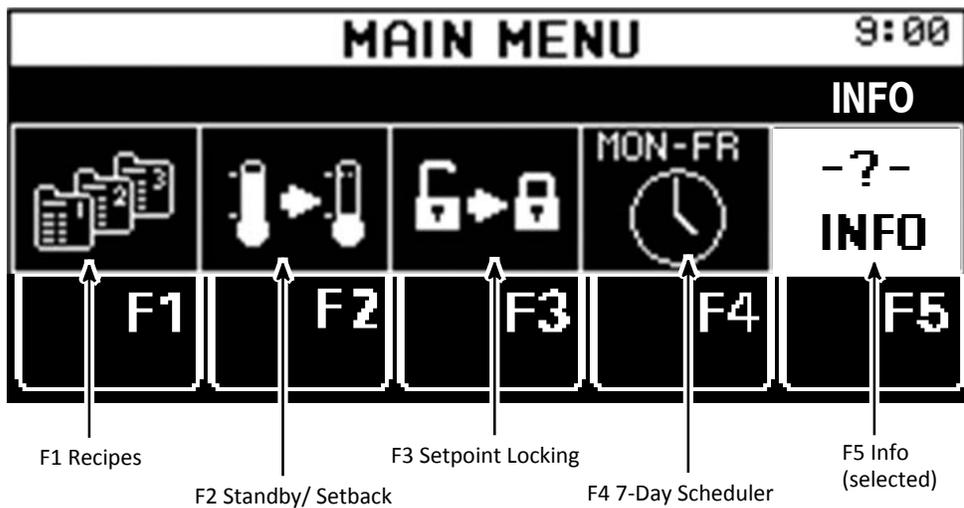
Press the RETURN button to return to the Overview Screen.

Main Menu

Press the Main Menu button on the Overview Screen to go to the following functions:

- F1: Recipe Management
- F2: Standby Mode
- F3: Setpoint Locking
- F4: 7-Day Scheduler
- F5: Info Menu

To select a function, press its “F” button (or turn the Input Wheel to highlight the desired function and then press the Enter Knob to select).



Recipe Management (F1)

A recipe (or “program”) is a set of temperature setpoints and parameters which the user has programmed and stored in the controller for future use. Up to four recipes may be stored in the DynaControl controller.



To Save a Recipe (SAVE TO PROG):

1. Program the controller as you wish it to be setup for a recipe. Program the following parameters: temperature setpoints, zone On/Off settings and motor mode and speed.
2. Press the Main Menu button, then press F1: Recipe Management. Turn the Input Wheel to SAVE TO PROG. Press the Enter Knob to enter. Turn the Input Wheel to select a program number (up to four recipes may be created and stored). Press F5 to confirm.

To Load a Stored Recipe (LOAD FROM PROG):

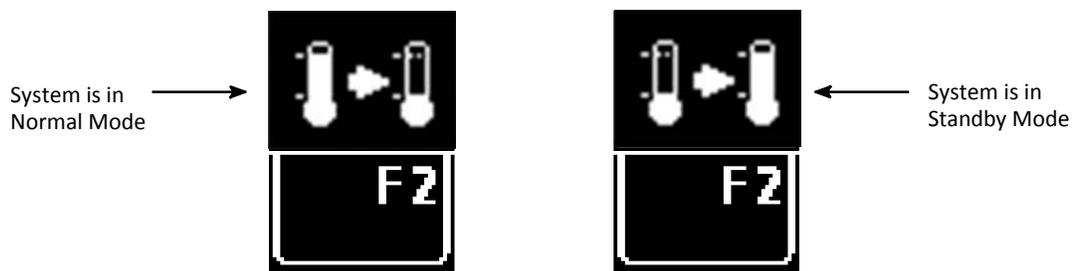
1. Press the Main Menu button, then press F1: Recipe Management. Turn the Input Wheel to LOAD FROM PROG. Press the Enter Knob to enter.
2. Select the desired recipe by turning the Input Wheel until its recipe number is highlighted. Press F5 to confirm the selection.

NOTES:

1. Recipes that contain temperature zones that do not show valid RTD sensors (ie, zones with “?” in their bar-graphs) will be turned Off after re-loading, because the controller assumes those zones will not be used.
2. If you have loaded a recipe, any changes you make to the temperature or motor settings are not automatically stored in that recipe. If your changes need to be stored, go to the Recipe Management Screen and follow the steps to SAVE TO PROG.

Standby (F2)

In Standby mode, the temperatures of all active temperature zones will decrease by a pre-defined amount and the pump will stop (Note: the pre-defined amount is programmed on page 2 of the System Configuration Menu).



Press the Main Menu button, then press F2 to toggle between Normal mode (setpoints and pump are active) and Standby mode (setpoints are lowered and pump is stopped.) Confirm Standby mode by pressing F2 again. After making a change, a screen message will indicate, “Standby ON” or “Standby Off”.

NOTES: Standby can also be activated via an external contact closure (E1, E2 on customer incoming connector terminals) or via the 7-Day Scheduler.

See also Standby Configuration in this chapter.

Setpoint Locking (F3)

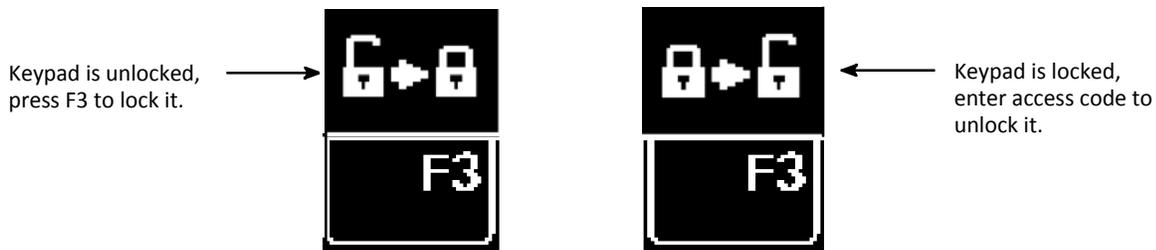
When Setpoint Locking is on, temperature and motor setpoints and the System Configuration Menu are locked and cannot be changed. But even when locked, the pump can be stopped and the setpoints can be monitored.

When Setpoint Locking is on, a small key symbol  can be seen on the Overview Screen, near the time-of-day display.

If setpoints are unlocked and you desire to lock them, press the Main Menu button, then press F3 twice.

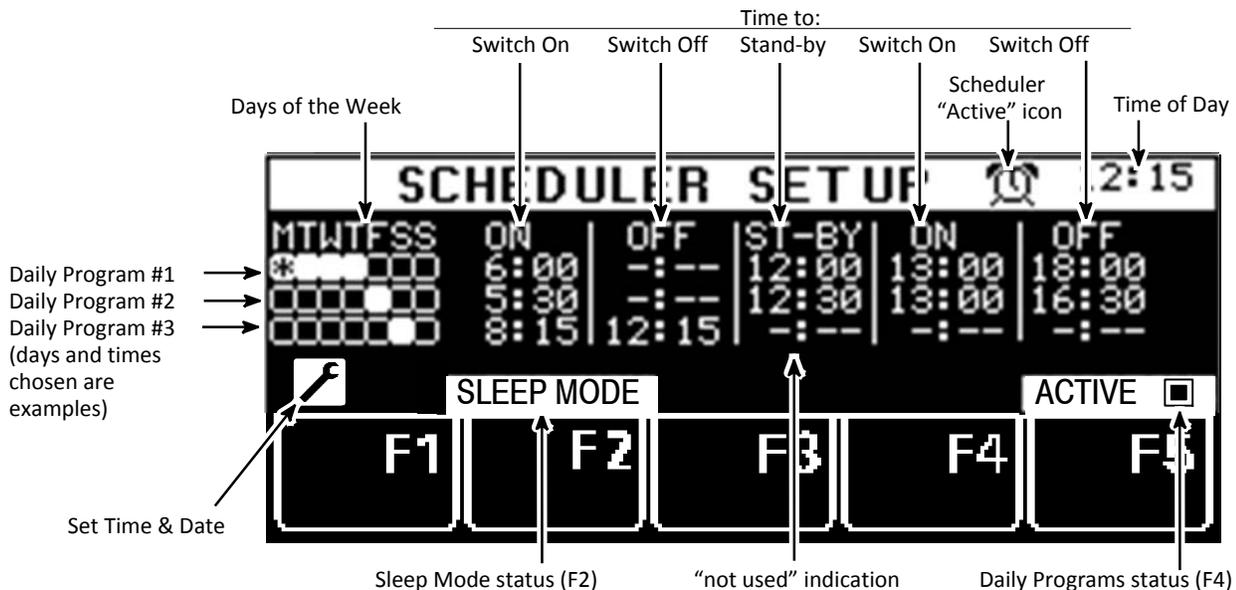
The controller's access code must be keyed-in to unlock setpoints. To do so, press the Main Menu button, press F3, then enter your access code using the F1 thru F5 buttons. For example, if your access code is 2453, press the sequence "F2, F4, F5, F3" (Note: setup an access code on page 3 of the System Configuration Menu).

The ASU is shipped from ITW Dynatec with a default access code of "1111".



7-Day Scheduler (F4)

The 7-Day Scheduler allows the user to program the ASU to automatically switch on or off at pre-programmed times and days of the week. Up to three daily programs may be setup. Each daily program can have two "on" periods with a standby period between them.



Programming Sequence:

Set-up each Daily Program entirely before moving on to the next Daily Program. Up to three Daily Programs may be setup. All time selections are based on a 24-hour clock.

To Program Active Days of the Week:

Turn the Input Wheel to the Days-of-the-Week (Note: if you can no longer see the cursor when turning the wheel, turn the wheel in the opposite direction). The Days-of-the-Week may be toggled Active (registers as "selected" on the display) or Inactive by pressing the Enter Knob.

Each day of the week can only be assigned to one program.

To Program On/ Off Times:

Turn the Input Wheel to select the first Switch-On time; press the Enter Knob to highlight the time. Turn the Input Wheel to program your desired Switch-On time (in hours and minutes) and press the Enter Knob.

Turn the Input Wheel to select a Switch-Off time or a Standby time, then press the Enter Knob to highlight it. As above, turn the Input Wheel to program your desired time (in hours and minutes), then press the Enter Knob.

In the same manner, if desired, program another Switch-On time and/or Switch-Off time.

To Program Additional Daily Programs:

Turn the Input Wheel to the second or third set of Days-of-the-Week to program Switch-On and Switch-Off times for Daily Program #2 or #3. Program in the same manner as above.

To Choose Activate, Deactivate or Sleep Mode:

Once the 7-Day Scheduler's Daily Programs are setup, press F5 to Activate. This is indicated by the clock symbol in the status line. To deactivate the scheduler, press F5 again.

Press F2 to put the ASU into SLEEP MODE (indicated below). In this state, the ASU will be activated at the next programmed Switch-On time of the scheduler or it can be manually started.



7-Day Scheduler Examples (as shown on the illustration on the previous page):

Daily Program #1: On Mondays, Tuesdays, Wednesdays and Thursdays, the ASU will Switch-On at 6:00am. It will go into Standby at 12:00 noon. It will come out of Standby at 1:00pm and Switch-Off at 6:00pm.

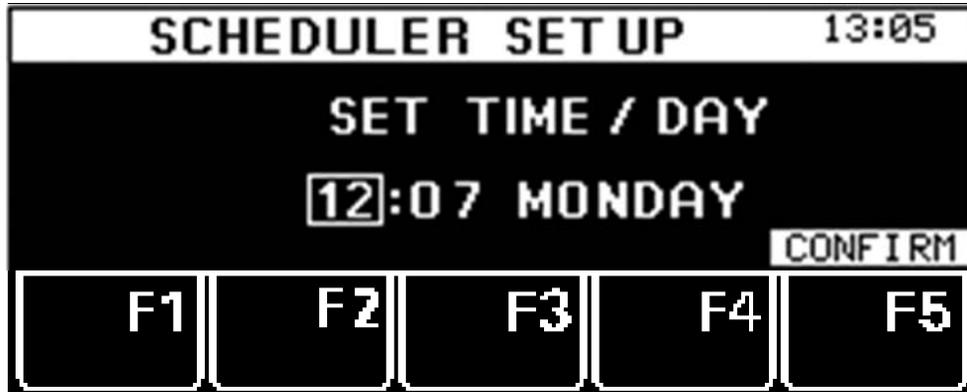
cont.

Daily Program #2: On Fridays, the ASU will Switch-On at 5:30am. It will go into Standby at 12:30pm. It will come out of Standby at 1:00pm and will Switch-Off at 4:30pm.

Daily Program #3: On Saturdays, the ASU will Switch-On at 8:15am and Switch-Off at 12:15pm.

Set Current Time-of-Day and Day-of-Week

While in the 7-Day Scheduler Set Up screen, press the Configuration button (↵) or F1 to set the current time and day.



Press F5 to confirm your changes

Turn the Input Wheel to select the item to be changed. Press the Enter Knob. Turn the Input Wheel to the desired time/ day and press F5 to confirm your entry.

Once all 7-Day Scheduler programming is completed, press the return button twice to return to the Overview Screen.

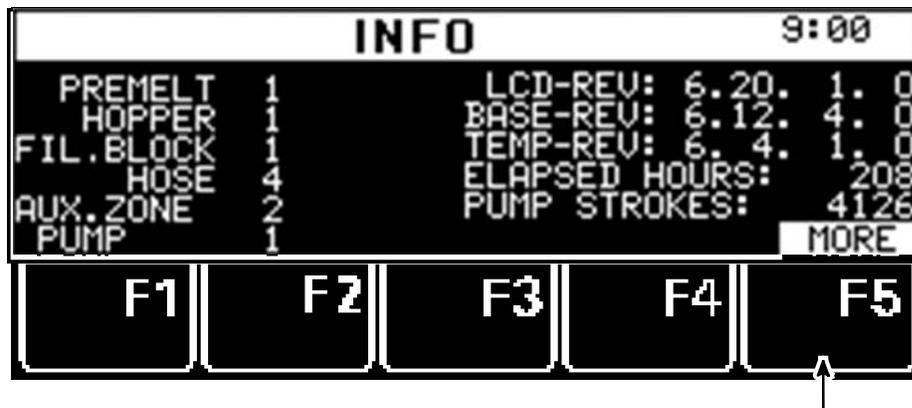
Info Menu (F5)

The info screens contain details about the hot melt system and can aid in troubleshooting.

Info Screen #1:

The first Info Screen lists temperature zone and pump configuration. It also provides the revision level of the controller's modules and the elapsed time on the Dynamelt ASU's controller.

Press F5 to go to the next Info Screen.



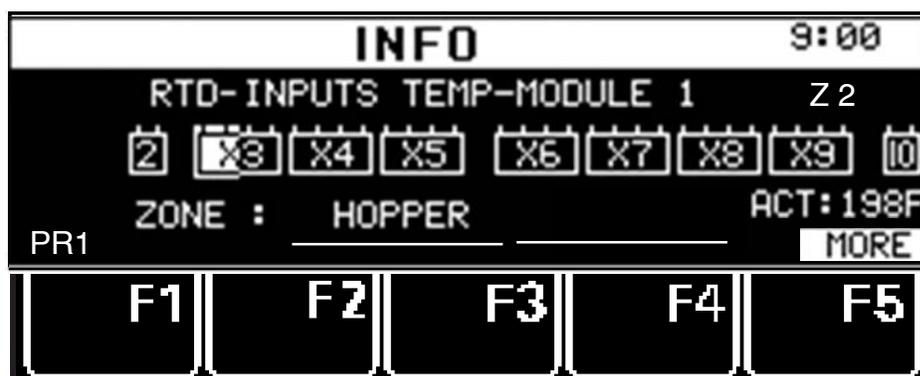
Press F5 to go to the next Info Screen

Info Screen #2:

The second Info Screen lists each temperature zone individually. Scroll through the zones using the Input Wheel. The zone's description (ie, HOPPER) and zone # (ie, Z 2), actual temperature, heat-up priority (ie, PR 1) and location of its corresponding RTD sensor is given.

The screen also shows the physical location of the RTD connectors of the temperature module. This information can help in troubleshooting errors in wiring.

All zones are shown here, even those that are not in use on the ASU.



Info Screen #3:

The next Info Screen provides set-up information for the unit's optional communication module. If that module is installed on your ASU, the set-up info is provided on a supplemental CD. If the module is not installed, the Info Screens end with Screen #2.

Press RETURN to exit the Info screens and press RETURN again to return to the Overview Screen.

System Configuration Menu

Press the System Configuration Menu button on the Overview Screen to program the following parameters:

Temperature/ Pressure Conversion - Fahrenheit or Celsius/ PSI or BAR

Language Selection - English, German, Spanish, French, Chinese or Japanese

Zone Configuration - typically configured by ITW Dynatec

Pump Configuration - typically configured by ITW Dynatec

Setpoint Limitation - sets a limit on the maximum setpoint

Hi/Low Tolerance - the high and low temperature window which defines the Ready temperature

Standby Configuration - amount of temperature difference, time delay, activation method and sleep mode for the standby function

Level Detection - activates or de-activates the low adhesive level detector

Heat-up Sequence (Priority) - simultaneous or sequential heat-up of temperature zones

Access Code - setup an access code to prevent un-authorized programming

0.5 RPM Increment - allows faster manual mode programming of the pump speed

Temperature Offset - fine-tuning allows compensation for temperature gradients

Customer Zone Names - allows personalization of the temperature zone's names

Logbook/ Fault History - records the time and date of controller events and faults

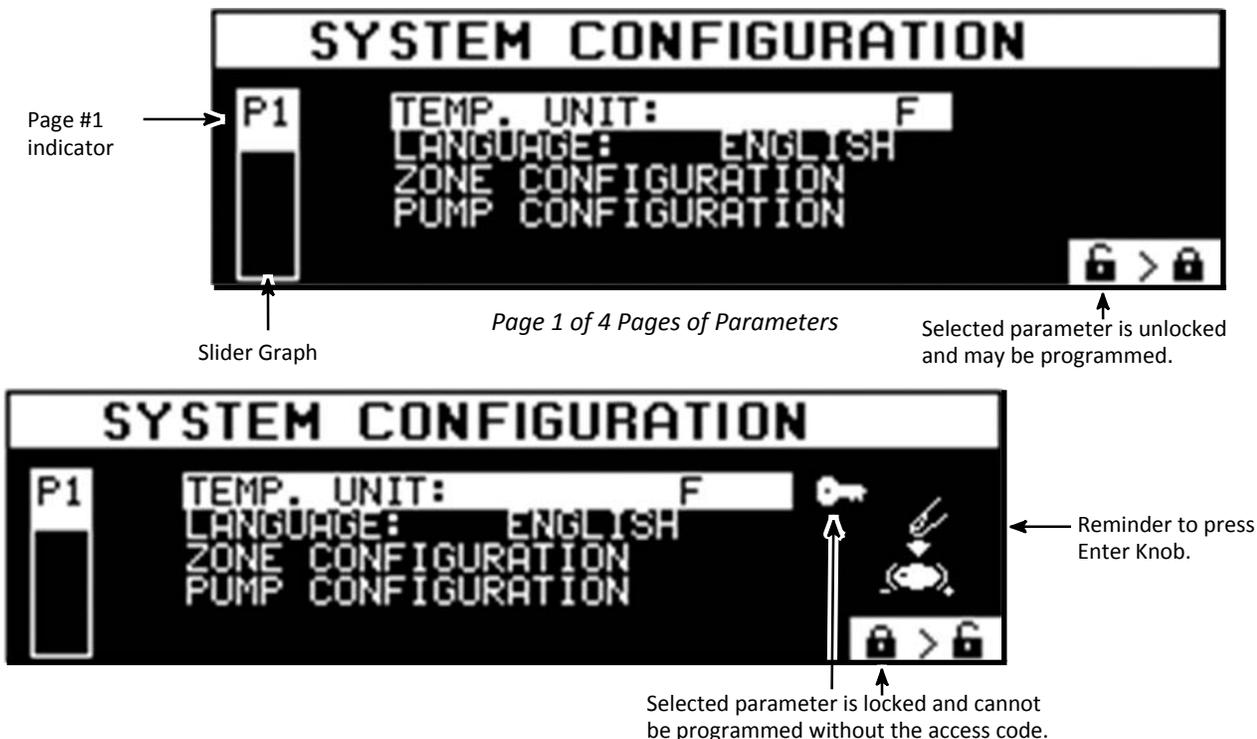
Power-On Configuration - allows custom settings for pump/motor and heaters at startup

Global Setpoints - allows easy one-temperature programming of setpoints

Accessing the Parameters

There are four pages of configuration parameters. Four parameters are on each page.

Turn the Input Wheel to select the parameter to be programmed. The slider graph (on the left) indicates the page # of the System Configuration Menu. Once you select (highlight) your desired parameter, many parameters can be changed simply by pressing the Enter Knob.



You may also progress through the pages by using the Configuration button () or F1.

When in the System Configuration Menu pages, you may return to the Overview Screen at any time by pressing the RETURN button twice.

Temperature/ Pressure Conversion (P1)

After turning the Input Wheel to select the Temperature/ Pressure parameter, toggle between Fahrenheit with PSI or Celsius with BAR readouts by pressing the Enter Knob.

Language Selection (P1)

After turning the Input Wheel to select the Language parameter, press the Enter Knob. The current language will flash. Turn the Input Wheel to select a language from the ones listed. Confirm your choice by pressing the Enter Knob.

Zone Configuration (P1)

This menu configures the controller's temperature zones by listing the number of each type of zone. Zone configuration is typically done at the ITW Dynatec factory and does not require programming by the user.

The Zone Configuration screen may be used to reload the ITW Dynatec factory default controller parameters. To do so: turn the Input Wheel to select the Zone Configuration parameter and press the Enter Knob. Press and hold the F1 button for five seconds, then press F2 to restore defaults and wait for the controller to reboot.

Pump Configuration (P1)

This menu configures the ASU's pump by listing pump type. Most pump parameters are setup at the ITW Dynatec factory. There are two user-programmable pump parameters: Pump Enable Temperature and Individual Pump Control. NOTE: D15/25/45 models have a maximum of two pumps; D50/90 models have a maximum of four pumps.

Pump Enable Programming:

The Pump Enable Temperature serves as a low limit value. The controller will not allow the pump to come on until its enable temperature is achieved. By doing so, it protects the pump, pump shaft, motor and motor control module.

After pressing the Enter Knob to select the Pump Enable parameter, turn the Input Wheel to increase or decrease the pump enable temperature. Confirm your choice by pressing the Enter Knob.

Individual Pump Control Programming:

When there are multiple pumps on a unit, they may be controlled individually since each pump has its own external contact.

After pressing the Enter Knob to select the Individual Pump Control parameter, turn the Input Wheel to select individual control, if desired, by choosing YES or NO. Confirm your choice by pressing the Enter Knob.

Setpoint Limitation (P2)

This parameter sets the maximum temperature zone setpoint. The setpoint limitation is useful for an adhesive with a low melt temperature. In this case, the maximum selectable setpoint could be lowered in order to avoid over-heating the adhesive.

After turning the Input Wheel to select the Setpoint Limitation parameter, press the Enter Knob and then turn the Input Wheel to select your desired setpoint limitation value. Confirm your choice by pressing the Enter Knob.

Hi/Lo Tolerance (P2)

A high and low temperature tolerance can be set for the temperature zones. During operation, these tolerances activate the error alarms which alert the operator to over-temp and under-temp conditions.

The hi/ lo tolerance is a range (+ and -) from the setpoint. Thus a setpoint of 150°C which has been programmed with a 10° hi/ lo tolerance will activate an under-temp alarm when the zone's temperature falls below 140°C and will activate an over-temp alarm when the zone's temperature rises above 160°. When this zone's temperature is within the tolerances (140° and 160°), it is considered "Ready".

When programming, only one value is chosen. This value applies to all temperature zones and is both the high and low tolerance.

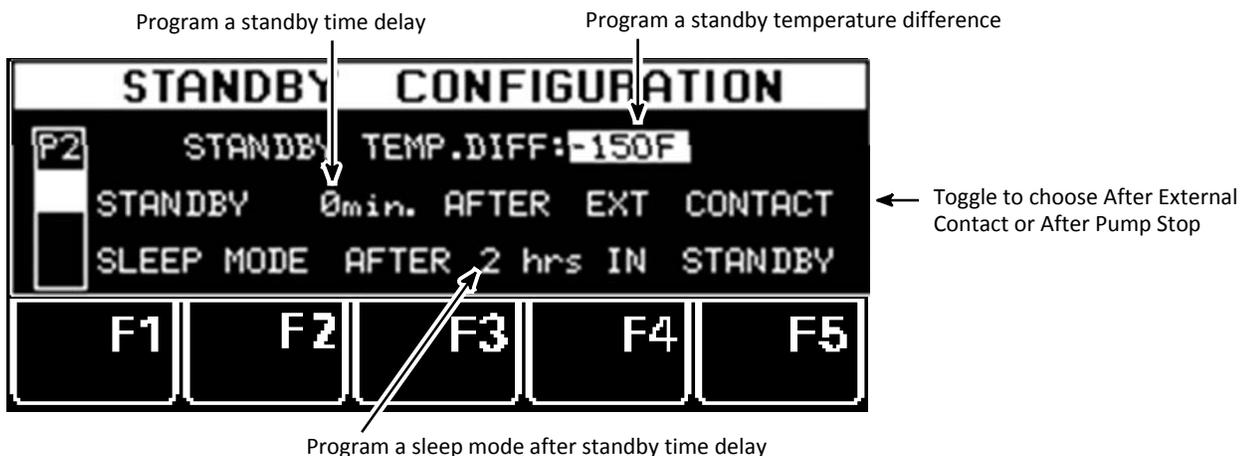
After turning the Input Wheel to select the Hi/Lo Tolerance parameter, press the Enter Knob and then turn the Input Wheel to select your desired tolerance value. Confirm your choice by pressing the Enter Knob.

Standby Configuration (P2)

There are four ways to activate standby mode:

1. Manually, at the Main Menu's F2,
2. Automatically, via the 7-Day Scheduler,
3. Remotely, via an external contact (program as described below), or
4. Automatically, after a pump stop (program as described below).

Standby Configuration allows you to select #3 or #4 and program other standby parameters.



Standby Temperature Difference

In Standby mode, the temperatures of all active temperature zones decrease by a programmed amount and the pump(s) stop pumping adhesive.

The programmed decrease in zone temperatures is the standby temperature difference. The standby temperature difference applies to all zones once standby is activated. For example, if the difference temperature is 80°F, and setpoints are 300°F, then all zones will reduce to 220°F (300 - 80 = 220) when standby is activated.

After turning the Input Wheel to select Standby Configuration, press the Enter Knob to advance to the screen. Press the Enter Knob to select the first parameter, ie. temperature difference. Press the Enter Knob again to highlight the temperature difference value. Then turn the Input Wheel to program your desired value. Confirm your choice by pressing the Enter Knob.

Standby Time Delay and Activation

The standby time delay is the programmed number of minutes until standby takes place after activation by either an external contact (for example: a PLC or an external switch) or by a pump stoppage. The default time delay is 0 minutes (immediately!). The programmable range of the standby time delay is 0-150 minutes.

Turn the Input Wheel to select the time delay parameter (ie. Standby X min. After...). Press the Enter Knob. Turn the Input Wheel again to select your desired minutes value. Confirm your choice by pressing the Enter Knob.

Now turn the Input Wheel to select the After Ext Contact/ After Pump Stop field. Press the Enter Knob and then turn the Input Wheel to highlight your choice of activation. Confirm your choice by pressing the Enter Knob.

Sleep Mode After Standby

Sleep mode shuts the ASU off after it has been in standby for a programmed length of time. This length of time can be from one hour to 99 hours. Or you can choose to program the unit to have no sleep mode by programming “ - ”. When the unit is in sleep mode, the Main Screen displays “System Off, Switch On with Enter Knob”.

Turn the Input Wheel to select the Sleep Mode After # Hrs In Standby field. Press the Enter Knob to highlight the hours value. Turn the Input Wheel to select your desired hours value. Confirm your choice by pressing the Enter Knob.

Press the RETURN button to return to the System Configuration Menu.

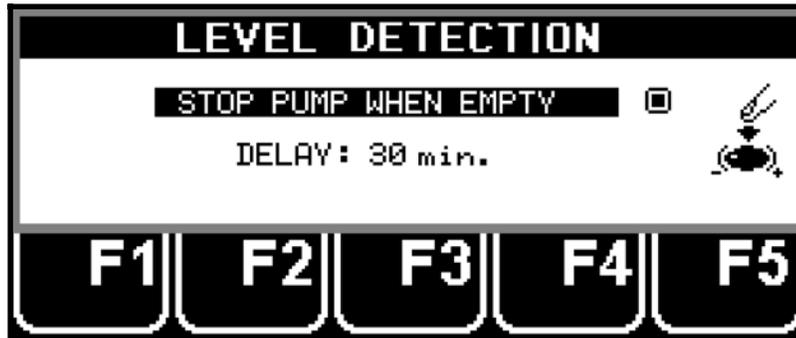
Level Detection (P2)

The level detection sensor triggers an alarm when the liquid adhesive level in the hopper falls below a certain level. Hopper Empty is the alarm message displayed on the controller's status line. The level detection parameter allows the user to: turn the level sensor function On or Off, activate a Stop Pump After Hopper Empty and set a timed delay before the pump stops.

After turning the Input Wheel to select the level detection parameter, press the Enter Knob to

change the function from activate or deactivate.

To program the controller to Stop the Pump After Hopper Empty, first press the Configuration button ( or F1 to bring up the parameter, then press the Enter Knob to change the function from activate or deactivate. To set the adjustable delay, press the Enter Knob and then turn the Input Wheel to select the desired length of the delay.



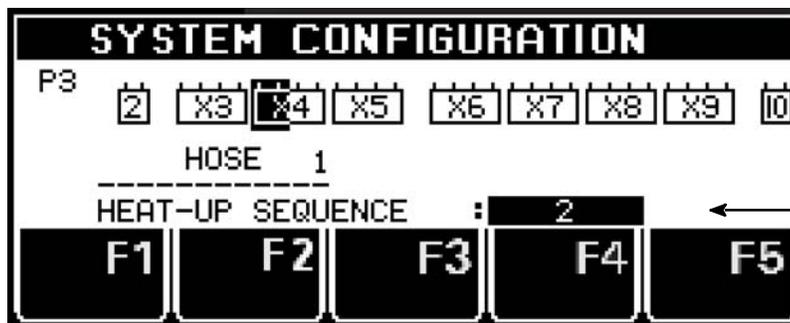
Heat-Up Sequence (Priority) (P3)

The controller allows you to choose the heating order of the various temperature zones, so that zones requiring more time to heat up to temperature can be programmed to begin heating before others. This is done by programming each zone with a sequential heating priority.

A "Priority 1" designation means the temperature zone will begin to heat immediately after the ASU is powered on. Zones with higher priority numbers (Priority 2 through Priority 6) do not begin heating until all zones with lower priority values have reached the low limit of their set-points. Zones which are switched OFF are not applicable.

The most common heating sequence is first hopper, then hose/ head and auxiliary zones. This allows the larger mass of adhesive in the hopper to begin heating first. This sequence (hopper, then hose/ heads and aux zones) is also the controller's default heating sequence.

After turning the Input Wheel to select the Heat-Up Sequence parameter, press F1. On the Heat-Up Sequence screen, turn the Input Wheel to select a desired zone. Press the F4 button to assign a priority number to the selected zone. Turn the Input Wheel to select another zone, if desired, and program its priority by pressing F4. Continue until all zones are programmed. Press the Enter Knob to confirm, then press the RETURN button to return to the System Configuration Menu.



Hose 1 (Z 4) has been programmed as a Priority 2 zone

Access Code (P3)

An active access code prevents unauthorized programming of setpoints and other configuration parameters. To utilize the Setpoint Locking feature of the controller, your access code must be keyed in at the Main Menu, F3.

The Dynamelt ASU is shipped from ITW Dynatec with a default code of 1111. To re-program the access code, the current access code must be entered. All access codes must be 4-digit numbers using the digits 1, 2, 3, 4 and 5 only.

After turning the Input Wheel to select the Access Code parameter, enter the current access code using the F1 thru F5 numerals. Press the Enter Knob. Then enter your desired access code using the F1 thru F5 numerals. Confirm your choice by pressing the Enter Knob.

0.5 RPM Increment (P3)

When setting the pump RPM in Manual Mode on the Pump Screen, the default increment for RPM is 0.1. If a coarser adjustment is desired, it may be changed to 0.5 RPM at this parameter.

After turning the Input Wheel to select the 0.5 RPM Increment parameter, press the Enter Knob to toggle the parameter active or inactive.

Temperature Offset (P3)

Temperature Zone Offsets are mathematical factors which compensate for differences in temperature within components. Each temperature zone may be programmed with an offset, if desired. Standard equipment does not usually require temperature offsets.

Note: Entering a positive-numbered offset will raise the temperature reading of that zone. Since the controller attempts to equate setpoint and actual temperature, this actually lowers the actual temperature by the amount of the offset.

For example: Setpoint and actual temperature both equal 300°F. An offset of +10°F is programmed. Initially the display will read 310°F, but the controller will lower the output power until the actual temperature value is back to 300°F.

After turning the Input Wheel to select the Temperature Offset parameter, press the Enter Knob to display a list of all temperature zones. Turn the Input Wheel to select a zone for programming and press the Enter Knob. Turn the Input Wheel to program the desired temperature offset for that zone. Press the Enter Knob to confirm your selection.

If desired, turn the Input Wheel to select another zone for programming. Program this zone as outlined above.

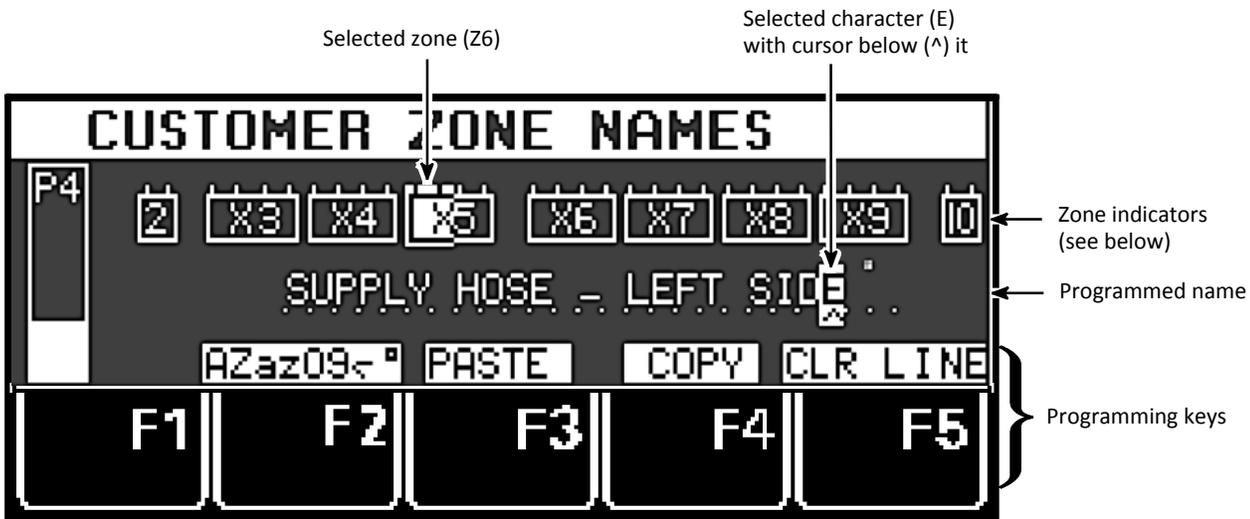
When all desired zones are programmed, press RETURN to go to the System Configuration Menu (page 1), then press RETURN again to go to the Overview Screen.

Customer Zone Names (P4)

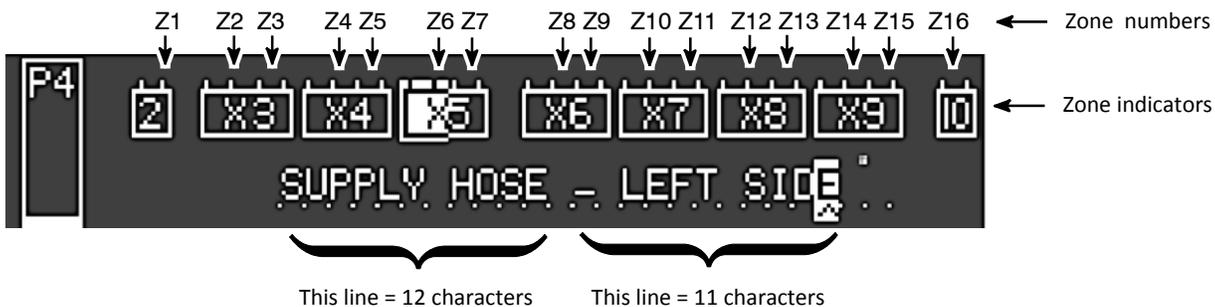
With this configuration parameter, the user may personalize the names of the temperature zones with names that are more descriptive for his application. That is, instead of the factory-set zone names of Z01, Z02, Z03, etc., the customer may prefer temperature zone names such as “TANK”, “HEAD 1”, “FILTER BLOCK”, “SUPPLY HOSE - LEFT”, etc.

After turning the Input Wheel to select the Customer Zone Names parameter, press the Enter Knob to display YES. To enter programming mode, press F3 (Change Text).

Now, by turning the Input Wheel, you can scroll through the zones and see their current zone names (or numbers). These names can be re-programmed one at a time. Each new name may consist of two lines, with a maximum of 12 characters in each line. Note: the factory-set numeric “names” correspond to RTD inputs.



Customer Zone Name Programming Screen



“Supply Hose - Left Side” = Zone #6 (highlighted zone indicator)

Using F2, F3, F4 & F5 Programming Keys

- F5 = press to Clear the entire zone name.
- F2 = press to select upper or lower case letters, to select numbers or to select special characters.
- F3 & F4 = press to Copy (F4) and Paste (F3) the name of one zone into another.

Programming the Zone Names

NOTE: This feature cannot accommodate Chinese language characters.

After selecting the Customer Zone Names parameter and pressing the Enter Knob to display YES, press F3 (Change Text) to begin programming.

1. Turn the Input Wheel to select desired temperature zone (refer to corresponding RTD). The selected zone is highlighted.
2. Press the Input Knob to confirm zone.
3. Turn the Input Wheel to select the character to be re-programmed.
4. Press the Input Knob to confirm selection. The cursor highlights the selected character.
5. Turn the Input Knob to select the new character.
6. Press the Input Knob to confirm the new character.
7. Repeat steps 3 through 6 to spell desired zone name.
8. Press the Return button  to select another zone to program. Repeat steps 1 through 6 for each zone desired.
9. Press Return again when all temperature zone name programming is completed.

Logbook/ Fault History (P4)

The Logbook provides a read-only history of the last 65 (maximum) controller faults and events. Controller faults include sensor or temperature errors or motor faults. Examples of an event include switching the ASU on/off or System Ready. The most recent event is recorded at the top of the list (No. 1).

Day, Time and Event are listed for each item in the Logbook. This information can be valuable when troubleshooting controller problems.

After turning the Input Wheel to select the Logbook parameter, press the Enter Knob to display the Logbook. Turn the Input Wheel to scroll through the list.

#1 is most recent entry →

LOGBOOK / FAULT HISTORY			
NO	DAY	TIME	EVENT
1	FRI	9:36	SYSTEM READY
2	FRI	12:05	RTD ERROR 2.4
3	THU	7:10	MOTOR FAULT
4	TUE	12:03	SYSTEM READY
5			

F1 F2 F3 F4 F5

Power-On Configuration (P4)

Two start-up parameters are programmed at the Power-On Configuration screen, and they are set by choosing YES or NO:

Power-On Motor Stop

At the Power-On Motor Stop parameter, you decide if you prefer that the motor to be stopped when the ASU is turned on (if so, choose YES) or if you prefer that the motor remain in its previous mode when the ASU is turned on (choose NO).

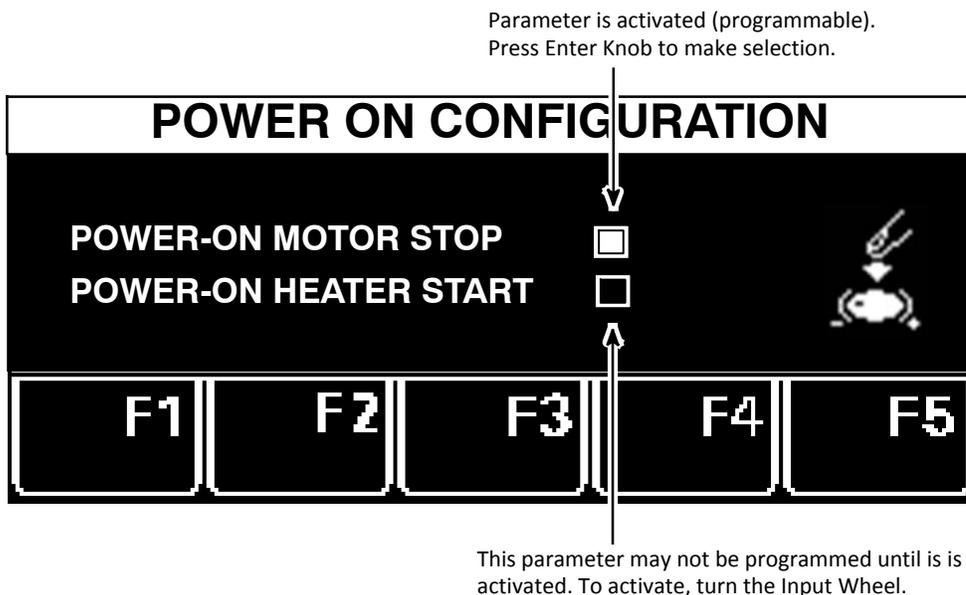
Power-On Heater Start

At the Power-On Heater Start parameter, you decide if you prefer that the temperature zones start heating automatically when the ASU is turned on (if so, choose YES) or if the heaters should require a manual start when the ASU is turned on (choose NO). NOTE: If you choose NO, the heaters will not begin to heat until the Enter Knob is pressed at start-up.

From the System Configuration Menu: after turning the Input Wheel to select Power-On Configuration, press the Enter Knob. The first parameter (Power-On Motor Stop) will be activated (see illustration below). Press the Enter Knob to choose YES or NO.

Turn the Input Wheel to activate the second parameter (Power-On Heater Start). Press the Enter Knob to choose YES or NO.

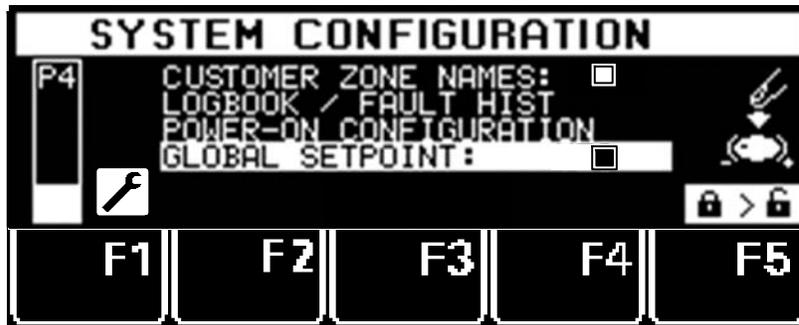
After programming, press RETURN twice to return to the Overview Screen.



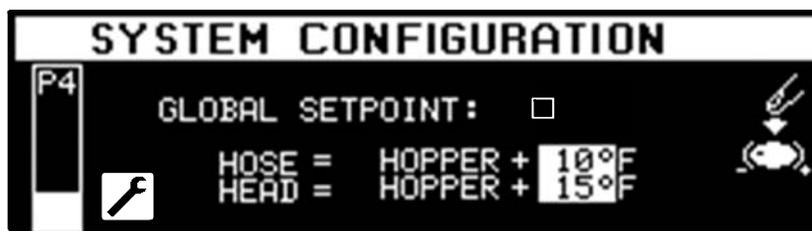
Global Setpoints (P4)

Setpoint programming may be simplified by programming Global Setpoints. With this parameter, the user programs a hopper setpoint and the controller configures all of the other zones. However, to do so, it must be appropriate for all your hoses to be programmed to one setpoint, and for all your applicator heads to be programmed to one setpoint.

After turning the Input Wheel to select the Global Setpoints parameter, press the Enter Knob to turn Global Setpoints On/Off.



Then press F3 to open the Global Setpoints menu.



On the Global Setpoints menu, you set up simple mathematical relationships (increases) between the hopper setpoint and the setpoints of the hoses and applicator heads. Pressing the Input Knob increases the temperature of the hose (or head) by 5 degrees, or, if you press again, by 10 degrees (press again for 15 degrees, and press again for 20 degrees). Once setup, all of the hoses will increase over the hopper setpoint by the same amount (0, 5, 10, 15 or 20 degrees) and likewise, all of the heads will increase over the hopper setpoint by the same amount as you program here.

Once Global Setpoints are set, you simply program the hopper (as described on page 5-6) and your hoses and heads will automatically be programmed to the increases you specified on the Global Setpoints menu.

For example: If you setup a Global Setpoint increase of 10 degrees for Hoses and 15 degrees for Heads, and you program your Hopper setpoint to 290 degrees, then the controller will automatically program all of the hoses to 300 degrees and all of the heads to 305 degrees.

When Global Setpoints are turned On and a temperature setpoint is changed, the display will not show the selected zone's name. Instead it will display GLOBAL SET:.

You can still turn individual zones Off and On while using Global Setpoints.

Controller Messages Troubleshooting Guide

The following are examples of System Status or controller display error messages and solutions.



The jumper connection from IN6 to COM (or IN6 to 24V) is not made on the Base Module.



This fault could be caused by one of the following problems:

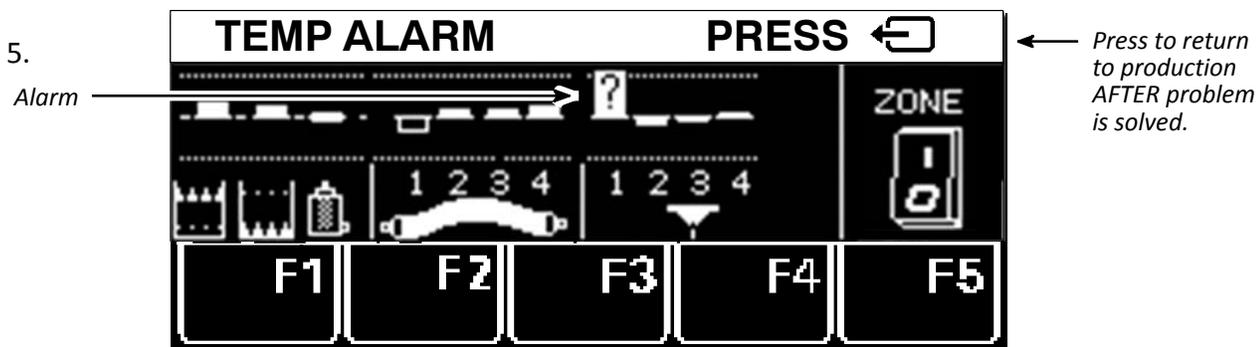
- a. there may be a motor short circuit (solution = replace the motor),
- b. there may be a faulty motor drive (solution = replace the motor drive),
- c. there may be a motor overload (contact ITW Dynatec, Technical Service).



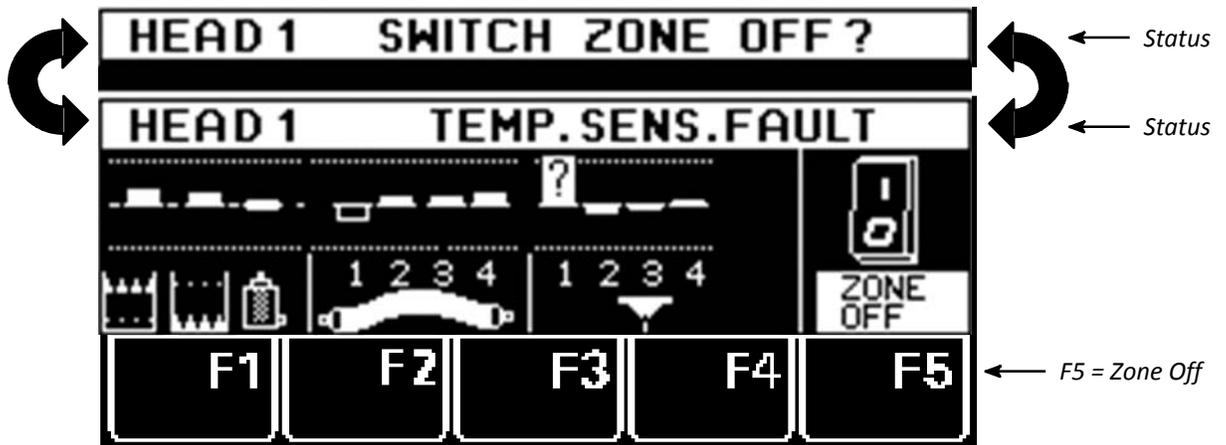
This fault, seen on the controller display, will result if the V6 modules on the DIN rail are not connected properly. A bus connector, near the rail, connects one module to the next. Modules can become disconnected during transport or during repair procedures.



A fault such as this indicates an over-temperature or an RTD sensor fault. The solution is not simply to press the RETURN button to confirm. The solution is to troubleshoot and solve the problem which caused the fault, and then confirm with the RETURN button.



The alarm shown above can occur on any screen. Its question mark indicates a problem with the RTD sensor in the Head #1 zone. After about 20 seconds, the following display is shown:



Advance to the temperature zones display to see which zone is affected. The two status lines shown above will alternate in this mode. As seen above, the question mark is placed on the zone with the faulty sensor (ie, Head #1). After troubleshooting the fault (reference the Error Indication Alarm Troubleshooting Guide on the previous pages of this chapter) and solving the problem with the sensor, press the RETURN button.

Or, if Head #1 is not in use, press F5 to turn the zone Off.

Chapter 5 DYNACONTROL V6 TOUCH PANEL for DYNAMELT M & D ASUs Version 01.2016

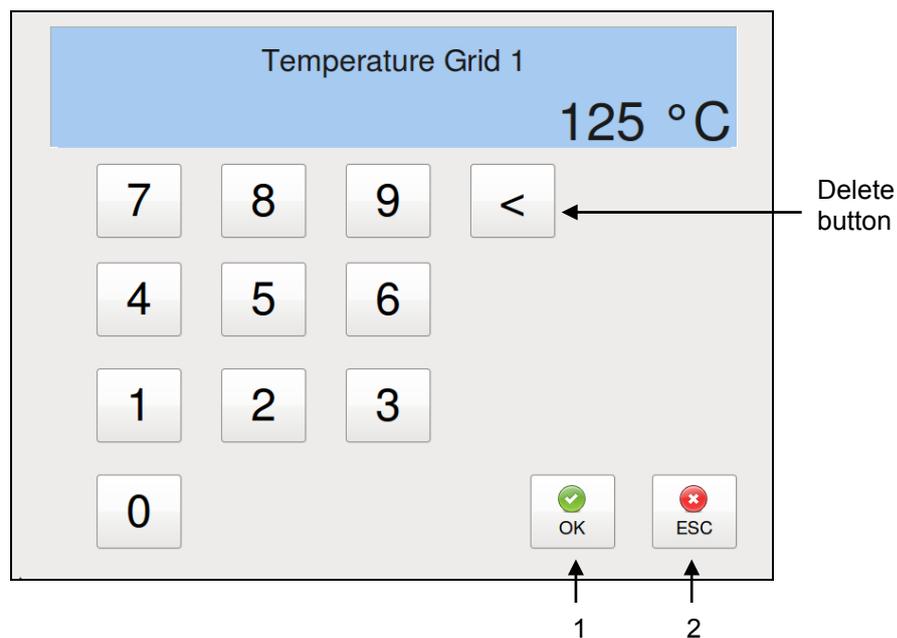
Setup Your System's Parameters

- Program the controller parameters to meet the specific temperature requirements of your production. Setpoints for each temperature zone must be programmed as well as a standby temperature, pump enable temperature, temperature alarm window and temperature alarm hysteresis.
- Choices must be made for recipe (program) selection, pump (or motor) conditions and heating priority. If desired, temperature zone offsets and/ or a temperature zone enable may be selected.

Numeric Entry Keypad

- Use the numeric entry keypad to enter or change numeric parameters (values).
- In the top window, the temperature zone name and its setpoint value will be displayed.

This is a typical example of the numeric entry keypad:

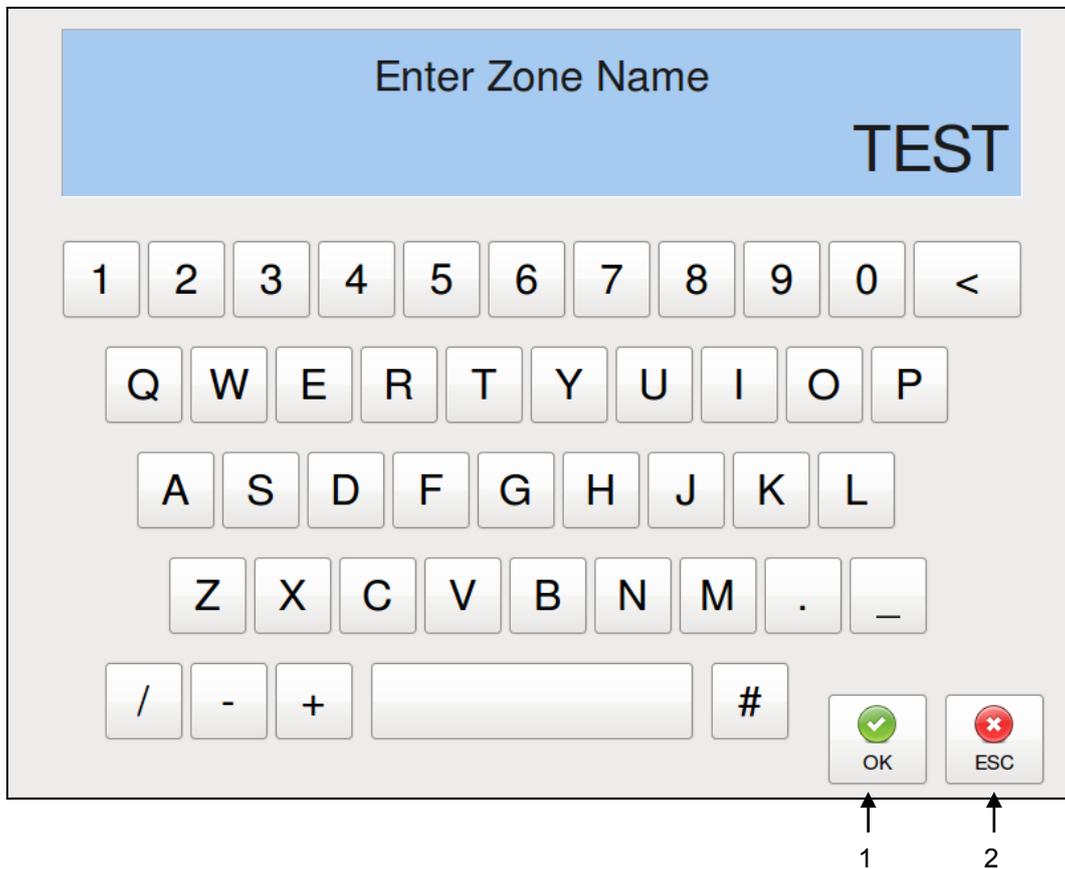


Item	Description
1	By pressing the OK button the entered values will be confirmed and stored in the controller. The numeric entry keypad closes and you will return to the previous screen.
2	By pressing the ESC button any entered but not yet confirmed values will be discarded and you will return to the previous screen.

Alphabetic Entry Keypad

- Use the alphabetic keypad to enter or change text, e.g. temperature zone names.
- In the top window, the temperature zone name will be displayed.

This is a typical example of an alphabetic keypad:



Item	Description
1	By pressing the OK button the entered text will be confirmed and stored in the controller. The alphabetic entry keypad closes and you will return to the previous screen.
2	By pressing the ESC button any entered but not yet confirmed text will be discarded and you will return to the previous screen.

Main Screen

- The Main Screen is displayed automatically when the unit is switched ON.
- The Main Screen provides a comprehensive overview of the status of each of the temperature zones and the system as a whole. It gives the status and speed of the pump, along with any adhesive pressures and level status.

Main Screen, if seven or more zones in any column are activated:

The screenshot displays the main control interface for System 2 in Local mode. The interface is organized into several sections:

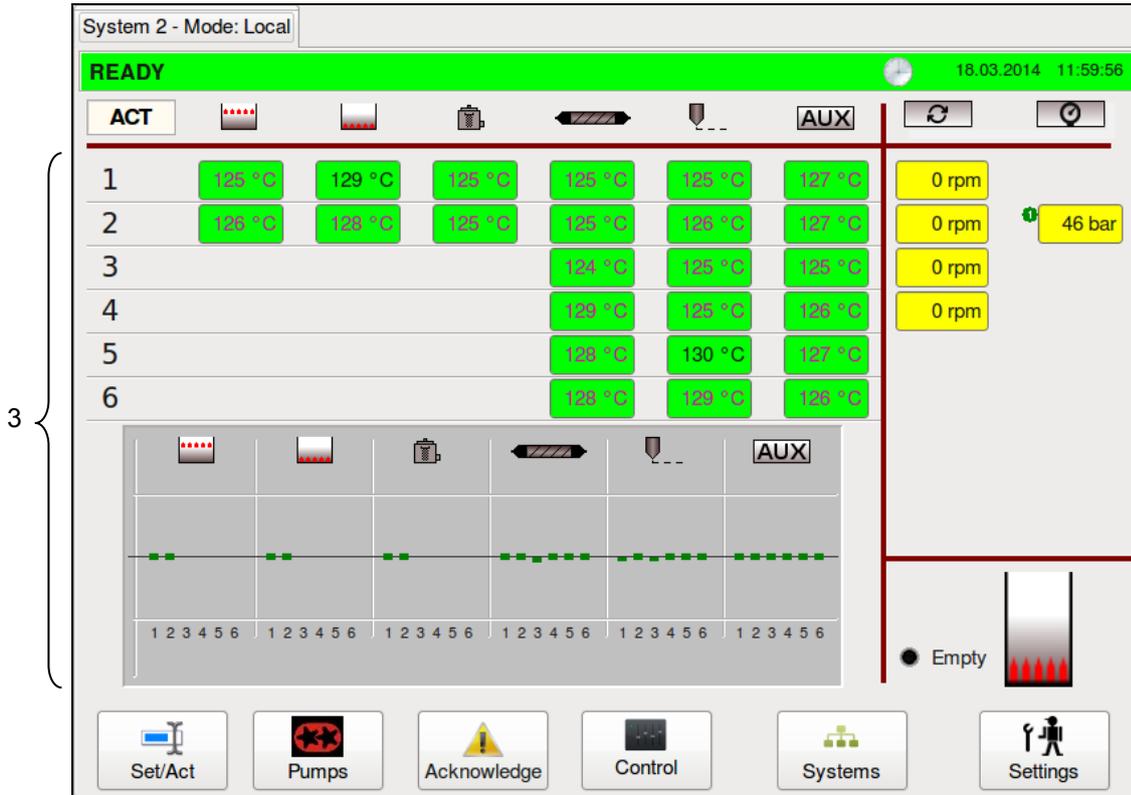
- System Header:** Shows 'System 2 - Mode: Local', a 'READY' status bar, and the date/time '18.03.2014 11:48:25'.
- Control Bar:** Includes 'ACT' and 'AUX' buttons, a battery icon, a pump icon, a pressure gauge icon, and a refresh icon.
- Temperature Zones (Table):** A grid of 8 rows and 6 columns showing temperature readings in °C.

1	125 °C	128 °C	125 °C	125 °C	125 °C	127 °C
2	126 °C	128 °C	125 °C	125 °C	125 °C	127 °C
3				124 °C	125 °C	128 °C
4				129 °C	126 °C	128 °C
5				128 °C	130 °C	127 °C
6				128 °C	129 °C	128 °C
7				127 °C	130 °C	128 °C
8				128 °C	126 °C	128 °C
- Pump Status:** Four yellow boxes show '0 rpm' for pumps 1, 2, 3, and 4. A pressure gauge shows '46 bar'.
- System Logo:** 'ITW Dynatec' logo with the tagline 'The Next Level of Technology'.
- Level Indicator:** A vertical gauge labeled 'Empty' with a red flame icon at the bottom.
- Navigation Bar:** Six buttons at the bottom: 'Set/Act', 'Pumps', 'Acknowledge', 'Control', 'Systems', and 'Settings'.

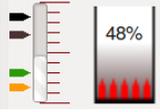
Annotations on the left side of the screen:

- 'Selected System #' points to the top header.
- '1' points to the 'READY' status bar.
- '2' points to the control bar.
- '3' points to the temperature zone table.
- '4' points to the pump status area.
- '5' points to the logo and level indicator area.
- '6' through '11' point to the navigation buttons.

Main Screen, if six or fewer zones in any column are activated:

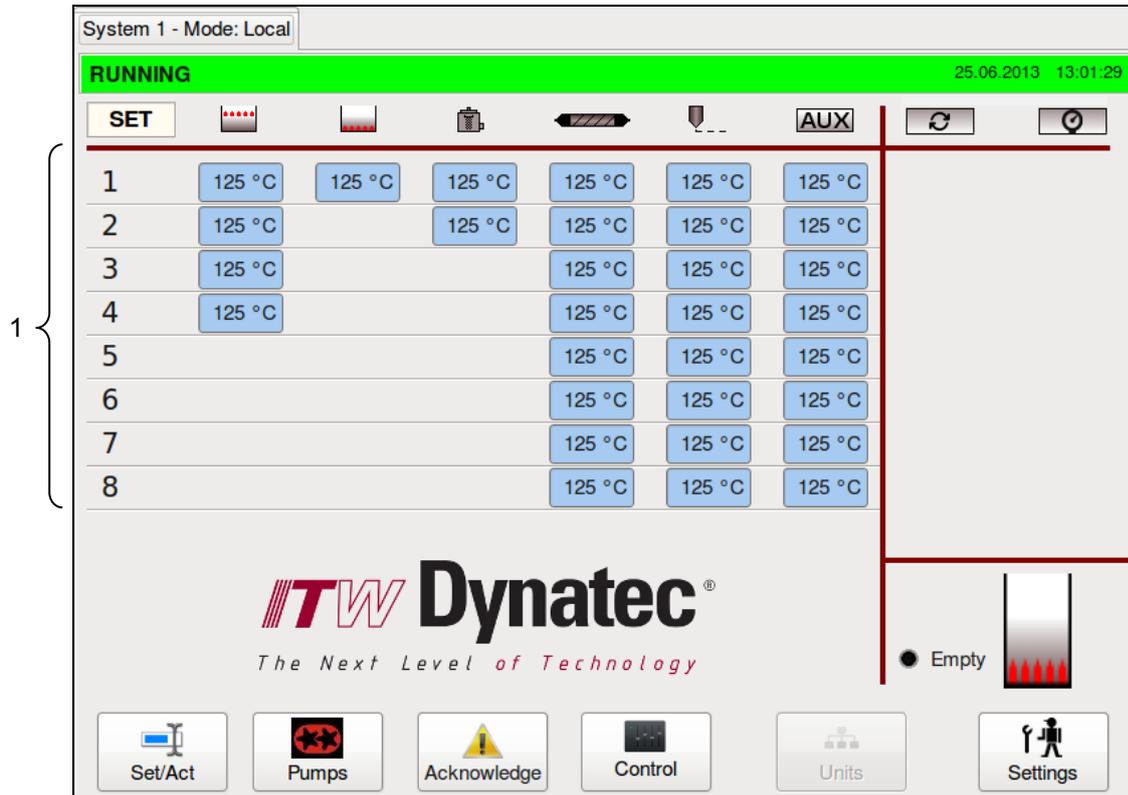


Item	Description
1	<p>Status Line Display of the actual status of the unit:</p> <ul style="list-style-type: none"> • READY = All zones are within their setpoint temperatures and the unit is ready for operation. • RUNNING = All zones are within their setpoint temperatures and the unit/pump is running. • NOT READY = At least one zone has not yet reached its setpoint temperature or has fallen below its set point or it is lower than the set global release temperature. • STANDBY = Standby temperature is activated. • ALARM = Alarms or faults are active. <p>The status line is highlighted <u>green</u> when the system is READY or RUNNING, <u>yellow</u> when NOT READY, <u>grey</u> when in STANDBY and <u>red</u> when in ALARM condition.</p> <p>The status line along with “Systems” button is in orange color if a non-visible system goes into Alarm condition (if several systems are controlled by the HMI).</p> <p>The „clock“  icon appears if a timer is activated under „Time & Scheduler“ screen and disappears if the timer is deactivated.</p> <p>Display of the actual date and time are on the right side of the screen. Depending on the selection of the unit of temperature and pressure (°C and bar or °F and psi) made under Unit & Date Selection, the appearance of the date display is affected also. With the C/bar selection, the date is displayed as ‘day.month.year’ while in F/psi mode, the date is displayed as ‘month/day/year’.</p> <p>The time is displayed as hour.minutes.seconds (ie, 11:48:25 pm).</p> <p>By pressing the status line you go to the Log Book screen.</p>
2	<p>Icon Line ACT / SET: Indicates if the temperature values shown on the display are Actual or Setpoint values. The Actual values will be displayed during production. By pressing the Set/Act button, the Set values can be displayed and edited. The display returns automatically to the Actual values after about 15 seconds if there is no activity.</p> <p>The icons:</p> <ul style="list-style-type: none">  Pre Melt Grid  Hopper  Filter block  Hose  Applicator  Auxiliary components  Pump RPM  Pressures  Decentralized pumps (e.g. Applicator, Metering Station:  A plausible limit value of Input Pressure (a minimum pressure of not less than 2 bar is recommended) has to be entered to avoid a dry run of the pumps; otherwise the pump can be damaged. See point “Extended Pump Mode Settings Screen, Linear Line Speed, Pressure Control”. <p>The appropriate actual values (temperature, pump rpm, pressures) are displayed under the icons.</p>

Item	Description
3	<ul style="list-style-type: none"> The actual values of the temperature zones are displayed in columns under the icons. Zone status is indicated by color: the zone field is colored green when the zone reaches setpoint, yellow while the zone is heating up, grey if it has been temporarily switched off and red if in alarm. When all zones have reached their setpoint values, READY will be displayed in the status line. If zones are still heating up and have not yet reached their setpoint values, NOT READY will be displayed in the status line. If six or fewer zones in any column are activated, the temperature status of each zone is shown by a bar-graph indicating if the temperature zone is inside its setpoint window (green) or outside (yellow). The bar-graph indication disappears if more than six zones are activated.
4	<p>The appropriate actual values (pump rpm, pressures) are displayed under the icons.</p> <p> Primary pressure: If the system is equipped with a (primary) pressure sensor, the appropriate primary pressure transducer input will be displayed with number 1 . The primary pressure input can be controlled via the Pressure Set Point in Pump Control/ Pressure Control Screen.</p> <p> Secondary pressure: If a second pressure sensor is equipped (usually in combination with dual pump outlets), the appropriate pressure transducer input will be displayed with number 2 . The secondary pressure input is just a readout function.</p> <p>The display alternates between primary pressure 1 and secondary pressure 2.</p>
5	<p> If an optional digital level sensor is built-in, Hopper Empty status will be indicated when adhesive drops below the level sensor.</p> <p> If an optional analog probe used the status bar will display the adhesive level along with a percentage of hopper volume.</p>
6	<p>Set/Act Button By pressing Set, values may be displayed and edited. The display will automatically return to actual values after about 15 seconds, if there is no display activity.</p>
7	<p>Pumps Button Press to go to the Pump Overview screen.</p>
8	<p>Acknowledge Button Press to acknowledge an error or alarm.</p>
9	<p>Control Button Press to go to the Control screen.</p>
10	<p>Systems Button Press to go to the Systems screen, if several systems are controlled by the HMI.</p>
11	<p>Settings Button Press to go to the Settings screen.</p>

Temperature Zones Set Screen

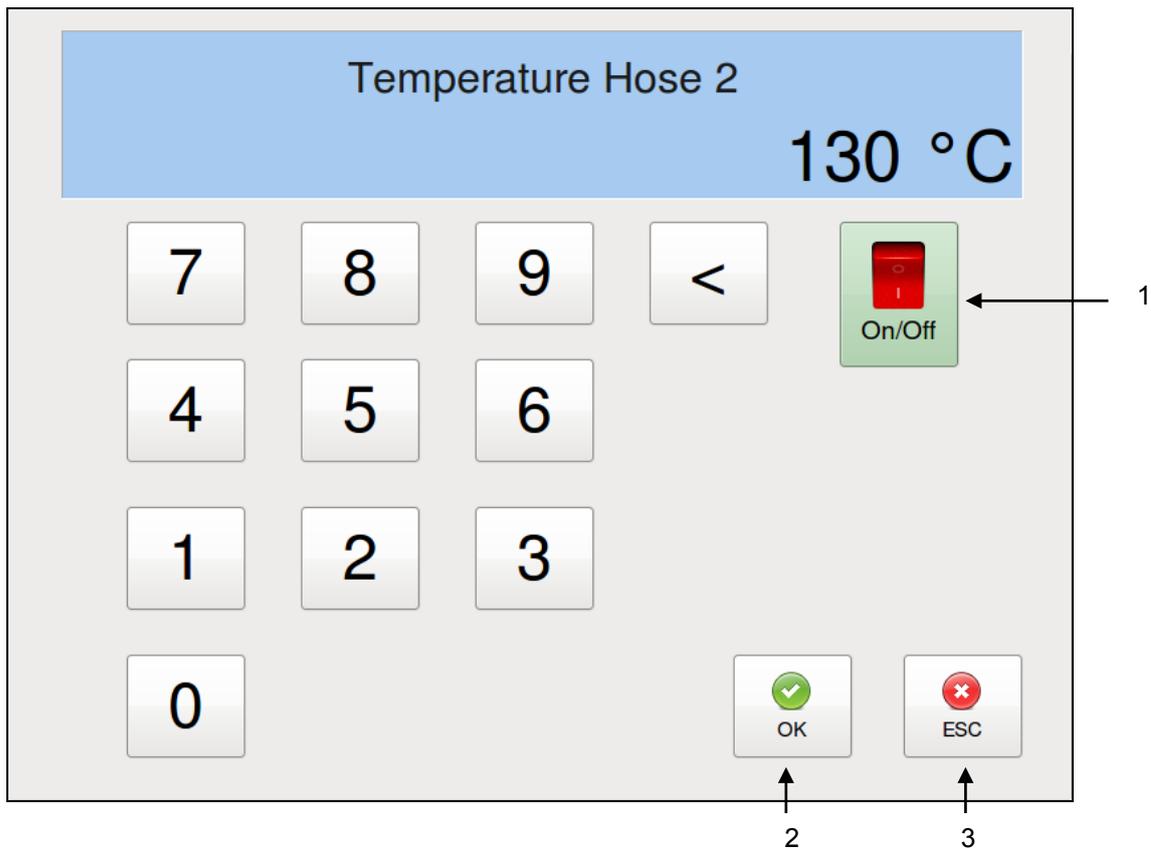
- To go to this screen, press the Set/Act button on the Main Screen.
- The Set screen allows you to program the setpoint temperature for each activated zone. Each zone requires a temperature setpoint.
- When a temperature zone is not used, it can be de-activated (turned OFF) on the Heating Priority screen. A zone that is turned Off no longer heats and is not monitored by the controller for over or under temperatures.



Item	Description
1	<p>Set values</p> <ul style="list-style-type: none"> • Display of the temperature setpoint values. • To edit values: Touch a zone input box and a numeric entry keypad will appear. Enter your new setpoint value and confirm by pressing OK. NOTE: Must be below the maximum setpoint value listed below. • The Set values are displayed for about 15 seconds and, if there is no display activity, the display returns automatically to the Actual values. • The maximum setpoint value is 218°C (424°F).

- See next page for Zone On/Off Switch on the Numeric Entry Keypad.

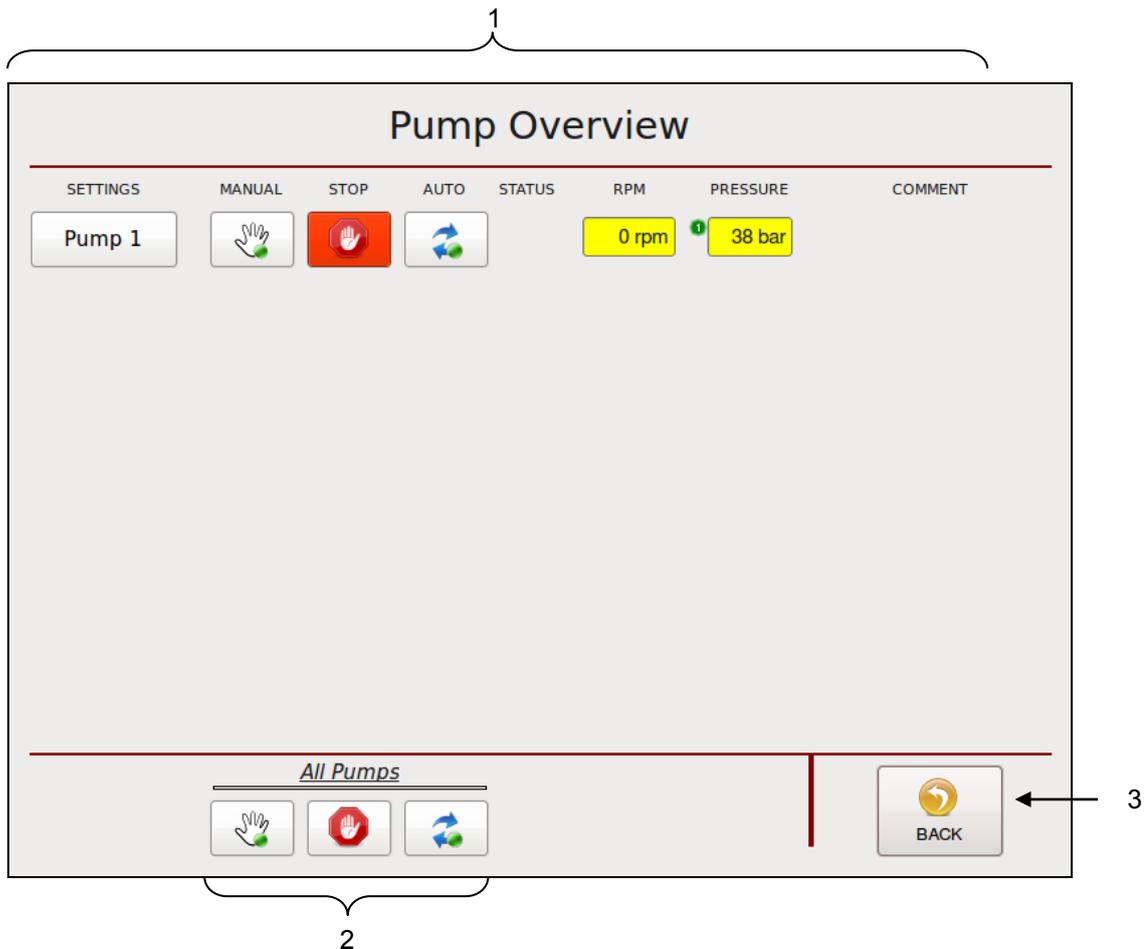
Zone On/Off Switch on the Numeric Entry Keypad



Item	Description
1	<p>Zone On/Off Switch</p> <ul style="list-style-type: none"> Zones can be activated/ deactivated temporarily. Some zones (e.g. Hopper) cannot be deactivated. The switch is colored light green if ON and light red if OFF.
2	By pressing the OK button the entered values will be confirmed and stored in the controller. The numeric entry keypad closes and you will return to the previous screen.
3	By pressing the ESC button any entered but not yet confirmed values will be discarded and you will return to the previous screen.

Pump Overview Screen

- To go to this screen, press the Pumps button on the Main Screen.
- While on the Pump Overview Screen, all changes are immediate (you do not need to confirm).
- The Pump Overview Screen allows you to program the pump mode (Manual, Stop or Automatic). Each pump in the system must be programmed with a Pump Mode.
- Decentralized pumps (e.g. Applicator, Metering Station:  A plausible limit value of Input Pressure (a minimum pressure of not less than 2 bar is recommended) has to be entered to avoid a dry run of the pumps; otherwise the pump can be damaged. See point “Extended Pump Mode Settings Screen, Linear Line Speed, Pressure Control” on next pages.



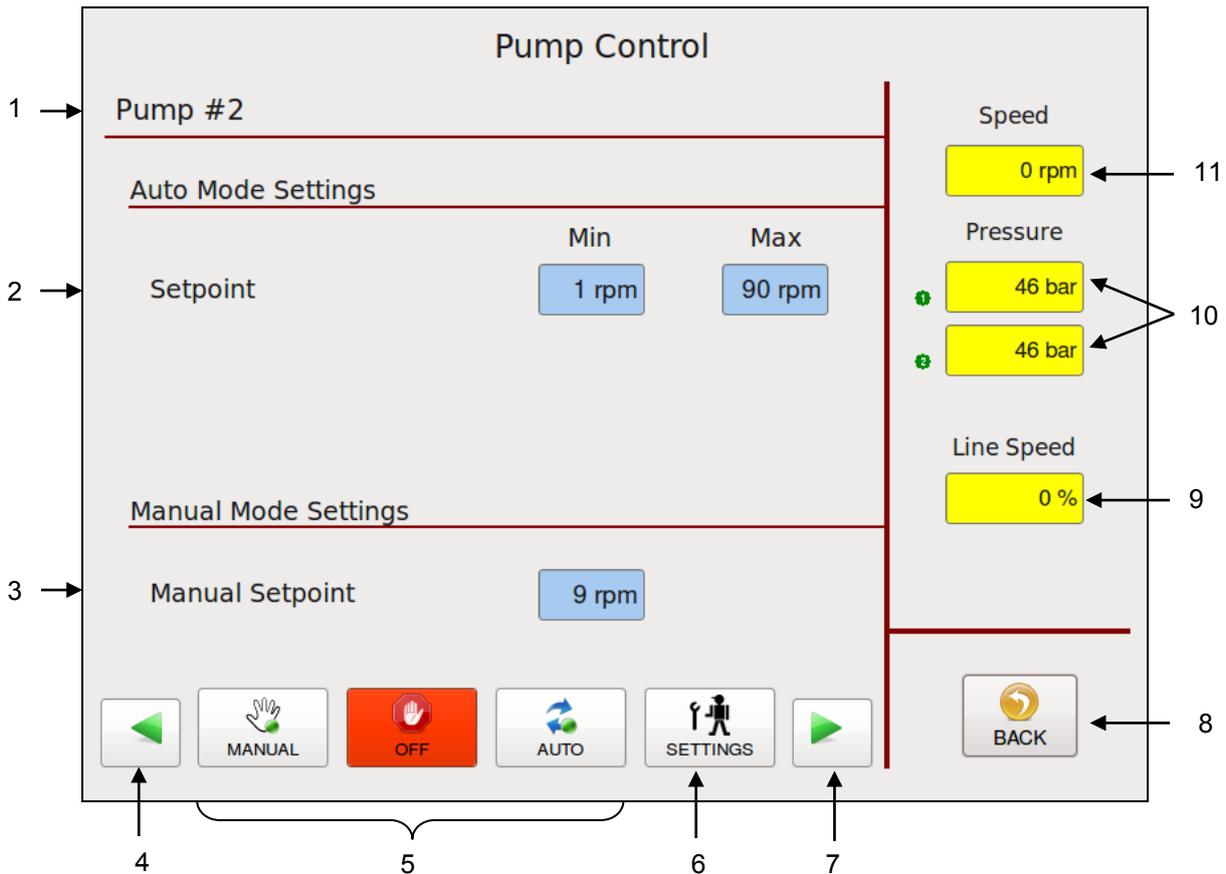
Item	Description
1	<p>Pump Overview</p> <ul style="list-style-type: none"> • SETTINGS: Press Pump 1, Pump 2, etc. to go to the appropriate Pump Control screen. • MANUAL: The pump speed is adjusted manually by the ASU operator. When selected the MANUAL icon is highlighted green. • STOP: The pump is stopped, until AUTO or MANUAL is selected. When selected, the STOP icon is highlighted red. • AUTO: The pump speed is controlled via a 0–10VDC signal that is provided by an external device (pattern control equipment or parent machine input). When selected, the AUTO icon is highlighted green. Auto operating parameters for each Pump must be set on the Pump Control Screen. • STATUS: Indicates if the pump is running or stopped. • RPM: The actual (calculated) RPM of each pump will be displayed. • PRESSURE: The pressure for each pump (if available) will be displayed. See explanation under Main Screen point 4. • COMMENT = The entered pump name will be displayed.

<i>Item</i>	<i>Description</i>
2	All Pumps Buttons Press one of the All Pumps buttons (either MANUAL, STOP or AUTO) to set all pumps to the desired function at one time.
3	BACK Button Press to return to the previous screen.

Pump Control Screen/ Linear Line Speed

- To go to this screen, press the Pump 2 field on the Pump Overview screen (to go to the Pump 1, etc. Control screen, press the corresponding field). Then press the Settings button, select Linear Line Speed in the Current Pump Mode menu on the Extended Pump Mode Settings screen and then press the BACK button.
- The Pump Control Linear Line Speed screen allows you to program the Auto Mode Settings (Setpoint minimum/maximum RPM at 0–10VDC external signal control) and Manual Mode Settings (Manual Setpoint RPM).

Pump 2 Example:



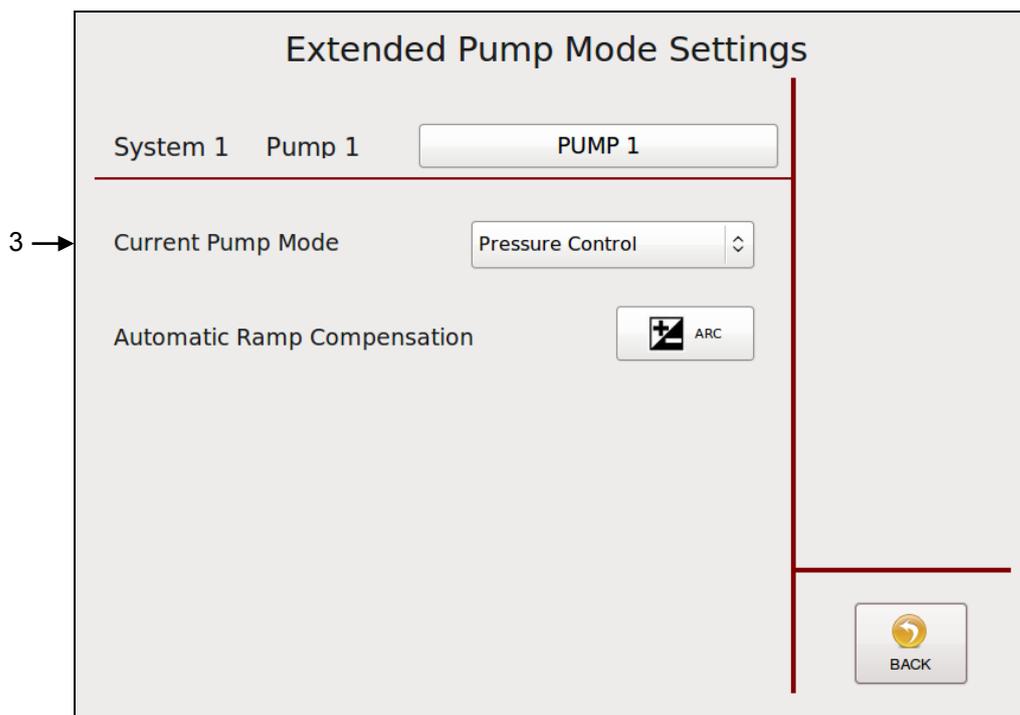
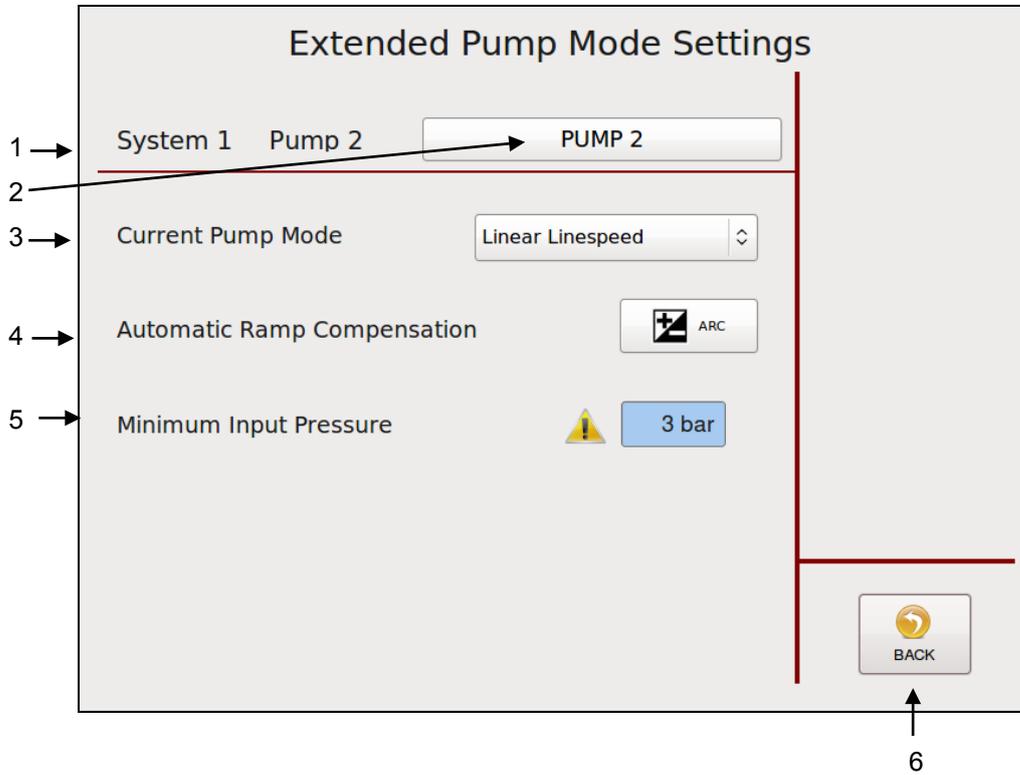
Item	Description
1	Pump #2 is the selected pump. All the settings and speeds displayed on this screen correspond to Pump #2.
2	Auto Mode Settings Setpoint The minimum and maximum setpoint values of the pump are displayed. The programmable range is 0 to 90 rpm. By pressing the input field you can edit the RPM values.
3	Manual Mode Settings Manual Setpoint The manual setpoint value of the pump is displayed. By pressing the input field you can edit the value.
4	Press the arrow icon to go to the previous pump screen (ie, Pump 1, etc.).

Item	Description
5	<p>Set the pump to the desired mode by pressing MANUAL, OFF (STOP) or AUTO.</p> <ul style="list-style-type: none"> • MANUAL: The pump speed is adjusted manually by the operator. If MANUAL is selected the icon is highlighted green. • OFF (STOP): The pump is stopped, until AUTO or MANUAL is selected. If OFF is selected the icon is highlighted red. • AUTO: The pump speed is controlled via a 0–10VDC signal that is provided by an external device (pattern control equipment or parent machine input). If AUTO is selected the icon is highlighted green. <p>A minimum speed is necessary to keep the pump turning in order to maintain a minimum amount of adhesive pressure through the hose and applicator head. For instance, if the input signal is 10VDC at 100 meters per minute and the pump percentage of full speed is 100% (maximum speed), but the system is putting out too much adhesive, adjusting the MAX pump percentage to 50 will cause the pump to slow down over the parent machine's entire speed range and adhesive output will be decreased.</p>
6	<p>Settings Button Press this button to go to the Extended Pump Mode Settings screen where you can select the Current Pump Mode "Linear Line Speed" or "Pressure Control" and you can go to the "Automatic Ramp Compensation" screen.</p>
7	<p>Press the arrow icon to go to the next pump screen (ie, Pump 3, etc.).</p>
8	<p>BACK Button Press to return to the previous screen.</p>
9	<p>LINE SPEED: The actual (or calculated) line speed is displayed.</p>
10	<p>PRESSURE: The actual pressures are displayed. See explanation under Main Screen point 4.</p>
11	<p>SPEED: The actual (or calculated) pump speed is displayed.</p>

Extended Pump Mode Settings Screen, Linear Line Speed, Pressure Control

- To go to this screen, press the Settings button on the Pump Control screen.
- The Extended Pump Mode Settings screen allows you to select the Current Pump Mode and to go to the Automatic Ramp Compensation (ARC) screen.

System 1 Pump 1 Example:

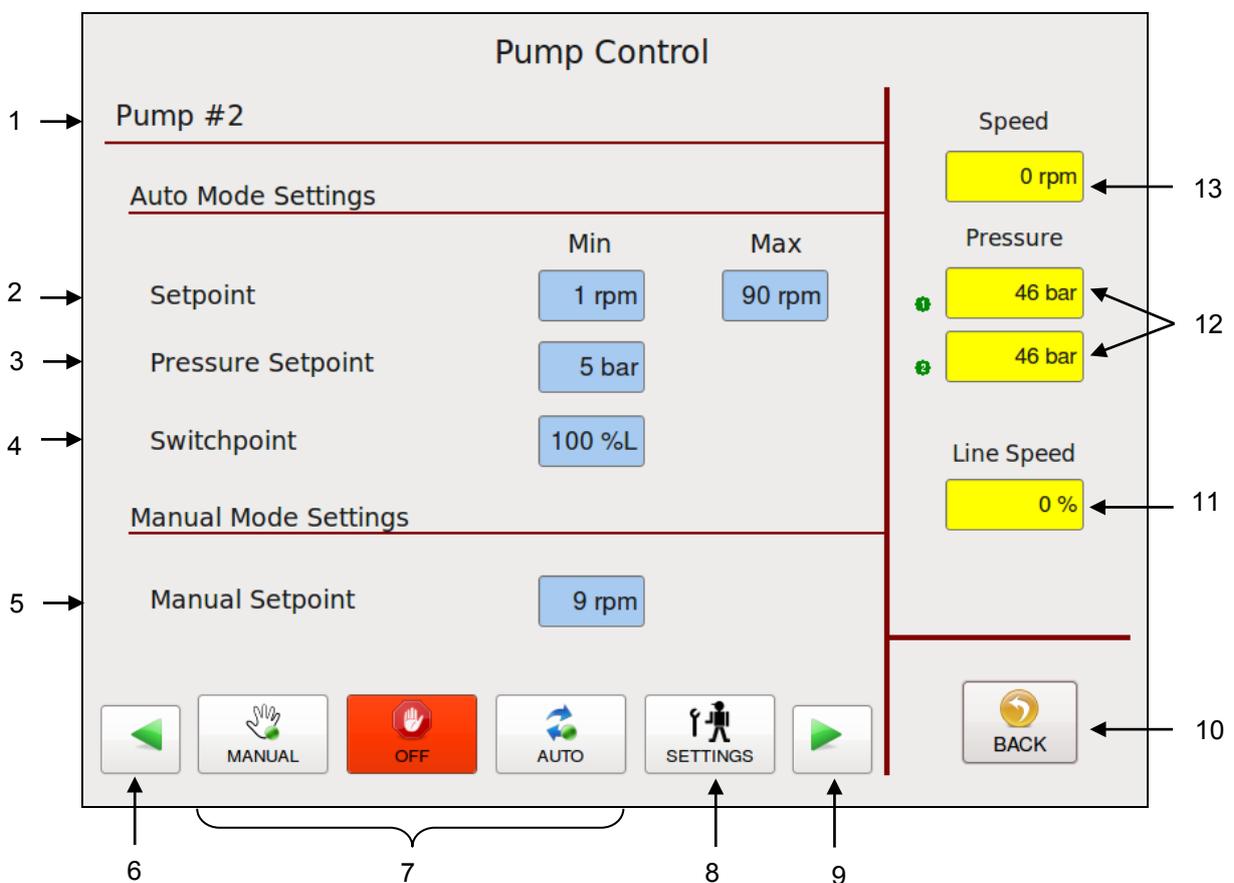


Item	Description
1	System 1 Pump 1 is selected.
2	Pump Name Touch the input box and an Alphabetic Entry Keypad will appear. Enter your desired pump name and confirm by pressing OK. The entered pump name will be displayed on the Pump Overview Screen.
3	Current Pump Mode Press Current Pump Mode to select "Linear Line Speed" or "Pressure Control". Then press the BACK button to go to the appropriate screen.
4	Automatic Ramp Compensation (ARC) Button Press to go to the Automatic Ramp Compensation screen.
5	Optional: Minimum Input Pressure <ul style="list-style-type: none">• This field appears only if the pump is configured for a minimum input pressure lock.• The Minimum Input Pressure is a customer parametrizable value which has to be reached for the according pumps on decentralized pump (Applicator or Metering Station) to be released.•  A plausible limit value of Input Pressure (a minimum pressure of not less than 2 bar is recommended) has to be entered to avoid a dry run of the pumps; otherwise the pump can be damaged.
6	BACK Button Press to return to the previous screen.

Pump Control/ Pressure Control Screen

- To go to this screen, press the Pump 2 field on the Pump Overview screen (to get to the Pump 1, etc. Control screen, press the corresponding field). Then press the Settings button, select Pressure Control in the Current Pump Mode menu on the Extended Pump Mode Settings screen and then press the BACK button.
- If (optional) pressure sensors (transducers) are installed on the unit, the pumps can be pressure controlled. Pressure values (Bar/PSI) will be displayed on the Main Screen.
- A plausible limit value of Input Pressure (a minimum pressure of not less than 2 bar is recommended) has to be entered to avoid a dry run of the pumps; otherwise the pump can be damaged. See point "Extended Pump Mode Settings Screen, Linear Line Speed, Pressure Control" on previous pages.

Pump 2 Example:



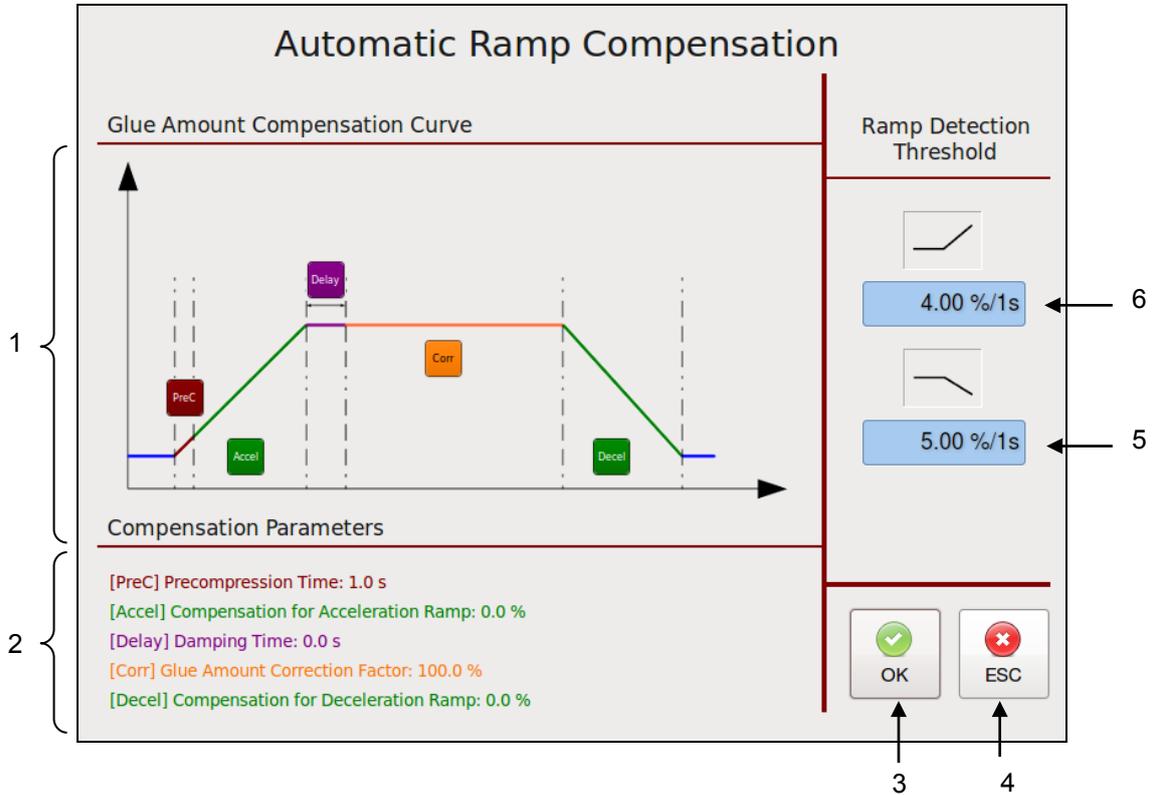
Item	Description
1	Pump #2 is the selected pump. All the settings and speeds displayed on this screen correspond to Pump #2.
2	Setpoint (if in Auto Mode only) The minimum and maximum setpoint RPM of the pump are displayed as programmed. Press the input field to edit the values.
3	Pressure Setpoint (if in Auto Mode only) The pressure setpoint value (BAR/PSI) is displayed as programmed and it controls the primary pressure input (point 11). Press the input field to edit the value.

Item	Description
4	<p>Switch Point (if in Auto Mode only) Switch Point is set at a percentage of line speed. In the example shown above, 10%L equals 10% of line speed. Below the Switch Point speed, the system runs in pressure control mode (PID control, in order to maintain the pressure set point). Above the Switch Point speed, the system runs in normal line speed following mode (utilizing the auto min and auto max parameters). The switch point value is displayed as programmed. Press the input field to edit the value.</p>
5	<p>Manual Setpoint (if in Manual Mode only) The manual setpoint RPM of the pump is displayed as programmed. Press the input field to edit the value.</p>
6	<p>Press the arrow icon to go to the previous pump screen (ie, Pump 1, etc.).</p>
7	<p>Set the pump to the desired mode by pressing either MANUAL, OFF (STOP) or AUTO.</p> <ul style="list-style-type: none"> • MANUAL: The pump speed is adjusted manually by the operator. If MANUAL is selected the icon is highlighted green. • OFF (STOP): The pump is stopped, until AUTO or MANUAL is selected. If OFF is selected the icon is highlighted red. • AUTO: The pump speed is controlled via a 0–10VDC signal that is provided by an external device (pattern control equipment or parent machine input). If AUTO is selected the icon is highlighted green. <p>A minimum speed is necessary to keep the pump turning in order to maintain a minimum amount of adhesive pressure through the hose and applicator head. For instance, if the input signal is 10VDC at 100 meters per minute and the pump percentage of full speed is 100% (maximum speed), but the system is putting out too much adhesive, adjusting the MAX pump percentage to 50 will cause the pump to slow down over the parent machine's entire speed range and adhesive output will be decreased.</p>
8	<p>Settings Button Press this button to go to the Extended Pump Mode Settings screen where you can select the Current Pump Mode "Linear Line Speed" or "Pressure Control" and you can go to the "Automatic Ramp Compensation" screen.</p>
9	<p>Press the arrow icon to go to the next pump screen (ie, Pump 3, etc.).</p>
10	<p>BACK Button Press to return to the previous screen.</p>
11	<p>LINE SPEED: The actual (or calculated) line speed is displayed.</p>
12	<p>PRESSURE: The actual pressures are displayed. The primary pressure input can be controlled via the Pressure Set Point (point 3) set on this screen. The secondary pressure input is just a readout function. See explanation under Main Screen point 4.</p>
13	<p>SPEED: The actual (or calculated) pump speed is displayed.</p>

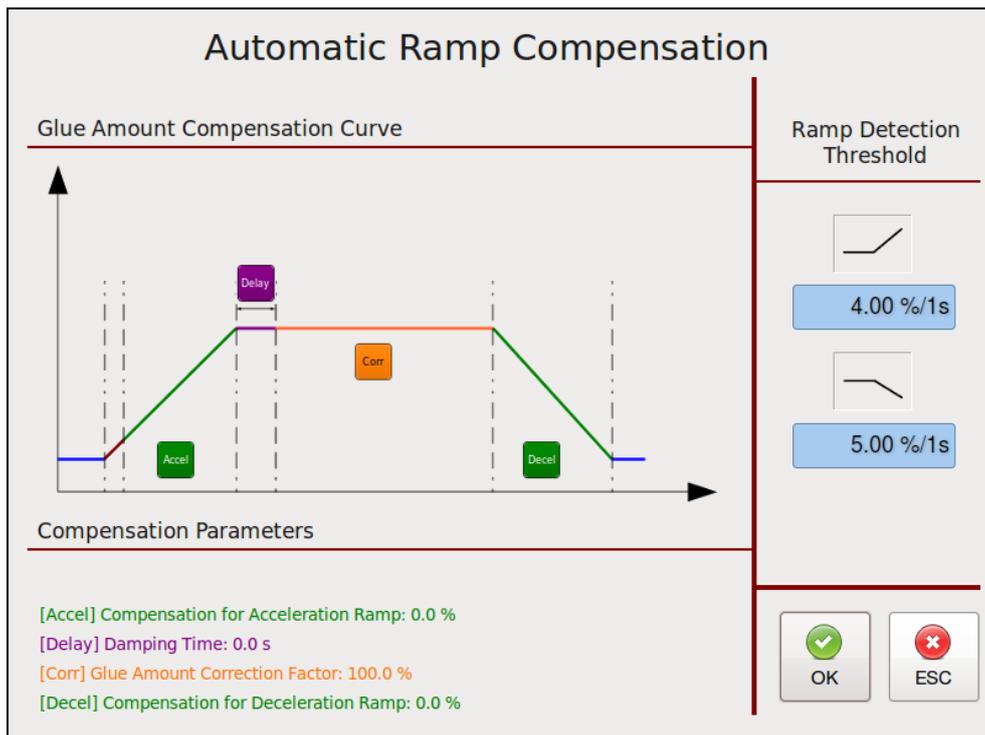
Automatic Ramp Compensation

- To go to this screen, press the Automatic Ramp Compensation button on the Extended Pump Mode Settings Linear Line Speed screen.
- The Automatic Ramp Compensation screen allows you to program parameters in order to compensate the adhesive amount when the speed of the main machine accelerates and decelerates.

With Linear Pump Control (Line Speed without Pressure PID Loop):



With Pressure Control PID Loop:



- Ramp Compensation allows tuning of adhesive amounts during acceleration and deceleration of main machine to reduce waste and increase machine efficiency by entering appropriate parameters.
- The colored parameters are related to the different phases of the main machine (see colored graph). A higher value will result in a higher compensation (more glue amount during acceleration, less glue amount during deceleration).
- After setting parameters by visibly checking the product result, further fine tuning might be necessary by checking products from the acceleration/deceleration ramp in a lab.

<i>Item</i>	<i>Description</i>
1	<p>Glue Amount Compensation Curve</p> <ul style="list-style-type: none"> • (PreC) Precompression Time in seconds: When using ramp compensation without pressure control loop, this defines the time the system will pre-compress at 75% pump speed before adhesive application. • (Accel) Compensation for Acceleration Ramp in % or rpm: This is the added percentage or rpm of pump speed to compensate the main machine acceleration ramp. • (Delay) Damping Time in seconds: within this time the compensation is reduced to the normal application rate in order to prevent an elastic impact. • (Corr) Glue Amount Correction Factor in %: Allows an adjustment of pump speed if a speed correction is required due to measured deviations of the adhesive amount. • (Decel) Compensation for Deceleration Ramp: This is the subtracted percentage or rpm of pump speed to compensate the main machine deceleration ramp. <p>By pressing the appropriate button you can edit the value by means of numeric entry keypad.</p>
2	<p>Compensation Parameters The compensation parameters values currently in use are displayed.</p>
3	Press the OK button to confirm your entered values and return to the previous screen.
4	Press the ESC button to discard any non-confirmed values and return to the previous screen.
5	<p>Ramp Detection Threshold for deceleration in %/1s A main machine deceleration phase is automatically detected when its speed change lies above the given value.</p> <p>By pressing the input field you can edit the value by means of numeric entry keypad.</p>
6	<p>Ramp Detection Threshold for acceleration in %/1s A main machine acceleration phase is automatically detected when its speed change lies above the given value.</p> <p>By pressing the input field you can edit the value by means of numeric entry keypad.</p>

Control Switch On/Off and Standby Switch

- To go to this screen, press the Control button on the Main Screen.
- This screen allows you to turn the system On or Off and to activate/deactivate standby condition.

System 2 - Mode: Local

READY 18.03.2014 12:38:25

ACT [Icons] AUX [Icons]

1	125 °C	128 °C	125 °C	125 °C	126 °C	127 °C	0 rpm	46 bar
2	126 °C	126 °C	125 °C	125 °C	126 °C	127 °C	0 rpm	
3				124 °C	125 °C	126 °C	0 rpm	
4				129 °C	126 °C	126 °C	0 rpm	
5				128 °C	130 °C	127 °C		
6				128 °C	129 °C	126 °C		

[Icons] [Icons] [Icons] [Icons] [Icons] AUX

Empty [Icon]

Standby On/Off Systems Back

1 2 3

System 2 - Mode: Local

STANDBY 18.03.2014 12:39:13

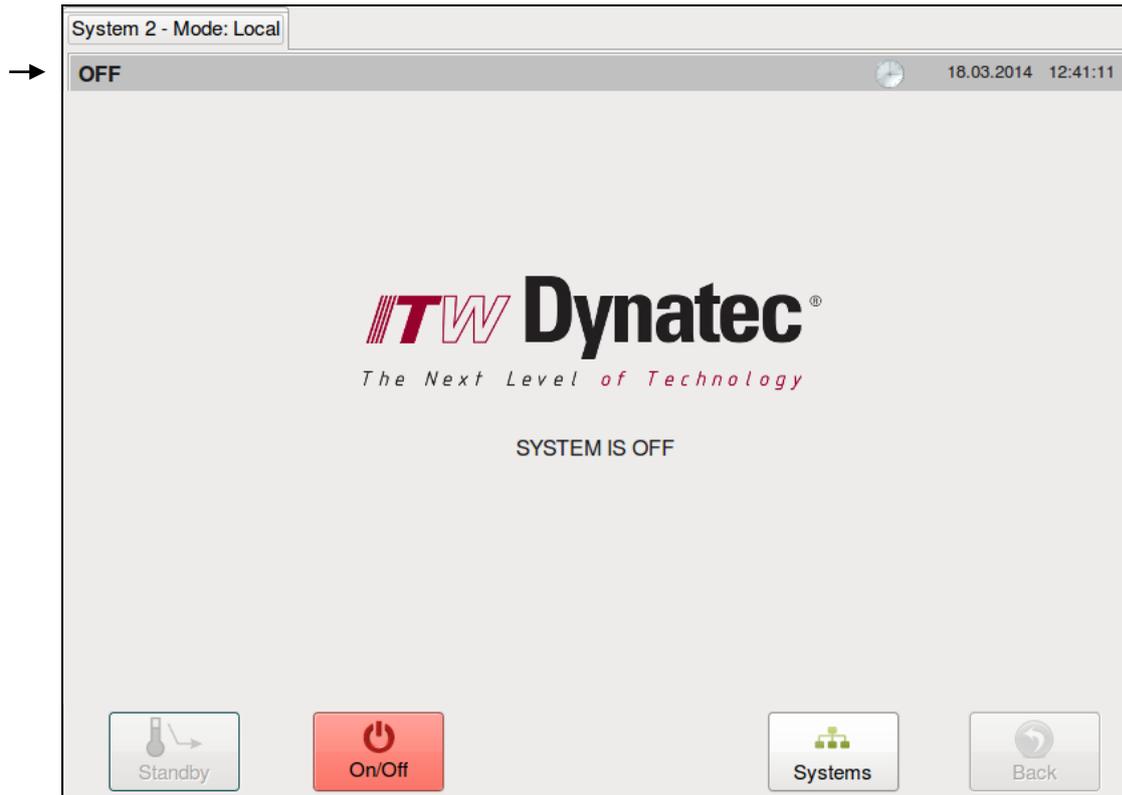
ACT [Icons] AUX [Icons]

1	125 °C	129 °C	125 °C	125 °C	125 °C	127 °C	0 rpm	46 bar
2	126 °C	127 °C	125 °C	125 °C	126 °C	127 °C	0 rpm	
3				124 °C	125 °C	126 °C	0 rpm	
4				129 °C	125 °C	126 °C	0 rpm	
5				128 °C	130 °C	127 °C		
6				128 °C	129 °C	126 °C		

[Icons] [Icons] [Icons] [Icons] [Icons] AUX

Empty [Icon]

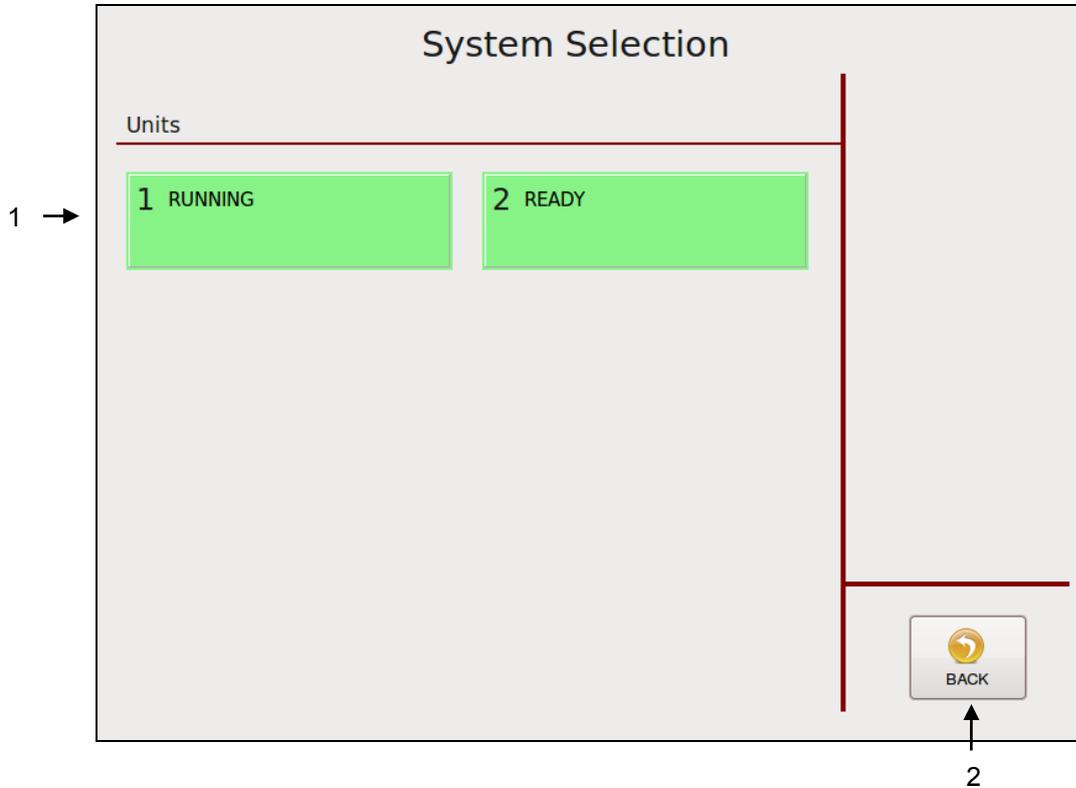
Standby On/Off Systems Back



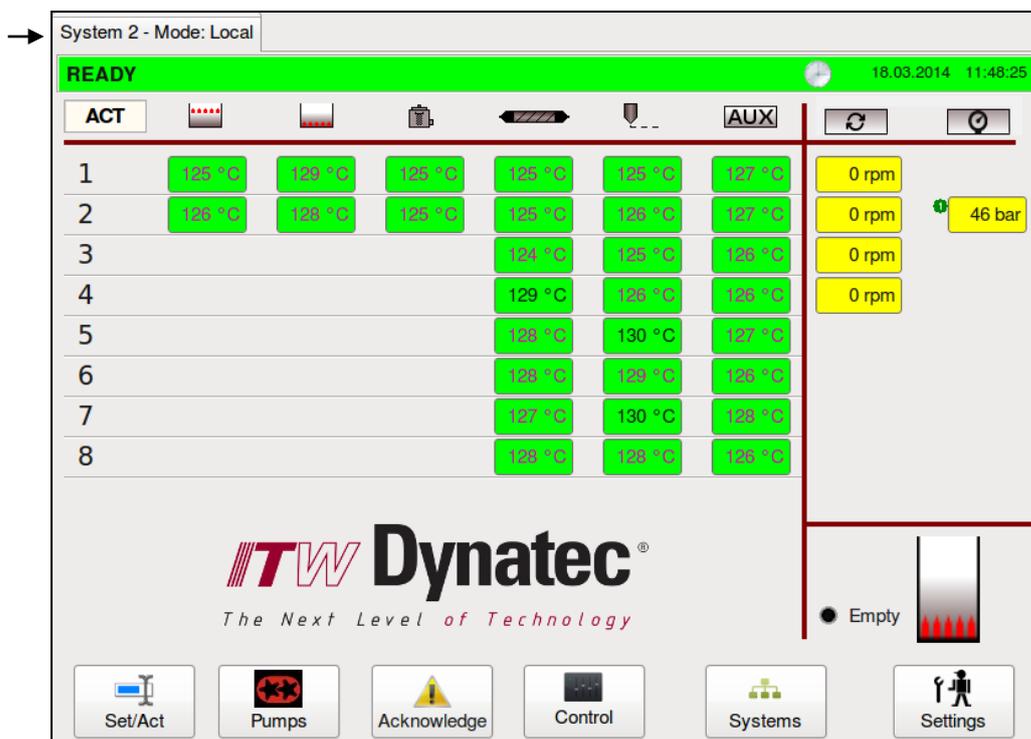
Item	Description
1	<p>Standby Switch</p> <ul style="list-style-type: none"> • Press the Standby switch to activate or deactivate the standby condition. When Standby is activated, the button will be highlighted blue. • When Standby is activated, all zone temperatures will be set to the standby value (programmed on the General Settings Screen) and all pumps will be disabled.
2	<p>On/Off Switch</p> <p>Press the On/Off button to toggle the system On or Off. When the system is On, the button will be highlighted green. When the system is Off, the button will be highlighted red.</p>
3	<p>BACK Button</p> <p>Press to return to the previous screen.</p>

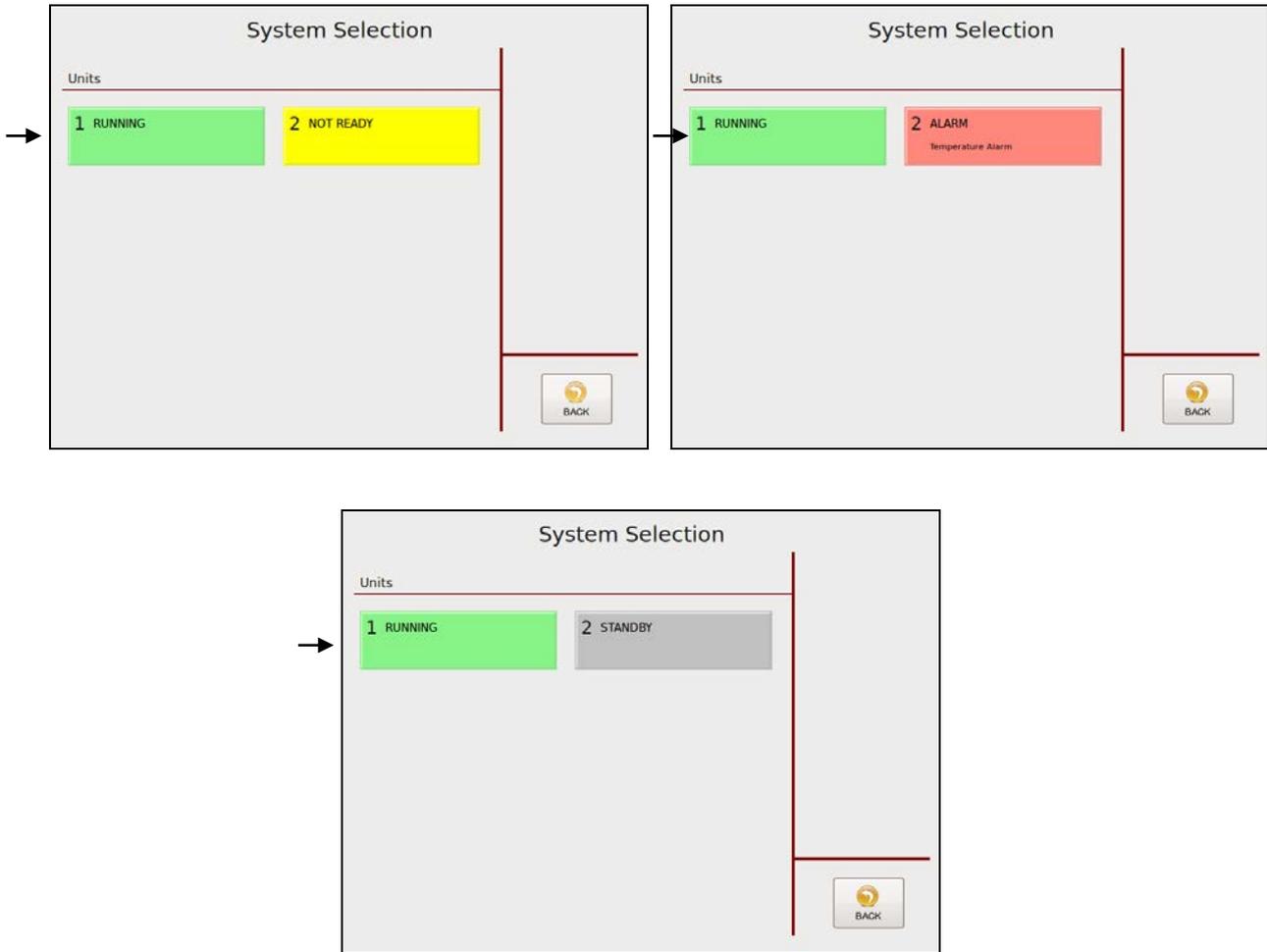
Systems Screen

- To go to this screen, press the Systems button on the Main Screen.
- This screen displays all attached systems and allows you to select the desired system to control it.



- For example: System #2 is selected. The system # will be indicated over the Status Line.

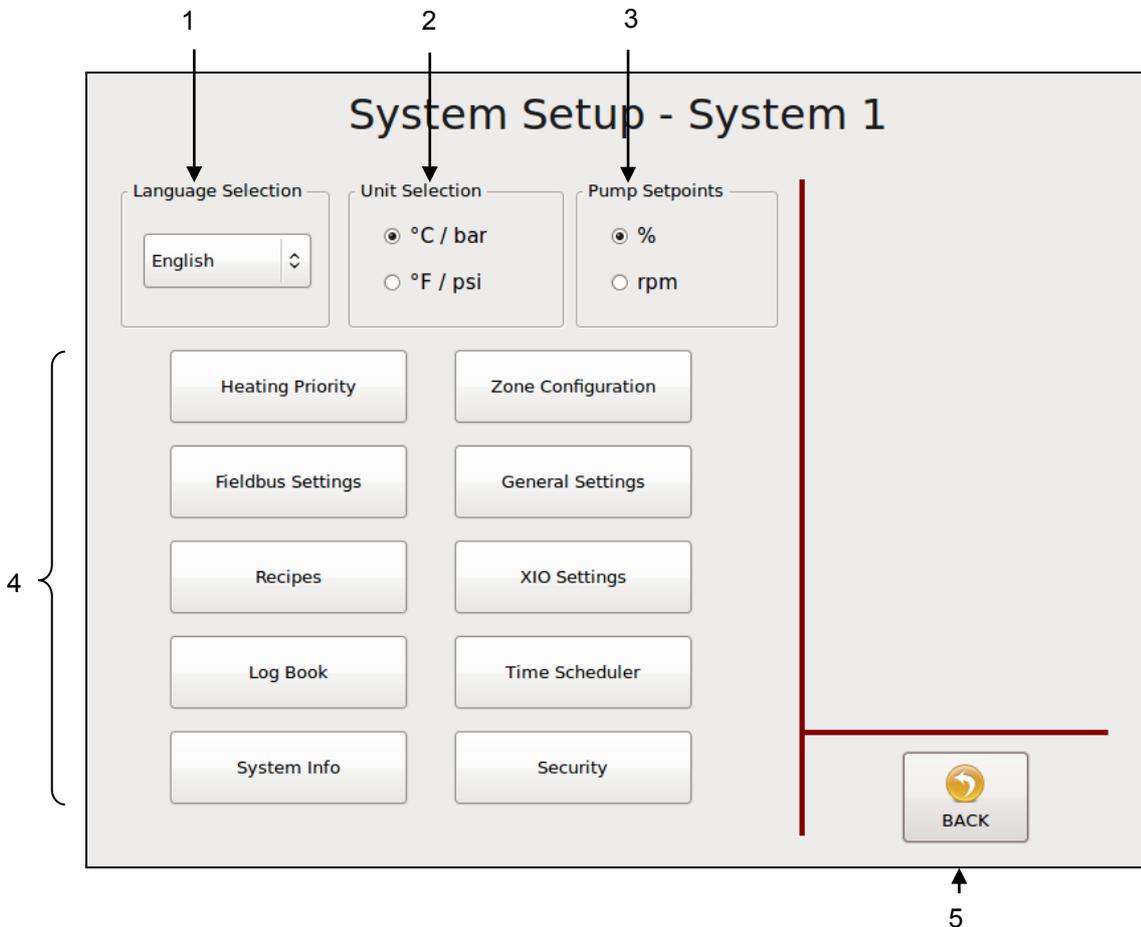




Item	Description
1	<p>System # Button</p> <ul style="list-style-type: none"> Each system is assigned with a number. Press the desired number to go to the appropriate system to control and to edit its parameters. The button is highlighted <u>green</u> when the system is RUNNING or READY, <u>yellow</u> when NOT READY, <u>grey</u> when in STANDBY and <u>red</u> when in ALARM condition.
2	<p>BACK Button</p> <p>Press to return to the previous screen.</p>

Settings Screen

- To go to this screen, press the Settings button on the Main Screen.
- This screen allows you to set the parameters displayed: Language, Temperature/ Pressure Units, Pump Setpoints, Heating Priority, Fieldbus, Recipes, Log Book, System Info (to see information about the controller and modules installed), Zone Configuration, General Settings (including Temperature Settings, Standby Settings, Level Control Settings, Pressure Calibration, Customer Zone Names and Support), XIO Settings, Time Scheduler and Security.



Item	Description
1	Language Selection Menu The current language is displayed. Press the button to select any language from the ones listed on the menu.
2	Unit & Date Selection Select the unit of temperature and pressure: choose either °C and bar or °F and psi. Depending on the selection made, the appearance of the date display is affected also. With the C/bar selection, the date is displayed as 'day.month.year' while in F/psi mode, the date is displayed as 'month/day/year'.
3	Pump Setpoints Select the pump speed setpoints either in RPM or % of production line speed.
4	All other Setting Buttons <ul style="list-style-type: none"> • To go to a desired screen, press the appropriate button. • On the following pages each screen is explained except XIO Settings. • XIO Settings: The screens used under XIO Settings are dependent from integrated equipment. See separate add-on at the end of this chapter.
5	BACK Button Press to return to the previous screen.

Heating Priority Screen

- To go to this screen, press the Heating Priority button on the Settings Screen.
- This screen allows you to set a Heating Priority for each zone. Heating Priority allows the hopper zones to heat to their ready temperatures before the other zones begin heating. In this way, the larger mass of adhesive in the hopper zones (including the grid, hopper and filter block) gets a head start on the other zones (hoses, applicators and auxiliary zones).

Heating Priority Matrix Example:

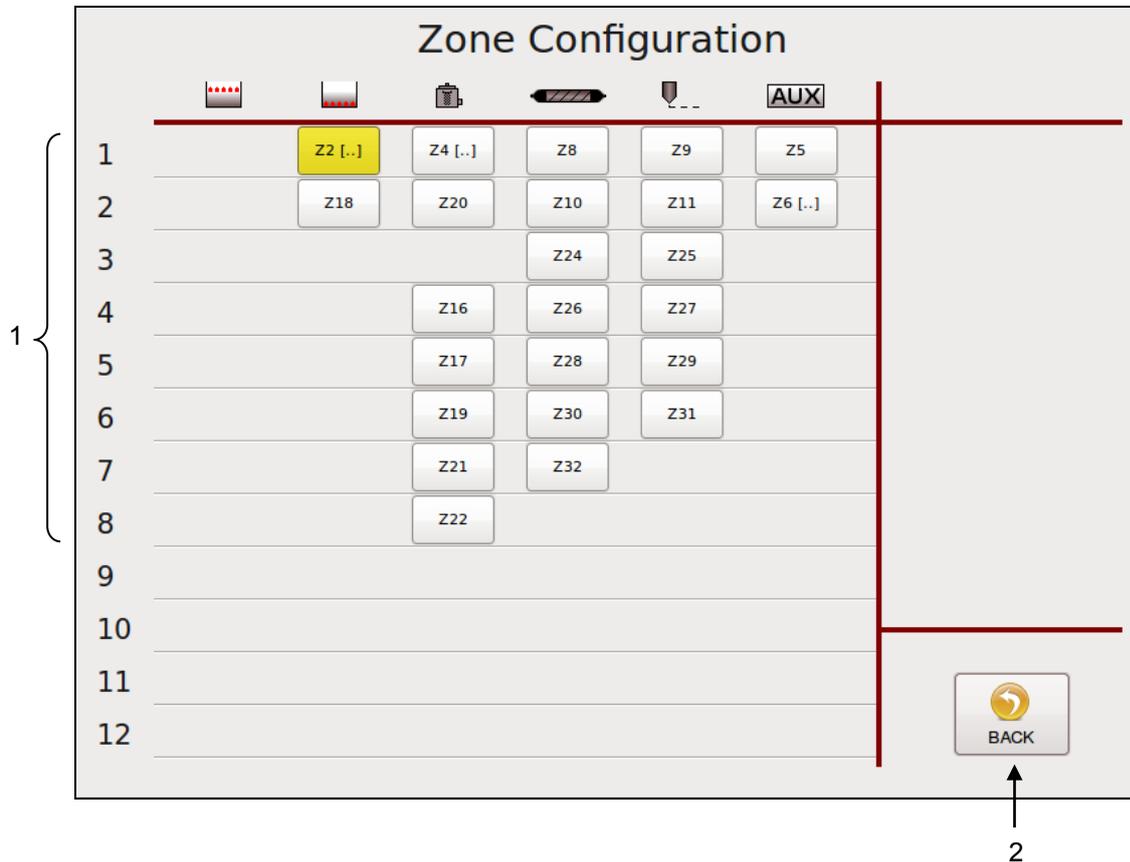
Zone	Icon 1	Icon 2	Icon 3	Icon 4	Icon 5	AUX
1	PRIO 1 125°C	PRIO 1 129°C	PRIO 1 126°C	PRIO 2 125°C	PRIO 3 125°C	PRIO 3 127°C
2	PRIO 1 126°C	PRIO 1 127°C	PRIO 1 125°C	PRIO 2 125°C	PRIO 3 126°C	PRIO 3 127°C
3				PRIO 2 124°C	PRIO 3 125°C	PRIO 3 126°C
4				PRIO 2 129°C	PRIO 3 126°C	PRIO 3 126°C
5				PRIO 2 128°C	PRIO 3 130°C	PRIO 3 127°C
6				PRIO 2 128°C	PRIO 3 129°C	PRIO 3 127°C
7						
8						
9						
10						
11						
12						

Item	Description
1	Touch each zone field to select one of the following three Heating Priorities, or to switch the zone OFF: <ul style="list-style-type: none"> • PRIO1 = the zone will heat first. • PRIO2 = the zone will begin to heat after the PRIO1 zones have reached their setpoints. • PRIO3 = the zone will begin to heat after the PRIO2 zones have reached their setpoints. • OFF = the zone is OFF. It will not heat and it will not be displayed on the Main screen.
2	Press the OK button to confirm your entered values and return to the previous screen.
3	Press the ESC button to discard any non-confirmed values and return to the previous screen.
4	Press the Standard Sequence button to accept the following standard Heating Priorities: <ul style="list-style-type: none"> • PRIO1 = grid, hopper and filter block • PRIO2 = hoses • PRIO3 = applicators and other auxiliary components Press the OK button to confirm.
5	Press the Without Sequence button to assign all zones to PRIO1. With this setting, all zones will begin to heat after turning on the unit. Press the OK button to confirm.

Zone Configuration Screen

- To go to this screen, press the Zone Configuration button on the Settings Screen.
- This screen allows you to enter zone names and to set Offset Temperature and other Control Settings for each zone.

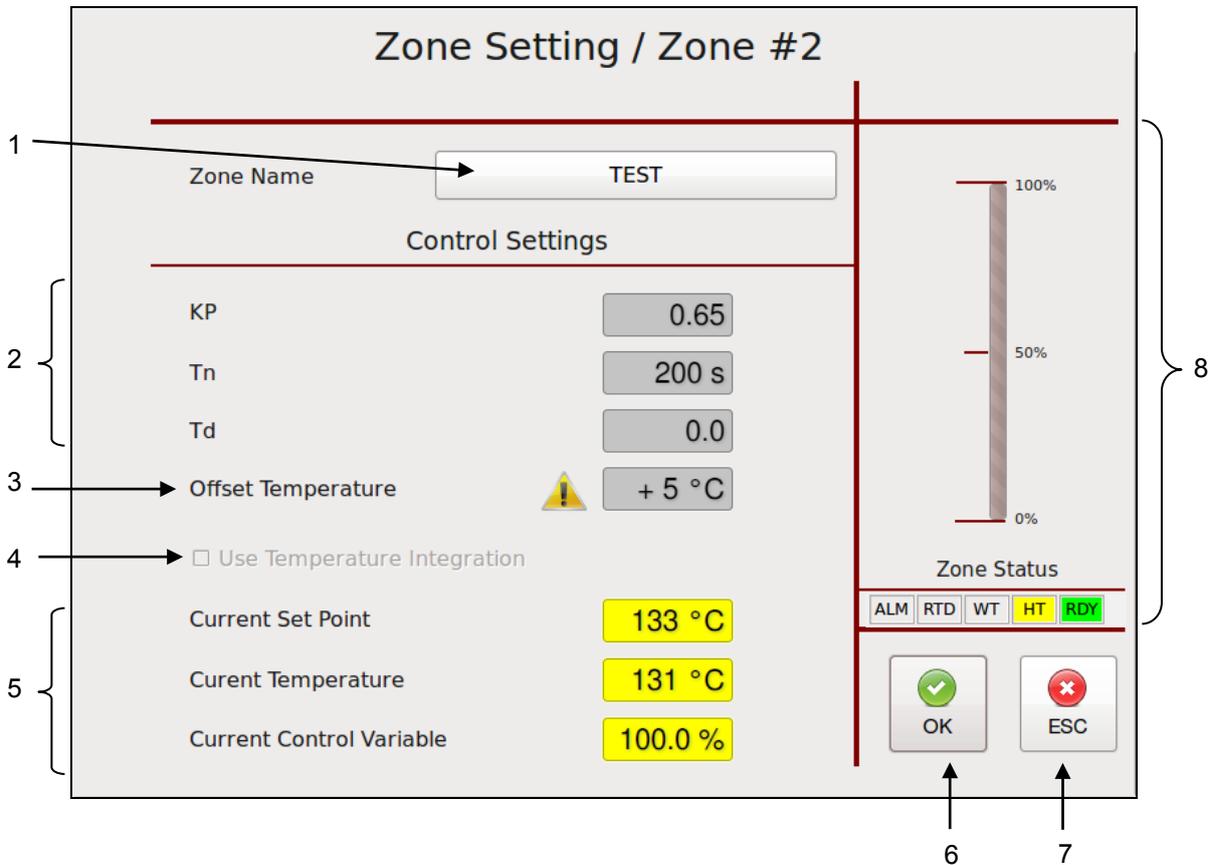
Zone Configuration Screen Example:



Item	Description
1	<ul style="list-style-type: none"> • Touch a zone input box to go to the Zone Settings. •  Zone is highlighted yellow if an Offset Temperature has been set for this zone. •  Square bracket is displayed if a custom zone name has been entered for this zone.
2	<p>BACK Button Press to return to the previous screen.</p>

Zone Settings

➤ To go to this screen, press a zone input box on the Zone Configuration Screen.

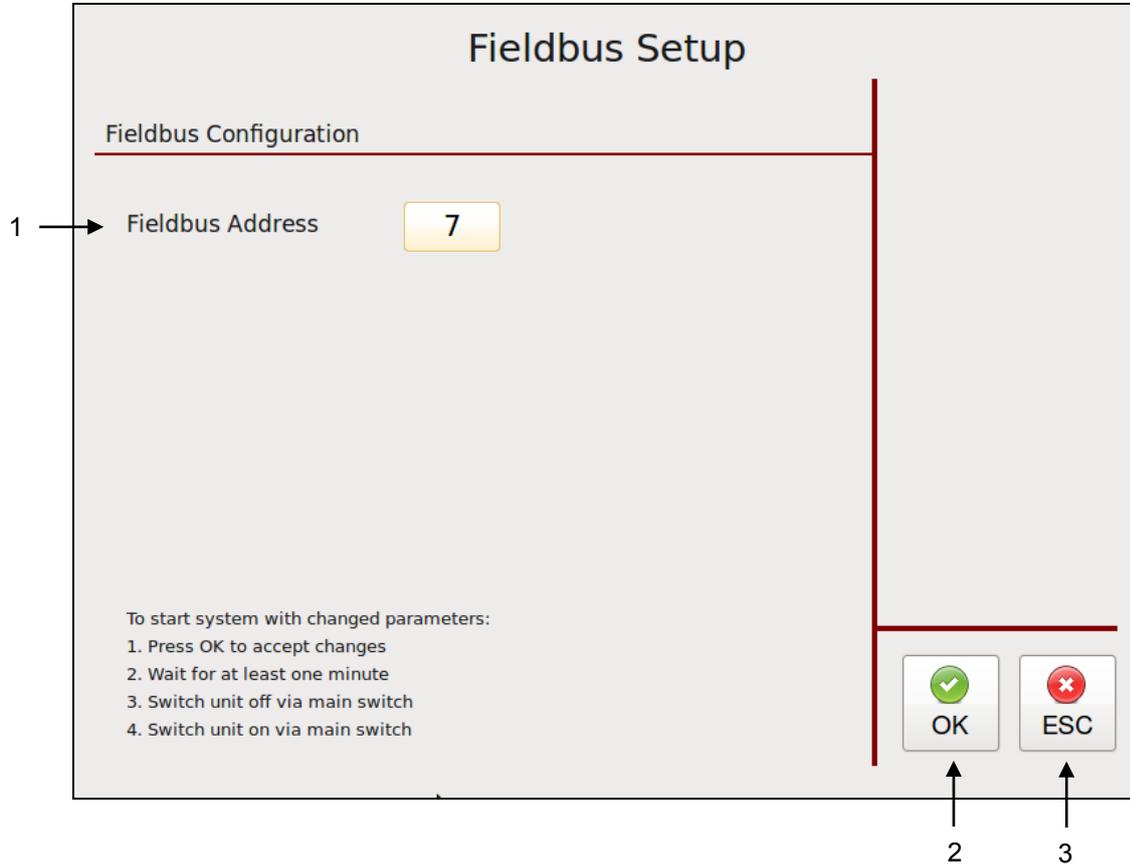


Item	Description
1	Zone Name Touch the input box and an Alphabetic Entry Keypad will appear. Enter your desired name and confirm by pressing OK.
2	Control Settings <ul style="list-style-type: none"> • KP, Tn and Td values allow access to the control parameters of PID Controller of the selected zone. • These values can be changed only by using a Maintenance password. See Security screen.
3	Offset Temperature <ul style="list-style-type: none"> • Temperature Offsets are mathematical factors which compensate for differences in temperature within components. Each temperature zone may be programmed with an offset, if desired. Standard equipment does not usually require temperature offsets. <p>Note: Entering a positive-numbered offset will raise the temperature reading of that zone. Since the controller attempts to equate setpoint and actual temperature, this lowers the actual temperature by the amount of the offset.</p> <p>For example: setpoint and actual temperature both equal 150°C (302°F). An offset of +10°C (+10°F) is programmed. Initially the display will read 160°C (312°F), but the controller will lower the output power until the actual temperature value is back to 150°C (302°F).</p> <ul style="list-style-type: none"> •  Warning icon is displayed if an Offset Temperature has been set for the zone. • This value can be changed only by using a Maintenance password. See Security screen.

Item	Description
4	Use Temperature Integration <ul style="list-style-type: none">• Depending on your Temp Module this function can be activated/ deactivated.• If you experience strong variations in actual temperature read-out, an integration function can be activated to eliminate EMC influence.
5	These values are read-only.
6	Press the OK button to confirm your entered values and return to the previous screen.
7	Press the ESC button to discard any non-confirmed values and return to the previous screen.
8	Zone Status Zone status is indicated. <ul style="list-style-type: none">• ALM = is highlighted if zone has an alarm.• RTD = is highlighted if temperature sensor error occurs.• WT = is highlighted if zone is in wait status because of heating priority setting.• HT = is highlighted if zone is heating up.• RDY = is highlighted if zone ready (setpoint temperatures are reached).• Scale = Indication of Current Control Variable of the selected PID control zone.

Fieldbus Setup Screen

- To go to this screen, press the Fieldbus Settings button on the Settings Screen.
- When communicating to a parent machine which utilizes profibus or EtherNet IP, the unit must have a Fieldbus Address to identify it. When there are additional units in a system, each unit must have its own unique Fieldbus Address.

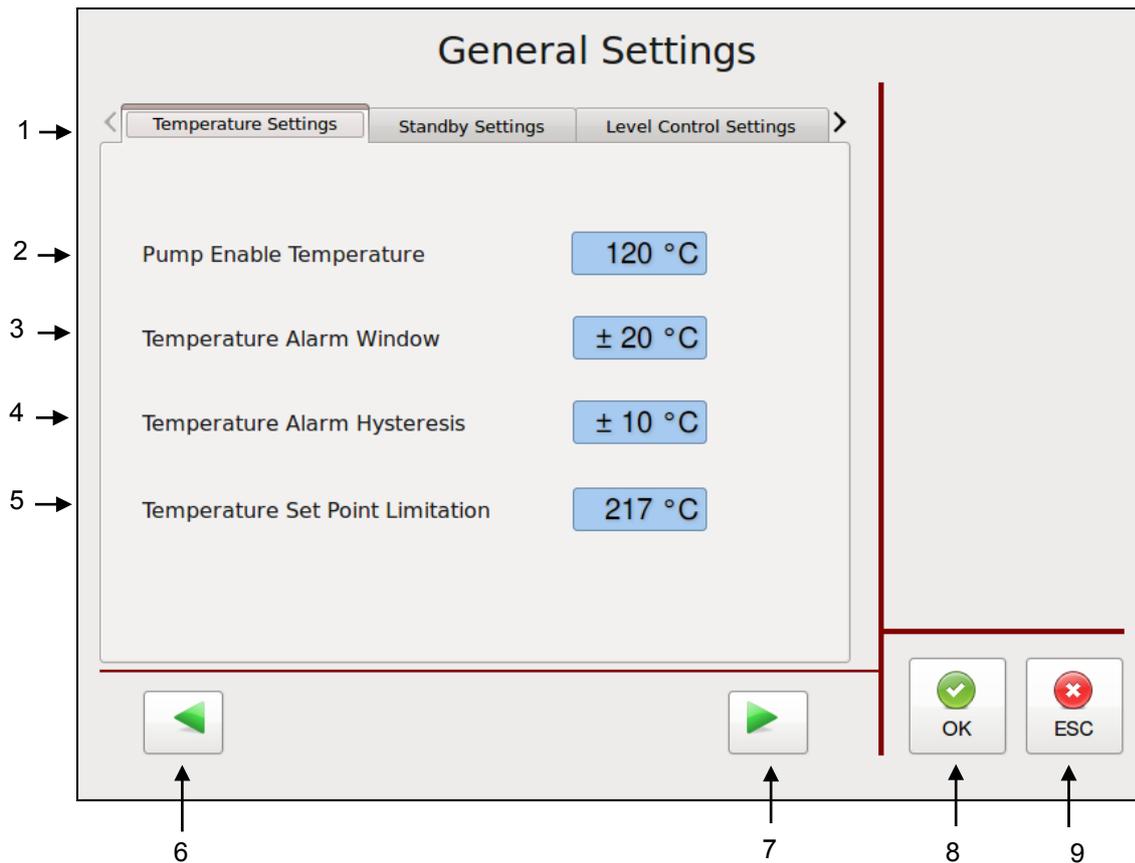


Item	Description
1	<p>Fieldbus Address Touch the input box and a numeric entry keypad will appear. Enter the Fieldbus Address of the unit. Confirm by pressing OK.</p> <p>After programming the Fieldbus Address, the system must be re-started. To re-start the system with changed parameters:</p> <ol style="list-style-type: none"> 1. Press OK to accept changes. 2. Wait at least one minute. 3. Switch unit Off via the main switch. 4. Switch unit On via the main switch.
2	Press the OK button to confirm your entered values and return to the previous screen.
3	Press the ESC button to discard any non-confirmed values and return to the previous screen.

General Settings Screen

- To go to this screen, press the General Settings button on the Settings Screen.
- This screen allows you to set the parameters shown across the screen's top line (Item #1, shown below).
- Select a desired parameter (Temperature, Standby, Level Control, Pressure Calibration or Customer Zone Names) by pressing its tab or by pressing the arrows at the bottom of the screen.

Temperature Settings

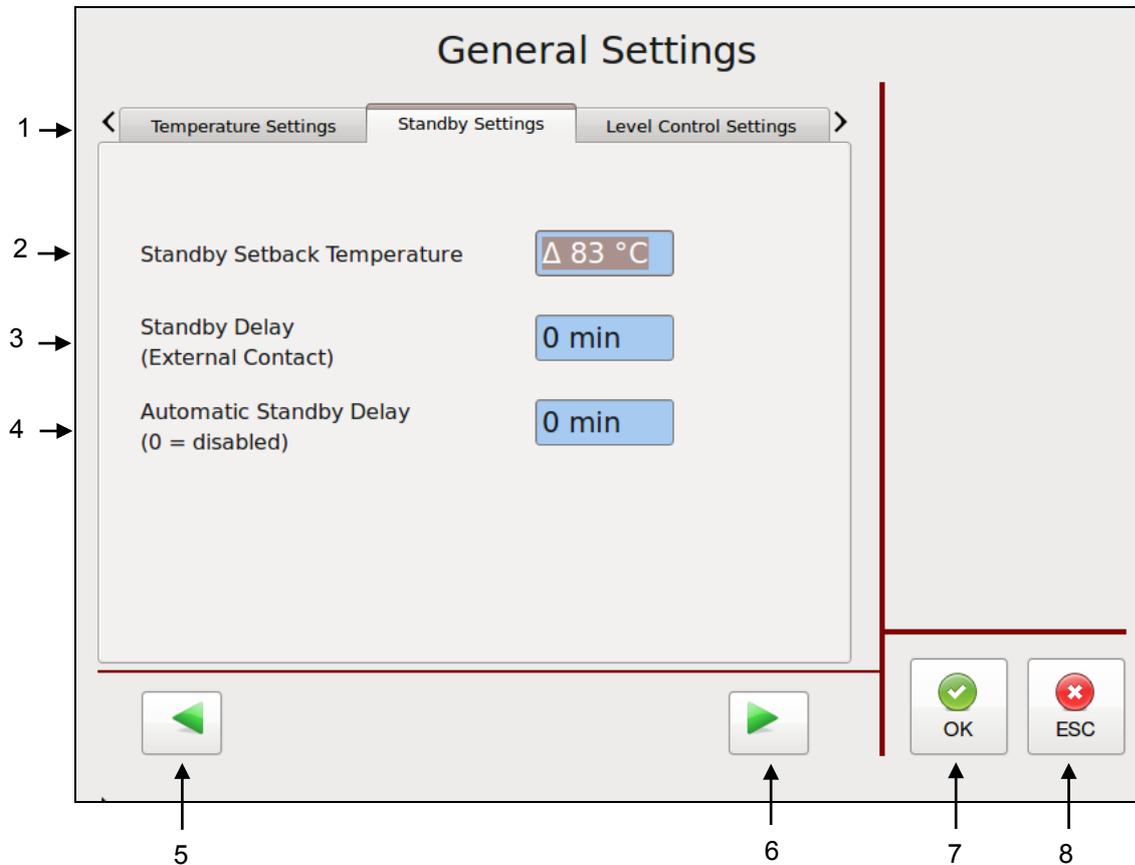


Item	Description
1	Parameter Selection tabs The Temperature Settings tab has been selected.
2	Pump Enable Temperature <ul style="list-style-type: none"> • The Pump Enable Temperature is a low-limit value (e.g. 100°C / 212°F) which protects the pump, pump shaft, motor and motor control module by preventing the pump from turning on until a minimum adhesive temperature is achieved. Caution should be taken to avoid setting this value too low because attempting to rotate the pump when the adhesive inside it is not molten will result in damage to the pump and, possibly, to the pump motor. The Pump Enable Temperature is independent from the temperature setpoints. The programmable range is 10-200 °C (50- 400°F). • Touch the input box and a numeric entry keypad will appear. Enter your desired Pump Enable Temperature value and confirm by pressing OK.

Item	Description
3	<p>Temperature Alarm Window</p> <ul style="list-style-type: none"> This is the programmable temperature range which allows the unit to go into Ready condition. The Temperature Alarm Window is a deviation (e.g. $\pm 20^{\circ}\text{C}$ / 36°F) from the setpoint. The setpoint minus the deviation is the low limit of the window, and the setpoint plus the deviation is the high limit of the window. The programmable range is $0\text{-}50^{\circ}\text{C}$ ($0\text{-}90^{\circ}\text{F}$). The Temperature Alarm Window (\pm the Temperature Alarm Hysteresis, if programmed) will trigger high and low temperature alarms when zone temperatures rise or fall outside of the window. Touch the input box and a numeric entry keypad will appear. Enter your desired Temperature Alarm Window value and confirm by pressing OK.
4	<p>Temperature Alarm Hysteresis</p> <ul style="list-style-type: none"> This is a second, smaller, temperature range and alarm limit programmed in addition to the Temperature Alarm Window which allows the unit to remain in Ready condition as temperatures stabilize. The Temperature Alarm Hysteresis is a deviation (e.g. $\pm 2^{\circ}\text{C}$ / 3°F) from the Temperature Alarm Window. The Temperature Alarm Window minus the deviation is the low limit of the Temperature Alarm Hysteresis, and the Temperature Alarm Window plus the deviation is the high limit of the Temperature Alarm Hysteresis. The programmable range is $0\text{-}10^{\circ}\text{C}$ ($0\text{-}30^{\circ}\text{F}$). The Temperature Alarm Hysteresis will trigger high and low temperature alarms when those temperatures are exceeded. Touch the input box and a numeric entry keypad will appear. Enter your desired Temperature Alarm Hysteresis value and confirm by pressing OK.
5	<p>Temperature Set Point Limitation This is a by customer programmable maximum temperature set point limitation.</p>
6	<p>Press the left-pointing arrow to go to the previous General Settings screen.</p>
7	<p>Press the right-pointing arrow to go to the next General Settings screen.</p>
8	<p>Press the OK button to confirm your entered values and return to the previous screen.</p>
9	<p>Press the ESC button to discard any non-confirmed values and return to the previous screen.</p>

Standby Settings

➤ To go to this screen, press the General Settings button on the Settings Screen.



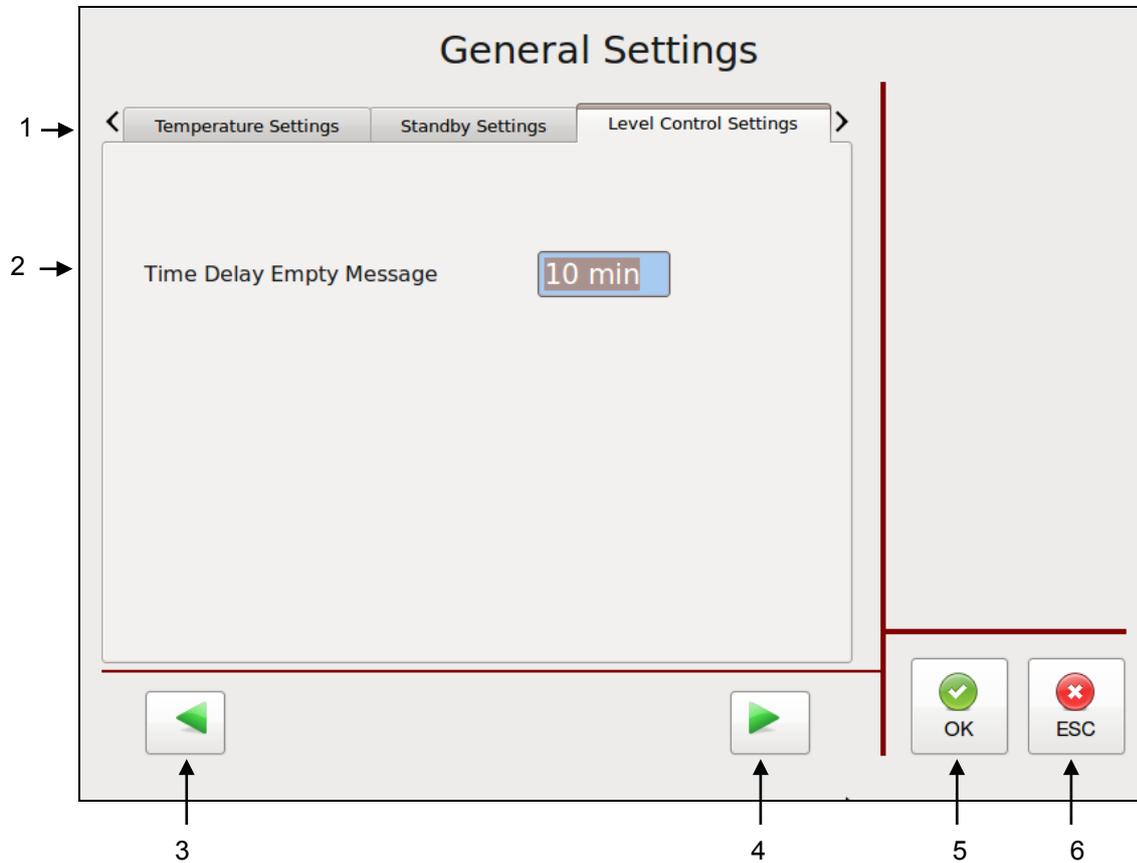
Item	Description
1	Parameter Selection tabs The Standby Settings tab has been selected.
2	Standby Setback Temperature <ul style="list-style-type: none"> This is the system condition where the hopper, hose and head temperatures are maintained at predetermined reduced temperature values. Standby Setback Temperatures are set lower than setpoint temperatures (e.g. 83°C / 149°F) in order to reduce adhesive degradation and energy consumption when the system is temporarily inactive, and to permit rapid system warm-up when run conditions are selected. When standby mode is activated, the controller will display STANDBY. The programmable range is 0-150 °C (0-270°F). Touch the input box and a numeric entry keypad will appear. Enter your desired Standby Setback Temperature value and confirm by pressing OK.
3	Standby Delay (External Contact) <ul style="list-style-type: none"> The Standby Delay is the programmed number of minutes until the unit goes into standby mode after activation by an external contact (for example: a PLC or an external switch). The programmable range is 0-150 minutes. Touch the input box and a numeric entry keypad will appear. Enter your desired Standby Delay value and confirm by pressing OK.
4	Automatic Standby Delay (0 = disabled) <ul style="list-style-type: none"> The Automatic Standby Delay is the programmed number of minutes until the unit goes into standby mode after the unit has heated-up and the pump is stopped (no adhesive feeding activity). The programmable range is 0-1440 minutes. Enter 0 to disable the feature. Touch the input box and a numeric entry keypad will appear. Enter your desired Automatic Standby Delay value and confirm by pressing OK.

<i>Item</i>	<i>Description</i>
5	Press the left-pointing arrow to go to the previous General Settings screen.
6	Press the right-pointing arrow to go to the next General Settings screen.
7	Press the OK button to confirm your entered values and return to the previous screen.
8	Press the ESC button to discard any non-confirmed values and return to the previous screen.

Level Control Settings

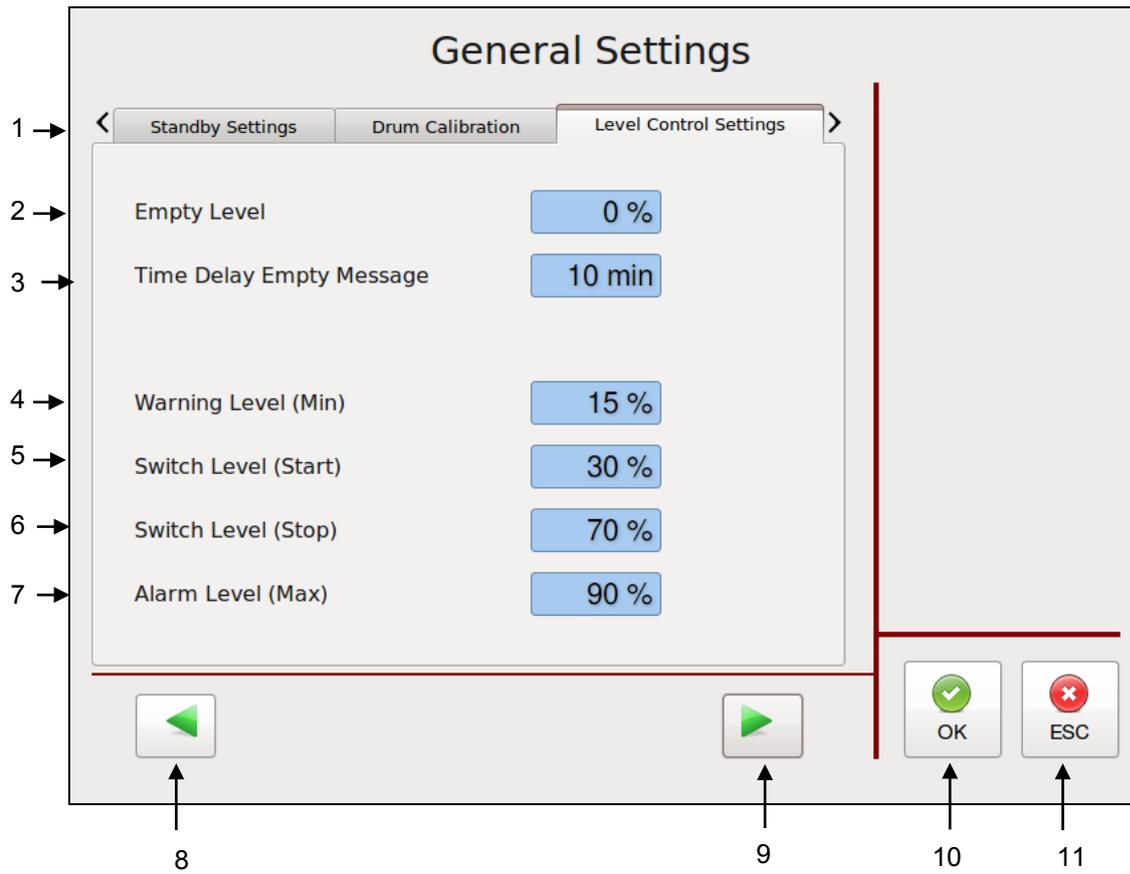
➤ To go to this screen, press the General Settings button on the Settings Screen.

If Digital Level Sensor is installed:



Item	Description
1	Parameter Selection tabs The Level Control Settings tab has been selected.
2	Time Delay Empty Message <ul style="list-style-type: none"> This is a programmable time delay for reappearance of the level control's Empty message. The level control device informs the operator via a "Minimum Level" message on the display that the hopper needs to be refilled. After expiration of the time delay, the message Minimum Level will be indicated on the display. The programmable range is 0-31 minutes. Touch a zone input box and a numeric entry keypad will appear and the values can be edited. Enter the value and confirm by pressing OK.
3	Press the left-pointing arrow to go to the previous General Settings screen.
4	Press the right-pointing arrow to go to the next General Settings screen.
5	Press the OK button to confirm your entered values and return to the previous screen.
6	Press the ESC button to discard any non-confirmed values and return to the previous screen.

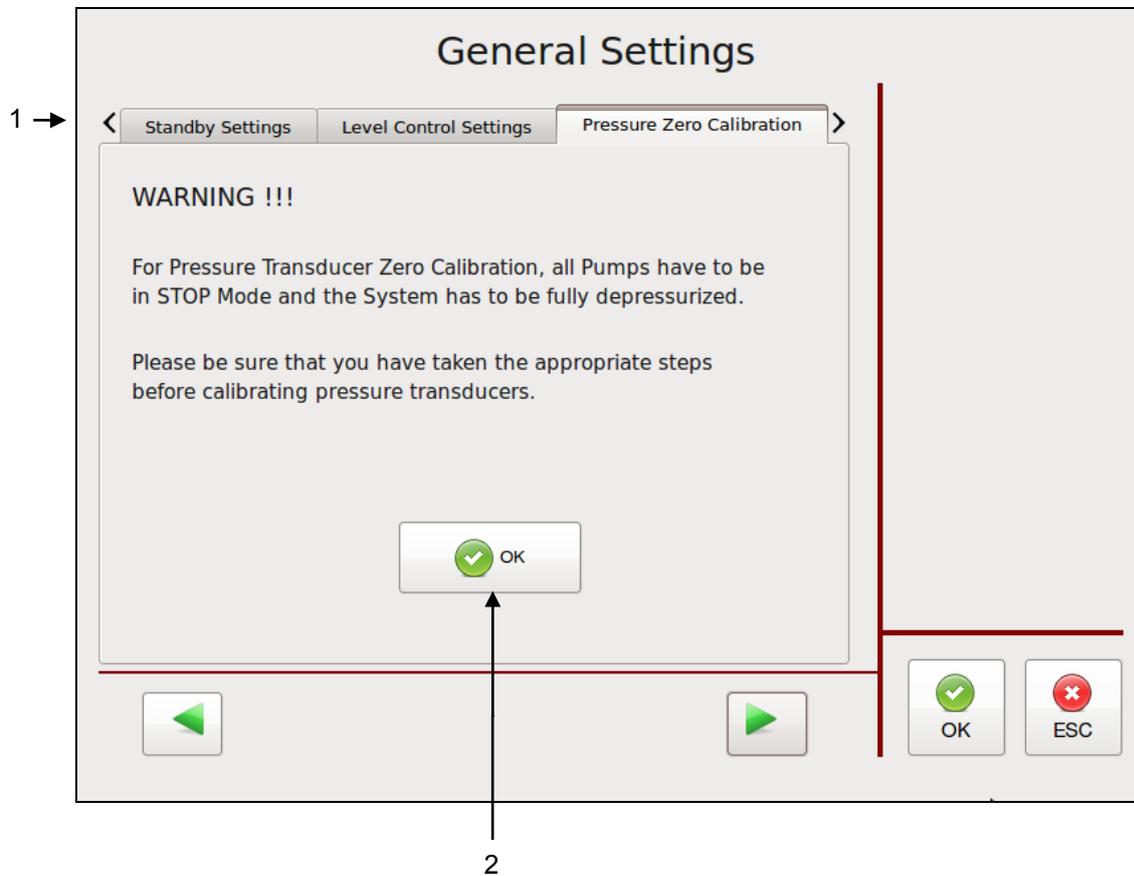
If Analog Level Sensor is installed:



Item	Description
1	Parameter Selection tabs The Level Control Settings tab has been selected.
2	Empty Level If fill level is lower than this parameter an empty message will be generated.
3	Time Delay Empty Message <ul style="list-style-type: none"> This is a programmable time delay for reappearance of the level control's Empty message. The level control device informs the operator via a "Minimum Level" message on the display that the hopper needs to be refilled. After expiration of the time delay, the message Minimum Level will be indicated on the display. The programmable range is 0-31 minutes. Touch a zone input box and a numeric entry keypad will appear and the values can be edited. Enter the value and confirm by pressing OK.
4	Warning Level (Min) Template-dependent parameter (not used in standard configuration).
5	Switch Level (Start) If system is configured as refiller control this parameter defines the refill start level.
6	Switch Level (Stop) If system is configured as refiller control this parameter defines the refill stop level.
7	Alarm Level (Max) Template-dependent parameter (not used in standard configuration).
8	Press the left-pointing arrow to go to the previous General Settings screen.
9	Press the right-pointing arrow to go to the next General Settings screen.
10	Press the OK button to confirm your entered values and return to the previous screen.
11	Press the ESC button to discard any non-confirmed values and return to the previous screen.

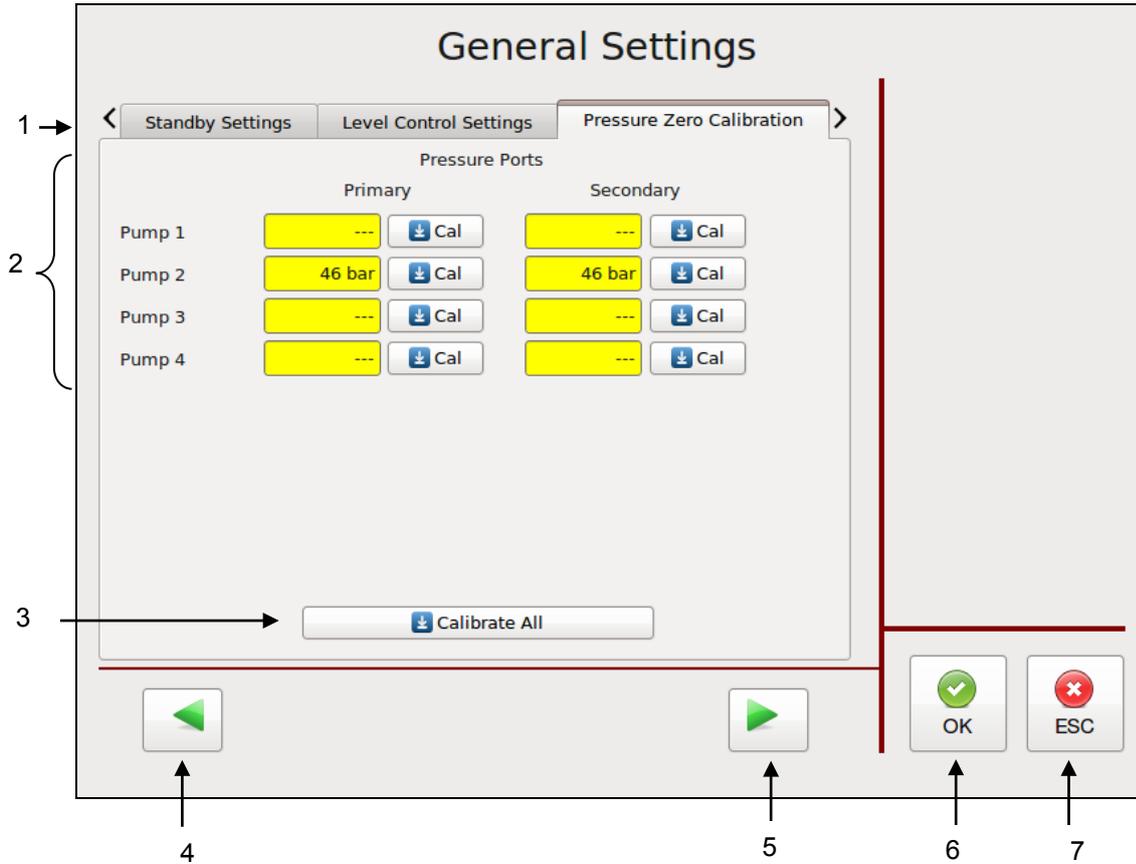
Pressure Zero Calibration

- To go to this screen, press the General Settings button on the Settings Screen.



Item	Description
1	Parameter Selection tabs The Pressure Zero Calibration tab has been selected.
2	OK Button Before calibrating the (optional) pressure transducers, all pumps must be in STOP mode and the system must be fully depressurized. After taking the appropriate steps, confirm this by pressing the OK button. You will then go to the Calibrating Screen.

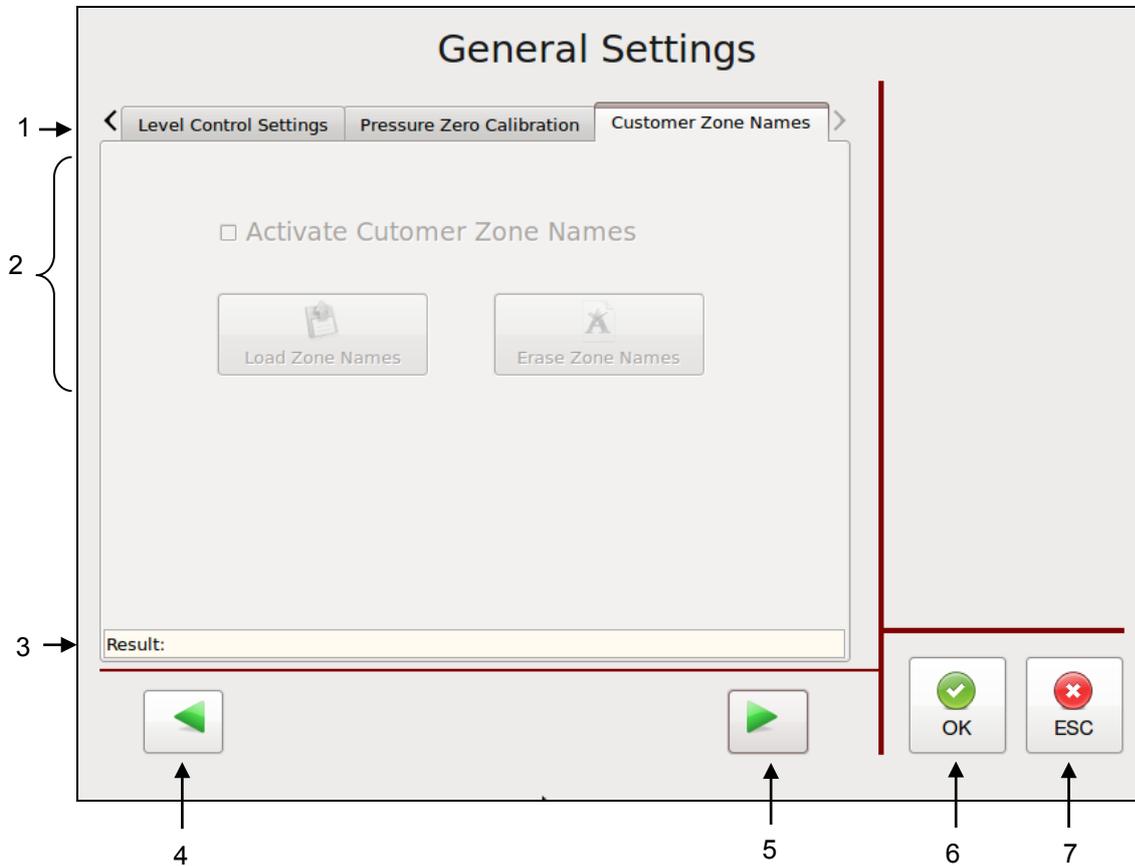
Calibrating Screen



Item	Description
1	Parameter Selection tabs The Pressure Zero Calibration tab has been selected.
2	Pressure Zero Calibration If (optional) pressure sensors are installed on the unit, the pumps can be pressure controlled. Pressure values will be displayed on the Main Screen. Refer to Pump Control, Pressure Control. Primary and Secondary Pressure Ports are displayed on the screen. Calibrate each pump to zero by pressing the appropriate "Cal" button. Note: before calibrating pressure transducers, all pumps must be in STOP mode and the system must be fully depressurized.
3	Calibrate All Press the Calibrate All button to calibrate all pumps to zero at one time. Note: before calibrating pressure transducers, all pumps must be in STOP mode and the system must be fully depressurized.
4	Press the left-pointing arrow to go to the previous General Settings screen.
5	Press the right-pointing arrow to go to the next General Settings screen.
6	Press the OK button to confirm your entered values and return to the previous screen.
7	Press the ESC button to discard any non-confirmed values and return to the previous screen.

Customer Zone Names

- To go to this screen, press the General Settings button on the Settings Screen.
- Use the Customer Zone Names Editor program (provided on CD) and a thumb drive (not provided) to make changes.

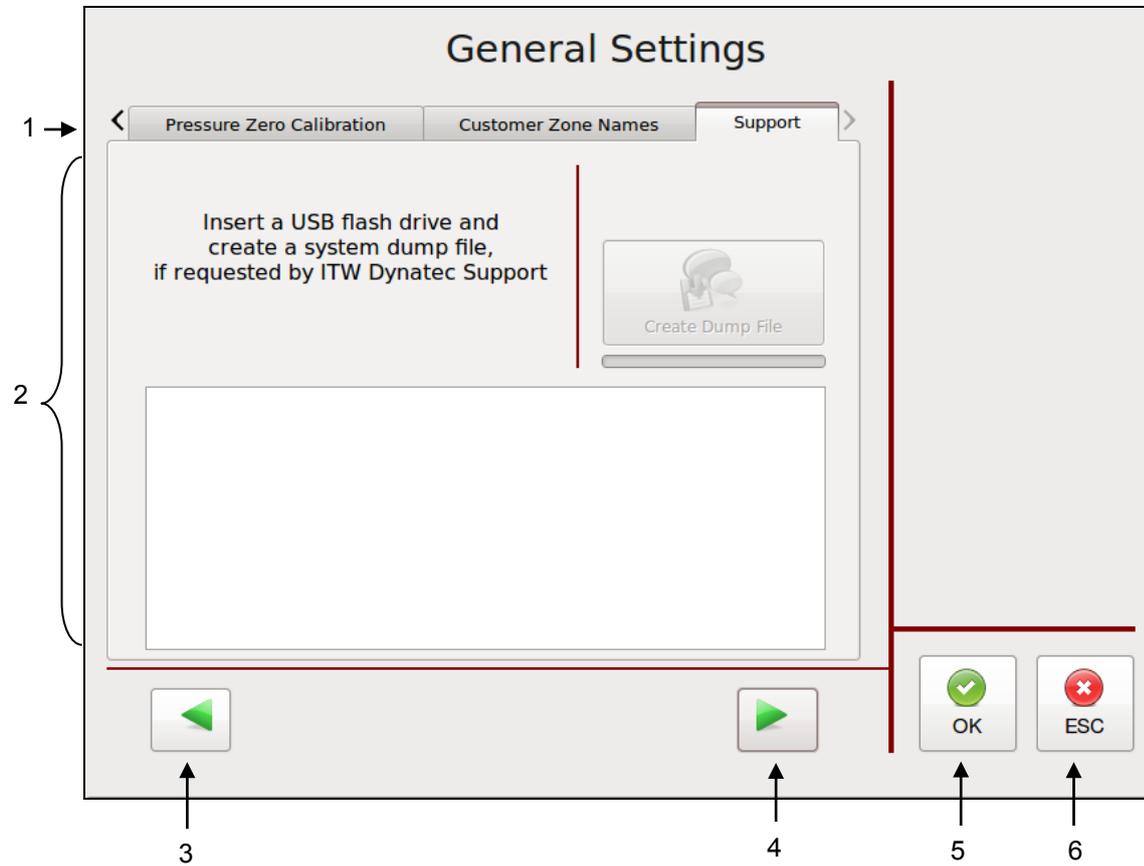


Item	Description
1	<p>Parameter Selection tabs The Customer Zone Names tab has been selected.</p>
2	<p>Customer Zone Names If activated, you can Load or Erase Zone Names by pressing the appropriate button. With the Customer Zone Names feature, the user may personalize the names of the temperature zones with names that are more descriptive for his application.</p> <p>A CD with the Customer Zone Names Editor program is supplied with your unit. The program allows the character sets of many different languages. To utilize this feature:</p> <ol style="list-style-type: none"> 1. Install the program from the CD into your computer. 2. Write your personalized zone names in this program. 3. Load your personalized program onto a thumb drive. 4. Insert the thumb drive into the V6 touch panel. 5. Load the new names into the controller by pressing "Load Zone Names" on the Customer Zone Names screen (seen above). 6. Activate the names by pressing "Activate Customer Zone Names". <p>Later you may deactivate (or re-activate) the names by pressing "Activate Customer Zone Names" again. When personalized names are deactivated, the ITW Dynatec default zones names become active.</p> <p>You may also press Erase Zone Names to delete your loaded zone names and you may load a new group of names utilizing the Customer Zone Names Editor program again.</p>

<i>Item</i>	<i>Description</i>
	Result
3	A message will confirm if the names were successfully loaded, activated or deactivated, or if there was an error in loading the names.
4	Press the left-pointing arrow to go to the previous General Settings screen.
5	Press the right-pointing arrow to go to the next General Settings screen.
6	Press the OK button to confirm your entered values and return to the previous screen.
7	Press the ESC button to discard any non-confirmed values and return to the previous screen.

Support

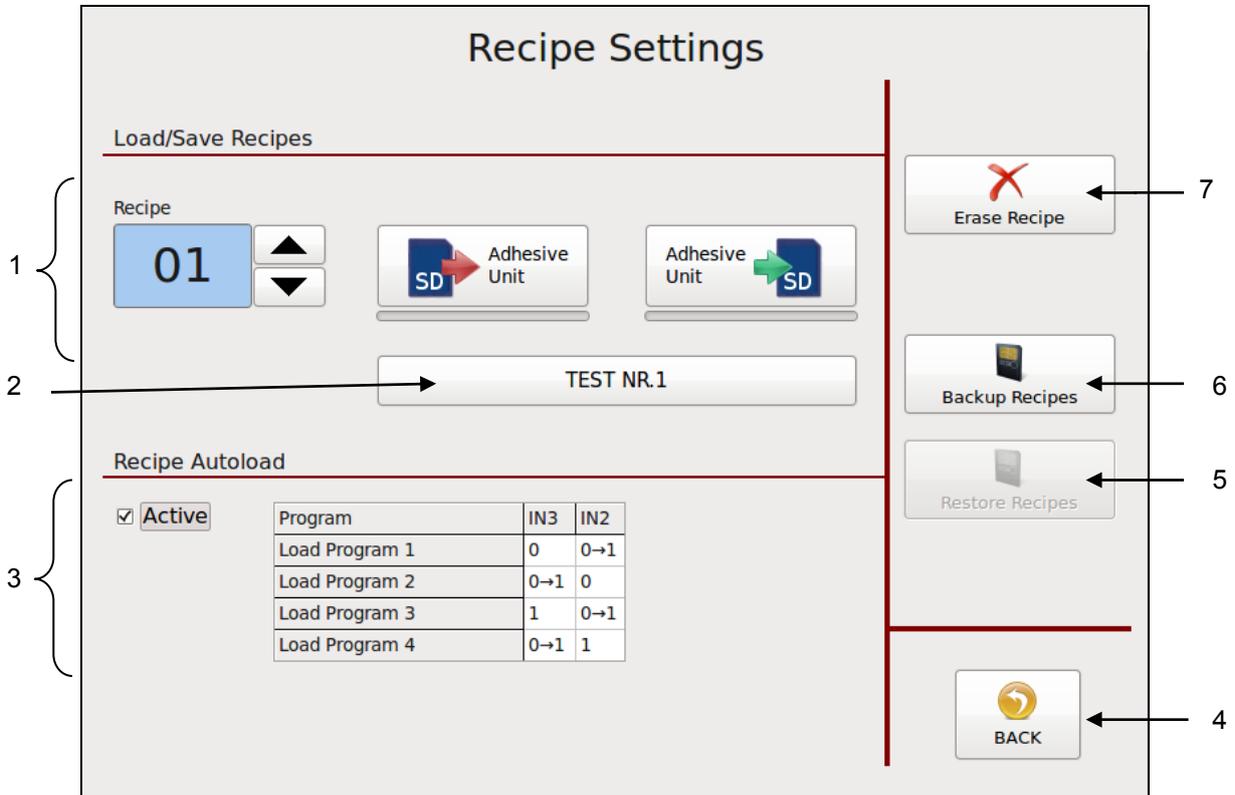
- To go to this screen, press the General Settings button on the Settings Screen.
- Use the Customer Zone Names Editor program (provided on CD) and a thumb drive (not provided) to make changes.



Item	Description
1	Parameter Selection tabs The Support tab has been selected.
2	If requested by ITW Dynatec Support you can insert USB Flash Drive to create a system dump file. This file can be send to ITW Dynatec for offline diagnostics.
3	Press the left-pointing arrow to go to the previous General Settings screen.
4	Press the right-pointing arrow to go to the next General Settings screen.
5	Press the OK button to confirm your entered values and return to the previous screen.
6	Press the ESC button to discard any non-confirmed values and return to the previous screen.

Recipes Screen

- To go to this screen, press the Recipes button on the Settings Screen.
- This screen allows you to create recipes (or “programs”). A recipe is a set of temperature set points and parameters which the user has programmed and stored in the controller for future use. Up to ten recipes may be stored in the V6 controller.

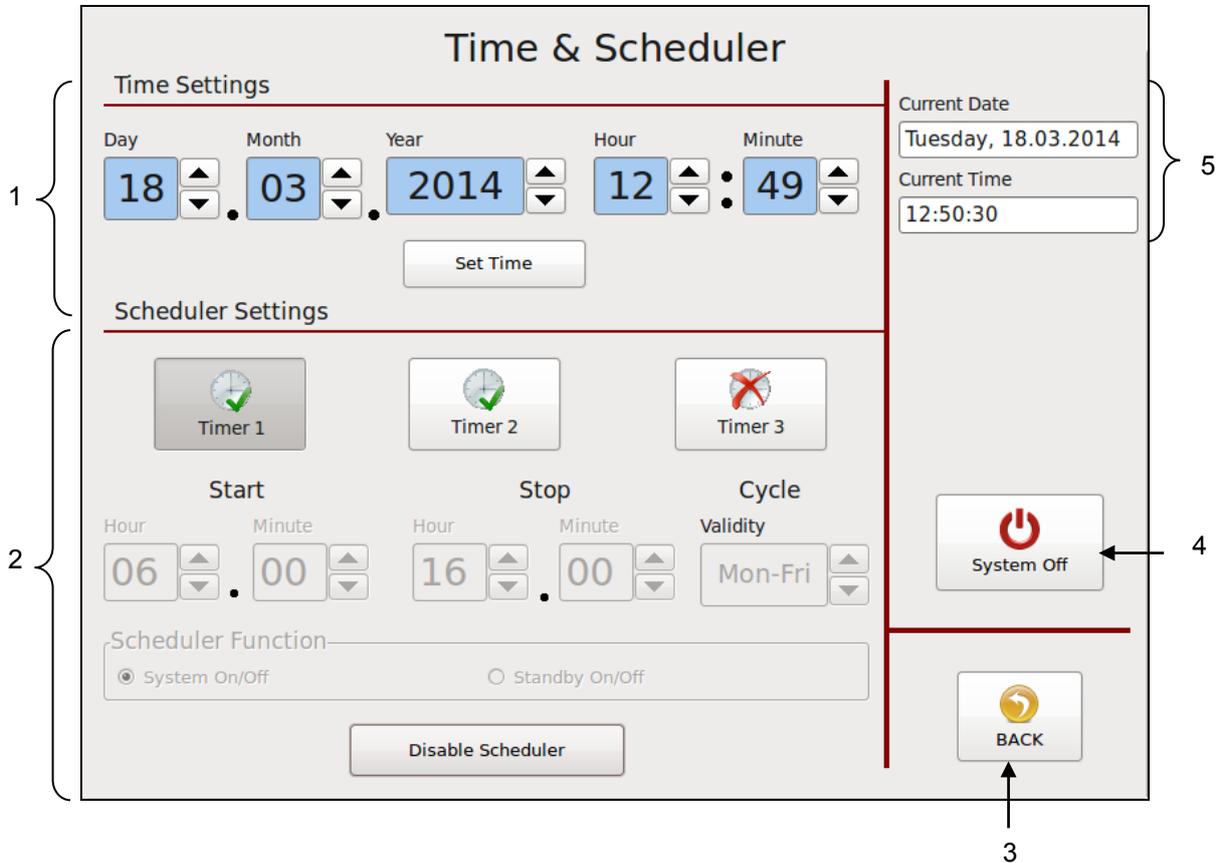


Item	Description
1	<p>To Create and Save a Recipe:</p> <ol style="list-style-type: none"> 1. Program the controller as you wish it to be setup for a recipe. Program the following parameters: temperature settings, zone On/Off settings, motor mode and speed. 2. Using the up and down arrows, select a number to assign to your recipe. 3. Press the “Adhesive Unit to SD”  button. The recipe will be saved. <p>To Load a Saved Recipe:</p> <ol style="list-style-type: none"> 1. Using the up and down arrows, select a recipe number. 2. Press the “SD to Adhesive Unit”  button. The recipe will be loaded and the saved parameters will be set.
2	<p>Recipe Name</p> <p>Touch the input box and an Alphabetic Entry Keypad will appear. Enter your desired name and confirm by pressing OK.</p>
3	<p>Recipe Autoload</p> <p>This function may be activated or deactivated by pressing the Active button.</p> <p>If activated, up to four recipes (always the first four saved recipes) can be loaded individually and automatically by addressing the digital inputs IN3 and IN2 on the Controller-Module via a parent machine controller, as indicated on the table shown above.</p>

<i>Item</i>	<i>Description</i>
4	BACK Button Press to return to the previous screen.
5	Restore Recipes This button is visible only if USB Flash Drive is inserted into the Touch Panel. Press this button to restore recipe collection from USB Flash Drive into the Touch Panel.
6	Backup Recipes This button is visible only if USB Flash Drive is inserted into the Touch Panel. Press this button to save recipe collection from Touch Panel to the USB Flash Drive.
7	Erase Recipe 1. Using the up and down arrows, select the number of the recipe you wish to erase. 2. Press Erase Recipe to delete the recipe from the controller/ Touch Panel.

Time & Scheduler Screen

- To go to this screen, press the Time & Scheduler button on the Settings Screen.
- This screen allows you to set the current date and time, and program the scheduler.



Item	Description
1	<p>Time & Date Settings The Time and Date are set with the buttons across the top of the screen. Using the up and down arrows, choose the current Day, Month, Year, Hour and Minute. To confirm these values, press Set Time. Afterwards, the current date and time will be displayed at right (item #5).</p>
2	<p>Scheduler Settings The controller's scheduler will automatically turn On the unit at the programmed start time and turn it Off at the programmed stop time on the programmed days (cycle). Up to three scheduler timers may be programmed either for System On/Off or for Standby On/Off. Each scheduler timer is programmed with a start time, a stop time and a cycle. Three cycles are available: Monday thru Friday, Saturday & Sunday or Sunday thru Saturday (ie, every day). For example: The display illustrated above shows Timer 1 programmed and activated. It is programmed for System On/Off with a Start time of 06:00, a Stop time of 16:00 and a Cycle of Mon-Fri.</p>

Item	Description
2	<p>Programming</p> <ul style="list-style-type: none"> • Select a timer for programming by pressing Timer 1, Timer 2 or Timer 3. • Select either System On/Off or Standby On/Off. • Using the up and down arrows, set the start time hour and minute. The scheduler will automatically turn On the unit at this time. • Using the up and down arrows, set the stop time hour and minute. The scheduler will automatically turn Off the unit at this time. • Using the up and down arrows, set the cycle. The scheduler will automatically turn the unit On and Off on these days. • By pressing the Enable Scheduler button, the programmed parameters will be confirmed and the selected timer is activated. <p>To change a timer program, first select the desired timer. Then press the Disable Scheduler button. Now the selected timer can be re-programmed with new parameters as described above.</p> <p>The „clock“  icon appears in the status line on main screen if a timer is activated and disappears if the timer is deactivated.</p>
3	<p>BACK Button</p> <p>Press to return to the previous screen.</p>
4	<p>Turn System Off</p> <p>Press System Off to turn the system Off. Refer to "Control switch On/Off and Standby".</p>
5	<p>Current Date & Time</p> <p>Display of the current date and time as programmed into the controller.</p>

Example:

The display on the right shows Timer 2 programmed and activated for Standby On/Off with a Start time of 12:00, a Stop time of 13:00 and a Cycle of Mon-Fri.

Time & Scheduler

Time Settings

Day: 18, Month: 03, Year: 2014, Hour: 12, Minute: 49

Set Time

Scheduler Settings

Timer 1 (Active), Timer 2 (Active), Timer 3 (Inactive)

Start: Hour: 12, Minute: 00; Stop: Hour: 13, Minute: 00; Cycle: Mon-Fri

Scheduler Function: System On/Off, Standby On/Off

Disable Scheduler

Current Date: Tuesday, 18.03.2014

Current Time: 12:50:59

System Off

BACK

Example:
The display on the right shows that Timer 3 is not programmed and not activated:

Time & Scheduler

Time Settings

Day: 18 | Month: 03 | Year: 2014 | Hour: 12 | Minute: 49

Scheduler Settings

Timer 1 | Timer 2 | Timer 3

Start: Hour 07 | Minute 00 | Stop: Hour 16 | Minute 00 | Cycle: Mon-Fri

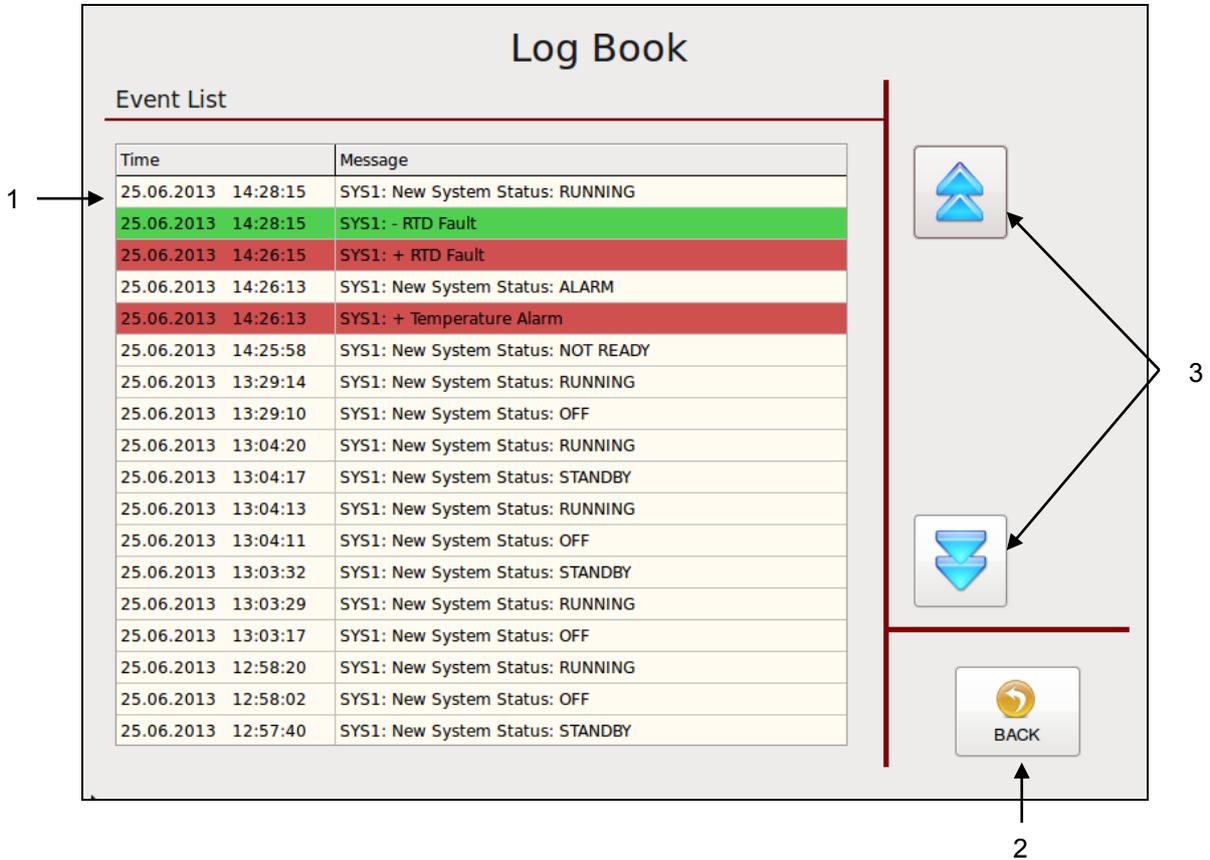
Scheduler Function:
 System On/Off | Standby On/Off

Current Date: Tuesday, 18.03.2014

Current Time: 12:51:14

Log Book Screen

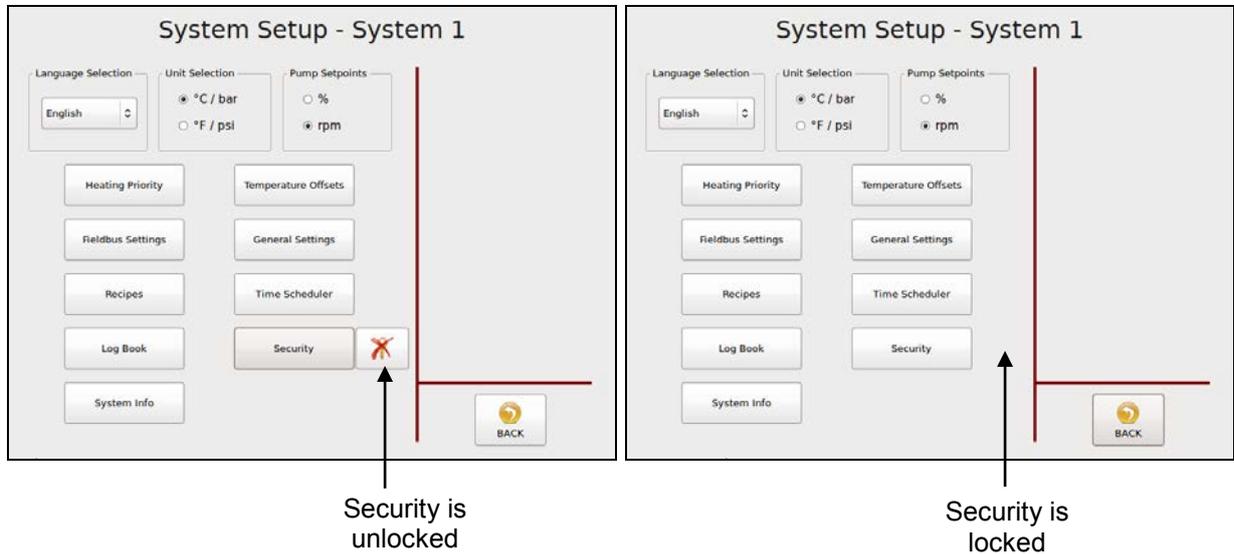
- To go to this screen, press the Log Book button on the Settings Screen.
- The Log Book provides a read-only history of the last 100 (maximum) controller faults and events.
- If several systems are controlled by the HMI, all events will be listed here.



Item	Description
1	<p>The most recent event is recorded at the top of the Event List.</p> <ul style="list-style-type: none"> • Examples of events: System Status OFF, READY, RUNNING, STANDBY, NOT READY, Recipe loaded. • Examples of controller faults: RTD Fault, Temperature Alarm, Minimum Level, Drive Failure, Parameter CRC Error, Over-temperature, Communication error. See point "Faults, Alarms".
2	<p>BACK Button Press to return to the previous screen.</p>
3	<p>Scroll Buttons Press the arrow buttons to scroll up and down through the Event List.</p>

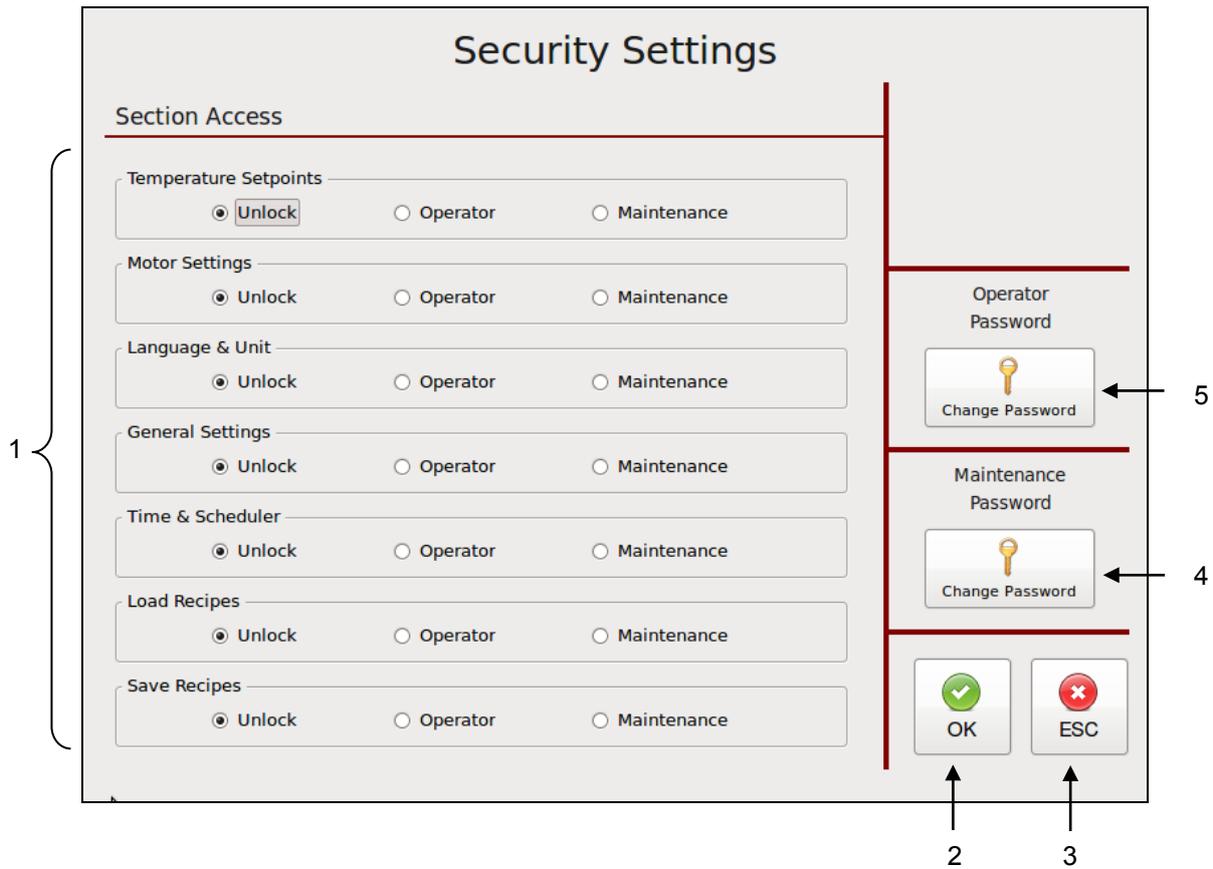
Security Screen

- To go to this screen, press the Security button on the Settings Screen.
- This screen allows you to set securities (with password) for access and for changing parameters.



Item	Description
	<ul style="list-style-type: none"> • Security unlocked = access to the Security Settings is unlocked and settings may be changed by all users. The crossed-out Key icon, shown above, means Security is unlocked. After pressing the Key button, it will disappear and the Security Settings will be locked. • Security locked = access to the Security Settings is locked and settings may only be changed by entering a password.

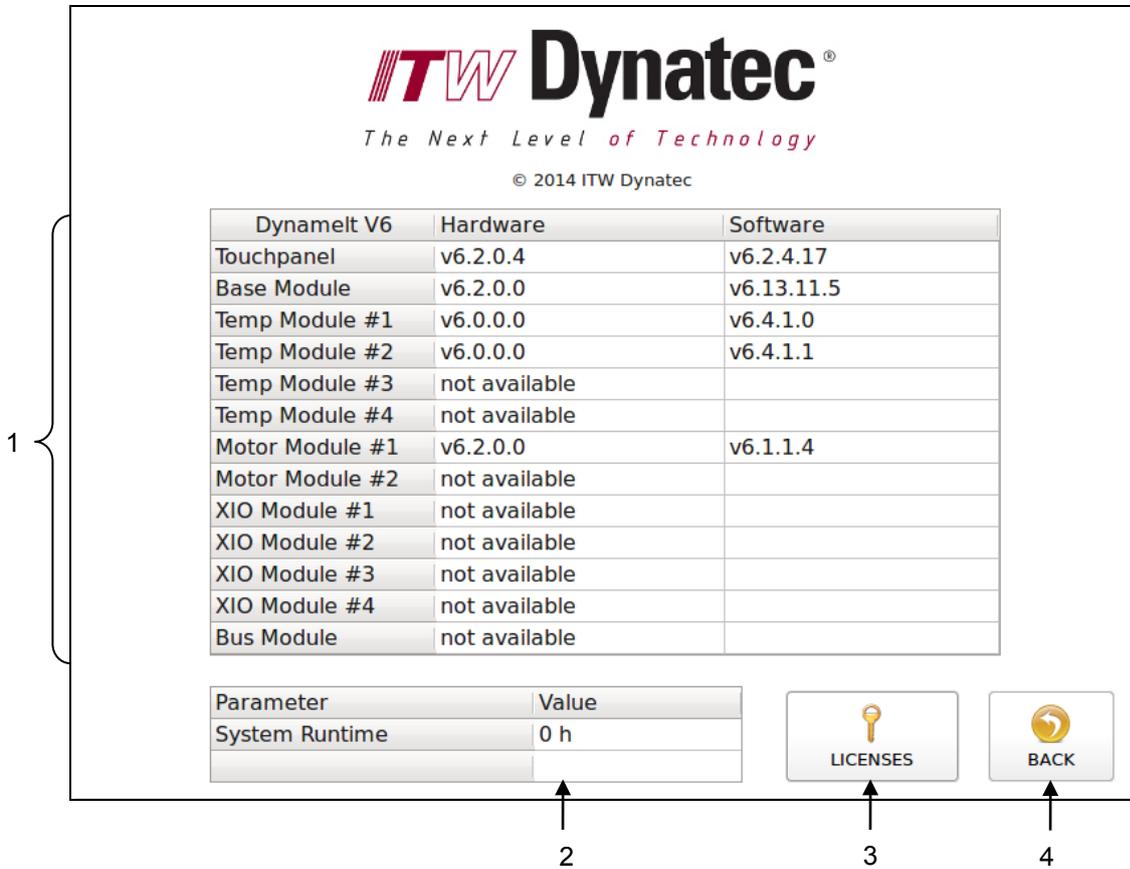
Continued on next page.



Item	Description
1	<p>Section Access Press the buttons to select access to each parameter as follows:</p> <ul style="list-style-type: none"> • Unlock = the parameter may be changed by all users. • Operator = the parameter may be changed by Operator personnel only, by using an Operator password. • Maintenance = the parameter may be changed by Maintenance personnel only, by using a Maintenance password.
2	Press the OK button to confirm your entered values and return to the previous screen.
3	Press the ESC button to discard any non-confirmed values and return to the previous screen.
4	<p>Change Maintenance Password Button Touch the Change Password button and a numeric entry keypad will appear. Enter desired numeric password (at least one digit). Press OK to confirm.</p>
5	<p>Change Operator Password Button Touch the Change Password button and a numeric entry keypad will appear. Enter desired numeric password (at least one digit). Press OK to confirm.</p>

System Info Screen

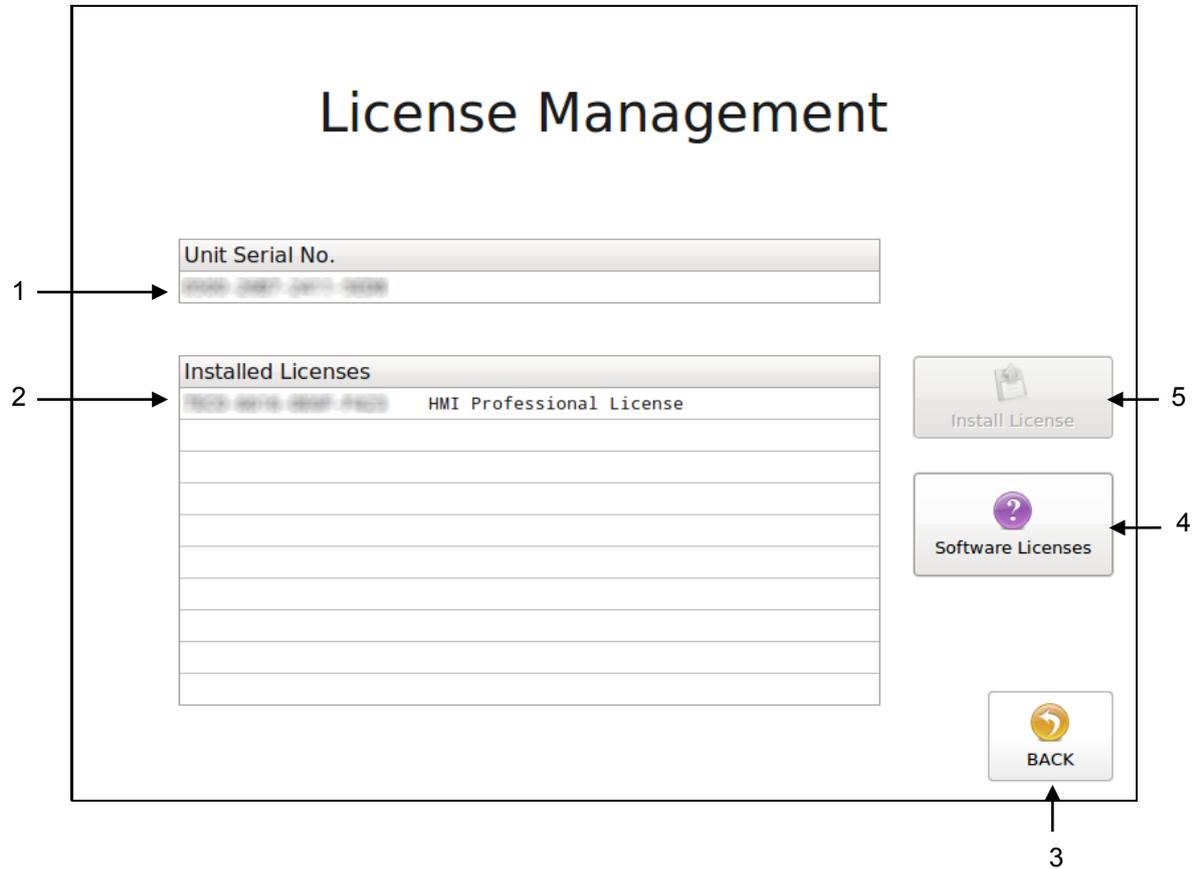
- To go to this screen, press the System Info button on the Settings Screen.
- This screen displays information about the V6 controller and its modules. The screen is read-only.



Item	Description
1	Information about the controller and its modules is displayed. The illustration above shows an example only.
2	The real System Runtime respectively pump runtime is displayed. The runtime of each day will be added.
3	Licenses Button Press to go to the License Management screen.
4	BACK Button Press to return to the previous screen.

License Management Screen

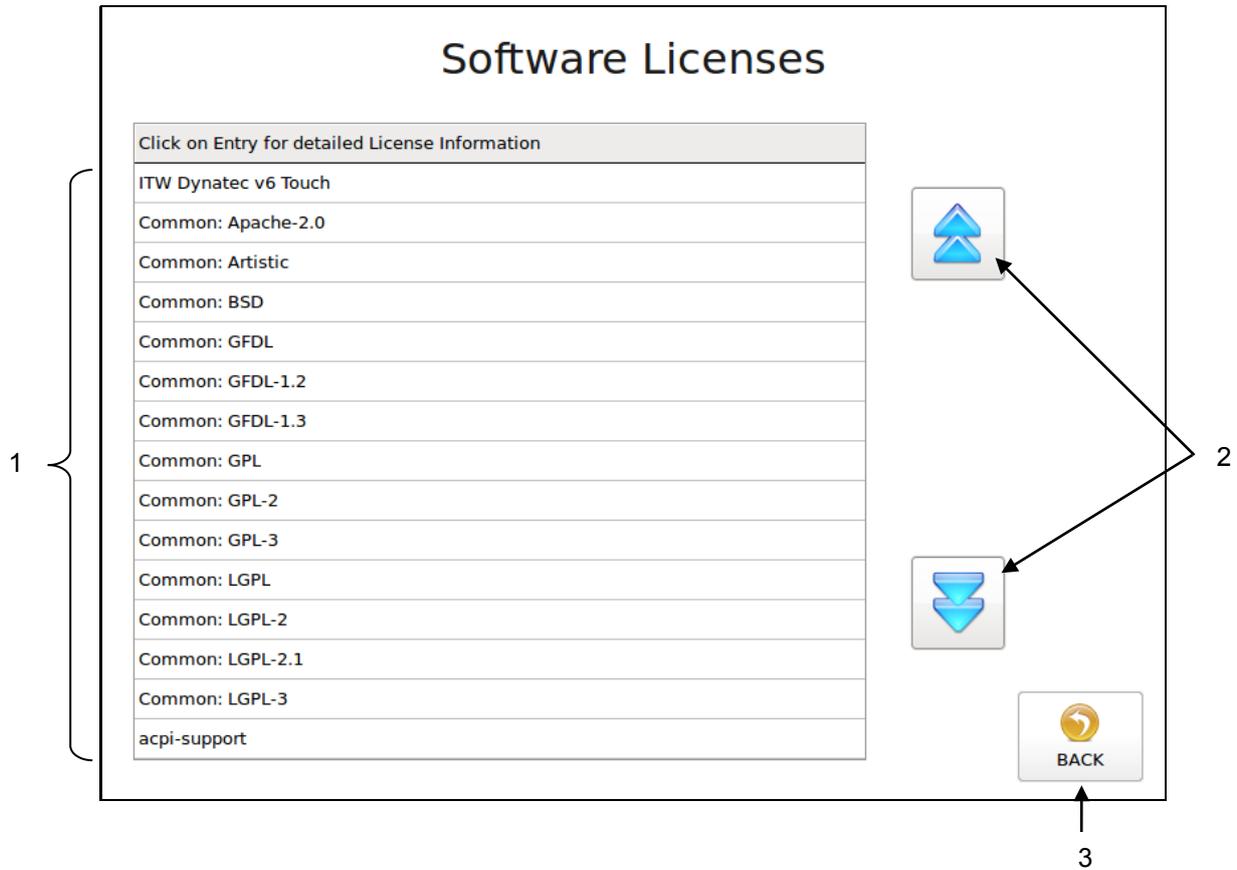
- To go to this screen, press the Licenses button on the System Info Screen.
- To purchase licenses with additional features, please contact ITW Dynatec Customer Service and provide your unit's serial number (provided on this screen). You will receive an USB Flash Drive with the license.



Item	Description
1	Unit Serial No. The serial number of your unit is displayed.
2	Installed Licenses The licenses installed on this unit are displayed (e. g. HMI Professional License). Note: The HMI Basic License with basic functions is installed on all units. The following licenses are available: <ul style="list-style-type: none"> • HMI Advanced License: activates additional features. • HMI Professional License: activates all available features. • HMI Feature License ARC: activates the Automatic Ramp Compensation (ARC) feature. • HMI Feature License Multi-System: activates the Multi-System feature.
3	BACK Button Press to return to the previous screen.
4	Software Licenses Button Press to see the used Open Source Licenses.
5	Install License Button To install a new license: After connecting the USB Flash Drive to your controller/ touch panel, press the Install License button on this screen to install the new license. After installation, the new license will be displayed on the Installed Licenses list. Afterwards, remove the flash drive from the controller.

Software Licenses

➤ To go to this screen, press the Software Licenses button on the License Management Screen.



Item	Description
1	Display Software Licenses Click on Entry for detailed license information.
2	Scroll Buttons Press the arrow buttons to scroll up and down through licenses.
3	BACK Button Press to return to the previous screen.

Acknowledge Button

- The Acknowledge Button is on the Main Screen & Temperature Zones Set Screen.

System 2 - Mode: Local

READY 18.03.2014 11:48:25

1	125 °C	128 °C	125 °C	128 °C	125 °C	127 °C	0 rpm
2	126 °C	125 °C	125 °C	125 °C	126 °C	127 °C	0 rpm
3				124 °C	125 °C	126 °C	0 rpm
4				129 °C	126 °C	126 °C	0 rpm
5				128 °C	130 °C	127 °C	
6				128 °C	129 °C	126 °C	
7				127 °C	130 °C	126 °C	
8				128 °C	128 °C	126 °C	

46 bar

ITW Dynatec
The Next Level of Technology

Empty

Set/Act Pumps Acknowledge Control Systems Settings



1: no faults or alarms indicated

Fault/ alarm
Description in
Status Line



System 2 - Mode: Local

ALARM RTD Fault 18.03.2014 12:58:33

1	126 °C	129 °C	126 °C	126 °C	126 °C	127 °C	0 rpm
2	126 °C	127 °C	125 °C	126 °C	126 °C	127 °C	0 rpm
3				124 °C	125 °C	126 °C	0 rpm
4				129 °C	126 °C	126 °C	0 rpm
5				128 °C	130 °C	127 °C	
6				128 °C	129 °C	126 °C	
7				FAIL	127 °C	130 °C	
8				128 °C	128 °C	129 °C	

46 bar

ITW Dynatec
The Next Level of Technology

Empty

Set/Act Pumps Acknowledge Control Systems Settings



1: Fault indicated

Item	Description
1	Acknowledge Button If a fault/ alarm is indicated, the affected temperature zone and the Acknowledge button will be highlighted red. When this occurs, follow these steps: <ul style="list-style-type: none">• Correct and clear the faults/ alarms.• Press the Acknowledge button in order to switch On the main contactor.

Faults/ Alarms

Among the Faults and Alarms that may be displayed are:

- **RTD Fault** = a hopper, hose or head sensor has an open circuit.
- **Temperature Alarm** = a temperature zone has exceeded its selected over-temperature setpoint, (which is the setpoint plus the Temperature Alarm Window and Temperature Alarm Hysteresis) or when it is below its selected under-temperature setpoint (which is the setpoint minus the Temperature Alarm Window and the Temperature Alarm Hysteresis).
- **Drive Failure** = a motor drive (frequency converter) has a fault.
- **Minimum Level** = adhesive level has dropped below the level sensor and the hopper is empty.
- **Feedback Failure Motor #** = (optional) speed monitor pump addressed.
- **Overtemperature** = hardware over-temperature indication.
- **Communication Error** = Communication error between the touch panel and controller.
- **Parameter CRC Error** = parameter memory is lost. Call ITW Dynatec Technical Service.
- **Other Faults or Alarms** = Call ITW Dynatec Technical Service.

When an alarm condition occurs, the current display will be interrupted only if a sensor (or motor drive) failure occurs. If more than one alarm condition occurs simultaneously, all alarm conditions will be displayed sequentially.

Operator Response to Error Indication Alarms

If an alarm occurs during operation, the controller will switch off the internal power to the heaters and an appropriate alarm indication will appear in the status line of the display.

Pressing the Acknowledge button resets the error. If several zones display alarms, each must be acknowledged. The operator must either switch OFF the indicated temperature zone(s) or troubleshoot to correct the problem.

Chapter 6 PREVENTIVE MAINTENANCE

Note: Re-read Chapter 1 “Safety Precautions” before performing any maintenance procedures. All maintenance procedures must be performed by qualified, trained technicians.

General Cleaning

The D50/D90 ASU enclosure is finished with an extremely durable polyurethane paint. The enclosure may be cleaned with a variety of industrial cleaners following manufacturers’ directions. To prevent discoloration or deterioration of the ASU’s finish, avoid prolonged contact with strong solvents.

The lid and control and hose panels may be cleaned with mineral spirits.

Preventive Maintenance Schedule

The ASU requires little maintenance. The hopper is fitted with a coarse screen to prevent large debris from entering the system. Normally this screen does not require cleaning. The ASU parts that require regular, periodic maintenance are as follows:

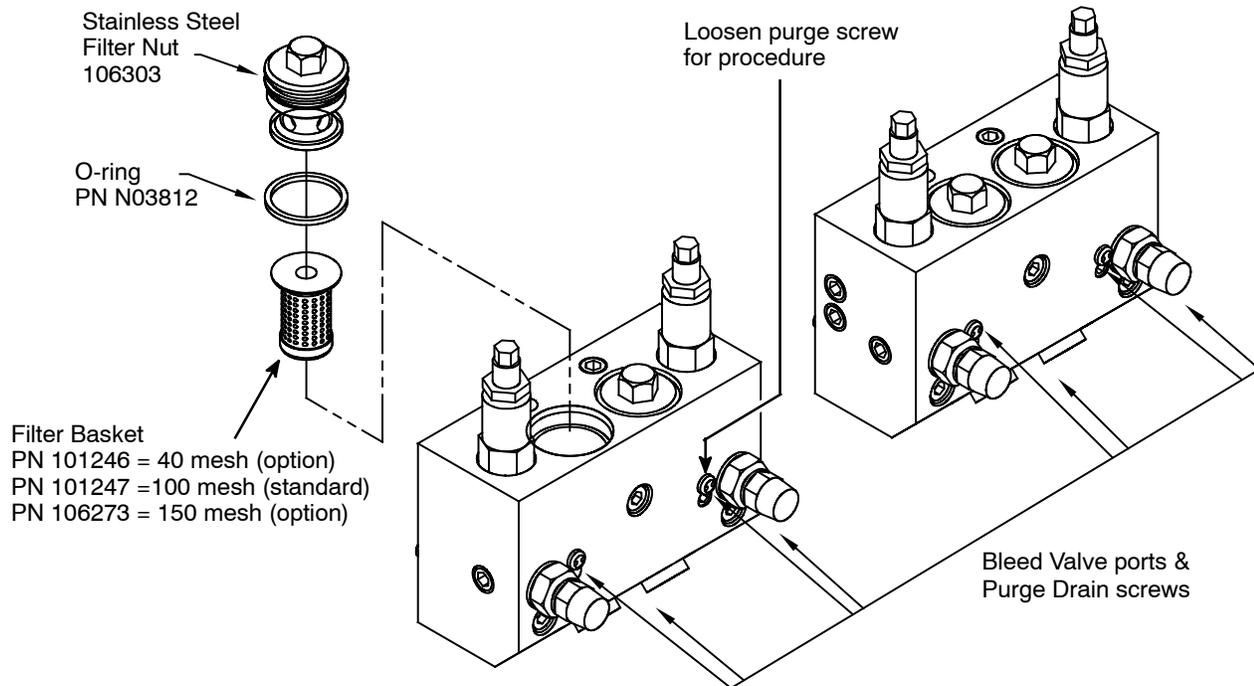
Output Filter

The output (pump) filter should be replaced monthly during the first few months of operation. After you gain experience with your system, you can determine how often you need to replace it. The output filter is located on the output filter manifold on the hose connection panel of the ASU. See illustration of the output filter on page 6-2.

Use the following procedure to replace the output filter.

cont.

WARNING	
	<p>PPE REQUIRED Failure to wear a face shield or safety glasses could result in severe eye injury during these procedures. Protect yourself from potential burns by wearing insulated gloves and arm guards.</p>
	<p>HIGH PRESSURE Use the output filter manifold’s bleed valve to relieve adhesive pressure before performing any pump filter maintenance. See page 6-5 for detailed instructions.</p>
	<p>HOT ADHESIVE Avoid splashing hot adhesive. The filter screen will be covered with hot adhesive and must be handled with proper tools. Position a heat-resistant container under the manifold’s purge drain before proceeding.</p>



Output Filter Manifold (located on the Hose Connection Panel)

1. The system should be at operating temperature before starting this procedure.
2. Before proceeding, follow instructions to “Purge the Filter Manifold of Adhesive and Pressure” on page 6-5. Loosen the purge screw with a M5 Allen key for this procedure.
3. Unscrew and remove the stainless steel filter nut (15.8 mm or 5/8” nut) with a 5/8” wrench.
4. With needle nose pliers, pull the filter basket out of the manifold body.
5. Clean or replace the filter basket needed. Note the char and debris inside the filter basket.
6. Before replacing the filter basket, replace the o-ring on the filter nut. Apply o-ring lubricant (PN N07588) to the new o-ring.
7. Apply a coat of anti-seize to the threads of the filter nut. Re-install the filter basket and the filter nut. Tighten the filter nut until it is seated firmly against the manifold body, taking care not to cut the o-ring as it enters the manifold. Tighten the purge screw.

Hose Fittings

All hose fittings should be checked for tightness after every three months of operation. Use 11/16” wrenches to remove and hold the fitting cover and fitting. Do not rotate fitting when glue is cold.

Fasteners

After the first ten hours of operation, check all set screws, socket head and cap screws for tightness. Thereafter, re-check all fasteners after every three months of operation.

Primary Filter Cleaning

See the illustration below for location of one of the two primary filters. The other primary filter is on the opposite side of the ASU.

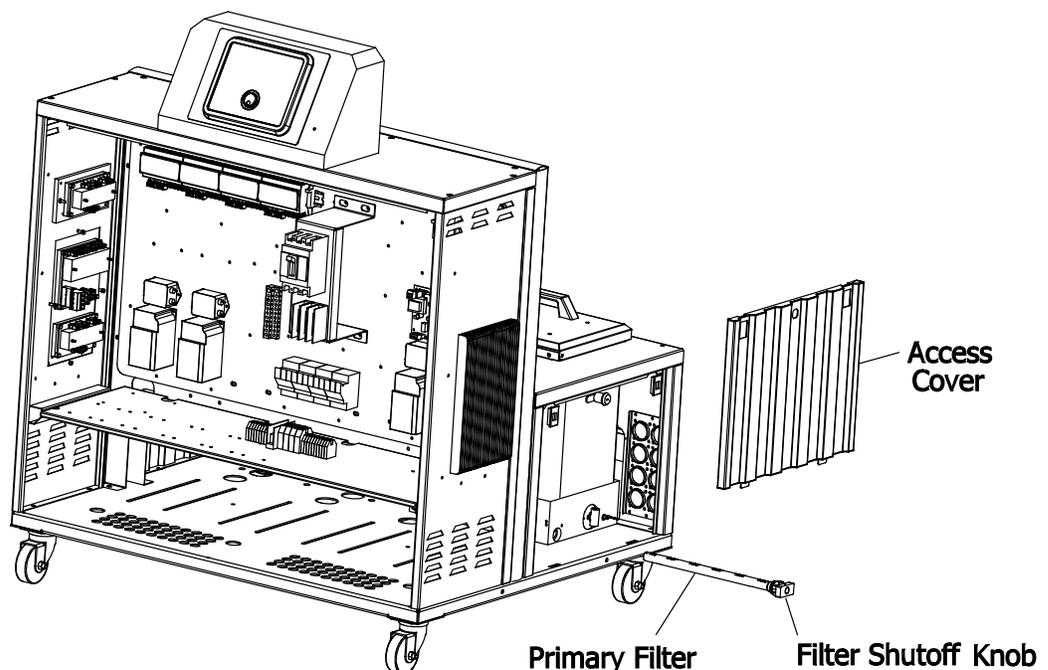
1. Pump all the adhesive out of the hopper.
2. Lower the temperature of the application system to the adhesive's softening point.



WARNING HOT SURFACE

The ASU will still be hot when this procedure is being done. Use insulated gloves and protective clothing when removing the primary filter.

3. Remove the access cover via two slide latches. Do not pull out the ground wire attached.
4. Wearing gloves, unscrew the filter retaining nut with a 32 wrench and pull the primary filter out.
5. Immerse the clogged filter in flushing fluid (PN L15653) to loosen contaminants. Remove filter from fluid and use a hot air gun (if necessary) and rags to clean all contaminants from the filter. (If filter cannot be cleaned, replace the filter).
6. Apply a coat of anti-seize compound onto the threads of the filter retaining nut before re-inserting into the ASU.
7. When re-installing the filter assembly, turn the filter's cut out hole toward the pump. Align the filter shutoff knob in its "open", vertical position (as shown in the diagram). Note: the filter shutoff knob is closed when it is positioned horizontally.
8. Replace the access cover and restore the ASU to normal operation.



Pump Shaft Leak

There is a cutout in the base plate, directly below the pump shaft, which will allow adhesive from a leaking pump to exit the ASU. Inspect the area under the base plate cutout every month for adhesive.

A leaking pump shaft indicates a worn pump seal. See instructions in Chapter 8 for replacement of this seal.

Summary of Preventive Maintenance Schedule

Monthly (or as experience dictates)

Inspect output filter basket. Replace as required.

Check for leaking adhesive under the base plate, caused by a worn pump seal. Replace as required.

Every Three Months (or as experience dictates)

Check all hose fittings for tightness.

Check all fasteners for tightness.

Inspect primary filter. Clean or replace as required.

Purging the Filter Manifold (Output Filter) of Adhesive and Pressure

As a safety precaution, the ASU's system should be purged of pressure and adhesive before attempting to change the output filter or before removing any of the hoses or applicators from their manifold port.

Refer to the illustration on page 6-2 while following these instructions.

WARNING	
	PPE REQUIRED Failure to wear a face shield or safety glasses could result in severe eye injury during these procedures. Protect yourself from potential burns by wearing insulated gloves and arm guards.
	HIGH PRESSURE Use the output filter manifold's bleed valve to relieve adhesive pressure before performing any pump filter maintenance. See page 6-5 for detailed instructions.
	HOT ADHESIVE Avoid splashing hot adhesive. The filter screen will be covered with hot adhesive and must be handled with proper tools. Position a heat-resistant container under the manifold's purge drain before proceeding.

The ASU should be at operating temperature. Turn the ASU's pump/ motor OFF.

1. Locate the bleed valve (purge screw) on the output filter manifold.
2. With a hex key screwdriver (M5 Allen wrench), slowly loosen the purge screw (do not attempt to remove it) which is in the bleed valve's port. Allow the adhesive and pressure to escape out of the manifold. The adhesive will flow into the heat-resistant container positioned below the manifold.
3. After all adhesive has run out, re-tighten the purge screw.

Flushing the System

Contaminated adhesive, accumulation of residue in the system and hopper, or changing the adhesive formulation may require the system to be flushed. To flush the system, have at least 6 liters (1.5 gallons) of flushing fluid on hand (PN L15653).

	WARNING HOT ADHESIVE The flushing fluid will splash easily. Wear protective clothing, gloves and a face shield to prevent severe burns.
---	---

1. Pump out as much of the molten adhesive from the hopper as possible.

2. Reduce the ASU's pump pressure to zero.

Note: the hose used in the following process is merely for the convenience of depositing flushing fluid. This procedure does not have to be repeated for each hose in the system.

3. Use a 11/16" wrench to disconnect one of the supply hose's adhesive feeds from its applicator head, while holding the applicator's fitting. Do not disconnect the electrical power to the head (since that would disable the pump). Put the hose in a secured position within a container which will catch the used flushing fluid.

4. Add flushing fluid to the hopper and allow approximately fifteen minutes for it to reach hopper temperature. Carefully stir the flushing fluid to mix with any adhesive remaining in the hopper.



WARNING HOT ADHESIVE

Do not set hopper temperature too high or fluid could boil and splash.

5. Slowly increase the pump pressure. Pump about half of the fluid through the hopper, pump and adhesive supply hose into the flushing container.



WARNING HOT ADHESIVE

Avoid splashing the flushing fluid from the end of the hose.

6. Reduce the pump speed to zero.
7. Add new adhesive to the hopper and allow it to reach application temperature.
8. Slowly increase motor speed to the pump.
9. Actuate each of the heads until all the flushing fluid is removed and a steady stream of new adhesive flows.
10. Remove the output filter and replace the basket. Install a new o-ring on the filter nut (lubricate the new o-ring with o-ring lubricant PN 001U002 prior to installation) and tighten the brass nut.
11. Re-adjust the pump speed for the desired flow.
12. Re-fill the hopper with adhesive. The system is now ready for production.

Chapter 7 TROUBLESHOOTING

General Troubleshooting Notes



**DANGER
HIGH VOLTAGE**



**WARNING
HOT SURFACE**

ITW Dynatec systems use electrical power that can be life threatening and hot-melt adhesives that can cause serious burns. Re-read Chapter 1 “Safety Precautions” before performing any troubleshooting or repair procedures. All troubleshooting and repair procedures must be performed by qualified, trained technicians.



CAUTION: Printed circuit boards (PCBs) are prone to damage from static electrical charges during handling. Read the section on “Handling Printed Circuit Boards” before handling or attempting service on Dynamelt’s PCBs.

The DynaControl controller includes malfunction self-diagnostics, alerts and error indication alarms. The error indication alarms (the alarms displayed on the DynaControl readout) are triggered whenever there is a sensor failure and whenever there is an over-temperature condition. The operation of the error indication alarms is described in Chapter 4 of this manual.

Preliminary Checks: Verify the following before proceeding:

1. The ASU is switched on.
2. The ASU is supplied with power.
3. The ASU is supplied with pneumatic air (if applicable).
4. Pneumatic and electrical connections are correct.
5. Adhesive is in the hopper.

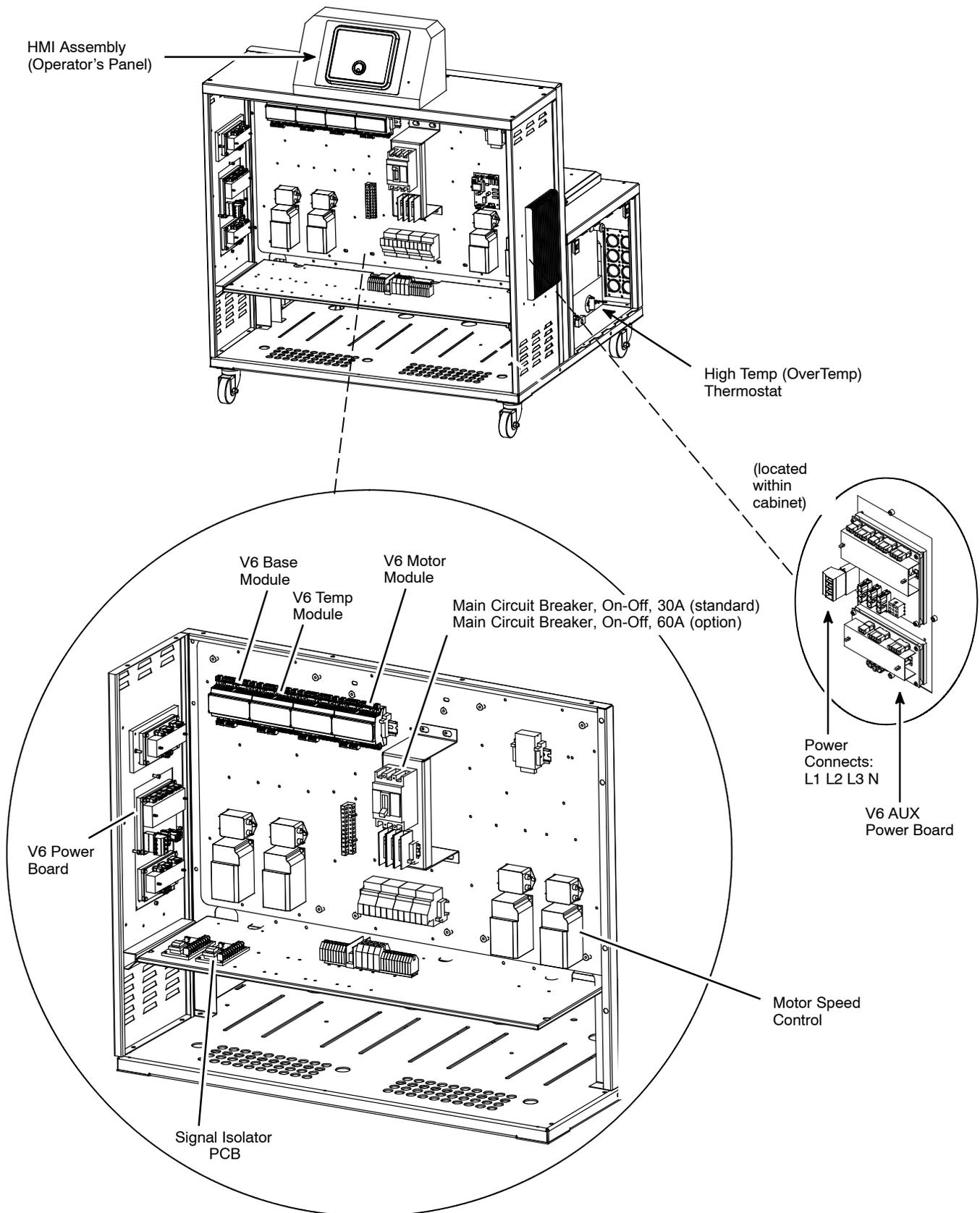
Error Messages

The controller indicates an error by displaying the word **FAULT** or **ALARM** in either the System Status or the Pump Status fields of the HMI.

Hose/ Applicator Troubleshooting Tip

Hose or applicator problems can be isolated by electrically connecting the applicator and hose to an alternate socket on the ASU. If the malfunction goes with the applicator and hose, the problem will usually be in the applicator or hose that was moved. If the malfunction does not move with the applicator and hose, the problem is probably in the ASU.

Before disconnecting a hose or applicator, always turn its temperature zone **OFF** at the controller. This will avoid controller alarms and possible system shutdown.



Location of Components

High-Temperature Redundant Overtemp Thermostat

The D Series ASU includes a mechanical (redundant) overtemp thermostat that acts as a safety backup. If the ASU's hopper temperature should exceed 232C (450F), the thermostat will cause the ASU's power relays to open and power to the hopper and all hoses and heads will be cut off. The mechanical thermostat must be manually re-set after the hopper temperature falls below 204C (400F).

The overtemp thermostat is located on the right-hand side of the hopper, behind the access cover (see illustration on previous page). To reset: turn OFF the ASU's main power switch; loosen the slide latch to remove the access cover; push the center of the thermostat's insulator to re-set; restart the ASU.

Lithium Battery on Operator's Panel Printed Circuit Board

The operator display panel's printed circuit board contains a lithium battery which powers the seven-day scheduler's clock. The normal life of this battery is about ten years. When the battery needs replacement, the scheduler's clock does not function, but other controller features remain intact. Return the board to ITW Dynatec for battery replacement.

DynaControl V6 Modules

The DynaControl V6 control package is built from encapsulated modules that snap onto the DIN rail within the ASU. The modules communicate via a proprietary serial communication. Each module has a status LED (ON/ERR). This LED shows the module's status, as follows:



Blinking green =	Everything o.k. Communication is working
Solid red =	Communication fault
No Light =	Module is defective or no voltage supply

7-Day Scheduler Use with Pendant Control

Units which are controlled via the optional pendant controller must remain connected to the pendant if the 7-Day Scheduler feature is employed. The 7-Day Scheduler will not function when the pendant controller is disconnected.

Handling Modules and Printed Circuit Boards (PCBs)

The Dynamelt ASU and DynaControl controller utilize several printed circuit boards (PCBs). These boards are extremely sensitive to electrostatic charges. When working near or with any PCBs, the following procedures must be followed to avoid damage to them.



DANGER HIGH VOLTAGE

Before unplugging connectors from the I/O PCBs, ground yourself to the ASU by touching any available unpainted cool metal surface, mounting screws, etc. This will avoid electrical discharge to the PCB assembly when you are removing and replacing connectors.



CAUTION: Printed circuit boards (PCBs) should be handled using the following procedures:

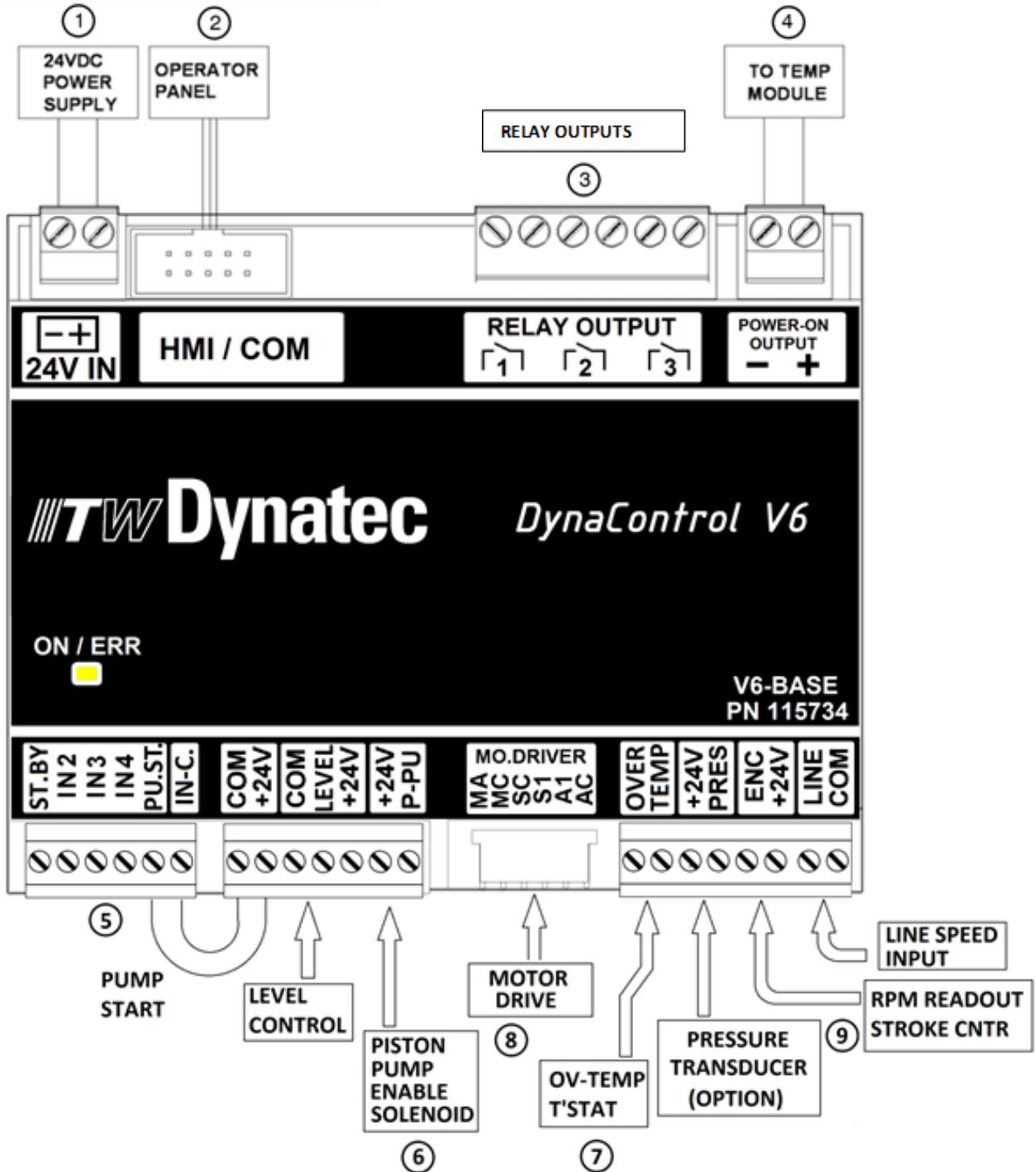
1. Wear a wrist grounding strap. If a grounding strap is not available, frequently touch a bare metal part of the ASU (unpainted frame, mounting screw, etc.) to safely discharge any electrostatic buildup on your body.
2. Handle a PCB by its edges only. Don't grip a PCB across its surface.
3. When removed from the ASU, each PCB must be individually packaged inside a metallized, static drain envelope. Do not place the removed PCB on a table, counter, etc. until it has first been placed in or on a static drain envelope.
4. When handing a PCB to another person, touch the hand or wrist of that person to eliminate any electrostatic charge *before* you hand the PCB to him.
5. When unwrapping a PCB from its static drain envelope, place the envelope on a *grounded, nonmetallic* surface.
6. To cushion PCBs for shipment, use only static-drain bubble pack. Do not use foam peanuts or bubble pack not known to be static draining.

The following pages detail the Dynamelt D Series PCBs.

V6 Base Module PN 115734

The V6 Base Module is the main control module of the DynaControl V6 controller. Most of the internal and external components are connected to the Base module. The Base module is always the top (first) module on the DIN-rail.

ITW Dynatec recommends using dry contacts for connecting to DynaControl V6!



cont.

V6 Base Module, cont.

Description of Components

The following items are referenced to the illustration on page 7-5:

Item #1 The controller runs on standard 24VDC. The supply voltage, coming from the 24VDC power supply, is connected to this terminal. The input is polarity sensitive.

Item #2 The operator's panel connects to this header via a ribbon cable. There are several types of operator's panels available. They are interchangeable.

Item #3 This connector provides customer accessible relay contacts. There are three pairs of dry contacts which are designed for maximum 240 VAC/1A. The default functions of the relays are:

Relay 1: Ready Signal

This contact closes once the system is in ready condition (ready condition = all active temperature zones are within their tolerances and there is no other alarm message pending). Normally open. a Hopper Empty alarm message will not remove the Ready condition.

Relay 2: Alarm Signal

This contact opens whenever a critical situation arises. A critical situation could be a defective temperature sensor, an over or under temperature situation, a motor driver fault, etc. Normally closed.

Relay 3: Hopper Empty Signal

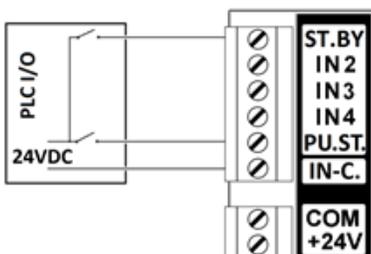
This contact closes when the adhesive level in the hopper drops below a certain level. It can be used to indicate this situation via an external light or an audible alarm. Normally open.

Note: Depending on the controller's settings, one or more of the relay outputs may be re-programmed for different purposes. In this case, refer to corresponding set-up instructions.

Item #4 This connector is used for a module-to-module connection. It provides the power-on signal to the power board through the TEMP board. In the case of a critical alarm, this 24 VDC signal will drop, cutting off the heater power on the power boards. This signal may also control the main contactor.

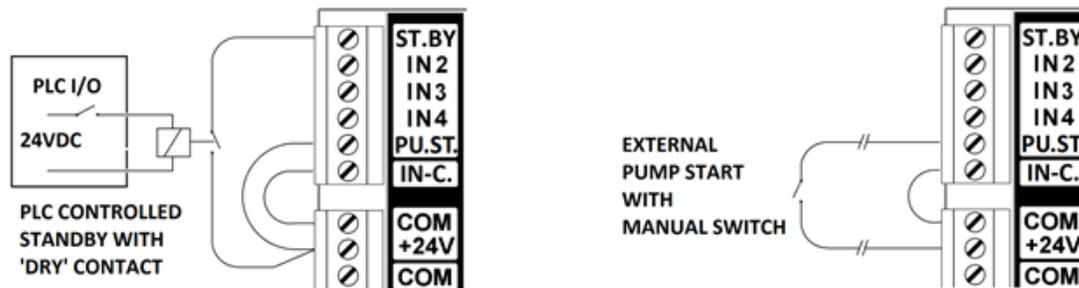
Item #5 This connector accepts external signals that can be used to control the ASU. The inputs require 24VDC signals. Although the internal 24VDC can be used to provide voltage for the inputs, it is recommended to use external 24VDC. For this purpose the common of the signal inputs is available on terminal IN-C. and is isolated from the internal 24VDC.

All inputs are not polarity sensitive. That means the common (IN-C.) can either be positive or negative.



V6 Base Module, cont.

Alternatively it is possible to use the external inputs via 'dry' contacts:



WARNING:

The ASU's internal 24VDC is grounded. It is not recommended to connect external 24VDC with the internal. If this cannot be avoided, it is important that the ground potential of the external and that of the ASU is equal. If this is not the case, damage to the V6 control modules is possible.

Inputs ST.BY, PU.ST. IN2 and IN3 are dedicated for default functions.
Input 4 is for future use.

Input ST.BY: External Standby/ Setback

Activating this input sets the ASU in Standby Mode. In standby mode, all temperature zones will lower their temperatures by a programmed amount. Opening that contact will return to normal mode.

Input 2 & 3: External Program/ Recipe Selection

By activating these inputs it is possible to load one of four programs (recipes) into the controller. The two inputs are coded in the following way:

- Activate input2 while input3 is not activated: Load Program 1
- Activate input3 while input2 is not activated: Load Program 2
- Activate input2 while input3 is activated: Load Program 3
- Activate input3 while input2 is activated: Load Program 4

Notes: the controller loads the new program when the corresponding input is activated. Deactivating an input does not affect the process.

It is possible to load a new program manually, independent from the input situation.

Item #6 This item is not applicable to the D Series ASUs.

Item #7 This input is connected to the over-temperature thermostat on the hopper. In the unlikely event that that hopper temperature exceeds 450F (232C), the thermostat will open and cause the power to all the heaters to be cut off. A corresponding alarm message will appear on the controller's display. The thermostat must be manually re-set after the hopper temperature falls below 400F (204C).

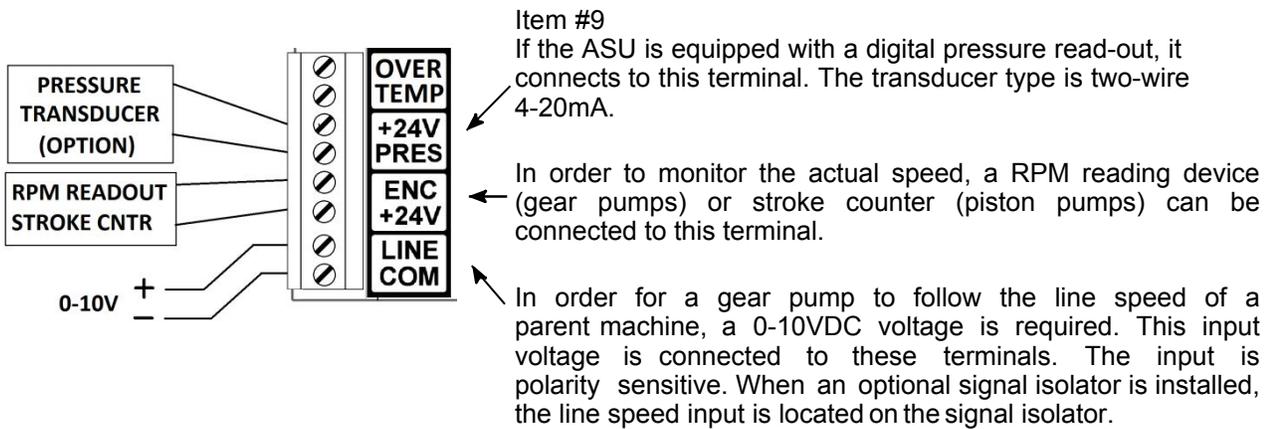
V6 Base Module, cont.

Item #8 This connects to the motor driver.

MB / MC: Alarm contact indicating driver fault (N.C.)

SC / S1: Pump start signal

A1 / AC: 0-10V pump speed signal



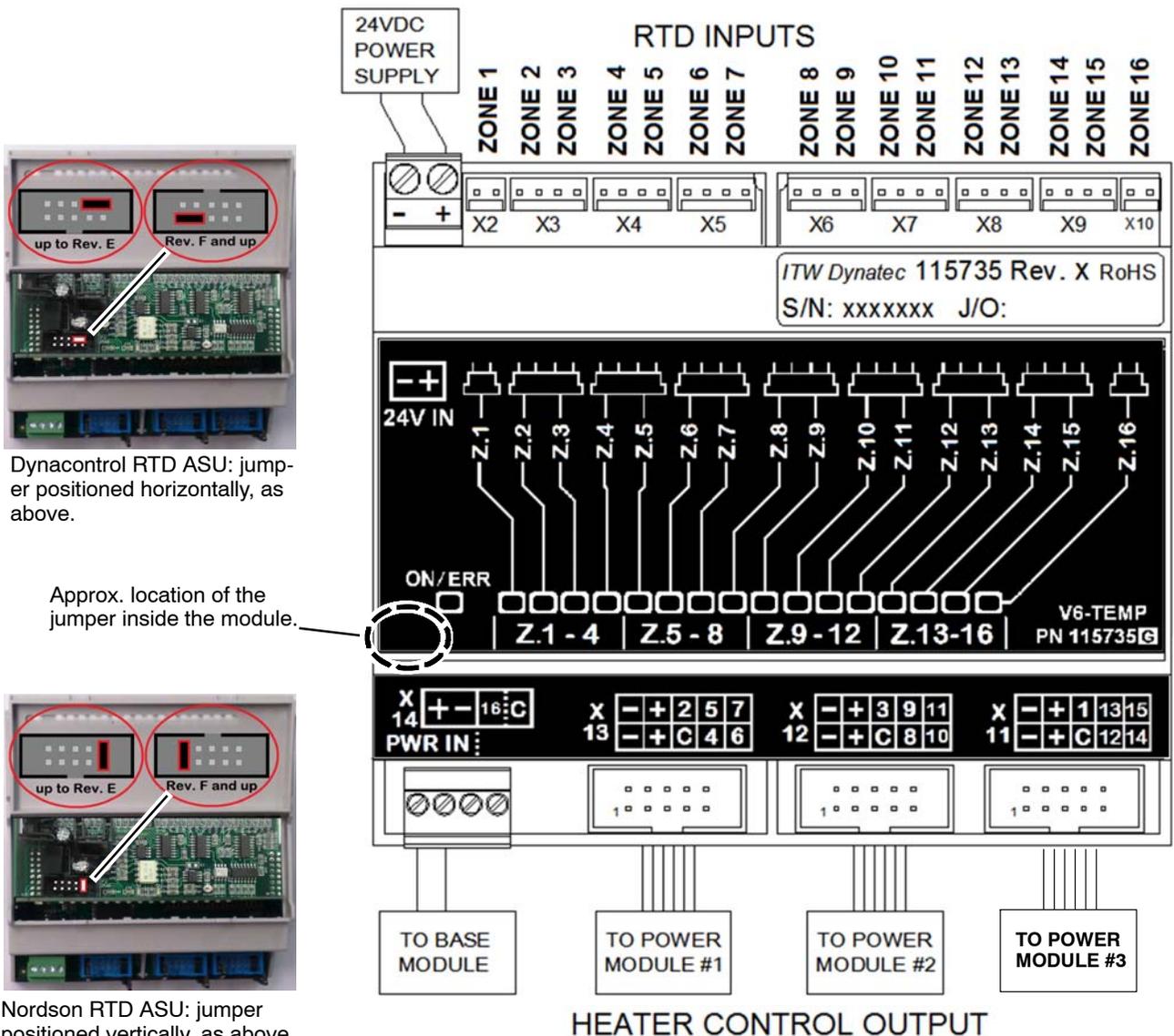
Warning: The line speed input is grounded. If the line tracking voltage has a different ground potential, it is recommended to use a signal isolator. Otherwise, damage to the V6 modules is possible.

V6 Temperature Module PN 115735

The V6 TEMP module(s) is mounted next to the V6 Base Module on the Din-rail. It requires 24VDC supply voltage. It is responsible for the temperature control of all heated temperature zones. The RTD temperature sensors connect to this module and the TEMP module provides corresponding output signals to the power boards. Depending on the configuration of the ASU, the RTDs may be PT100 (DynaControl) or NI120 (Nordson). Configuration is determined by a jumper located within the module (see below, to left of module illustration).

Each of the maximum 15 zones has a status LED which shows its heating status in the following manner:

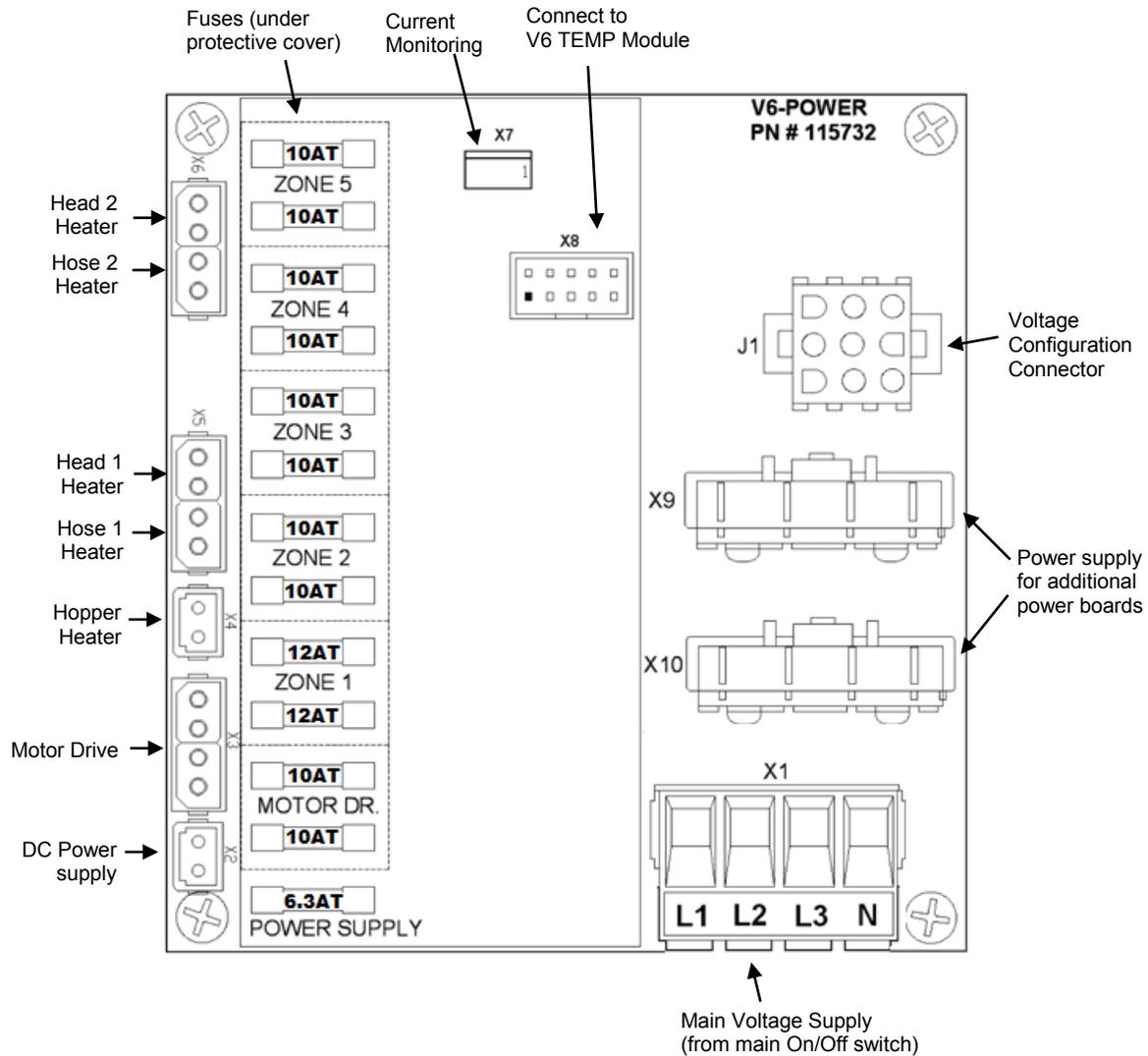
- if the zone is switched off, the LED is Off,
- if the zone is heating, the LED is On,
- if the zone is near or at the setpoint temperature, the LED blinks.



V6 Power Module PN 115732

The V6 POWER module provides controlled power to the heater of the first five zones. It receives its control signals from the V6 TEMP module. The Power Module also has protected outputs for the DC power supply and motor drive.

Each zone can provide a maximum of 10 Amps. The maximum total load of the board is 40 Amps (20 per phase). The board has its own heat sink which is mounted on the panel box insert for good heat conductivity.



V6 Power Module, cont.

Fuses

The fuses of the POWER Module are located underneath a protective cover. The cover should only be removed after the ASU is switched Off and disconnected from the main power supply. After checking or replacing fuses, the cover must be re-installed.

Heater and motor driver circuits are fused on both legs with a 10A fuse.
The output for the DC power supply has a 6.3A fuse.

Always replace fuses with the same type of fuse.

Voltage Configuration Connector

The appropriate voltage configuration plug must be installed for the machine to operate properly.

Two different connectors (plugs) are available:

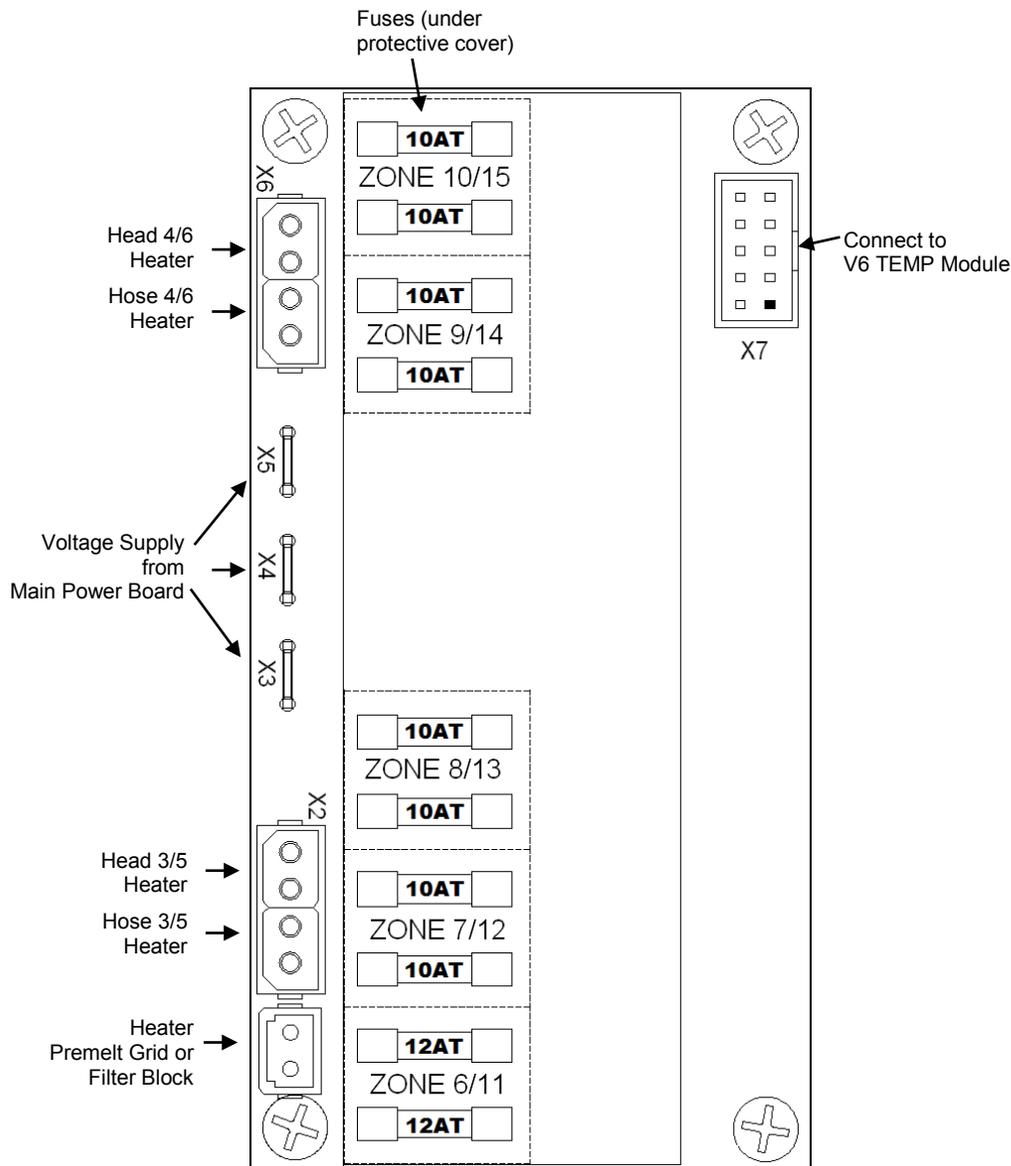
PN 115725 - 240V three phase, Delta (violet)

PN 115726 - 400V three phase, Wye (yellow)

V6 Aux Power Module PN 115733

The V6 AUX module provides controlled power to the heater of the additional five zones. It receives its control signals from the V6 TEMP module. There are two of these modules on a D Series ASU.

The fuses of the AUX Module are located underneath a protective cover. The cover should only be removed after the ASU is switched Off and disconnected from the main power supply. After checking or replacing fuses, the cover must be re-installed. All heater circuits are fused on both legs with a 10A fuse. Always replace fuses with the same type of fuse. The maximum total load current of the board is 40 Amps (20 per phase).

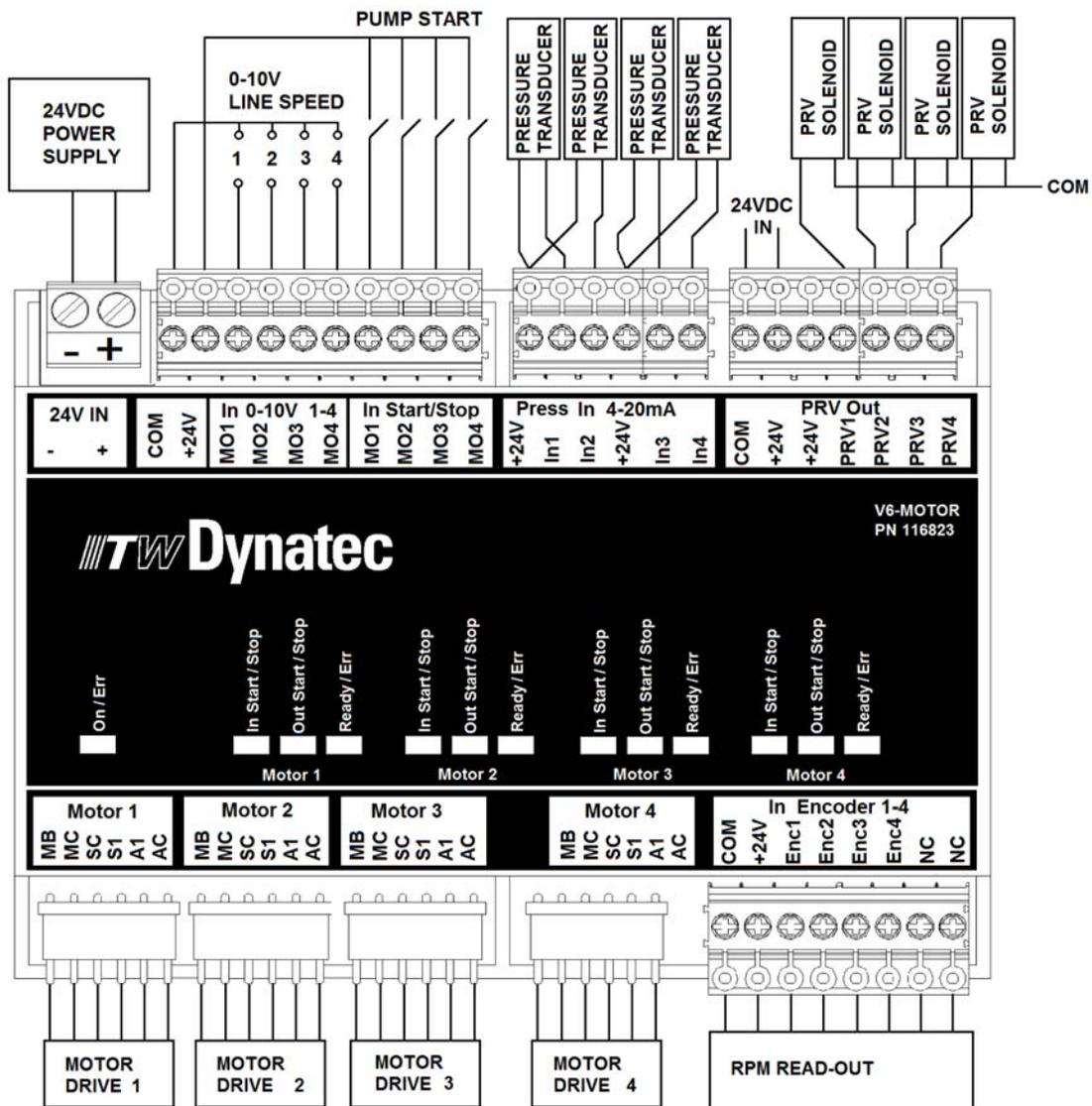


V6 Motor Module PN 116823

A maximum of two V6 MOTOR modules may be installed on the ASU. Each motor module controls up to four motors. Each motor control output is associated with an enable contact and an encoder input. A wide variety of encoders (ie. a ring kit) may be adapted to the input.

Each motor may be assigned its individual line speed input, but it is also possible to use a common line speed input. This also applies to the pump enable input. Each motor module has four pressure transducer inputs; transducer type is 4-20mA. One or two pressure transducers may be assigned to each motor.

Motor #1 on the first Motor Module = pump #2 in the system (pump #1 is on the Base Module).
Motor #1 on the second Motor Module = pump #6 in the system.



Motor Speed Control Drive

The Motor Speed Control is mounted on the divider panel within the electronics compartment of the ASU. This variable-frequency drive is factory-set and normally does not require adjustments. The following is a list of parameters that Dynatec programs to optimize performance, but which differ from the drive's default parameters.

Parameter	Value	Description
B1-17	01	Starts the motor even when the enable signal precedes power up.
C1-01	3.0	The time it takes to ramp the pump speed up from 0 to maximum.
C1-02	1.0	The time it takes to ramp the pump speed down from maximum to 0.
C6-02	3	Carrier Frequency 8kHz.
E1-04	62*	Calibrates the maximum speed. See note below for details.
E1-08	16.0	Middle Output Frequency Voltage.
E1-09	2.0	Allows the motor turn down to 1% minimum.
E1-10	9.5	Minimum Output Frequency Voltage.
E2-01	1.5 (1/4HP) or 3.6 (1HP)	Full load amperes, maximum motor current.
L1-01	02	Prevents false tripping at low speeds.
L2-01	02	Does not stop the motor when under-voltage is detected (power up after short interruption).
H2-01	10e	Alarm output on fault, inverted

* Due to component tolerances, the maximum speed of the pump might vary. In order to calibrate the maximum speed, parameter E1-04 can be fine-tuned. Valid range is 61 to 63. Set motor speed to 100% and adjust parameter E1-04 so that the pump is turning exactly 90rpm.

Acceleration and Deceleration Times

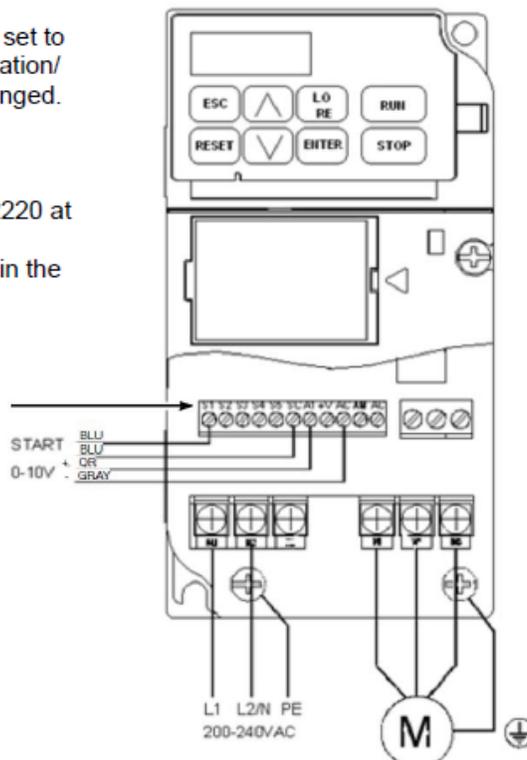
The acceleration and deceleration times are factory set to 10 seconds. If an application requires faster acceleration/ deceleration, corresponding parameters can be changed.

Corrupted Memory

If the memory becomes corrupted:

1. Restore the factory default settings by entering 2220 at parameter A1-03.
2. Re-enter the ITW Dynatec parameters specified in the chart at the top of this page.

S1 S2 S3 S4 S5 SC A1 +V AC AM AC

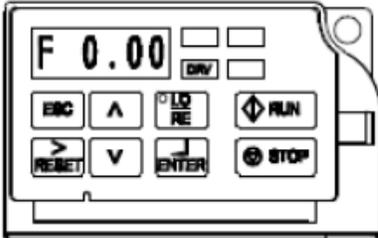


Layout of Motor Control Drive

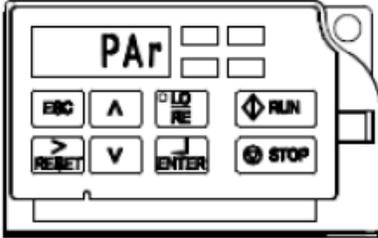
Accessing, Programming and Monitoring Motor Control Parameters

To Access and Change Parameter Values

J1000 Digital Operator power-up state →

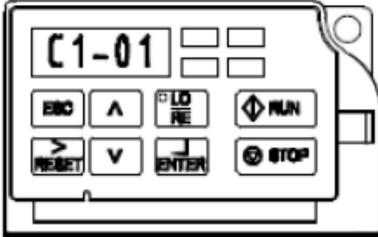


Step 1. Press the  key once. The digital operator shows the parameter menu (PAR), then press the  key.



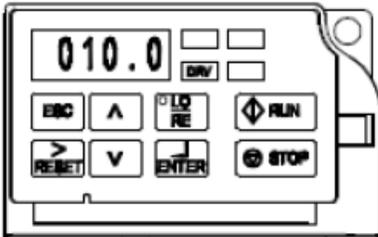
Step 2. Press the  key to select the digit you would like to change. Next use the  and  keys to select the parameter group, sub-group or number, then press the  key.

Select Parameter Menu



Step 3. Press the  key to select the digit you would like to change. Modify the parameter value using the  and  key and press the  key to save the new value.

Select Parameter



Change Parameter Value

To access other drive signals, refer to the Yaskawa technical manual, available at:
<http://www.yaskawa.com/site/products.nsf/productGroup/ACDrives.html>

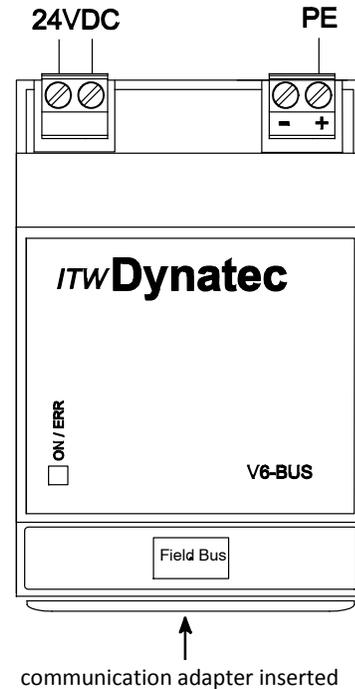
Optional Printed Circuit Boards

Wiring diagrams and other details on the following optional PCBs can be found on the main ASU schematic in Chapter 11:

- Adhesive Level Sensor (hopper low level detection)
- Signal Isolator (gear pump auto mode)
- Trigger Switch Pump Enable (hand-held applicators/ swirl kits)
- EtherNet/ IP, EtherCat or Profibus (communications protocols)

Optional V6 BUS Communications Module PN 117382

The V6 BUS module is used with a communications protocol adapter to provide functionality so that the ASU may be operated remotely. Several communication adapters are available, including EtherNet IP, EtherCat and Profibus.



Heater and Sensor Resistance Values

The resistance values given in the four tables on the following page will aid in troubleshooting if a sensor or heater malfunction is suspected. The “Temperature Sensor Resistance” table gives values for various temperatures. If you know the approximate temperature of the suspected sensor, you can check to see if the sensor resistance approximates the value given in the table by unplugging the affected head or hose connection and measuring resistance across the affected pins (see wiring diagram in Chapter 11 for pin numbers).

The “Nominal Hose Heater Resistance” table gives the heater resistance for hoses. A suspected hose heater problem can be quickly isolated by measuring hose heater resistance and comparing it to the correct resistance for your hose length and voltage as shown.

The “Nominal Head Heater Resistance” table gives values for several different head wattages. A suspected head heater problem can be isolated by measuring head heater resistance and comparing it to the resistance for the appropriate wattage of your system.

The “Nominal Hopper Heater Resistance” table gives heater resistance for the hopper heaters of each model and for the (optional) drop-in grids.



DANGER HIGH VOLTAGE

Before unplugging connectors from the PCBs, ground yourself to the ASU by touching any available unpainted cool metal surface, mounting screws, etc. This will avoid electrical discharge to the PCB assembly when you are removing and replacing connectors.

Temperature		Resistance in Ohms
°F	°C	
32	0	100
50	10	104
68	20	108
86	30	112
104	40	116
122	50	119
140	60	123
158	70	127
176	80	131
194	90	135
212	100	139
230	110	142
248	120	146
268	130	150
284	140	154
302	150	157
320	160	161
338	170	164
356	180	168
374	190	172
392	200	176
410	210	180
428	220	183

Temperature Sensor Resistance
(0.00385 PT 100 RTD)

Hose Length		Resistance in Ohms
Meters	Feet	
1.2	4	466-544
1.8	6	279-326
2.4	8	236-275
3	10	189-221
3.7	12	155-181
4.9	16	118-137
7.3	24	77-90

Nominal Hose Heater Resistance
for #6 DynaFlex Hoses

Watts	Resistance in Ohms
200	288
270	213
350	165
500	115
700	82

Nominal Head Heater Resistance

	ASU	Drop-in Grid
Qty. Heaters	2	1 or 2
Resistance in Ohms for each heater: 200-240 v 380-400 v	19.4-24 ea. 57.8-66.7 ea.	22 ea.

Nominal Hopper Heater Resistance

Note: Resistance is measured at ambient temperature (20 °C/ 68 °F).

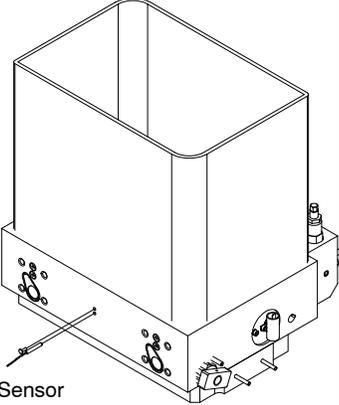
Error Indication Alarm Troubleshooting Guide

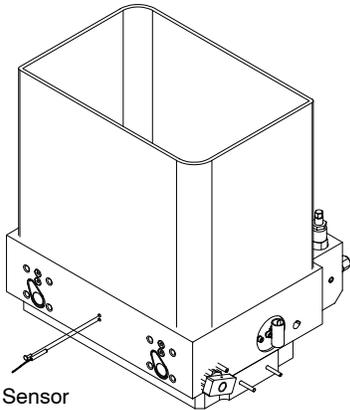
The operation of error indication alarms is described in Chapter 4. When checking for correct equipment operation in the following guide, be aware that all heaters will go off immediately after an error indication alarm occurs if the operator takes no action. With the exception of the fuses, there are no user-replaceable parts on the printed circuit boards. If there is a non-fuse failure on any of the PCBs, the PCB must be replaced.

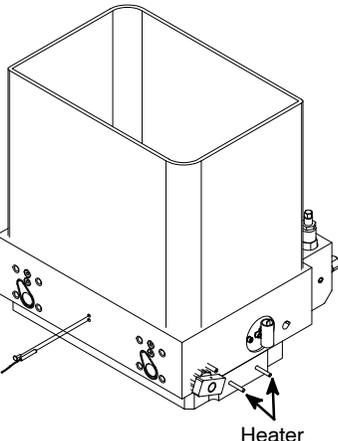
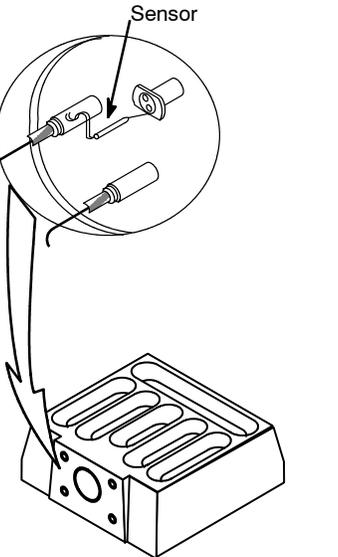
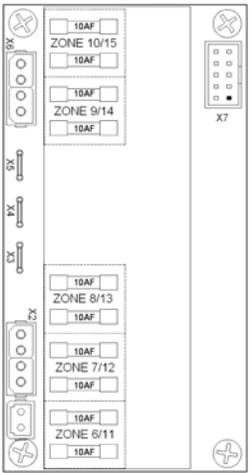


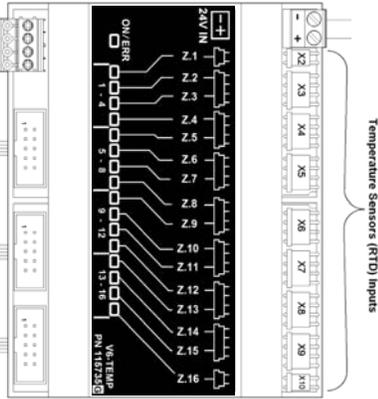
DANGER HIGH VOLTAGE

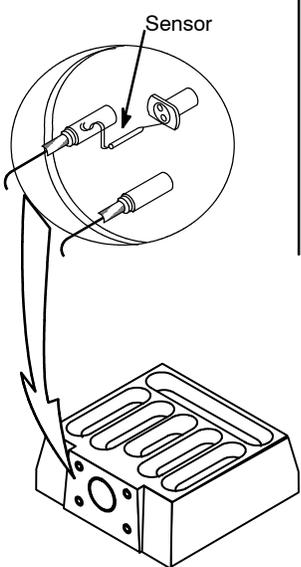
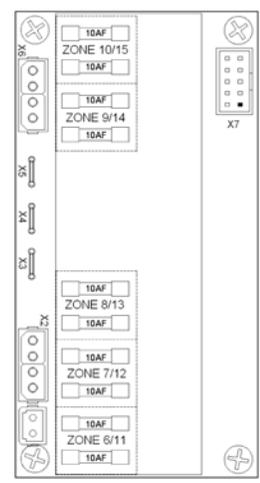
Some of the procedures in the following Troubleshooting Guide require potentially dangerous electricity to be present. Only qualified service personnel should perform these procedures.

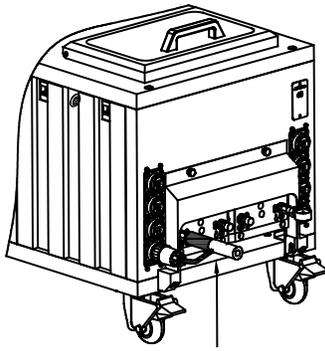
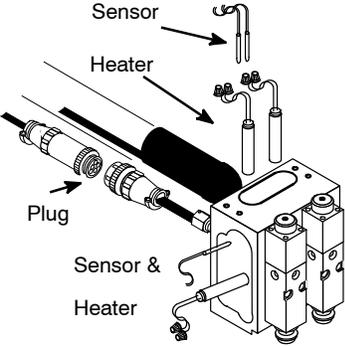
Problem	Possible Cause	Solution
<p>Hopper (tank) Overtemp</p> 	<ol style="list-style-type: none"> 1. Setpoints have been programmed without enough deviation. 2. Hopper sensor inoperative 3. Hopper control triac on V6 Power Module is inoperative. 	<ol style="list-style-type: none"> 1. Re-program setpoints, allowing a larger deviation between the high and low limits. 2. Replace hopper sensor if resistance does not comply with the resistance table in this manual. 3. If the hopper status LED on the Temperature Module is Off and the hopper temperature continues to rise, the triac on the power module has failed. The module must be replaced.

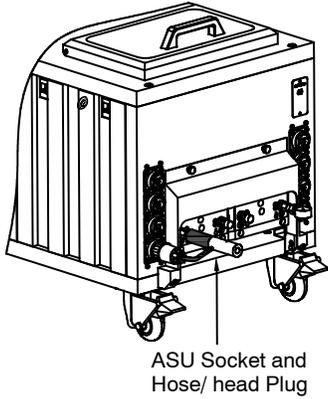
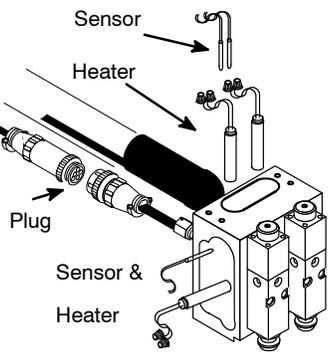
Problem	Possible Cause	Solution
<p>Hopper Sensor Open</p> 	<ol style="list-style-type: none"> 1. Sensor cable has become unplugged from V6 Temperature Module. 2. Hopper sensor inoperative. 	<ol style="list-style-type: none"> 1. Verify that hopper sensor cable is properly connected at X3 on the Temperature Module. 2. Replace hopper sensor if resistance does not comply with resistance table.
<p>Hopper Sensor Short</p>	<ol style="list-style-type: none"> 1. Short-circuit caused by debris where sensor plugs into the V6 Temperature Module. 2. Pinched sensor lead wire. 3. Hopper sensor inoperative. 	<ol style="list-style-type: none"> 1. Verify that sensor plug is clean and correctly connected at X3 on the Temperature Module. 2. Visually inspect sensor lead wire for break, kink, damage, etc. If no obvious damage, use an ohmmeter to measure continuity from the sensor lead to the plug at the Temperature Module. Repair or replace any damaged wire. 3. Replace hopper sensor if resistance does not comply with resistance table.

Problem	Possible Cause	Solution
<p>Hopper Heater Open</p> 	<ol style="list-style-type: none"> 1. Disconnection in hopper heater circuit. 2. Disconnection between Power Module and the Temperature Module. 3. The ASU circuit breaker (on the front panel) is inoperative. 4. Open hopper heater element. 	<ol style="list-style-type: none"> 1. Inspect hopper heater wiring for proper connections. 2. Verify that all connections are properly made between the Power and Temperature Modules. 3. Visually and electrically inspect for a short circuit to ground in the hopper heater circuit. This will be limited to between the hopper triac on the Power Module and the hopper heater. 4. Remove both lead wires from hopper heater plate. Use an ohmmeter to measure resistance across the plate. Infinitely high resistance values indicate an open heating element and heater plate which must be replaced.
<p>(Optional) Drop-in Grid Overtemp</p> 	<ol style="list-style-type: none"> 1. Setpoints have been programmed without enough deviation. 2. Grid sensor inoperative. 3. Grid control solid state relay inoperative.  <p style="text-align: center;">AUX Power PCB</p>	<ol style="list-style-type: none"> 1. Re-program setpoints, allowing a larger deviation between the high and low limits. 2. Examine grid sensor assembly for intermittent break in sensor lead. Remove sensor bulb from grid. Replace grid sensor if resistance does not comply with resistance table. 3. Use a clamp-on ammeter to monitor current on AUX Power PCB. If grid zone is switched OFF, the current will read 0 amps. If current still flows, replace shorted solid state relay.

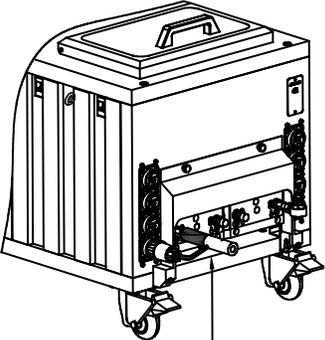
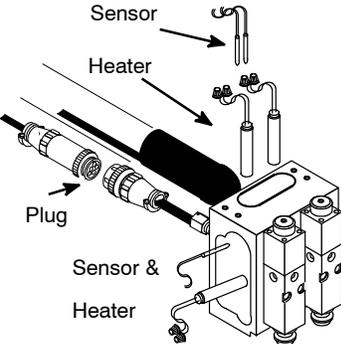
Problem	Possible Cause	Solution
<p>(Optional) Drop-In Grid Sensor Open</p> 	<ol style="list-style-type: none"> 1. Sensor cable has become unplugged from the Temperature Module. 2. Drop-in Grid sensor inoperative. 	<ol style="list-style-type: none"> 1. Verify that grid sensor cable is properly connected at X3 (or X2) on the Temperature Module. 2. Replace grid sensor if resistance does not comply with resistance table.
<p>(Optional) Drop-in Grid Sensor Short</p>	<ol style="list-style-type: none"> 1. Short-circuit caused by debris where sensor plugs into the Temperature Module. 2. Pinched sensor lead wire. 3. Drop-in Grid sensor inoperative. 	<ol style="list-style-type: none"> 1. Verify that sensor plug is clean and correctly connected at X3 (or X2) on the Temperature Module. 2. Visually inspect sensor lead wire for break, kink, damage, etc. If no obvious damage, use an ohmmeter to measure continuity from the sensor lead to the plug at X3 (or X2) on the Temperature Module. Repair or replace any damaged wire. 3. Replace grid sensor if resistance does not comply with resistance table.

Problem	Possible Cause	Solution
<p>(Optional) Drop-in Grid Heater Open</p> 	<ol style="list-style-type: none"> 1. Disconnection in grid's heater circuit. 2. Check the fuses for each drop-in grid on AUX Power Board. 3. Open Drop-in Grid heater element. 	<ol style="list-style-type: none"> 1. Inspect grid's heater wiring for proper connections on AUX Power PCB.  <p style="text-align: right;"><i>AUX Power PCB</i></p> <ol style="list-style-type: none"> 2. Remove system power, then remove the fuse from the grid circuit. Check fuse visually or with an ohmmeter. 3. Remove all lead wires from both grid heater elements. Use an ohm meter to measure resistance across each element. Infinitely high resistance values indicate an open heating element and grid must be replaced.

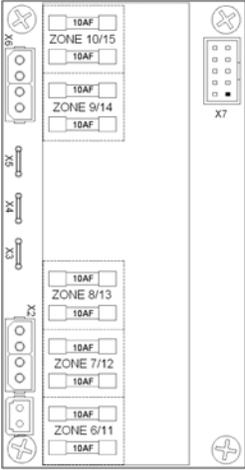
Problem	Possible Cause	Solution
<p>Hose/ Head (No.) Overtemp</p>  <p>ASU Socket and Hose Plug</p> 	<ol style="list-style-type: none"> 1. Hose/ Head tolerance (hi/ low limits) incorrectly programmed. 2. Hose/ Head triac on Power or AUX Module is inoperative. 3. Disconnection between Power and/ or AUX Power Module and the Temperature Module. 4. Hose/ Head sensor circuit inoperative. 	<ol style="list-style-type: none"> 1. Re-program tolerance setpoint to allow a larger deviation. 2. If a hose or head status LED on the Temperature Module is OFF, and the corresponding temperature continues to rise, the corresponding triac on its Power Module has failed. The module must be replaced. 3. Verify that Power and AUX Power Module are properly connected to the Temperature Module. 4. <ol style="list-style-type: none"> a. Visually examine hose/ head socket connections. Verify that pins are properly seated. If pins or plug housings are damaged, repair or replace hose. If socket is damaged, repair or replace harness. b. If hose-to-ASU plug and socket are okay, hose may have intermittent short or open circuit. Repair or replace hose, hose harness, Power Module or Aux Power Module as appropriate. Alternately, problem can be isolated by connecting the affected hose to a different ASU hose socket to tell whether the problem is in the hose or in the Power or Aux Power Module. c. If head-to-hose and hose-to-ASU plugs and sockets are okay, head sensor may have an intermittent short or open circuit. Examine connections inside the service block area of the head and monitor head sensor resistance with an ohmmeter while flexing sensor leads. Repair or replace an inoperative sensor.

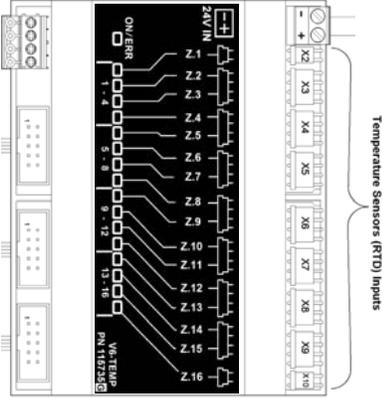
Problem	Possible Cause	Solution
<p>Hose/ Head (No.)* Not Heating (Sensor Circuit Open)</p>  <p>ASU Socket and Hose/ head Plug</p>  <p>Sensor Heater Plug Sensor & Heater</p>	<ol style="list-style-type: none"> 1. Disconnection between hose and ASU. 2. Hose sensor harness unplugged from Power or AUX Power Module. 3. Hose/ Head sensor circuit inoperative. 	<ol style="list-style-type: none"> 1. Visually examine connector for proper contact and seating. If pins or housings are damaged, repair or replace hose or hose harness (in ASU). 2. Verify that affected hose is properly connected to Power or AUX Module. Replace or repair damaged hose harness as necessary. 3. Replace head sensor if resistance does not comply with resistance table. Use hose schematic to check hose sensor resistance at ASU socket, repair or replace hose, hose harness, Power or AUX Power Module as appropriate.
<p>Hose/ Head (No.)* Not Heating (Sensor Circuit Shorted)</p>	<ol style="list-style-type: none"> 1. Debris at connection between hose/ head and ASU. 2. Debris at connection between hose/ head harness and Power or AUX Power Module. 3. Hose/ Head sensor circuit inoperative. 	<ol style="list-style-type: none"> 1. Visually inspect hose plug and ASU socket for cleanliness and proper contact and seating of pins. 2. Visually inspect that the affected hose plug at Power or Aux Power Module is clean and properly installed. 3. Using the hose schematic, check hose sensor resistance at ASU socket. An ohmmeter can also be used to isolate a pinched wire in the hose harness. When cause is isolated, repair or replace sensor, hose, hose harness, Power or AUX Power Module as appropriate.

* Check each Hose/Head circuit on the system.

Problem	Possible Cause	Solution
<p>Hose/ Head (No.)* Not Heating (Heater Circuit Open)</p>  <p>ASU Socket and Hose/ head Plug</p> 	<ol style="list-style-type: none"> 1. Disconnection between hose/ head and ASU. 2. Disconnection between hose/ head harness and Power or AUX Power Module. 3. Disconnection between cartridge heater and cable assembly inside head. 4. Open head heater element. 5. Head/ hose fuse on Power Module or AUX Power Module is inoperative. 6. Open wiring inside ASU. 	<ol style="list-style-type: none"> 1. Visually examine affected hose/ head-plug and ASU socket for cleanliness and proper contact and seating. Refer to wiring diagram for pin identification. The problem can be isolated by plugging the affected hose/ head into another ASU socket. If the new hose number is then displayed as malfunctioning, the problem is in the hose that was moved. Repair or replace hose or head or ASU hose/ head harness as appropriate. 2. Verify that the hose harness is properly inserted into its Power or AUX Power Module plug. Check for loose leads, debris and proper contact. 3. Visually inspect wiring inside head. Verify that cartridge heater leads are properly connected in the service block area. 4. Use an ohmmeter to measure resistance of head cartridge heater. Refer to resistance table for resistance values. Infinitely high resistance indicates an open heater. Replace cartridge heater as appropriate. 5. If fuse is found to be blown, do not replace it without first finding cause. Look for a short circuit to ground in the head heater circuit, particularly inside the head at the connections in the service block area. If replaced fuse also blows, Power or AUX Power Module may be the cause. However, fuse failure is usually due to a problem in the head heater circuit, not the Power or Aux Power Module. 6. Visually inspect ASU wiring and use an ohmmeter and the wiring diagram to locate open wire in head heater circuit. Repair or replace ASU hose harness or other ASU wiring as necessary.

* Check each Hose/Head circuit on the system

Problem	Possible Cause	Solution
<p>Aux (No.) Overtemp</p>  <p>AUX Power PCB</p>	<ol style="list-style-type: none"> 1. Aux tolerance (hi/ low) setpoints incorrectly programmed. 2. Aux solid state relay is inoperative. 3. Aux sensor circuit inoperative. 	<ol style="list-style-type: none"> 1. Re-program tolerance to allow a larger deviation. 2. Use a clamp-on ammeter to monitor Aux current on AUX Power PCB. If Aux current does not cycle on and off, then relay is inoperative and must be replaced. 3. a. Visually examine Aux socket connections. Verify that pins are properly seated. If pins or plug housings are damaged, repair or replace hose. If socket is damaged, repair or replace harness. <ol style="list-style-type: none"> b. If Aux-to-ASU plug and socket are okay, Aux may have intermittent short or open circuit. Repair or replace Aux, Aux harness or solid state relay as appropriate. c. If Aux sockets and cables to ASU plugs and sockets are okay, Aux sensor may have an intermittent short or open circuit. Examine connections at the Aux device and monitor Aux sensor resistance with an ohmmeter while flexing sensor leads. Repair or replace an inoperative sensor.

Problem	Possible Cause	Solution
<p>Aux (No.) Sensor Open</p> 	<ol style="list-style-type: none"> 1. Disconnection between Aux connector and ASU. 2. Aux sensor harness unplugged from the V6 Temperature Module. 3. Aux sensor circuit inoperative. 	<ol style="list-style-type: none"> 1. Visually examine connector for proper contact and seating. If pins or housings are damaged, repair or replace Aux harness (in ASU). 2. Verify that affected Aux is properly connected to Temp Module. Replace or repair damaged Aux harness as necessary. 3. Replace Aux sensor if resistance does not comply with resistance table. Use schematic to check Aux sensor resistance at ASU socket, repair or replace Aux, Aux harness or Temperature Module as appropriate.
<p>Aux (No.) Sensor Short</p>	<ol style="list-style-type: none"> 1. Debris at connection between Aux and ASU. 2. Debris at V6 Temperature Module. 3. Aux sensor circuit inoperative. 	<ol style="list-style-type: none"> 1. Visually inspect Aux plug and ASU socket for cleanliness and proper contact and seating of pins. 2. Visually inspect that the affected Aux plug at the Temperature Module is clean and properly installed. 3. Using the schematic, check Aux sensor resistance at ASU socket. An ohmmeter can also be used to isolate a pinched wire in the Aux harness. When cause is isolated, repair or replace sensor, Aux, Aux harness or the Temperature Module as appropriate.

Problem	Possible Cause	Solution
<p>Aux (No.) Heater Open</p>	<ol style="list-style-type: none"> 1. Disconnection between Aux and ASU. 2. Disconnection between Aux harness and AUX Power PCB. 3. Open Aux heater element. 4. Aux fuse on AUX Power PCB inoperative. 	<ol style="list-style-type: none"> 1. Visually examine affected Aux plug and ASU socket for cleanliness and proper contact and seating. Refer to wiring diagram for pin identification. The problem can be isolated by plugging the affected Aux into another ASU socket. If the new Aux number is then displayed as malfunctioning, the problem is in the Aux that was moved. Repair or replace Aux or ASU Aux harness as appropriate. 2. Verify that the Aux harness is properly-inserted into its AUX Power PCB plug. Check for loose leads, debris and proper-contact. 3. Use an ohmmeter to measure resistance of Aux cartridge heater. Refer to resistance table for resistance values. Infinitely high resistance indicates an open heater. Replace cartridge heater as appropriate. 4. If fuse is found to be blown, do not replace it without first finding cause. Look for a short circuit to ground in the Aux heater circuit, particularly at the Aux device. Fuse failure is usually due to a problem in the Aux heater circuit, not the solid state relays.

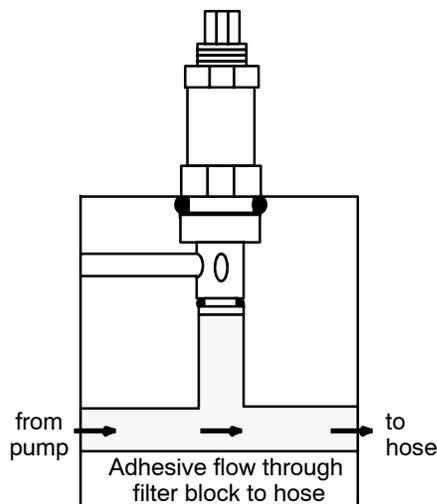
Adjustable Adhesive Pressure Relief Valve

D Series ASUs are outfitted with a high-pressure relief valve located on the outlet filter manifold. The valve is adjustable and it does not affect adhesive pressure under normal operating conditions. The adjustable pressure relief valve is factory set at 27 bar (400 psi).

When adhesive pressure exceeds the set limit, the pressure forces the valve to move away from its seat, compressing the spring and allowing adhesive to flow back to the hopper. This adhesive flow reduces pressure. When the pressure falls below the set limit, the spring forces the valve against its seat, cutting off adhesive flow.

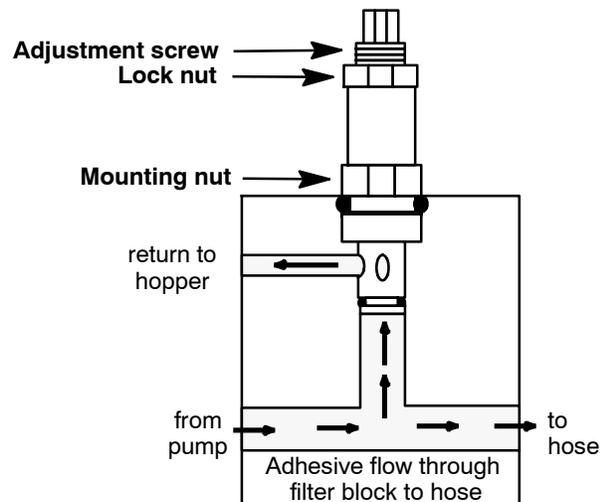
Normally Closed (Unrelieved):

In the drawing below, the valve is closed.



Open (Relieved):

In this drawing, pressure has exceeded the setting of the valve, causing the valve to open and discharge adhesive to the hopper.



To Adjust Pressure Relief:

Note: This adjustment should be done with a melt pressure gauge or a pressure transducer installed. Failure to use proper equipment can result in excessive pressure levels.

1. Turn the application system ON and raise the temperatures of all components to normal operating temperatures.
2. At the controller, set the motor speed to "0" so that the gearmotor is not turning.
3. Locate the pressure relief assembly on the manifold (where the hoses attach).
4. At the controller, turn the motor ON to desired operating speed.
5. Hold the valve's mounting nut with a 7/8" wrench to prevent it from rotating during procedure.
6. Locate the valve's adjustment screw and loosen its lock nut with a 3/4" wrench.
7. Actuate (open) the valves on the applicator(s) in order to fill them with adhesive and purge air from the system.
8. Close the valves (those opened in the last step) to stop the flow of adhesive.
9. Using a 7/16" wrench, turn the adjustment screw clockwise to increase the pressure to the applicator(s) (or counter-clockwise to decrease pressure) until desired pressure is achieved.



CAUTION: DO NOT adjust the adjustment screw fully clockwise (closed). Maximum operating pressure should not exceed 1000 PSI.

10. After desired pressure is achieved, tighten the lock nut. The system is now adjusted.

Operation of the ASU's Gear Pump

Manual or Automatic Pump Operation

Choose MANUAL, STOP or AUTO gear pump operation via the PUMP button on the DynaControl Overview screen. When the Dynamelt's pump is to be operated manually (that is, without a line following signal), the manual mode is used to control pump speed (and adhesive output). For the gear pump to be operated in the automatic mode, a tach generator, or equivalent, (attached to the parent conveyor line) must be provided and the following set-up procedure should be performed:

1. The tach generator or the signal isolator must be adjusted so that the voltage from the speed controller is 0 to 10 VDC (but not more than +10 VDC when the conveyor is at maximum speed). This voltage is measured at the LINE and COMMON terminals on the V6 Base module. The 0-10VDC signal must be connected to the LINE terminal.

2. The AUTO setting then changes pump speed for any given 0 to +10 VDC incoming tachometer signal. Voltage will vary given production speed.

The speed can be adjusted (trimmed) in automatic mode by setting maximum and minimum RPM values on the DynaControl keypad.

To make speed adjustments, follow the programming instructions on page 5-8.

Pump Output Adjustments

When the adhesive in the ASU's hopper has reached a temperature high enough for the pump to operate safely, the controller will place the hopper in "Ready" condition and power will be supplied to the pump. The pump is self-priming.

Pump output is adjusted by the motor speed control on the DynaControl keypad. However, if less pressure is needed, maximum pressure of the pump can be decreased (or increased) by adjusting the pressure relief valve installed on the pump output manifold. To change the setting of this valve, refer to instructions in Chapter 3. The relief valve is factory set at 27 bar (400 psi) for gear pumps.

Troubleshooting the ASU Pump

No special tools are needed for working on the ASU pump. See Chapter 8 of this manual for dis-assembly/ assembly procedures for the ASU pump, and Chapter 10 for locating pump parts on the component illustrations (exploded-view drawings).

Gear Pump Priming/ Start-Up

The pump is self priming.



CAUTION: DO NOT continue to run the pump if no glue is coming out. This could damage the pump since it uses the glue as a lubricant. Stop and troubleshoot.

Caution for 20cc/rev Standard Accuracy Gear Pumps



CAUTION: DO NOT exceed the 400 psi pressure relief valve factory setting on 20 cc/rev gear pumps. Motor overload will result if 400 psi is exceeded.

Gear Pump Troubleshooting Guide

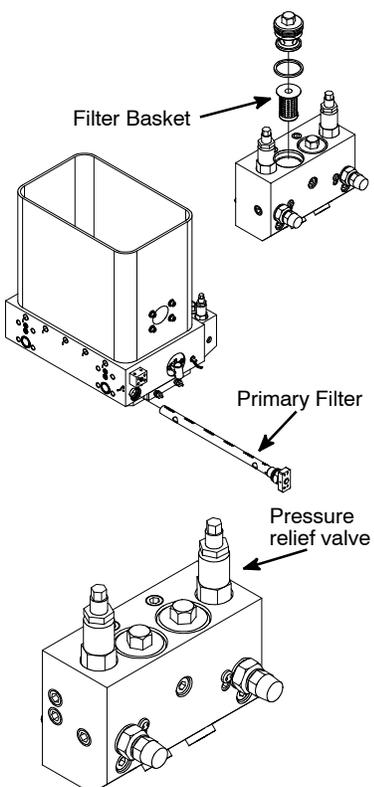


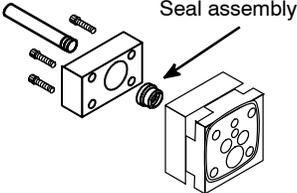
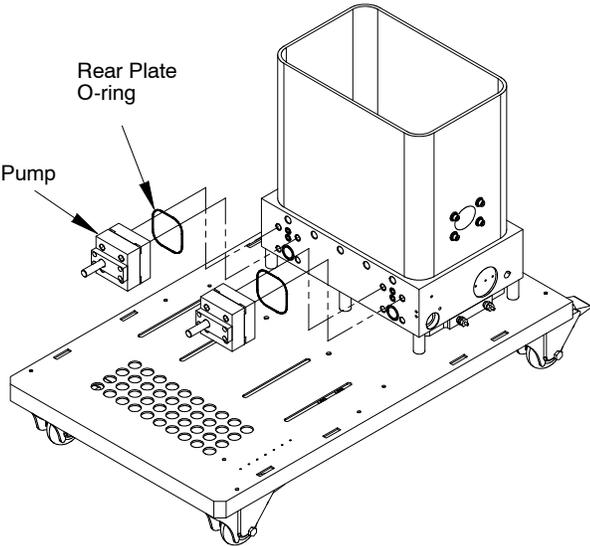
WARNING HOT SURFACE & ADHESIVE

Some of the procedures in the following Troubleshooting Guide require working near hot adhesive. Be sure to wear protective gloves, safety glasses and clothing and use proper tools for handling hot melt components.

Note: Each motor in the system can run independently (or dependently). Each motor may have its own operating parameters. Therefore, each motor should be troubleshot independently.

Problem	Possible Cause	Solution
Pump doesn't operate in "Manual" mode.	<ol style="list-style-type: none"> 1. Pump RUN/STOP is set to STOP at the controller keypad. 2. Hopper temperature is below ready setpoint. 3. No incoming electrical power. 	<ol style="list-style-type: none"> 1. Check keypad setting. 2. Pump cannot operate until hopper has reached ready condition. Verify that hopper has reached ready. Re-program hopper operating setpoint and ready setpoint if necessary. 3. Check to see if ASU temperature control is operating. If not, check for presence of incoming supply voltage.
Pump doesn't operate in "Manual" mode, hopper is at Ready condition.	<ol style="list-style-type: none"> 1. "Manual" pump is set at zero RPM (at keypad). 2. If pump RUN/STOP is being controlled by a remote switch (i.e., a hand-held applicator), the switch or switch circuit may be open. 3. Faulty motor controller. 	<ol style="list-style-type: none"> 1. Re-program pump. 2. Check condition of the remote switch (the hand-held applicator). 3. If the control is faulty, it must be replaced.

Problem	Possible Cause	Solution
<p>Pump doesn't operate in "Auto" mode, hopper is at Ready condition.</p>	<ol style="list-style-type: none"> 1. Parent machine is not running. 2. "Auto" motor is set at zero (at controller keypad). 3. No incoming line following signal. 	<ol style="list-style-type: none"> 1. Check parent machine. 2. Re-program pump. 3. Check for presence of 0 to 10 VDC control signal at LINE and COMMON terminals on V6 Base module. If signal is not present, check connection at tachometer drive connections. If control signal is present there, the problem is within the ASU.
<p>Pump runs but there is no adhesive output.</p>	<ol style="list-style-type: none"> 1. ASU is out of adhesive. 2. If pump has been serviced and leads reversed, pump will run backwards with no output. 	<ol style="list-style-type: none"> 1. Add adhesive to hopper. 2. Check pump wiring to schematic.
<p>Low or inconsistent adhesive output.</p>  <p>The diagram illustrates the ASU assembly. It shows a hopper on the left connected to a pump unit on the right. A 'Filter Basket' is shown being inserted into the pump. A 'Primary Filter' is shown as a long, thin component connected to the pump. A 'Pressure relief valve' is shown as a small component on the side of the pump. Arrows point from the text labels to the corresponding parts in the diagram.</p>	<ol style="list-style-type: none"> 1. Filter(s) clogged. 2. Adhesive used is too viscous. 3. Clogged hose. 4. Clogged applicators. 5. The fixed pressure relief valve is opening. 	<ol style="list-style-type: none"> 1. Remove and inspect filter basket and primary filter. 2. Verify that system components are at appropriate temperatures and that the selected adhesive is correct for the application. 3. Inspect hose for kinks or internal plugs of debris or char. Clean or replace hoses as necessary. 4. Inspect applicators for plugged nozzles or filters. Clean or repair applicators as necessary. 5. When fully closed (clockwise) and all applicators are off, adhesive pressure should be around 68 bar (1000 psi). If it is significantly less, the pressure relief valve should be replaced.

Problem	Possible Cause	Solution
<p>Adhesive leak at pump shaft seal.</p> 	<ol style="list-style-type: none"> 1. Pump seal is incorrectly positioned inside the seal and bearing assembly. 2. Pump seal inoperative. 	<ol style="list-style-type: none"> 1. Remove seal and bearing from pump. Verify that all components are correctly positioned. 2. Remove seal from pump, inspect it and replace it if worn or damaged. Be sure there are no burrs or other sharp edges on pump shaft or on installation tools that could damage a new seal.
<p>Adhesive leak at pump-to-hopper interface.</p> 	<ol style="list-style-type: none"> 1. O-ring in pump's rear plate is inoperative. 2. Pump retaining nuts are missing or loose. 3. Helicoil insert pulled out of hopper. 	<ol style="list-style-type: none"> 1. Remove seal from pump, inspect it and replace it if worn or damaged. Be sure there are no burrs or other sharp edges on the rear plate o-ring groove that could damage a new o-ring. 2. Verify that all four pump retaining nuts are tightly assembled to the studs. 3. Remove pump and inspect hopper. Repair or replace hopper as necessary.

Chapter 8 DISASSEMBLY & RE-ASSEMBLY PROCEDURES

Note: Re-read Chapter 1 “Safety Precautions” before performing any disassembly procedures. All disassembly procedures must be performed by qualified, trained technicians.

Disassembly Procedures

Note: Use the exploded-view drawings referenced with each procedure in conjunction with the instructions outlined in this chapter. Read the “cautions” on page 8-4 before re-assembling the ASU.

To Remove Rear Cover (Hopper)

1. Loosen 8 button head screws, 2 screws along the bottom of the rear cover and the screw near the top corner of the hopper side cover.
2. Lift cover up and off.

To Remove the Hopper's Outer Lid

1. Remove the screws which are located one on each side of the rear cover.
2. Pull the lid up to remove.

a. **Lid Seal Replacement:** The lid seal (o-ring) is located inside the lid base. Remove the old seal, which rests against the top of the rear cover. Install the new seal into the groove provided.

Mechanical Over-Temperature or Pump Enable Thermostat Replacement

Use the latches to remove the desired hopper cover.

a. **Mechanical OT Thermostat Replacement:** Remove the 2 screws and slip the terminals and the hopper ground wire off of the thermostat before removing the thermostat from the base of the hopper.

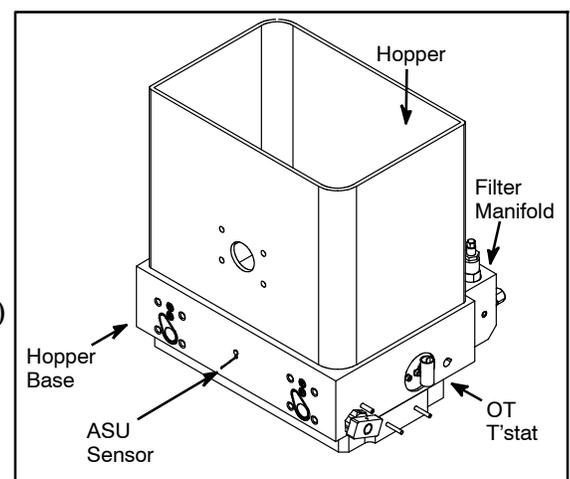
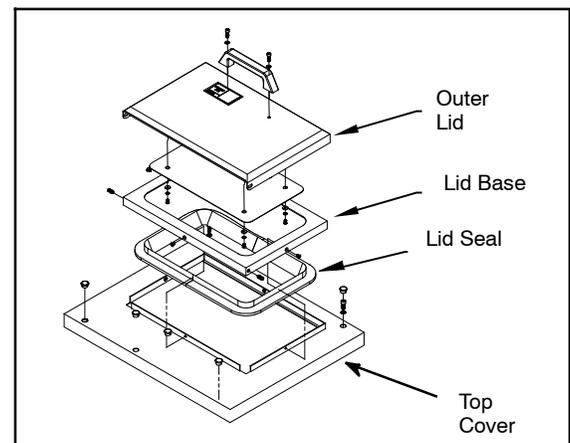
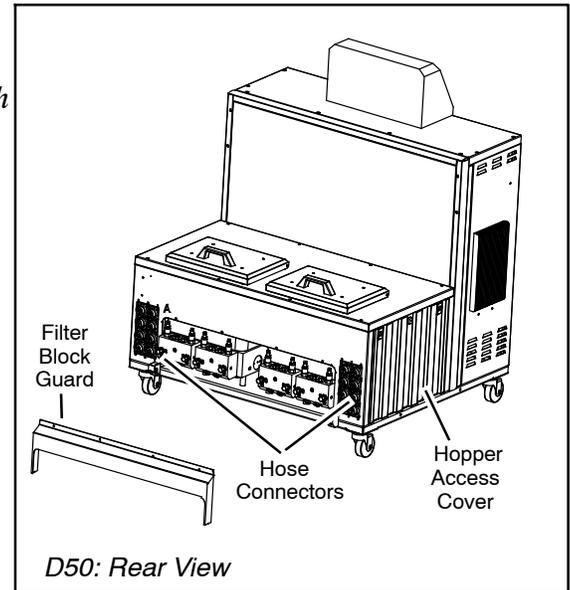
b. **Pump Enable Thermostat Replacement:** Slide the thermostat out of the hopper. De-solder to remove the 2 wires from the old thermostat, then re-solder the wires to the new thermostat.

To Access the RTD Sensors

Use latches to remove the hopper access side cover.

a. **RTD for ASU:** Each ASU has one RTD located in the base of the hopper. This RTD slips into its adapter and is easily plugged in electrically.

b. **RTD for Drop-in Grid:** (see pg. 10-11 for diagram) If the optional drop-in grid is installed, there is a second RTD located in the grid. This RTD slips into its adapter and is easily plugged in electrically.



To Access the Electrical Components

(See illustrations on pages 4 thru 7 in Chapter 10)
Verify again that the main power is OFF. Open the front (panel box) door.

a. To Remove Front Electrical Display

1. Loosen 4 screws (2 per side) along bottom of the front electrical display.
2. Lift the display straight up and off.

b. **Main On/ Off (Circuit Breaker) Replacement:** The main on/off switch is located on the front of the panel box door but is removed from within the panel box. It is mounted in the panel box so it makes contact with the main switch.

1. Remove 4 screws from circuit breaker to release it from the ASU. Remove all wires from it.
2. Re-wire the new circuit breaker to the same locations and mount into ASU with 4 screws.

c. **Fuse Replacement:** The circuit breaker (10amp) fuses, the Power PCB and (optional) Auxiliary PCBs contain 10 amp fuses which can be accessed without removing the boards from the ASU. These are mounted on the side electrical mounting plates inside the panel box.

d. **Relay Replacement:** Located within the panel box on the left side (of ASUs with grids and/or auxiliary wattage). Release each relay via two M4 screws. To reinstall, plug new relays into side electrical mounting plate and tighten M4 screws.

e. **Printed Circuit Board (PCB) Replacement:** Reference the section entitled "Handling Printed Circuit Boards" on page 7-4.

1. Remove 4 screws in corners of desired PCB to release. Remove wiring connects.
2. Wire the new PCB to original locations. Mount into ASU with 4 screws.

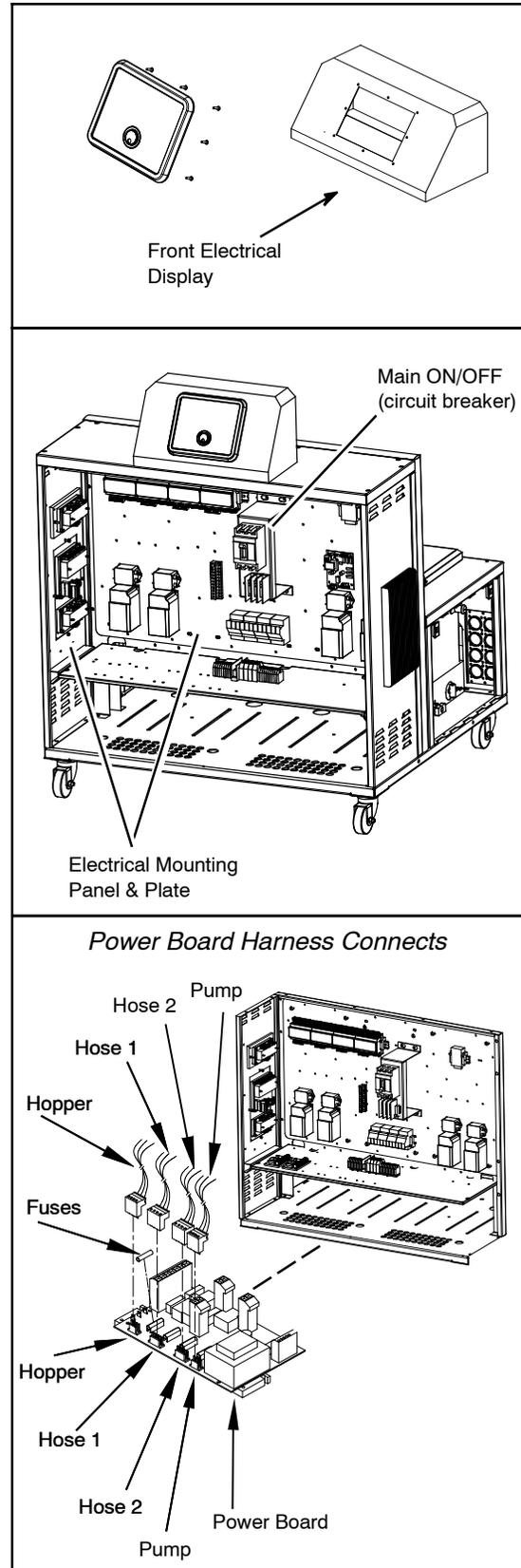
1. Operator's Board Replacement:

Located in the front electrical display.

2. Other Boards Replacement:

Open front door. PCBs are in the top compartment.

Reference pg. 7-2 for individual board and module locations. The diagram at right illustrates the power board's harness connects.



Notes: the PCB fuses and the Lithium battery are the only customer-replaceable parts on the PCBs. You may obtain a Lithium battery locally

f. Module Replacement: Reference the section entitled “Handling Printed Circuit Boards” in Chapter 7. The V6 Modules are installed on a DIN rail. To remove a module, first unplug all connectors attached to it.

1. Unscrew the end stop of the DIN rail nearest to the desired module and slide it off the rail.
2. Gently slide the modules apart on the rail (you may need to unplug some connectors to do this).
3. Each module is “locked” onto the rail by two orange connectors at the top and bottom of the module. With a flat-blade screwdriver, slide the upper orange connector up until it clicks open, and slide the lower orange connector down until it clicks open. Then the module may be lifted off the rail.

g. Opening Modules

There are various electrical components located within the modules. To open a module, use two fingers to pull straight up on the top (lid) of the module. Position your fingers toward the outside edge (not the center) of the module. Do not use a tool as it could damage the module’s plastic casing.



DANGER HOT SURFACE HIGH VOLTAGE

If the pump is not operable but the heating system will function, raise the temperature of the application system to the operating temperature to aid in the pump disassembly process. Otherwise, a heat gun or other controlled heating method is recommended to melt hardened hot melt material. Never use a torch or an open flame on any of the components of the application system. Once the system is up to temperature, disconnect all incoming power before proceeding.

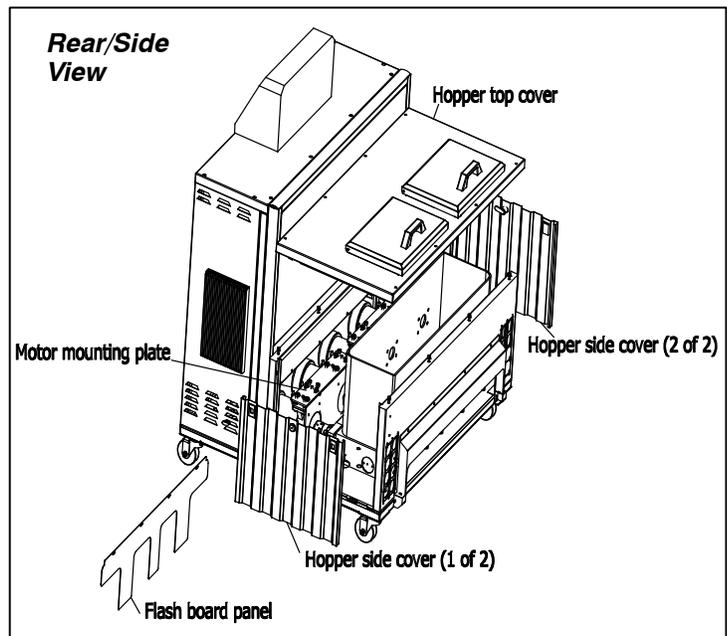
To Access the Pump or Motor

Open the ASU’s front door. Turn the rotary handle switch OFF. Turn OFF the filter shutoff valve.

Gear Pump and Motor Removal:

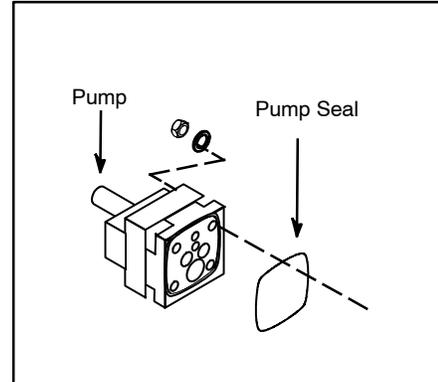
1. Open the Hopper side cover.
2. Loosen the eight M6 screws and move the hopper top cover.
3. Loosen the four M6 screws. Remove the Flash board panel.
4. Loosen the four M8 screws of the motor mounting plate and pull out the desired motor.
5. Loosen the four M10 nuts.

Remove the desired pump.



Pump Seal (O-ring) Replacement:

1. Remove the pump from the ASU (see instructions on previous page).
2. Remove the external pump seal from its groove on the back of the pump.
3. Reference the pump exploded-view illustration (in Chapter 10) for your specific pump.
4. Install the new seal.
5. Re-assemble components.



Re-Assembly Procedures

Unless noted, the ASU's re-assembly is simply the reverse sequence of the disassembly procedures. However, the following "cautions" should be followed (whenever they apply) for proper re-assembly:



CAUTION: In general, all *O-RINGS AND SEALS* should be replaced whenever hot-melt equipment is re-assembled. All new o-rings should be lubricated with o-ring lube (PN N07588).

CAUTION: *TAPERED PIPE THREADS* are found on air line fittings used with the pump air supply and on the outlet filter manifold. Apply thread sealant (PN N02892) whenever tapered pipe threaded parts are re-assembled.

CAUTION: *SOME FITTINGS* used for adhesive on the ASU have straight threads and o-ring seals. Use of thread sealant is not necessary with these parts, but the o-ring seals should be clean and lubricated. Tighten straight-threaded parts and fittings until their shoulders are firmly seated against the pump body (or other surface). Excessive torque may damage straight-threaded parts and the use of power wrenches is not recommended.

CAUTION: *HOT-MELT RESIDUE* should be cleaned from parts before they are re-assembled, particularly from threaded parts. As a precaution against adhesive residue preventing proper re-assembly, threaded parts should always be re-tightened at operating temperature.

Chapter 9 AVAILABLE OPTIONS & ACCESSORIES

Pressure Gauge Kit: PN 101175

An optional analog pressure gauge can be mounted on the outlet filter manifold. Reading the adhesive pressure at the manifold, rather than in-line on a hose, allows for more precise monitoring of system pressure. It is also useful for troubleshooting and maintenance.

The gauge is installed at one of the adhesive ports on the manifold (see illustration on page 3-7). Though there is no “dedicated” port for the gauge, ports #2 or #4 are preferred. Fittings are included in the kit.

Drop-in Grids: PN 680089

The drop-in grid is an extra heated grid which is installed near the bottom of the ASU’s hopper. The additional grid allows faster melting of adhesive for applications requiring higher melt rates and higher volumes of adhesive.

Filter Options

150 Mesh Outlet Filter: PN 106273

Some situations call for a finer mesh outlet filter. A “dirty” adhesive or one with a short pot life are examples. Systems utilizing very high temperatures or systems running in a dusty environment also benefit from a 150 mesh filter. Standard equipment is a 100 mesh filter (PN 101247).

Pressure Transducer Assembly: PN 680545

A pressure transducer is an electronic probe that allows the melted adhesive’s pressure to be processed by the ASU’s control system and displayed on the HMI. They are used to monitor system operating pressures and their limits. They troubleshoot clogged nozzles and filters.

Level Control Assembly: PN 680614

This device informs the operator, via a message on the DynaControl’s readout and an audible signal, that the hopper’s adhesive level is low. It may also be wired to stop production, turn on an alarm light or signal a PLC at a low adhesive level.

Pneumatic Pressure Relief Valve (PPRV): PN 680424

The pneumatic PRV provides gear pump units with a method to automatically relieve adhesive pressure (to zero) by turning off air supply to the ASU.

Pump Options

Gear Pumps

For higher tolerances and precision, several gear pumps are available for the ASU. Gear pumps give better service for continuous applications or applications which require more control over the volume of adhesive pumped. Gear pumps available are:

Single Pumps:

PN 111253: 0.15 cc/rev single, standard accuracy, cast iron Gear Pump
 PN 109908: 0.55 cc/rev single, standard accuracy, cast iron Gear Pump
 PN 100860: 1.54 cc/rev single, standard accuracy Gear Pump
 PN 100861: 3.18 cc/rev single, standard accuracy Gear Pump
 PN 100862: 4.5 cc/rev single, standard accuracy Gear Pump
 PN 108875: 8.5 cc/rev single, high accuracy Gear Pump
 PN 084E374: 0.584 cc/rev single, high accuracy Gear Pump
 PN 084E428: .297 cc/rev single, high accuracy Gear Pump
 PN 084E430: 1.168 cc/rev single, high accuracy Gear Pump
 PN 084E434: 2.920 cc/rev single, high accuracy Gear Pump

Dual Pumps:

PN 111254: 0.15 cc/rev dual, standard accuracy, cast iron Gear Pump
 PN 109909: 0.55 cc/rev dual, standard accuracy, cast iron Gear Pump
 PN 100863: 1.54 cc/rev dual, standard accuracy Gear Pump
 PN 100864: 3.18 cc/rev dual, standard accuracy Gear Pump
 PN 084E389: 0.584 cc/rev dual, high accuracy Gear Pump
 PN 084E432: 1.168 cc/rev dual, high accuracy Gear Pump
 PN 108874: 2.920 cc/rev dual, high accuracy Gear Pump

Gear Pump Repair Kit: PN 103151

Contains the following items needed to repair the PNs 100860 thru 100864 and the 109908-109909 gear pumps:

PN	Description	Qty.	PN	Description	Qty.
N00198	O-ring	2	069X064	O-ring	3
018X031	Ball Bearing	5	078F017	Ring, Clip	4
069X061	Seal	1	078I001	Key, Woodruff	1

Pressure Relief Valve Repair Kit: PN 109982

Contains the following three items needed to repair the PN 101840 or PN 115540 Pressure Relief Valve: a PN N00179 O-ring 012, a N01601 O-ring 908 and a N05733 Backup Ring, 012.

DynaControl V6 Options

HMI Selection

LCD Controller PN 115719

The LCD (liquid crystal display) controller is available with the complete line of DynaControl features. It features an intuitive, multi-line, graphic display and operates via an input wheel.

Touch Screen Controller PN 118135

The V6 color touch screen controller is available with an expanded line of DynaControl features. A variety of customer-selected devices may be integrated into the HMI utilizing VNC desktop sharing. An optional XIO module allows programmable I/O for custom applications. Up to ten units may be controlled remotely by each touch panel.

LCD Pendant Control Assembly PN 680520

The Pendant Control option gives the DynaControl keypad mobility via an up to 30 meter (100 ft) cable. The Pendant Control Panel Kit replaces the standard built-in keypad. An optional re-set switch and on/off light can be mounted on the front panel.

V6 Communications Adapters

V6 EtherNet Assembly PN 680619

V6 Profibus Kit PN 680618

V6 EtherCAT Kit PN 680620

The V6 communications bus module adapts the ASU to full remote operation so that all system parameters can be transmitted and received.

Signal Isolator PN 680617

A signal isolator conditions a parent machine's production line's DC speed voltage or current reference to allow the ASU's gear pump to track the application's line speed. It accepts 0-10V, 0-5V, 4-20mA inputs and outputs a proportional 0-10V signal to DynaControl's electronics.

Recommended Service Parts List

Category	Part No.	Description	Qty.
	108689	Dow 112 Silicone Lubricant, O-ring, 0.25	2
	N02937	Thread Sealant	1
	L15653	Kit, Flushing Fluid, 1 gallon	1
	103151	Gear Pump Repair Kit	1
	680132	Main Power Switch, 30 amp (Circuit Breaker) (standard)	1
	610201	Main Power Switch, 60 amp (Circuit Breaker) (option)	1
	112568	Fuse, 10A, 240VAC, 5x20mm (Power Boards)	20
	119975	Fuse, 12A, 240VAC, 5x20mm (Power Boards)	5
	108566	Fuse, 6.3A, 5x20mm (Power boards)	5
	107183	RTD Sensor, PT 100	2
	104166	Over-Temp Thermostat & Insulator Assy.	1
	106519	Hi-Temp Over-Temp Thermostat Assy. (option)	1
	036B015	Pump Enable Thermostat	1
	101840	Pressure Relief Valve	1
	069X064	O-ring 041 Pump Shaft Seal	2-4
	807729	Pump Shaft Seal (Zenith/ TSHA, high accuracy pumps)	4
	069X064	O-ring 041	1
	610714	O-ring 21x2	1
	610712	O-ring 9.5x1.8	4
	069X058	O-ring 028	2
	N03812	O-ring 125	4
	610704	O-ring 24x3	1
	N00196	O-ring 5-005	4
	108667	O-ring 5-005, Hi-Temp (option)	4
	806859	O-ring 125, Hi-Temp (option)	4
	610712	O-ring 9.5x1.8	8
	N00192	O-ring 032 (option)	1
	N00181	O-ring 014	4
	106303	Filter Nut	1
	102172	Lovejoy Coupling	1
	115283	Motor Speed Control Kit, Y	1
V6 Modules & Printed Circuit Boards:			
	115719	HMI Assembly	1
	115733	Aux Power PCB, V6	1
	115732	Power PCB, V6	1
	115734	Base Module, V6	1
	115735	Temperature Module, V6	1
	116823	Motor Module, V6	1
Filter Replacements:			
	106273	Filter Basket, 150 mesh (optional)	4
	101247	Filter Basket, 100 mesh/149 micron	4
	610702	Filter Shut-Off Assembly	1

Chapter 10 COMPONENT ILLUSTRATIONS & BILLS OF MATERIAL



WARNING

All parts must be periodically inspected and replaced if worn or broken. Failure to do this can affect equipment's operation and can result in personal injury.

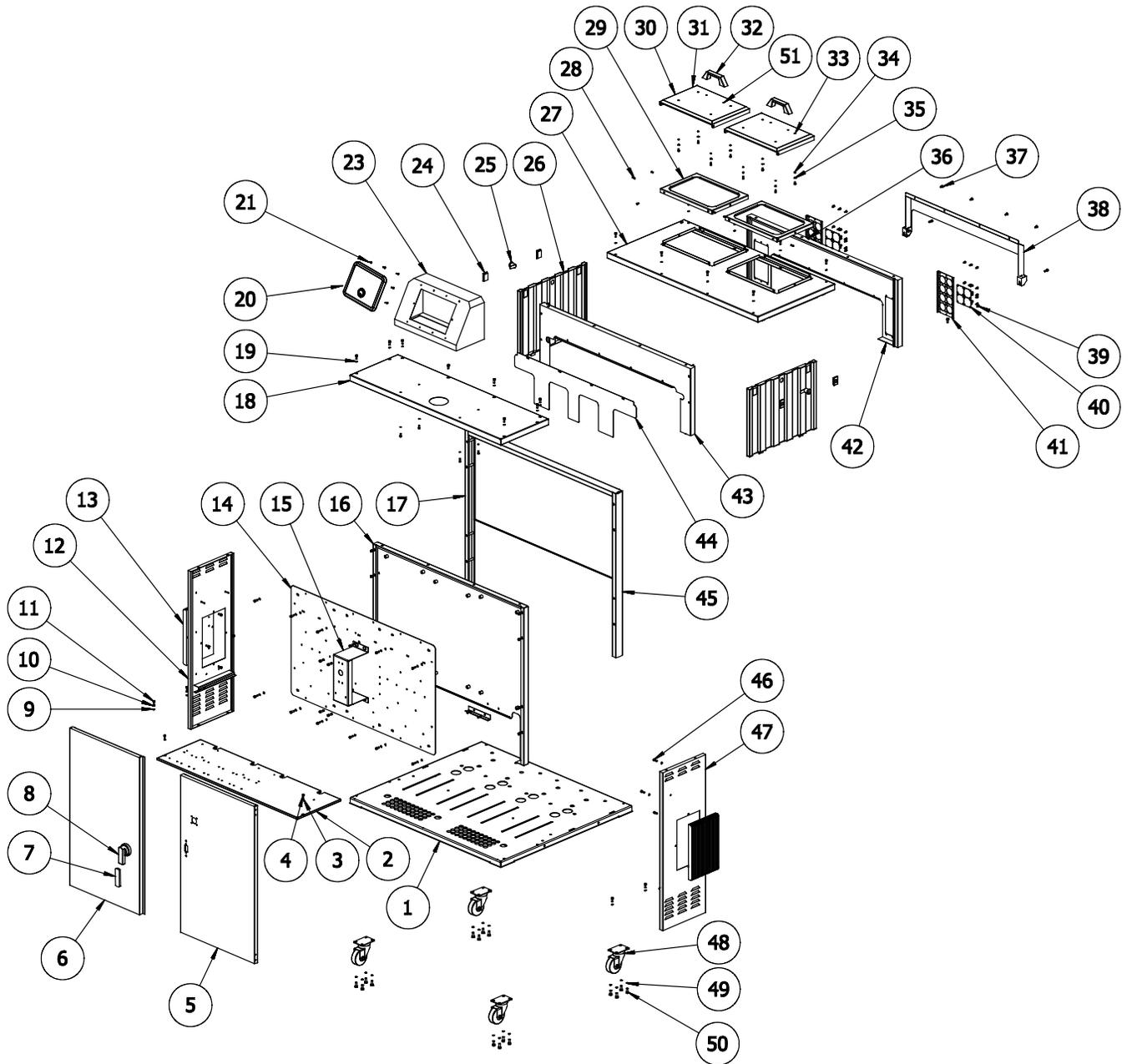
Chapter Format

This chapter contains the component illustrations (exploded-view drawings) for each assembly of the D50/D90 SERIES of ASUs. These drawings are useful for finding part numbers as well as for use when maintaining or repairing the unit.

Note: most common nuts, bolts and fasteners can be obtained locally at your hardware store. Specialty fasteners are available by contacting Dynatec's Customer Service.

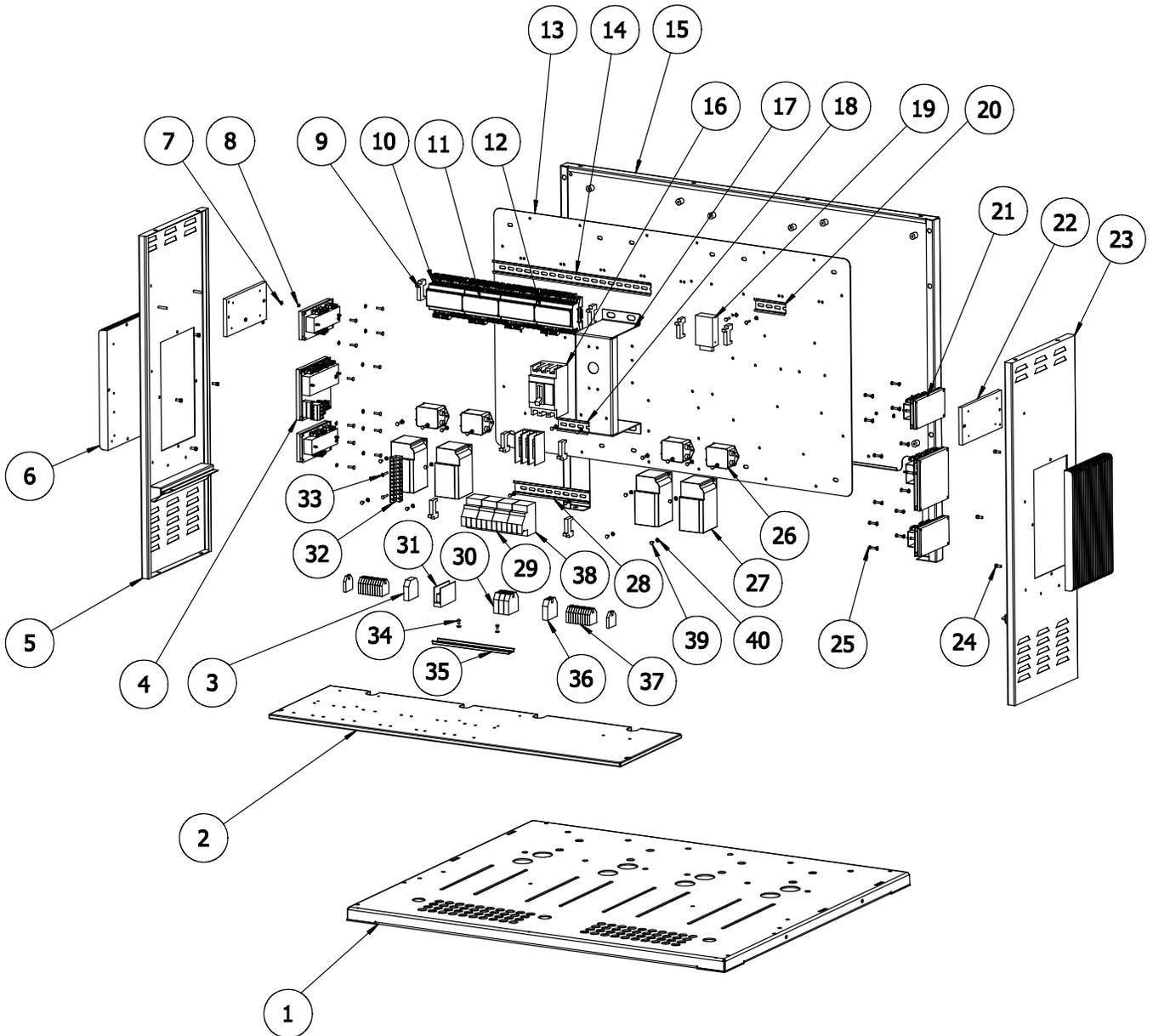
PN 620001 D50 and PN 620031 D90 Cabinet Groups

Item No.	Part Number	Description	Qty.
1	620101	Base plate	1
2	620104	Panel, electrical horizontal	1
3	106318	Washer, M5, External Tooth Lock	20
4	101626	Screw, SHC, M5x0.8 x 12mm	10
5	620108	Front door, right side	1
6	620109	Front door, left side	1
7	610129	Front door lock	1
8	610202	Rotary Handle & Shaft (including circuit breaker)	1
9	610141	Flat Washer M6	36
10	111345	M6, Split Lock Washer	36
11	104662	M6x1.0 x 16mm Socket Head Cap Screw	56
12	620259	COVER, SIDE, LH, ELECTRICAL D50 90, V6	1
13	620269	HEAT SINK, Main PWR Left	2
14	620265	PANEL, ELECTRICAL DIVIDER, REAR, V6	1
15	620114	Circuit breaker mounting bracket	1
16	620103	Rear electrical panel	1
17	620121	Middle panel, D50	1
	620126	Middle panel, D90	1
18	620105	Electrical Box top cover	1
19	106319	Washer, M6, External Tooth Lock	20
20	115893	PCB Assy, V6-LCD HMI	1
21	115792	SCR, PH, 4-20X3/8, TF, ZP	8
22		not used	
23	680453	Bezel, Display	1
24	610131	Plastic Slide Latches	4
25	610132	Key Lock	2
26	620120	Hopper Side Cover D25	2
	620125	Hopper Side Cover D45	2
27	620106	Hopper side cabinet, top cover	1
28	610152	Set screw, cup point, M4*16mm	4
29	680175	Hopper lid base, black	2
30	610125	Hopper lid heat shield	2
31	680176	Hopper lid	2
32	600730	Handle, Hopper, Lid	2
33	680133	Spring	8
34	106234	Washer, M4	8
35	106236	M4 External Tooth Lock	8
36	110734	Flat Head Cross Recess Screw, M4x0.7 x 8mm	12
37	610185	Screw, BSHSC, M5x0.8x10	4
38	620110	Manifold cover	1
39	105113	Socket Head Screw, M4x0.7x8mm	84
40	610136	Connector hole cover	8
41	620111	Connector mounting bracket	2
42	620123	Rear panel, D50	1
	620128	Rear panel, D90	1
43	620122	Hopper side, divider panel, D50	1
	620127	Hopper side, divider panel, D90	1
44	620124	Flat board panel	1
45	620121	Middle panel, D50	1
	620126	Middle panel, D90	1
46	102446	SCREW, M4 0.7 10MM	8
47	620260	COVER, SIDE, RH, ELECTRICAL D50 90,V6	1
48	680198	Caster, 3" Dia	4
49	106237	Tooth lock washer, external, M8	16
50	610715	Screw, SHC, black, M8*20mm	16
51	106242	Socket Head Cap Screw, M5x0.8 x 16mm	4



Contents of Panel Box Assembly: Electrical Components

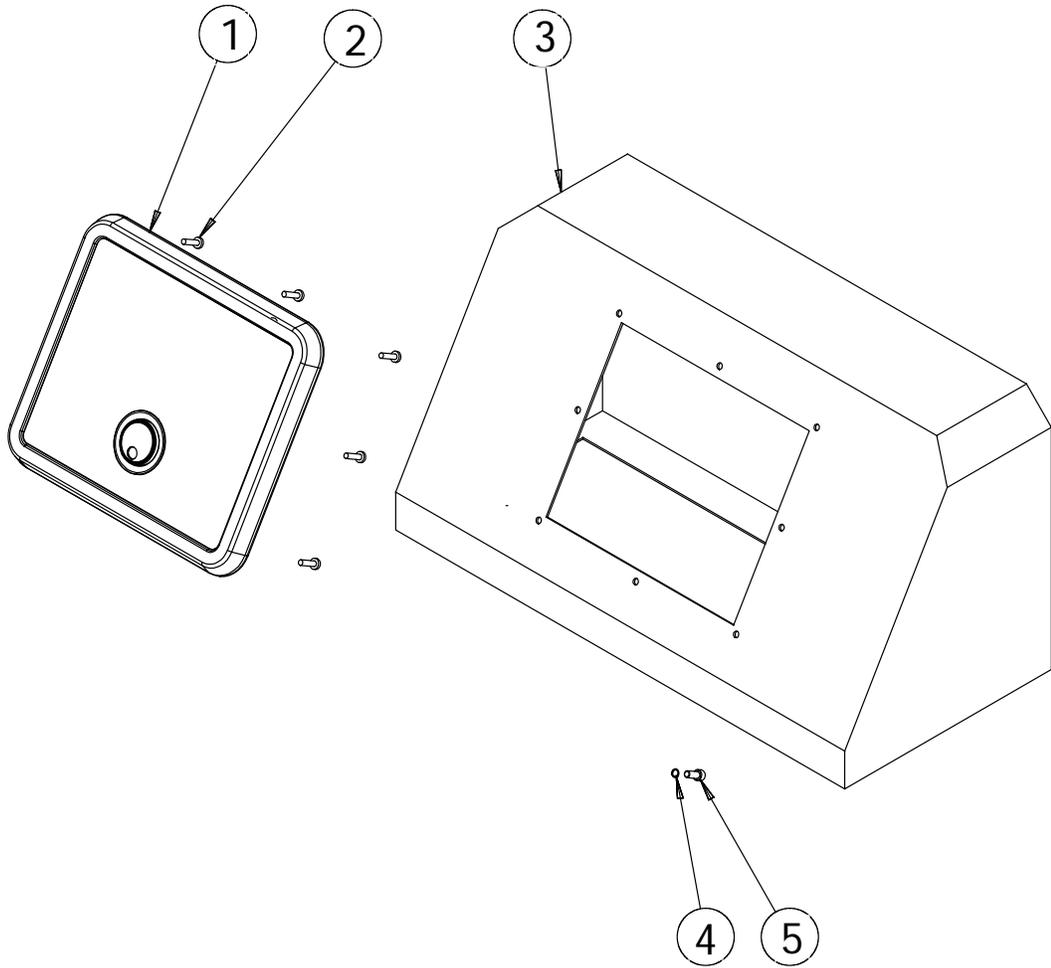
Item No.	Part Number	Description	Qty.
1	620101	Base plate	1
2	620104	Electrical panel, horizontal	1
3	N06624	Signal isolate, 240V(option)	1
4	115732	V6 Power Borad	2
5	620259	Cover, side, LH, electrical D50 90, V6	1
6	620269	Heat Sink, Main PWR Left	2
7	106318	Washer, M5	4
8	106110	Nut M5	4
9	610915	End Stop, terminal rail	10
10	115734	V6-Base Module	1
11	115735	V6-Temp Module	2
12	116823	V6-Motor Module	1
13	620265	Panel, electrical divider, rear, V6	1
14	680493	Terminal rail, Module 360mm	1
15	620103	Rear electrical panel	1
16	610201	Circuit breaker, 60A, 3P(standard)	1
	680738	Circuit breaker, 60A, 4P(option)	1
	620150	Circuit breaker, 125A, 3P(option)	1
	620304	Circuit breaker, 125A, 4P(option)	1
17	620114	Bracket, CB mount	1
18	620153	Terminal rail, distribution block	1
19	115783	Single Output Switching Power Supply, RS-25-24	1
20	680492	Terminal rail, 280mm	1
21	115733	V6 AUX Power Board	4
22	680474	Block, Heat Sink, AUX PC Board	2
23	620260	Cover, side, RH, electrical D50 90, V6	1
24	102446	Screw, M4x0.7x10MM	8
25	106241	Screw, M4x40	24
26	106978	Filter, RFI(EMI)line, 240V 6A	4
27	115138	Motor driver	4
28	620154	Terminal rail, fuse block	1
29	680135	Fuse block	2
30	620152	Terminal block, 125A	3
31	109514	Distribution block	4
32	680254	Ground block, Dual	1
33	680159	Screw for GND block	2
34	N07384	Screw, pan head cross recess, M4X0.7X25	10
35	620152	Terminal rail, connector	1
36	610916	Ground block	1
37	610914	Terminal block, 32A	20
38	804534	Fuse insert	6
39	610164	Screw, pan head cross recess, M4 X 0.7 X 16	16
40	106236	Washer, M4 external tooth lock	16



Contents of Panel Box Assembly

Front Panel Assembly

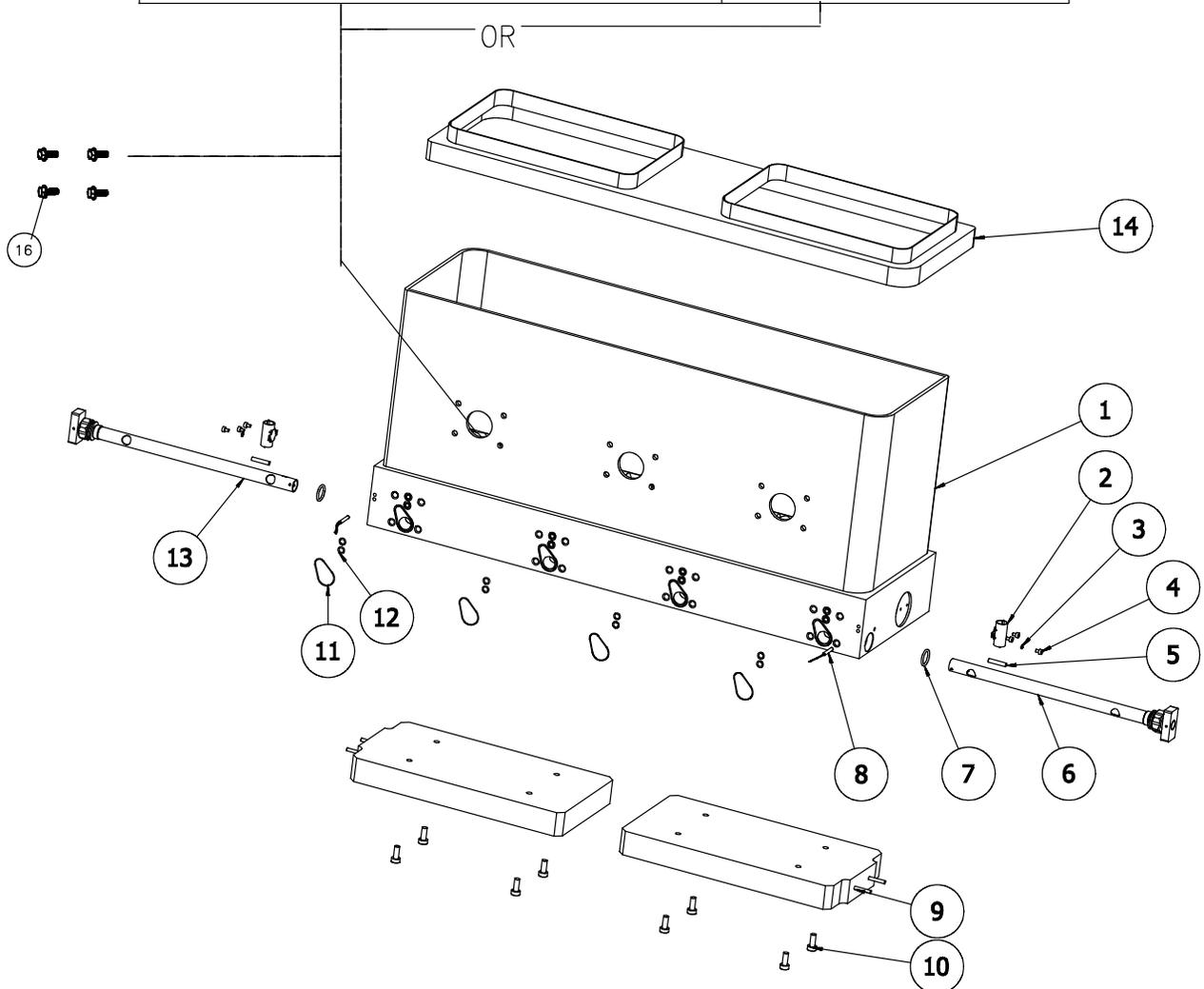
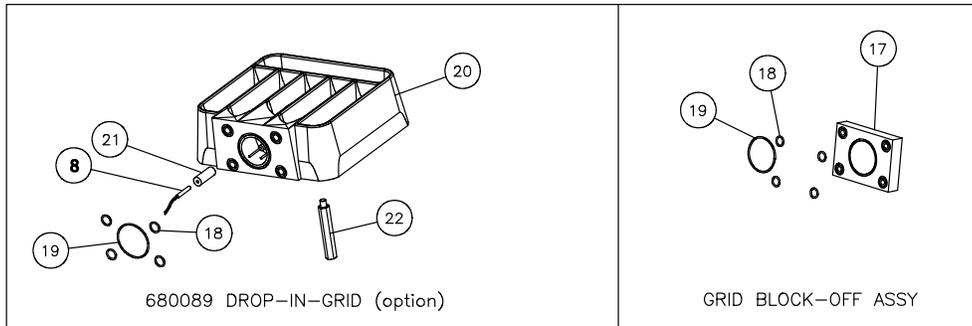
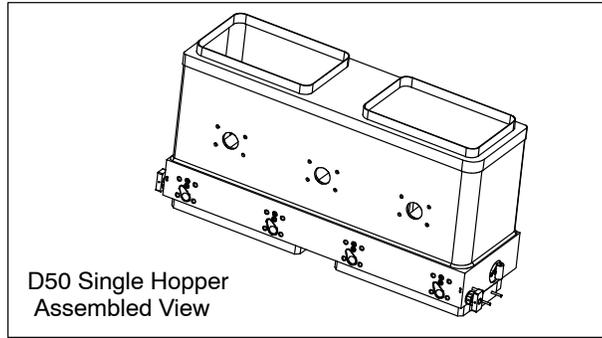
<i>Item No.</i>	<i>PN</i>	<i>ITW PN</i>	<i>Description</i>	<i>Qty.</i>
1	115893		PCB Assy. V6-LCD HMI	1
	118135		Touch Panel Assy. V6 (option, not shown)	1
2	115792		SCR, PH, 4-20X3/8,TF,ZP	8
3		680453	Bezel, Display	1
	820487		Bezel, HMI, Touch Panel (option, not shown)	1
4	106110		Hexagon Nut, M5x0.8	1
5	106318		External Tooth Lock Washer, 5mm	1



Front Panel Assembly

D50 Single Hopper & Grid Assembly

<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	620181	Hopper, Single, D50	1
2	104166	Mechanical O/T Thermostat	2
3	106236	M4, External Tooth lock washer	2
4	108698	M4*0.7*6MM SHC Screw	6
5	610705	Socket set screw, cup point, M6*1.0*30	2
6	620184	Filter shut-off assembly, single hopper, left	1
7	610704	O-RING, 24*3	2
8	107183	Temperature sensor	5
9	610304	Heat plate, 2500W	2
10	610715	M8*20 SHC Screw, M8*1.25*20	8
11	069X058	O-RING, -028	4
12	610712	O-RING, 9.5*1.8	8
13	620192	Filter shut-off assembly, single hopper, right	1
14	620182	Hopper cover, single hopper, D50/90	1
15			
16	108297	M8*1.25*20mm, HH Screw	12
17	105149	Block-off plate	3
18	N00181	O-RING, -014	12
19	N00192	O-RING, -032	3
	680089	Drop-in Grid (option)	
20	104802	Drop-in-Grid (option)	3
21	106174	Sensor adapter (option)	3
22	107256	Stand-off Support, 3"	3



D50 Single Hopper & Grid Assembly

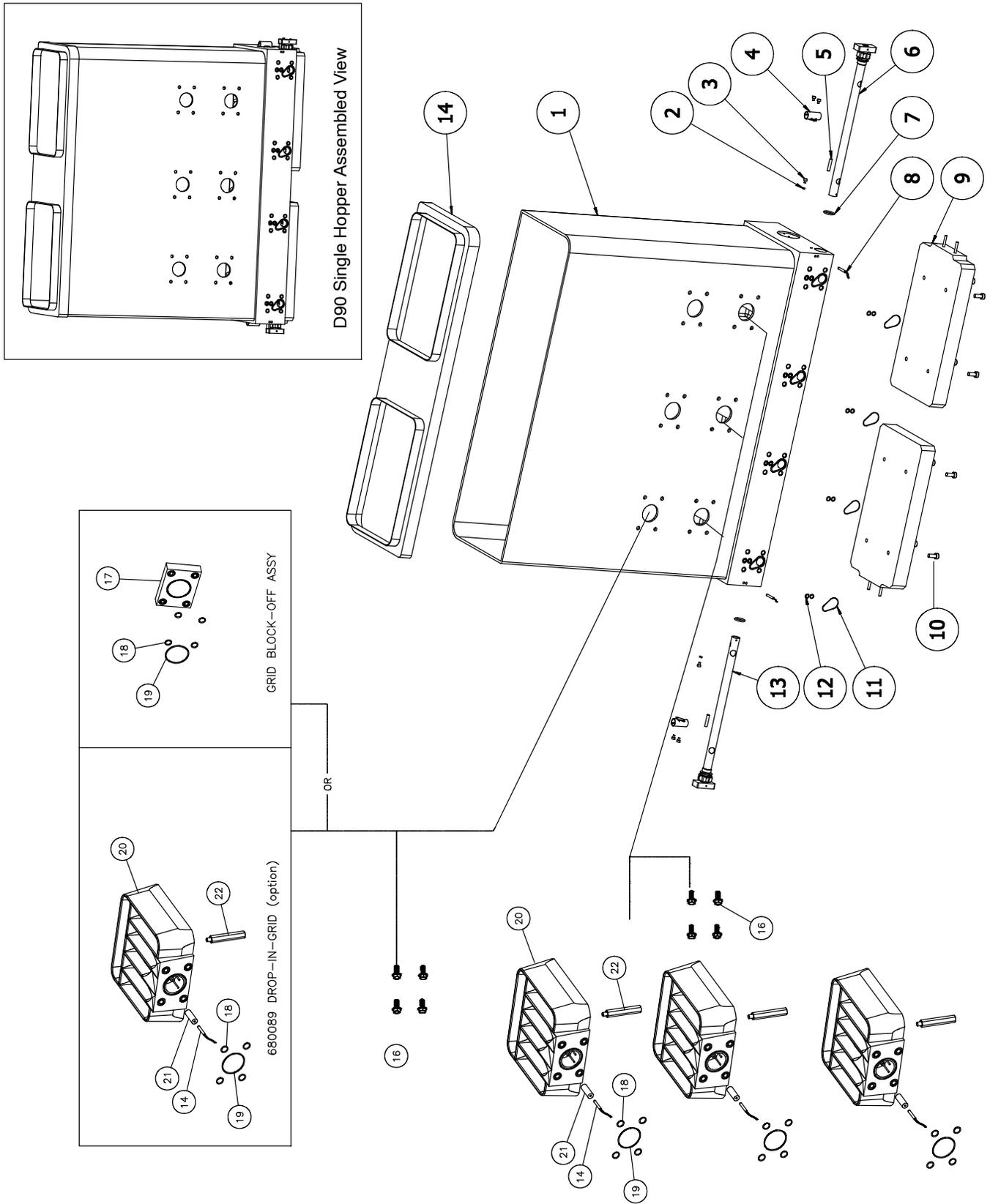
D90 Single Hopper & Grid Assembly

<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	620191	Hopper, Single, D90	1
2	106236	M4, External Tooth lock washer	2
3	108698	M4*0.7*6MM SHC Screw	6
4	104166	Mechanical O/T Thermostat	2
5	610705	Socket set screw, cup point, M6*1.0*30	2
6	620184	Filter shut-off assembly, single hopper, left	1
7	610704	O-RING, 24*3	2
8	107183	Temperature sensor	5
9	610304	Heat plate, 2500W	2
10	610715	M8*20 SHC Screw, M8*1.25*20	8
11	069X058	O-RING, -028	4
12	610712	O-RING, 9.5*1.8	8
13	620192	Filter shut-off assembly, single hopper, right	1
14	620182	Hopper cover, single hopper, D50/90	1
15			
16	108297	M8*1.25*20mm, HH Screw	12
17	105149	Block-off plate	3
18	N00181	O-RING, -014	12
19	N00192	O-RING, -032	3
	680089	Drop-in Grid (option)	
20	104802	Drop-in-Grid (option)	3
21	106174	Sensor adapter (option)	3
22	107256	Stand-off Support, 3"	3

Configurations

Standard configuration for the D90 single hopper = 3 sets of grid assemblies mounted in the 3 lower holes of the hopper and 3 block-off plates mounted in the upper 3 holes.

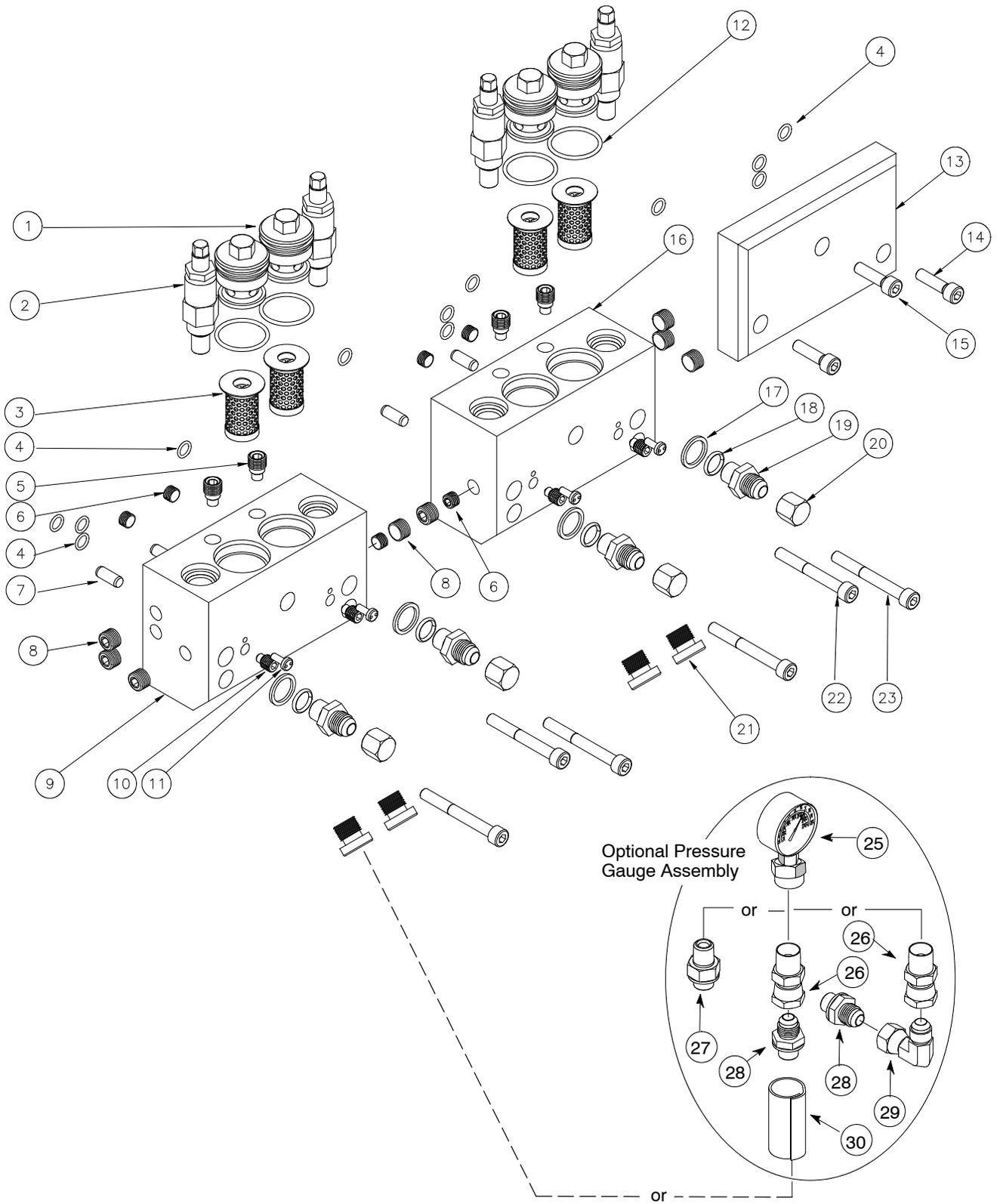
Optional configuration for the D90 single hopper = 3 sets of grid assemblies mounted in the 3 lower holes of the hopper plus 3 sets of grid assemblies mounted in the 3 upper holes of the hopper.



D90 Single Hopper & Grid Assembly

PN 680029 (Left) and 680030 (Right) Filter Manifold Assemblies

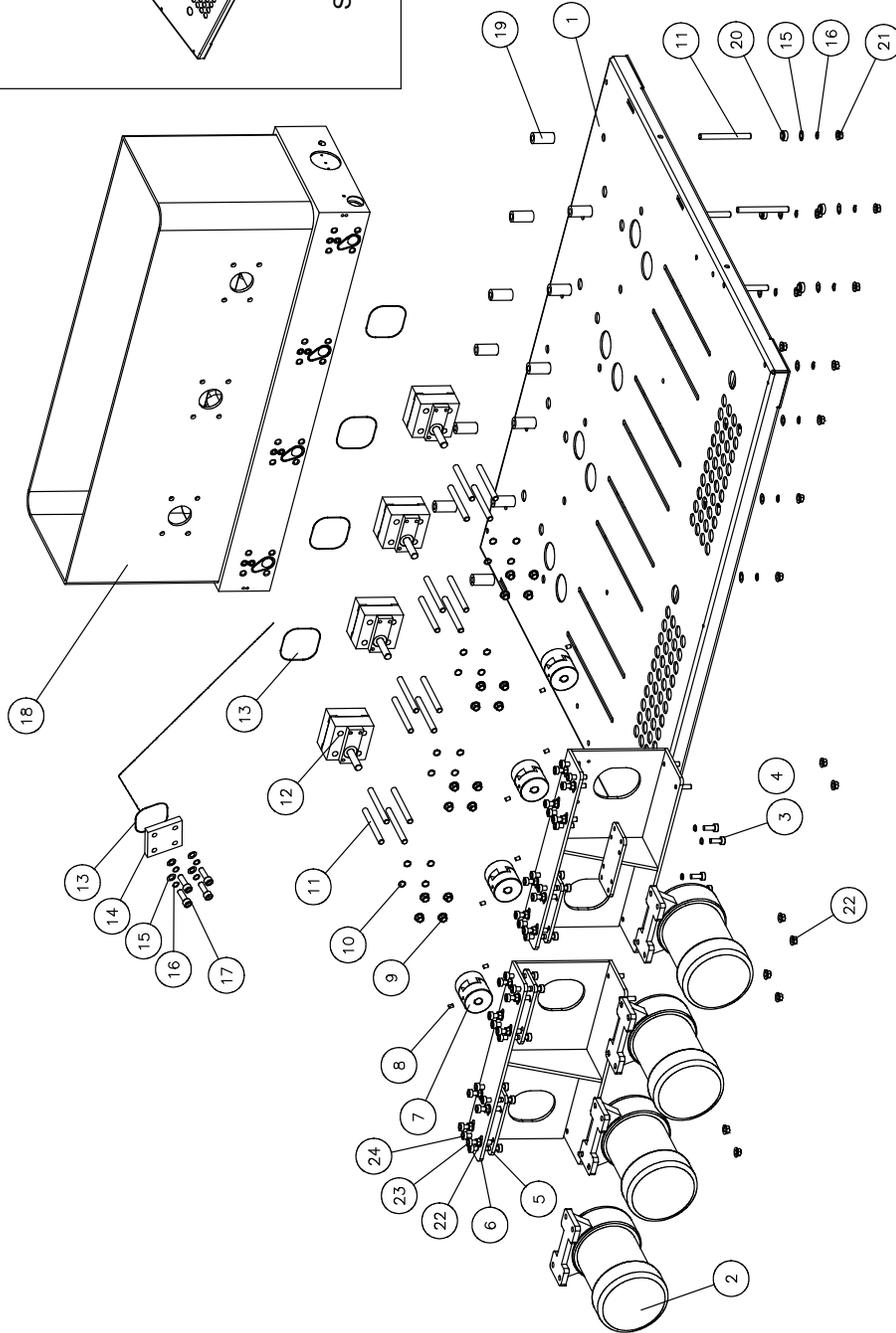
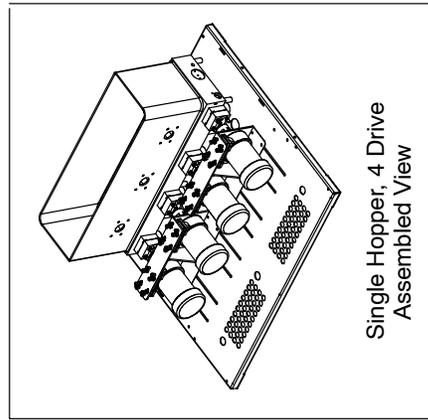
<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	106303	Filter Nut	2 or 4
2	101840	Pressure Relief Valve	2 or 4
3	101247	Filter Basket, 100 Mesh	2 or 4
4	610712	O-Ring, 9.5 x 1.8 mm	8
5	104733	Plug, Pressure Transducer	2 or 4
6	N00753	Flush Plug, 1/8 NPT	3 or 6
7	680049	Dowel Pin, 8 x 20 mm	2 or 4
8	N00754	Flush Plug, 1/4 NPT	4 or 8
9	610804	Filter Manifold, Left	1
10	104852	Setscrew, M10x1.5 x 12, Cone Point	2 or 4
11	101833	Screw, 10-32 x 1/2, Tamper Proof Head	2 or 4
12	N03812	O-Ring, -125	2 or 4
13	610821	Block-off Plate (used only with 1 drive system)	1
14	N07429	Screw, SHC, M8x1.25 x 30	2
15	107345	Screw, SHC, M8x1.25 x 25	1
16	610803	Filter Manifold, Right	1
17	610816	Flat Washer (included with item 19)	2 or 4
18	N00198	O-Ring, 5-005 (Included with item 19)	2 or 4
19	103623	Fitting, Straight, #6 JIC x G 3/8	2 or 4
20	N08024	Fitting, Cap, #6 SAE	2 or 4
21	103626	Fitting, Plug, G3/8	2 or 4
22	109793	Screw, SHC, M8x1.25 X 65	1 or 2
23	610805	Screw, SHC, M8x1.25 x 70	2 or 4
24	101175	Pressure Gauge Assembly (option)	1
25	101174	Pressure Gauge (option)	1
26	104325	Fitting, Adapter, #6 x 1/4 NPT	1
27	105914	Fitting, Adapter, G 3/8 x 1/4 NPT	1
28	103623	Fitting, Adapter, #6 x G 3/8	1
29	N07830	Fitting, 90°, #6 JIC Male x #6 JIC Female	1
30	102987	Insulator Cuff	1



PN 680029 (Left) and 680030 (Right) Filter Manifold Assemblies

4 Drive Assembly, Single Hopper

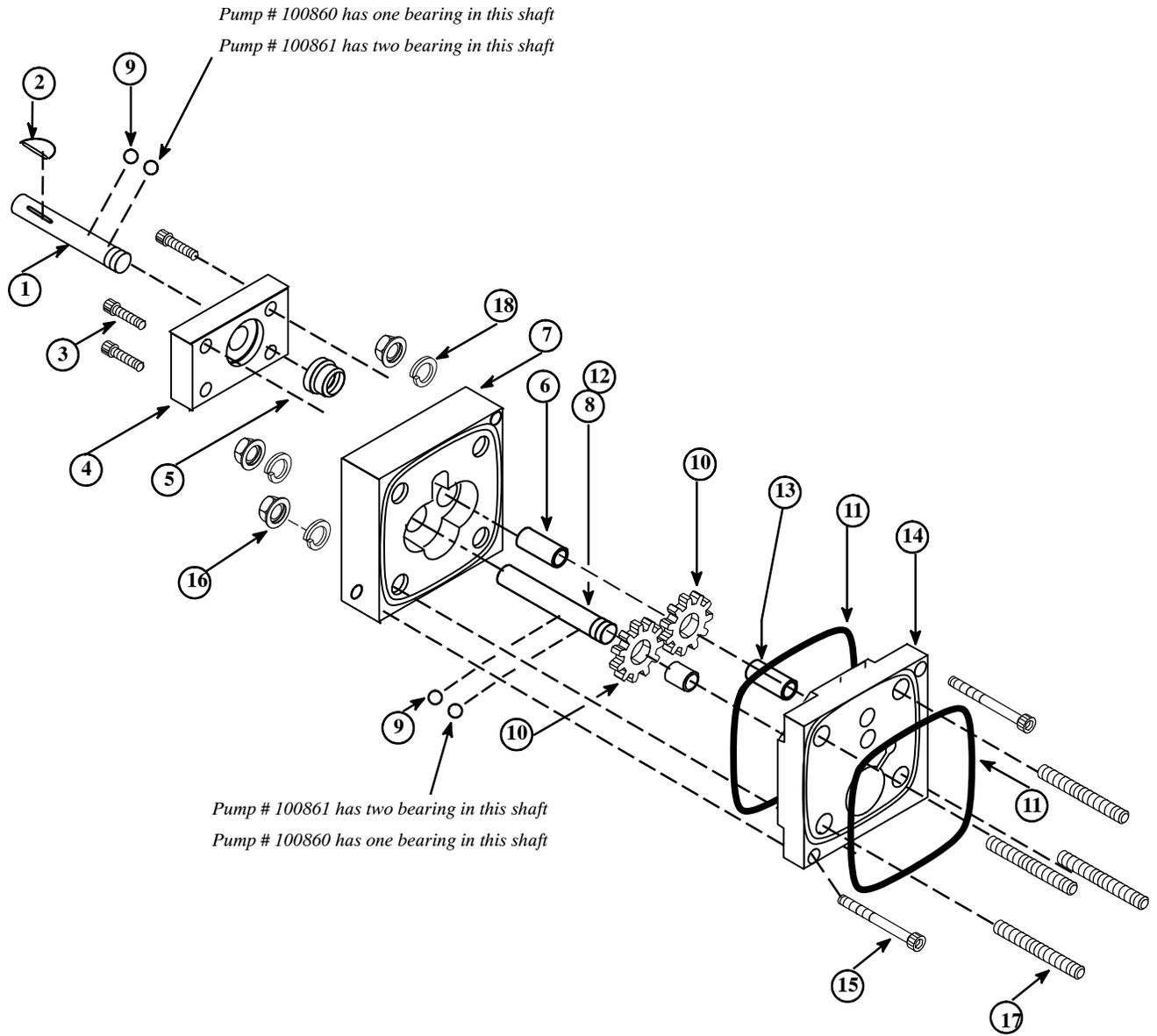
Item No.	Part Number	Description	Qty.
1	620101	Base plate, D50/90	1
2	680137	Motor, gear, 240V, 3PH, 0.25HP	4
3	610715	M8X1.25X20MM, SHC Screw	16
4	107346	M8 Split lock washer	16
5	610109	Motor nut mounting plate	4
6	680138	Motor mounting bracket, dual	2
7	680129	Coupling, mikipully	4
8	610209	Socket set screw, cup point	8
9	104158	M10- 1, nut, 5, flange	16
10	107538	M10 split lock washer, high collar	16
11	104072	M10- 1.5X100mm, Stud, GRD 8.8	28
12	per order	PUMP (shown for reference)	4
13	069X064	O- RING, - 041	4
14	012G009	Grid hole block- off plate	4
15	610169	M10 flat washer	16
16	107538	M10 Split lock washer	16
17	103518	M10X1.5X30mm, SHC, Screw	4
18	620181	Hopper, Single, D50	1
	620191	Hopper, Single, D90	1
19	610204	Spacer, L=40mm	12
20	610122	Spacer, L=8.5mm	12
21	610120	Hex flange nut, GRADE A	12
22	610146	Hexagon flange nut, M8X1.25	24
23	106244	M8X1.25X40mm, SHC screw	16
24	N07429	M8X1.25X30mm, SHC Screw	16



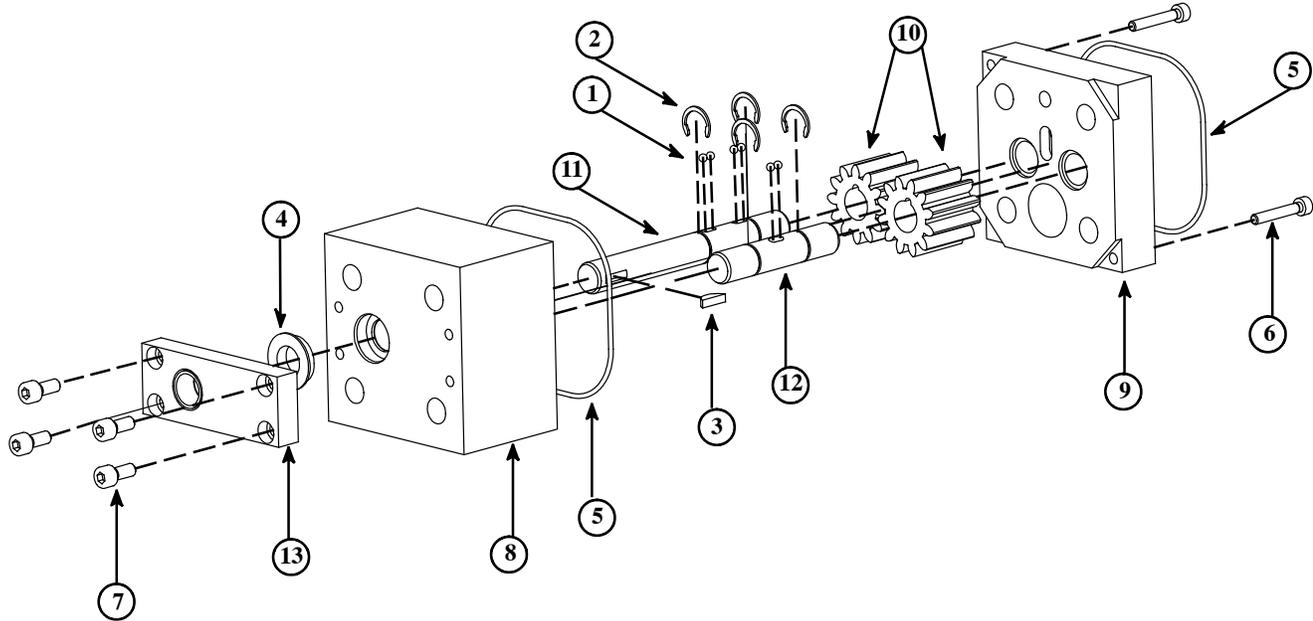
4 Drive Assembly, Single Hopper

PN 100860 1.54 cc/ rev. Single Gear Pump Assembly
PN 100861 3.2 cc/ rev. Single Gear Pump Assembly

<i>Item No.</i>	<i>Part Number</i> #100860 / #100861	<i>Description</i>	<i>Qty.</i>
1	012D079 / 012D077	Drive Shaft	1
2	078I001	Key, Woodruff	1
3	101626	M5 x 12 SHC Screw	4
4	069X160	Seal Retainer & Bearing Housing	1
5	069X061	Lip Seal	1
6	018X041	Bearing Sleeve	2
7	100866 / 100867	Front Plate Assembly	1
8	012D080 / 012D078	Driven Gear Shaft	1
9	018X031	Ball, 1/8" Diameter (see illustration for quantity)	2-4
10	012C020 / 012C019	Drive Gear	2
11	069X064	Pump Seal	2
12	078F017	Shaft Retaining Ring	4
13	018X041	Bearing Sleeve, Rear Plate	2
14	100865	Rear Plate Assembly	1
15	100908	M4 x 25 SHC Screw	2
16	104158	M10 Flange Nut	4
17	104072	M10-1.5 x 100 All Thread	4
18	107538	Lock Washer Split Hi Collar	4

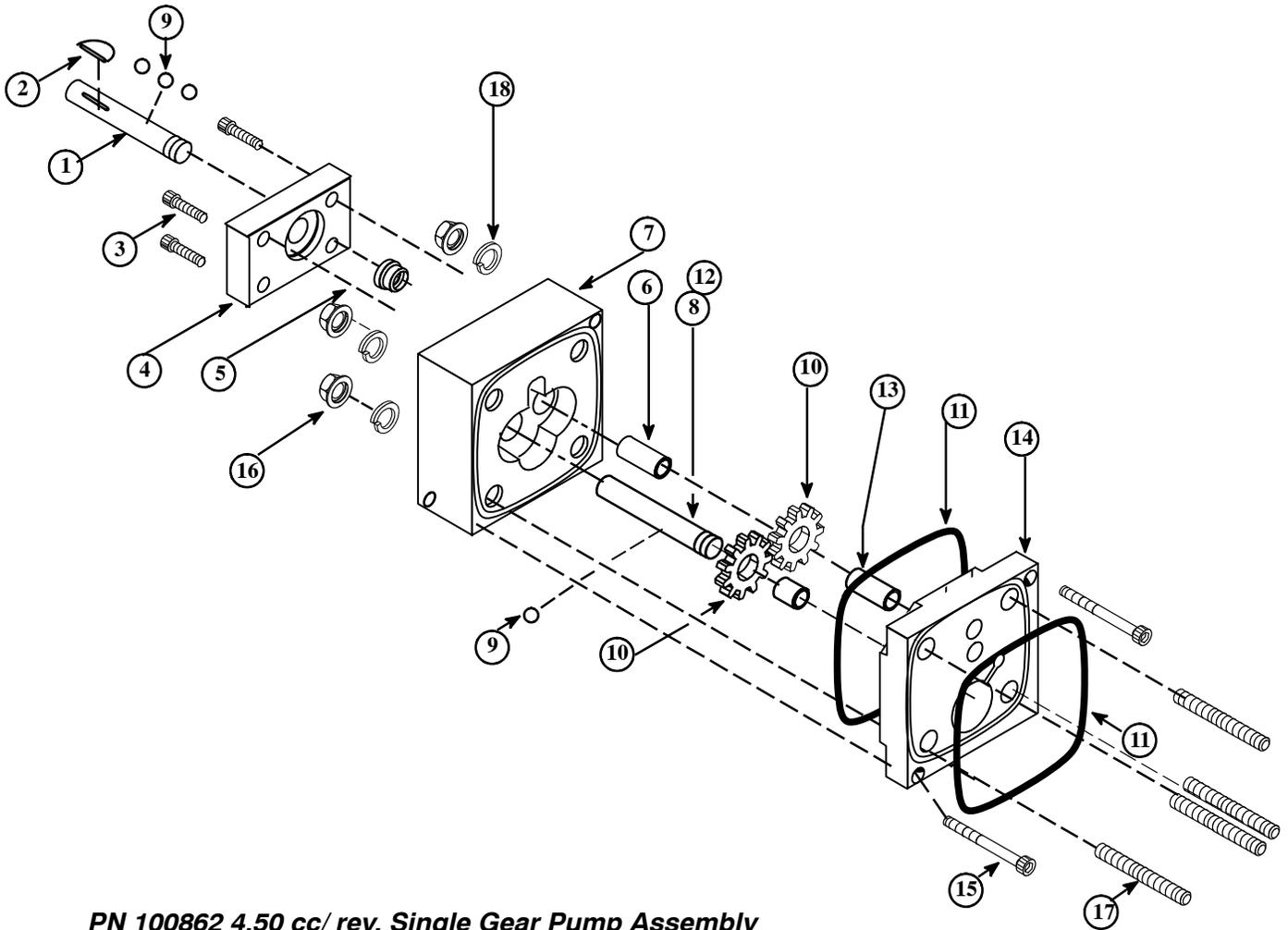


PN 100860 & PN 100861 Single Gear Pump Assemblies



PN 109690 10 cc/ rev. Single Gear Pump Assembly

Item No.	Part Number	Description	Qty.
1	018X031	Ball Bearing, 1/8 Diameter	6
2	078F017	Snap Ring, 1/2"	4
3	078I001	Key Woodruf, #404	1
4	069X061	Shaft Seal	1
5	069X064	O-ring, -041	2
6	108588	M4x25mm, Blk SHC Screw	2
7	101626	M5-0.8 x 12mm SHC Screw	4
8	109685	Pump Body 10cc/ rev	1
9	109686	Rear Bearing Plate 10cc/ rev	1
10	109689	Gear 10cc/ rev	2
11	109687	Drive Shaft 10cc/ 20cc	1
12	109688	Driven Shaft, 10cc/ 20cc	1
13	069X160	Shaft Seal Retainer	1
14	001U002	Dow Corning 112 Lubricant (not shown)	

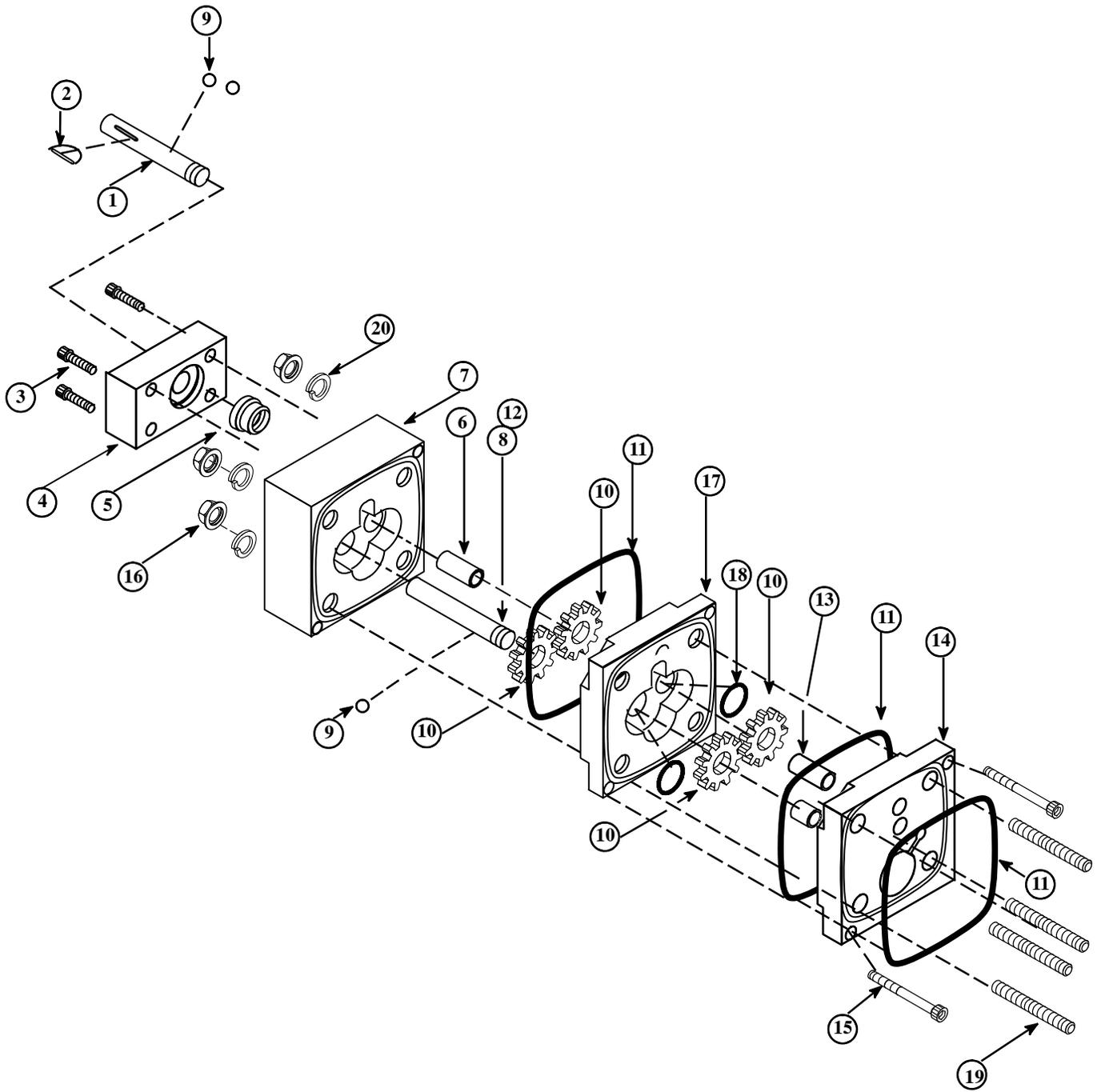


PN 100862 4.50 cc/ rev. Single Gear Pump Assembly

Item No.	Part Number	Description	Qty.
1	012D072	Drive Shaft	1
2	078I001	Key, Woodruff	1
3	101626	M5 x 12 SHC Screw	4
4	069X160	Seal Retainer & Bearing Housing	1
5	069X061	Lip Seal	1
6	018X041	Bearing Sleeve	2
7	100868	Front Plate Assembly	1
8	012D073	Driven Gear Shaft	1
9	018X031	Ball, 1/8" Diameter	4
10	012C018	Drive Gear, 4.5 cc/ rev.	2
11	069X064	Pump Seal	2
12	078F017	Shaft Retaining Ring	4
13	018X041	Bearing Sleeve, Rear Plate	2
14	100865	Rear Plate Assembly	1
15	100908	M4 x 25 SHC Screw	2
16	104158	M10 Flange Nut	4
17	104072	M10-1.5 x 100 All Thread	4
18	107538	Lock Washer Split Hi Collar	4

PN 100863 1.54 cc/ rev. Dual Gear Pump Assembly

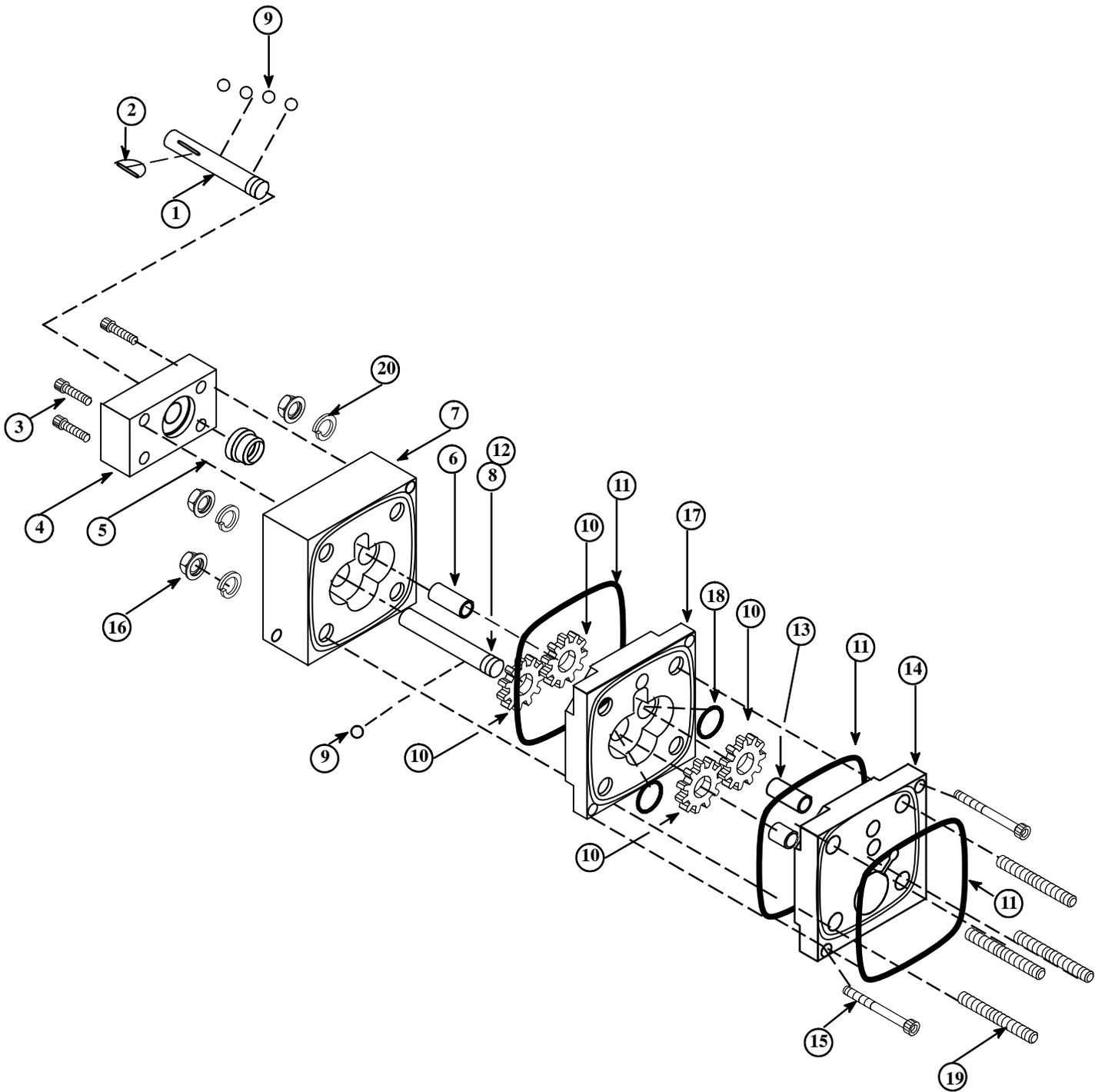
<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	012D083	Drive Shaft	1
2	078I001	Key, Woodruff	1
3	101626	M5 x 12 SHC Screw	4
4	069X160	Seal retainer & Bearing Housing	1
5	069X061	Lip Seal	1
6	018X041	Bearing Sleeve	2
7	100866	Front Plate Assembly	1
8	012D082	Driven Gear Shaft	1
9	018X031	Ball, 1/8" Dia.	3
10	012C020	Pump Gear, 1.5 cc/ rev.	4
11	069X064	O-ring, -041	3
12	078F017	Shaft Retaining Ring	4
13	018X041	Bearing Sleeve, Rear Plate	2
14	100865	Rear Plate Assembly	1
15	101692	M4 x 35 SHC Screw	2
16	104158	M10-1.5 x 100 Flange Nut	4
17	100869	Middle Plate	1
18	N00198	O-ring, -113	2
19	104073	M10-1.5 x 105 All Thread	4
20	107538	Lock Washer Split Hi Collar	4



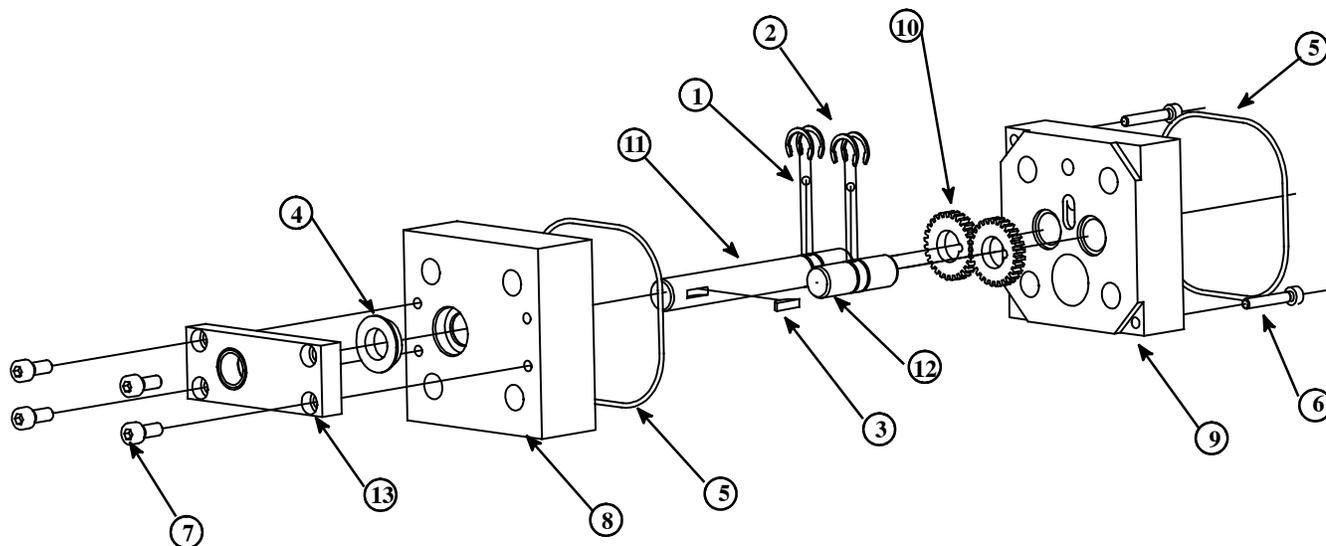
PN 100863 1.54 cc/ rev. Dual Gear Pump Assembly

PN 100864 3.2 cc/ rev. Dual Gear Pump Assembly

<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	012D088	Drive Shaft	1
2	078I001	Key, Woodruff	1
3	101626	M5 x 12 SHC Screw	4
4	069X160	Seal Retainer & Bearing Housing	1
5	069X061	Lip Seal	1
6	018X041	Bearing Sleeve	2
7	100867	Front Plate Assembly	1
8	012D087	Driven Gear Shaft	1
9	018X031	Ball, 1/8" Diameter	5
10	012C019	Drive Gear	4
11	069X064	O-ring, -041	3
12	078F017	Shaft Retaining Ring	4
13	018X041	Bearing Sleeve, Rear Plate	2
14	100865	Rear Plate Assembly	1
15	101691	M4 x 40 SHC Screw	2
16	104158	M10 Flange Nut	4
17	100870	Middle Plate	1
18	N00198	O-ring, -113	2
19	114890	M10-1.5 x 110, Stud	4
20	107538	Lock Washer Split Hi Collar	4

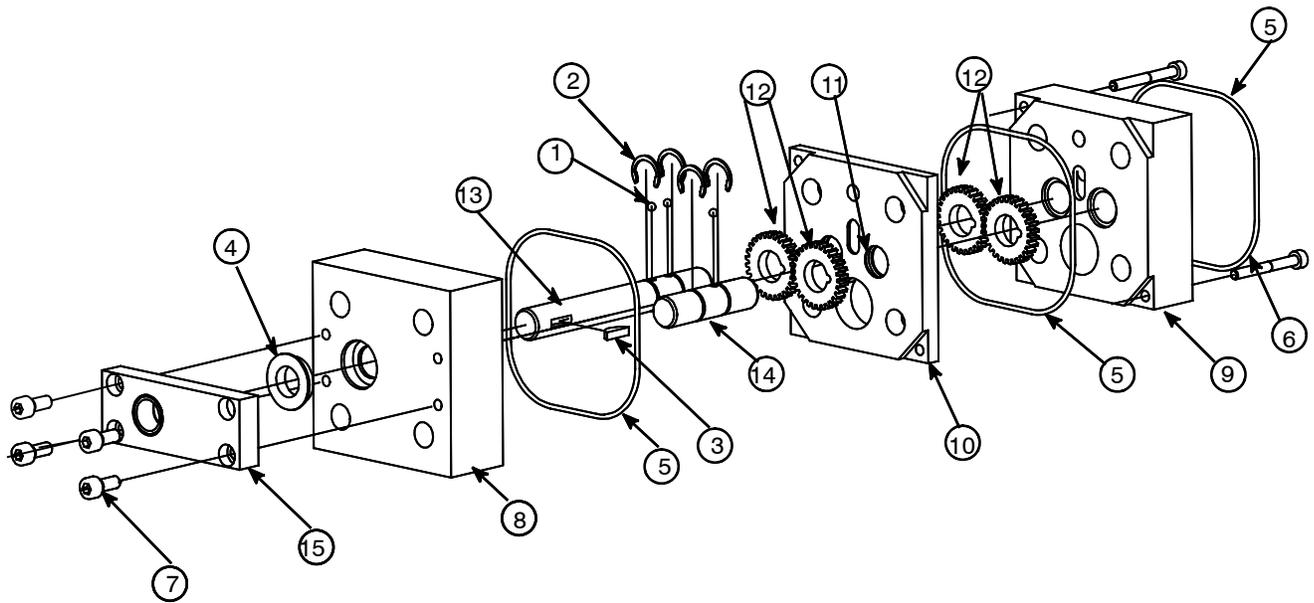


PN 100864 3.2 cc/ rev. Dual Gear Pump Assembly



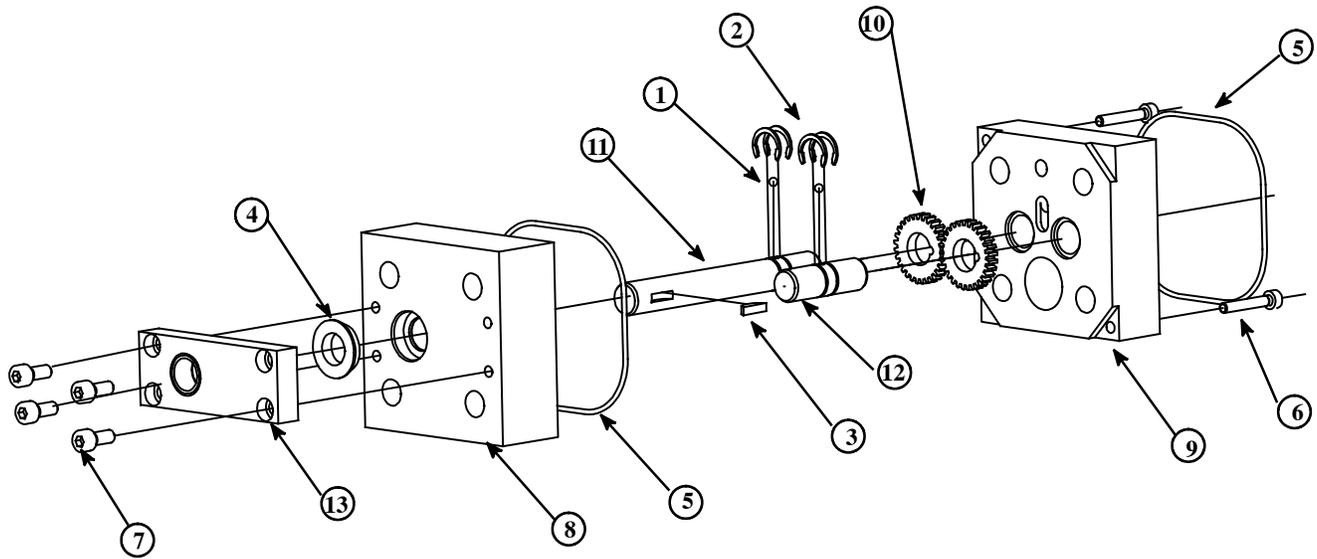
PN 109908 0.55 cc/ rev. Single Gear Pump Assembly

Item No.	Part Number	Description	Qty.
1	018X031	Ball Bearing, 1/8 Dia.	6
2	078F017	Snap Ring, 1/2"	4
3	078I001	Key Woodruff, #404	1
4	069X061	Shaft Seal	1
5	069X064	O-ring, -041	2
6	100908	M4-0.7 x 25mm SHC Screw	2
7	101626	M5-0.8 x 12mm SHC Screw	4
8	109906	Plate Front, .55 cc/ rev.	1
9	100865	Rear Bearing Plate .55 cc/ rev.	1
10	109907	Gear .55 cc/ rev.	2
11	012D079	Drive Shaft 1.5 cc/ rev. Dual	1
12	012D080	Driven shaft, 1.5 cc/ rev. Dual	1
13	069X160	Shaft Seal Retainer	1
14	001U002	Dow Corning 112 Lubricant (not shown)	



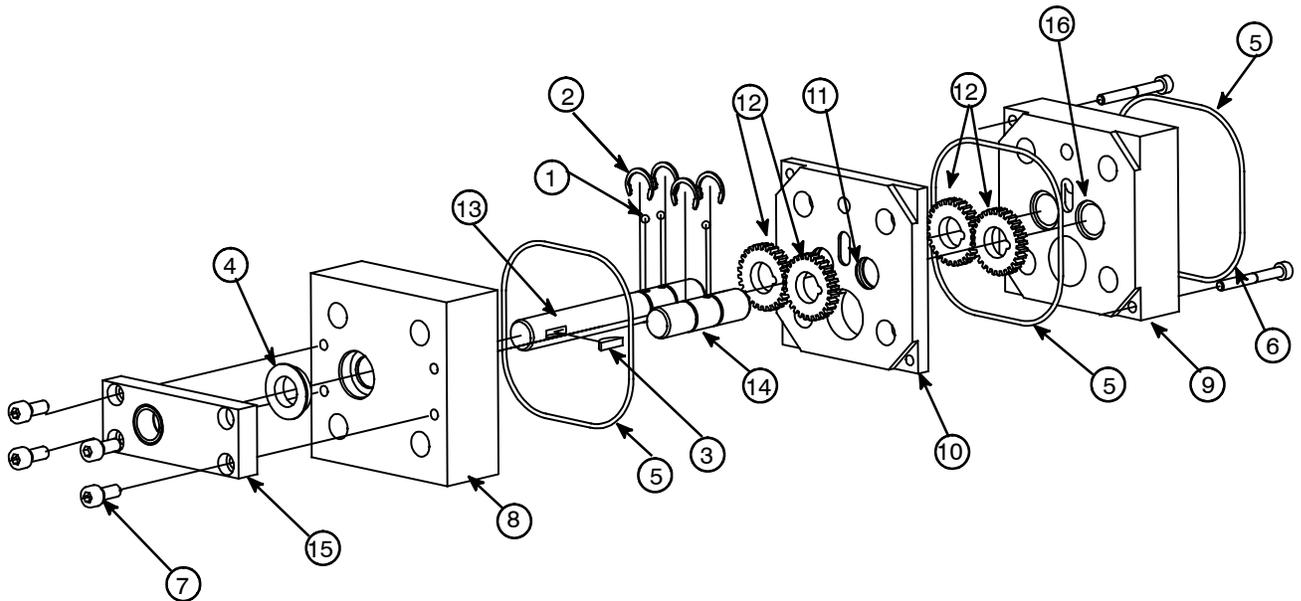
PN 109909 0.55 cc/ rev. Dual Gear Pump Assembly

Item No.	Part Number	Description	Qty.
1	018X031	Ball Bearing, 1/8 Dia.	6
2	078F017	Snap Ring, 1/2"	4
3	078I001	Key, Woodruff #404	1
4	069X061	Shaft Seal	1
5	069X064	O-ring, -041	2
6	101692	M4-0.7 x 35mm SHC Screw	2
7	101626	M5-0.8 x 12mm SHC Screw	4
8	109906	Plate Front, .55 cc/ rev.	1
9	100865	Rear Bearing Plate, .55 cc/ rev.	1
10	109905	Plate, Middle Gear, .55 cc/ rev.	1
11	N00198	O-ring -113	2
12	109907	Gear .55 cc/ rev.	4
13	012D083	Drive Shaft 1.5 cc/ rev. Dual	1
14	012D082	Driven Shaft, 1.5 cc/ rev. Dual	1
15	069X160	Shaft Seal Retainer	1
16	001U002	Dow Corning 112 Lubricant (not shown)	



PN 111253 0.15 cc/ rev. Single Gear Pump Assembly

Item No.	Part Number	Description	Qty.
1	018X031	Ball Bearing, 1/8 Dia.	6
2	078F017	Snap Ring, 1/2"	4
3	078I001	Key Woodruff, #404	1
4	069X061	Shaft Seal	1
5	069X064	O-ring, -.041	2
6	100908	M4-0.7 x 25mm SHC Screw	2
7	101626	M5-0.8 x 12mm SHC Screw	4
8	111251	Plate Front, .15 cc/ rev.	1
9	100865	Rear Bearing Plate .55 cc/ rev.	1
10	111252	Gear .15 cc/ rev.	2
11	012D079	Drive Shaft 1.5 cc/ rev. Dual	1
12	012D080	Driven shaft, 1.5 cc/ rev. Dual	1
13	069X160	Shaft Seal Retainer	1
14	001U002	Dow Corning 112 Lubricant (not shown)	



PN 111254 0.15 cc/ rev. Dual Gear Pump Assembly

Item No.	Part Number	Description	Qty.
1	018X031	Ball Bearing, 1/8 Dia.	6
2	078F017	Snap Ring, 1/2"	4
3	078I001	Key Woodruff, #404	1
4	069X061	Shaft Seal	1
5	069X064	O-ring, -041	2
6	101692	M4-0.7 x 35mm SHC Screw	2
7	101626	M5-0.8 x 12mm SHC Screw	4
8	111251	Plate Front, .55 cc/ rev.	1
9	100865	Rear Bearing Plate, .55 cc/ rev.	1
10	111252	Plate, Middle Gear, .55 cc/ rev.	1
11	N00198	O-ring, -113	2
12	109907	Gear .55cc/ rev.	4
13	012D083	Drive Shaft 1.5 cc/ rev. Dual	1
14	012D082	Driven Shaft, 1.5 cc/ rev. Dual	1
15	069X160	Shaft Seal Retainer	1
16	N00198	O-ring, 2-113	2
	001U002	Dow Corning 112 Lubricant (not shown)	

PN 680424 Pneumatic Pressure Relief Valve Kit

Item No.	Part Number	Qty.	Description	
13	N00093	12	EA	FITTING,1/8 NPT,1/4 O.D
12	---	N/A	FT	TUBE,O.D.6MM,TFE
11	---	2	EA	FITTING,90DEGREE,O.D.8MM-6MM
10	---	N/A	FT	TUBE,O.D.6MM,PVC
9	---	N/A	FT	TUBE,O.D.8MM,PVC
8	---	6	EA	FITTING, 3 HOLES,8MM-6MM-8MM
7	---	1	EA	FITTING, 3 HOLES,10MM-8MM-8MM
6	---	N/A	FT	TUBE,O.D.10MM,PVC
5	115540	4	EA	PNEUMATIC REV VALVE ASSY
4	680279	4	EA	PRECISE PRESSURE GAUGE,1R2010-02BG
3	680273	4	EA	SOLENOID,24V,4.8W,1/8 PORT,VT307
2	680419	1	EA	FILTER& GAUGE KIT,AW30-03BG
1	680421	1	EA	MNT PLATE,P.R.V KIT.D25/45

TABULATURE

PART NUMBER	DESCRIPTION	QTY.			
		1 UNIT	2 UNIT	3 UNIT	4 UNIT
---	FITTING, 3 HOLES,8MM-6MM-8MM	1	2	4	6
115540	PNEUMATIC REV VALVE ASSY	1	2	3	4
680279	PRECISE PRESSURE GAUGE,1R2010-02BG	1	2	3	4
680273	SOLENOID,24V,4.8W,1/8 PORT,VT307	1	2	3	4

NOTES:

- THE DIAGRAM SHOWS 2 DUAL PUMP CONFIGURATION. THE OPTION SHOULD ACCORDING THE DETAILED CONFIGURATION OF THE SINGLE OR DUAL PUMP ON THE ASU,THAT IS:
 EACH SINGLE PUMP: ONE SENOID AND ONE PRECISE AIR CONTROL GAUGE
 EACH DUAL PUMP: TWO SENOIDS AND TWO PRECISE AIR CONTROL GAUGES
- ADJUST THE AIR PRESSURE USING A PRESSURE GAUGE INSTALLED ON THE MANIFOLD
- THE NOMINAL PRESSUER RATIO (GLUE TO AIR) OF THE PNEUMATIC PRV IS 14:1
- DO FACTORY SETUP TO GET 400PSI OUTPUT OF GLUE PRESSURE ON THE PRESSURE GAUGE,100 PSI FROM PRECISE GAUGE CIRCLE AND 300 PSI FROM THE SOLENOID CIRCLE.

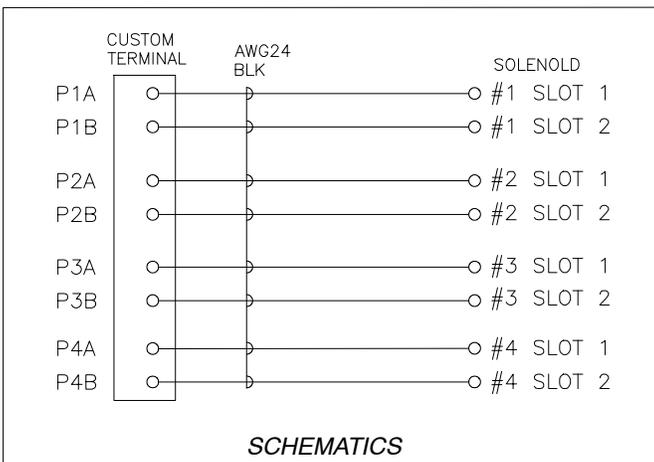
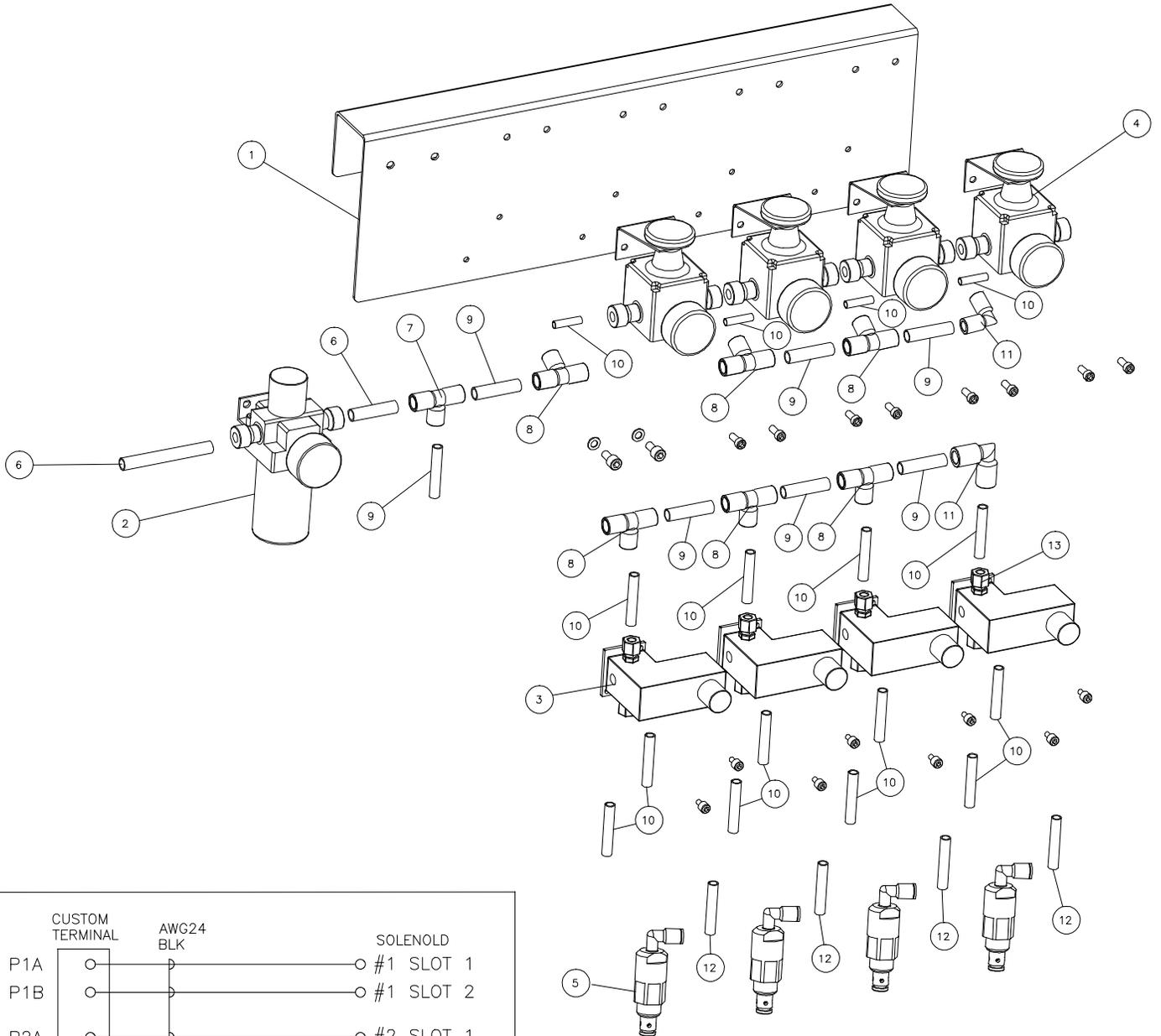
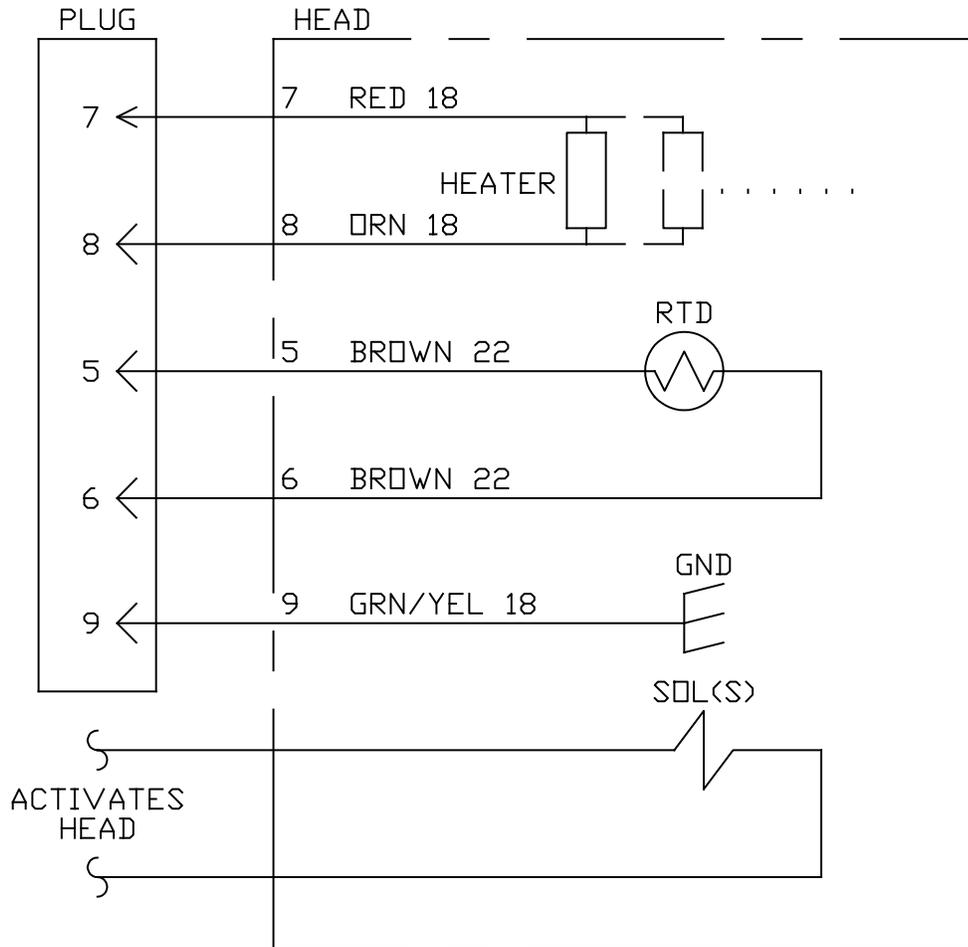


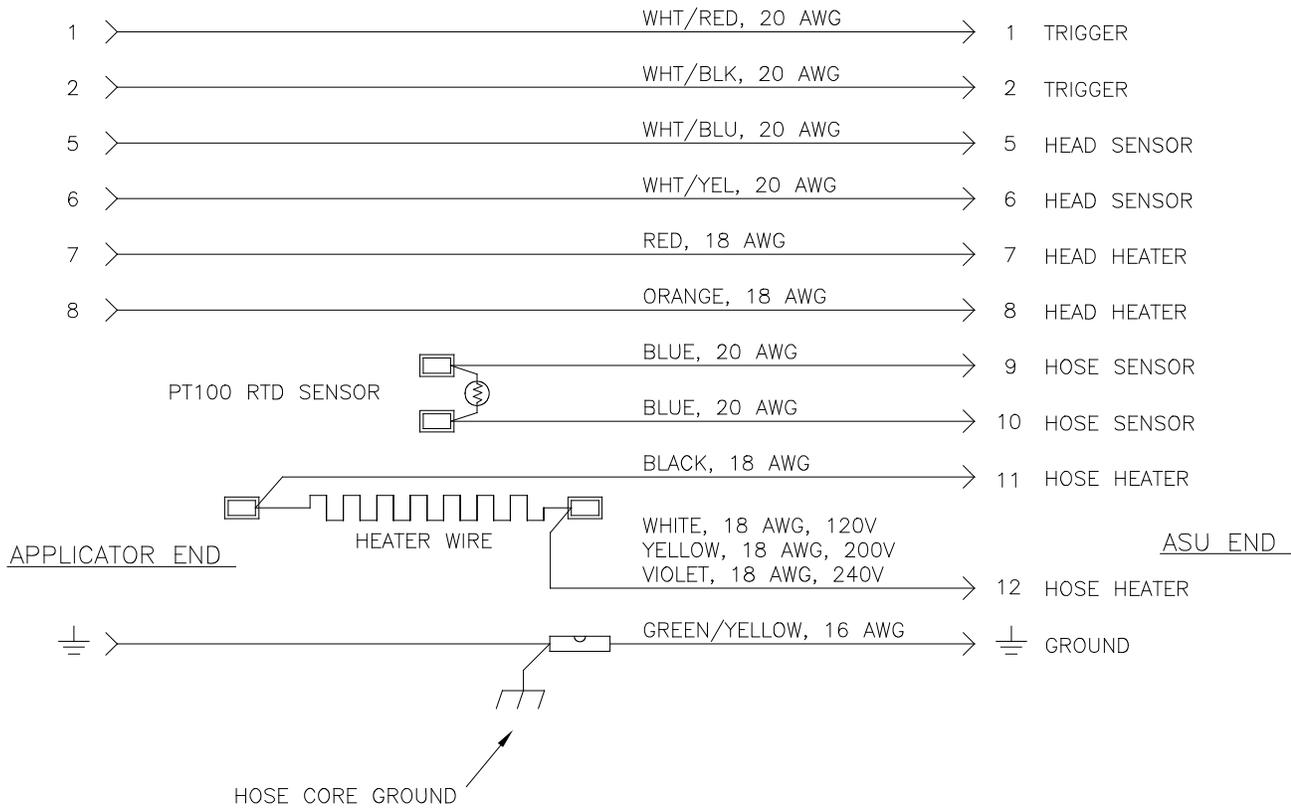
Illustration shows two Dual Pump Configuration.

Chapter 11 SYSTEM SCHEMATICS & ENGINEERING DRAWINGS



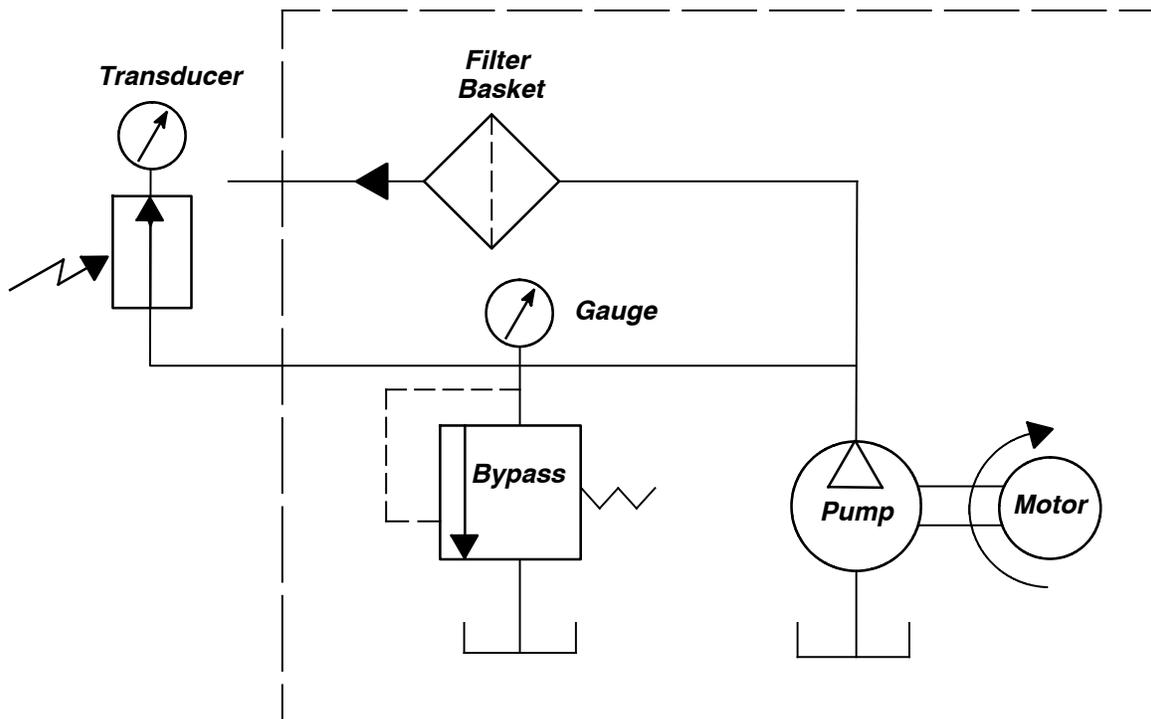
Notes:

1. ALL WIRE MIL-W-22759/10 OR 12, MINIMUM 600 VOLTS, 260 DEG. C
2. SOLENOID(S) VOLTAGE AND TIMING METHOD DEPENDS ON APPLICATION.
3. RTD WILL BE PLATINUM 100 OHM.

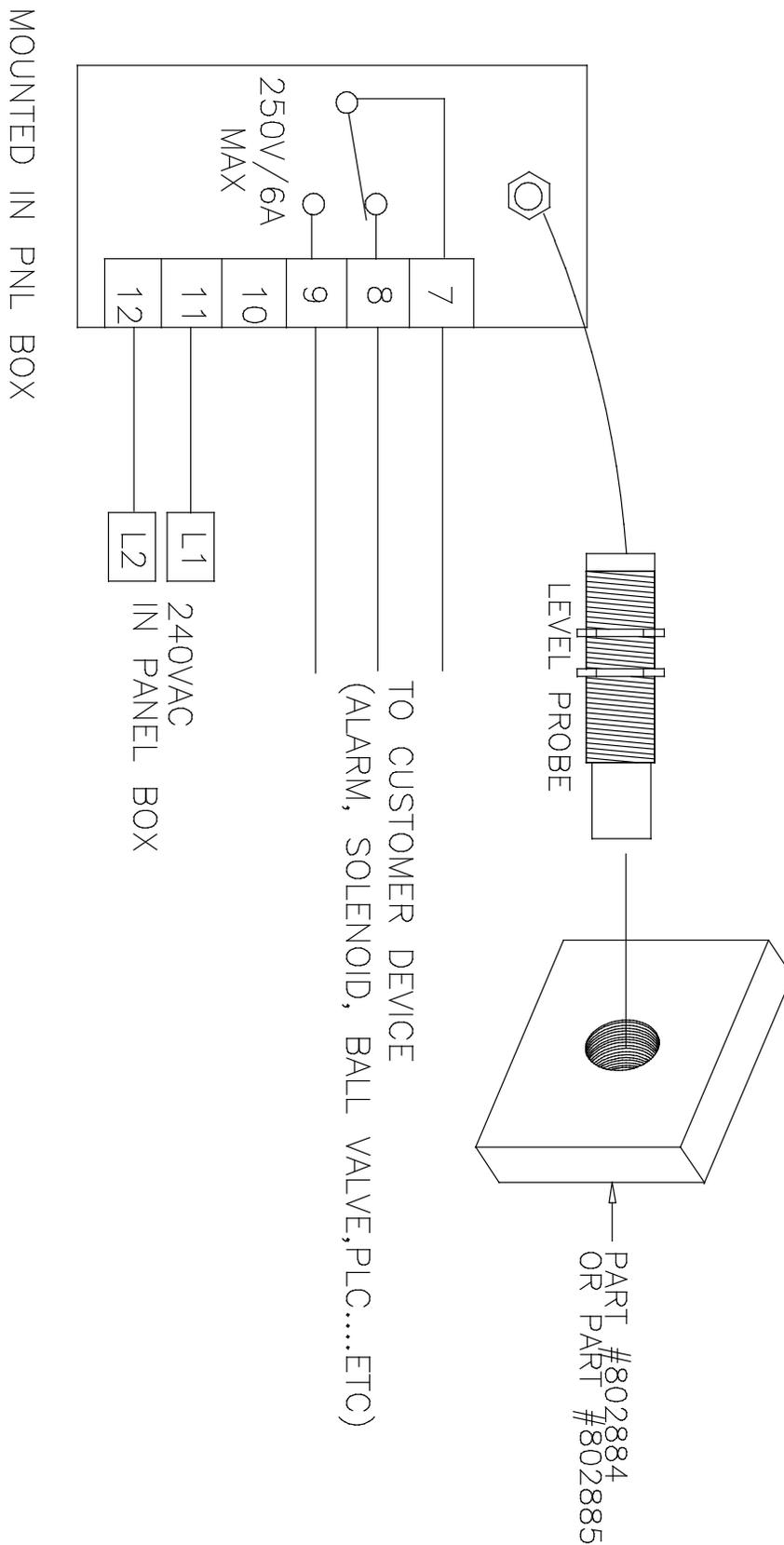


NOTES:

1. ALL WIRING IS ROUTED THROUGH THE HOSE.,
2. WIRE SIZES SHOWN ARE FOR NO. 6 AND NO. 8 HOSES UP TO 24 FT. IN LENGTH. FOR LARGER DIAMETER AND LONGER HOSES, HEATER LEAD WIRES ARE 16 AWG. OTHER WIRE SIZES, AND COLORS, MAY BE CHANGED IN SPECIAL HOSES, PER CUSTOMER REQUEST.



TYPICAL HYDRAULIC SCHEMATIC:
Single Pump, Motor, Bypass, Filter, optional Transducer & optional Pressure Gauge



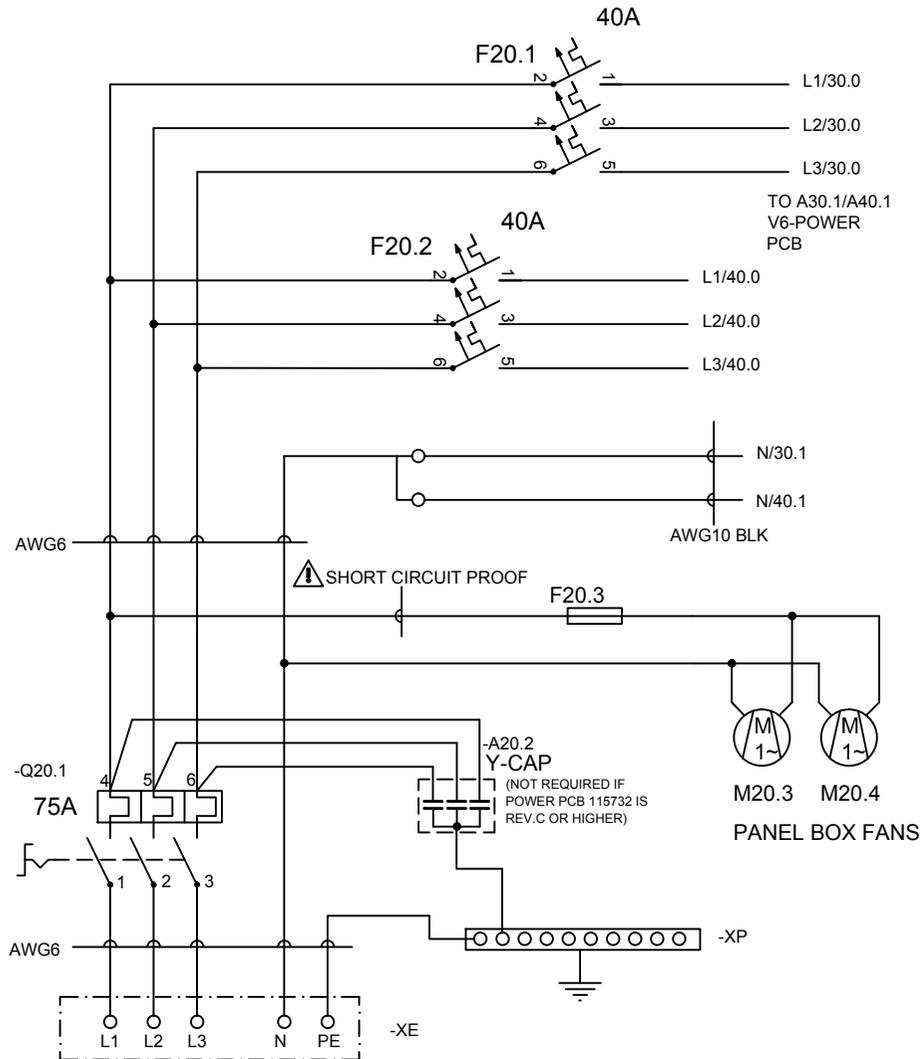
LEVEL CONTROL SCHEMATIC PN 802972 REV. A

THIS DRAWING IS THE PROPERTY OF AIR/SEALED.
DO NOT REPRODUCE OR DISCLOSE TO
OTHERS WITHOUT EXPRESS WRITTEN
CONSENT OF AIR/SEALED.

DRAWING NO. 118522 REV. 2

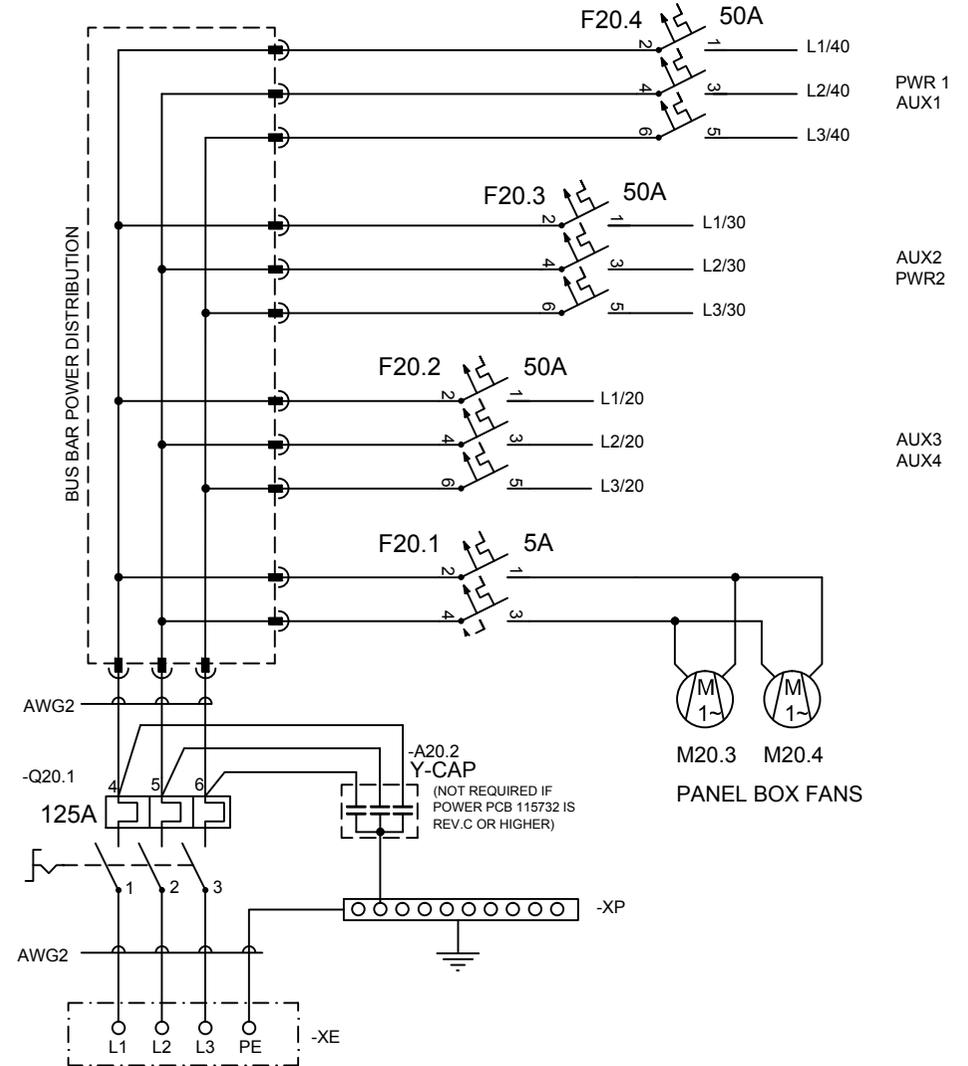
REV.	DESCRIPTION	DATE	BY	APPROVED
1	ORIGINAL RELEASE		DH	

400VAC 3 PHASE + N (WYE)



POWER SUPPLY
3 PHASE 400VAC 50/60HZ

230VAC 3 PHASE (DELTA)



POWER SUPPLY
3 PHASE 230VAC 50/60HZ

D50/90 V6

COMPUTER DESCRIPTION (MANDATORY)		DATE	REV.	BY	CHKD.	DATE	REV.	BY	CHKD.	DATE	REV.	BY	CHKD.
SCHEM, D50/90, V6		05.01.12	2	B	D. HEERDT								

DO NOT SCALE DRAWING	FOR MACHINING STANDARDS AND SYMBOLS SEE REV. 07/2008 - 02C, A0800	REV. 2	OF 15	DATE 05.01.12	BY D. HEERDT	CHKD. -	DATE -	REV. -	BY -	CHKD. -	DATE -	REV. -	BY -	CHKD. -
----------------------	---	--------	-------	---------------	--------------	---------	--------	--------	------	---------	--------	--------	------	---------

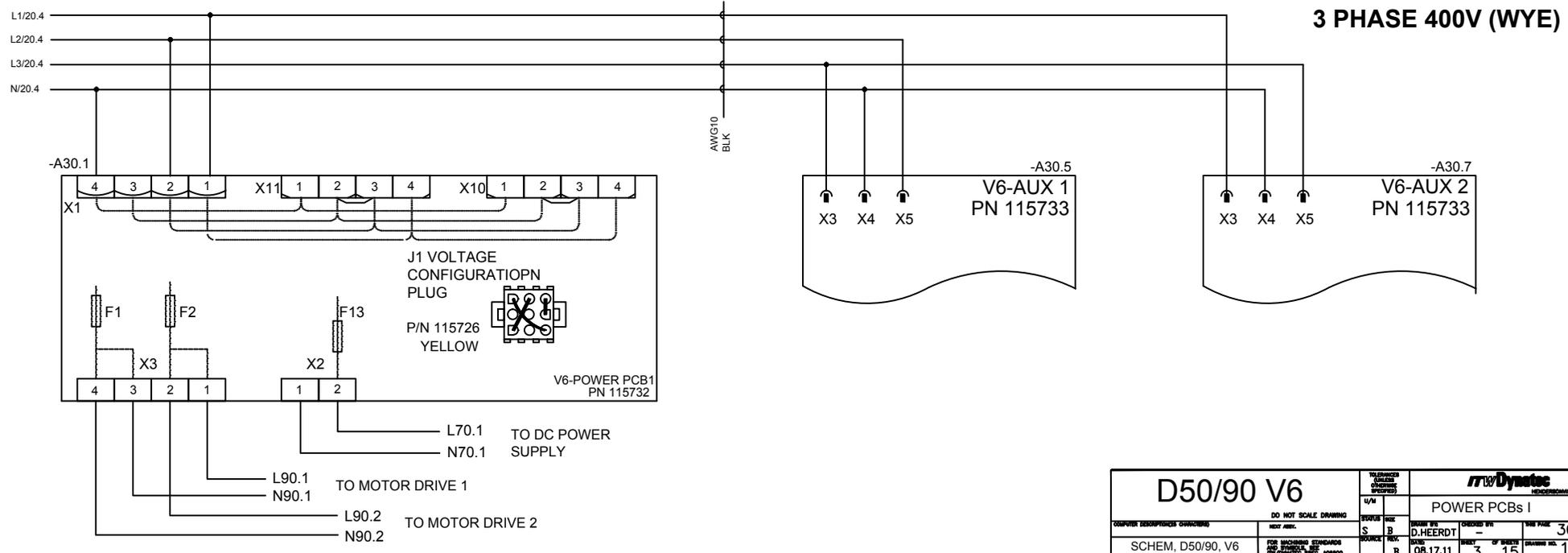
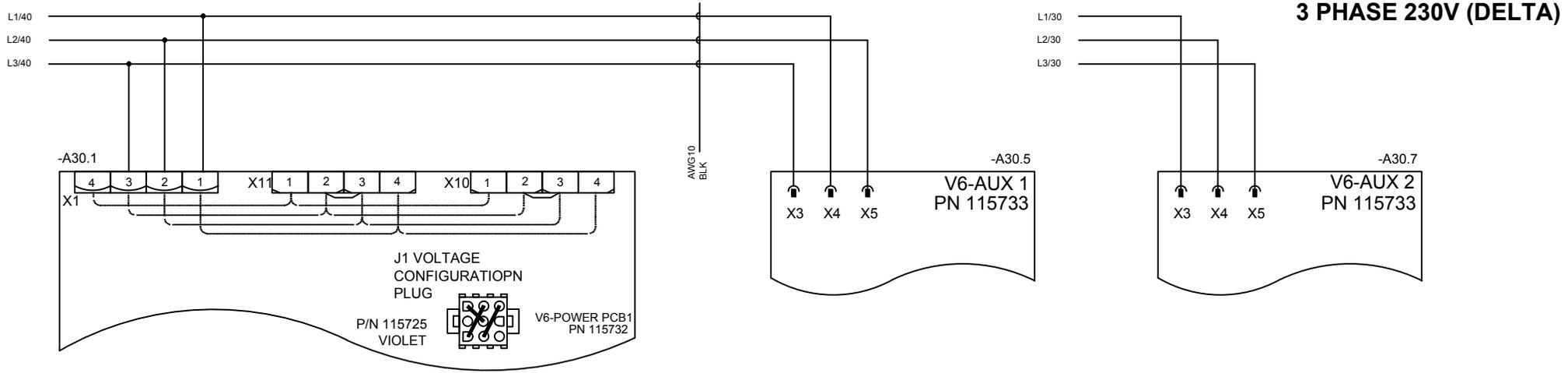
POWER HOOK-UP/DISTRIBUTION	THE PAGE 20	OF 30	DRAWING NO. 118522
----------------------------	-------------	-------	--------------------

THIS DRAWING IS THE PROPERTY OF DYWIDAG.
 IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT EXPRESS WRITTEN PERMISSION OF DYWIDAG.

DWG. NO. 118522 **3** **B**

REV.	BY	DESCRIPTION	DATE	BY	APPROVED
XXXX	A	ORIGINAL RELEASE			

0 1 2 3 4 5 6 7 8 9

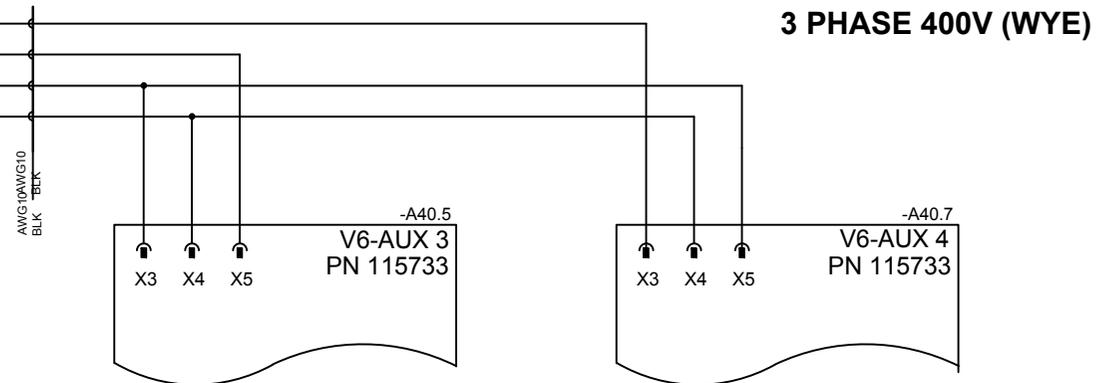
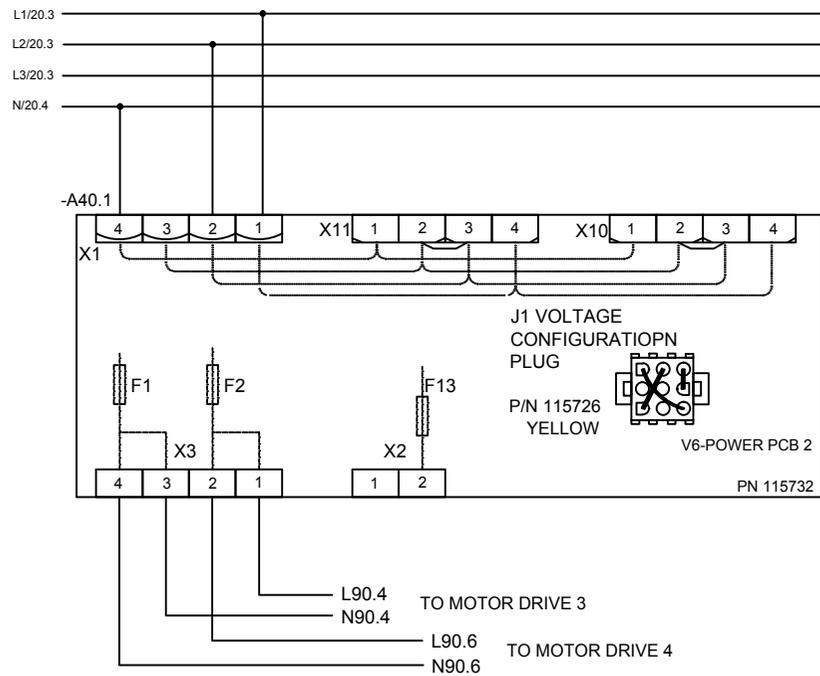
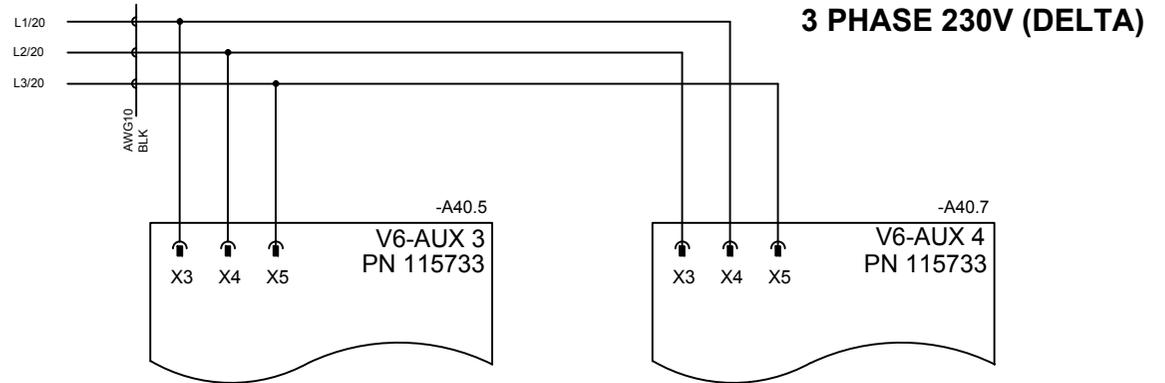
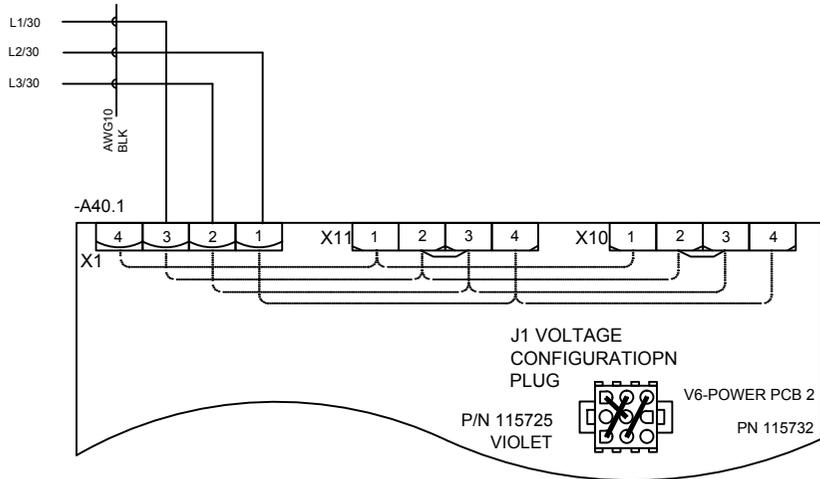


D50/90 V6		TOLERANCES UNLESS OTHERWISE SPECIFIED		Dynatec MEMPHIS, TN	
DO NOT SCALE DRAWING		U/M		POWER PCBs I	
COMPUTER GENERATED DRAWING	NEXT REV.	BY	CHK	DATE	REV
SCHEM, D50/90, V6	FOR MACHINING STANDARDS SEE STANDARD SPEC. ADDRESS	S	B	08.17.11	B
				3	15
				30	40
				DRAWING NO. 118522	

THIS DRAWING IS THE PROPERTY OF RW/DYNATEC.
 DO NOT REPRODUCE OR DISSEMINATE
 WITHOUT EXPRESS WRITTEN
 CONSENT OF RW/DYNATEC.

REV. NO.		118522		REV. 4		REV. B	
REV.	NO.	DESCRIPTION	DATE	BY	APPROVED		
XXXX	A	ORIGINAL RELEASE				DATE	

0 1 2 3 4 5 6 7 8 9

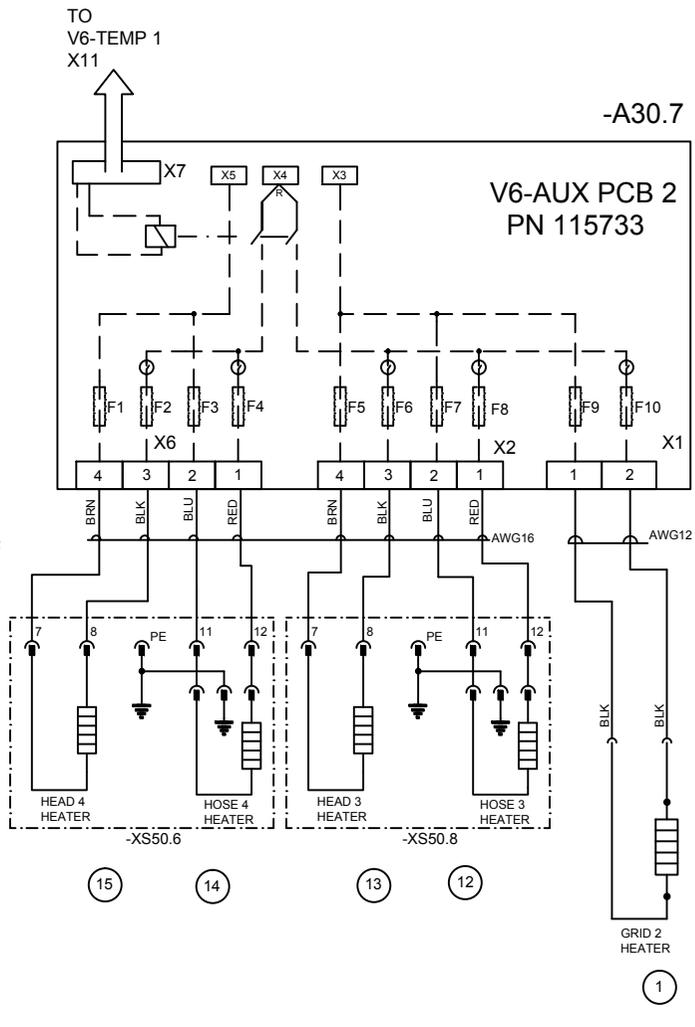
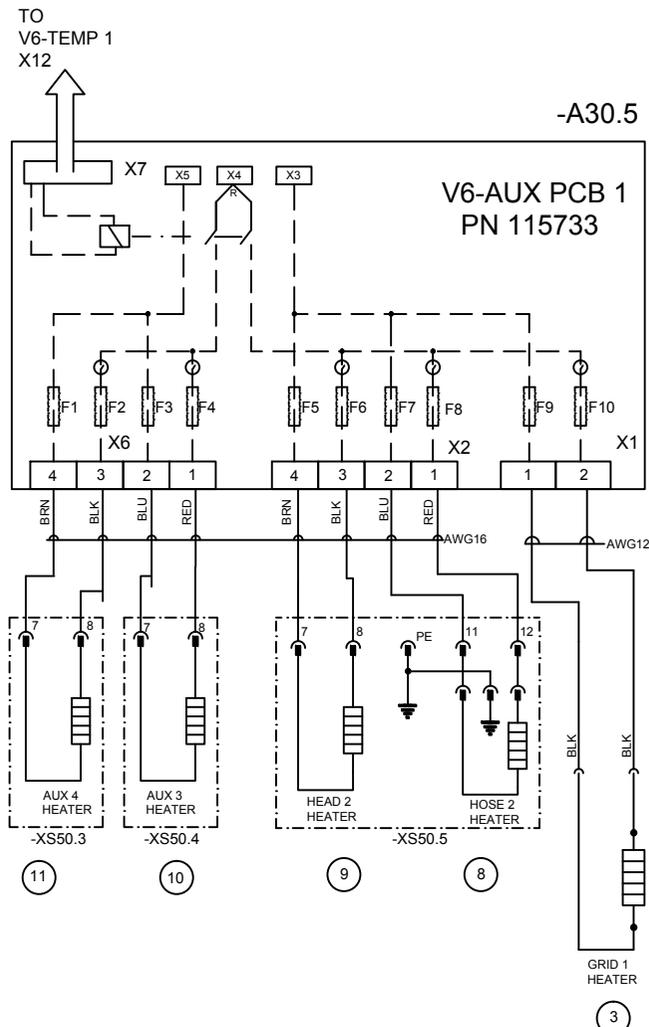
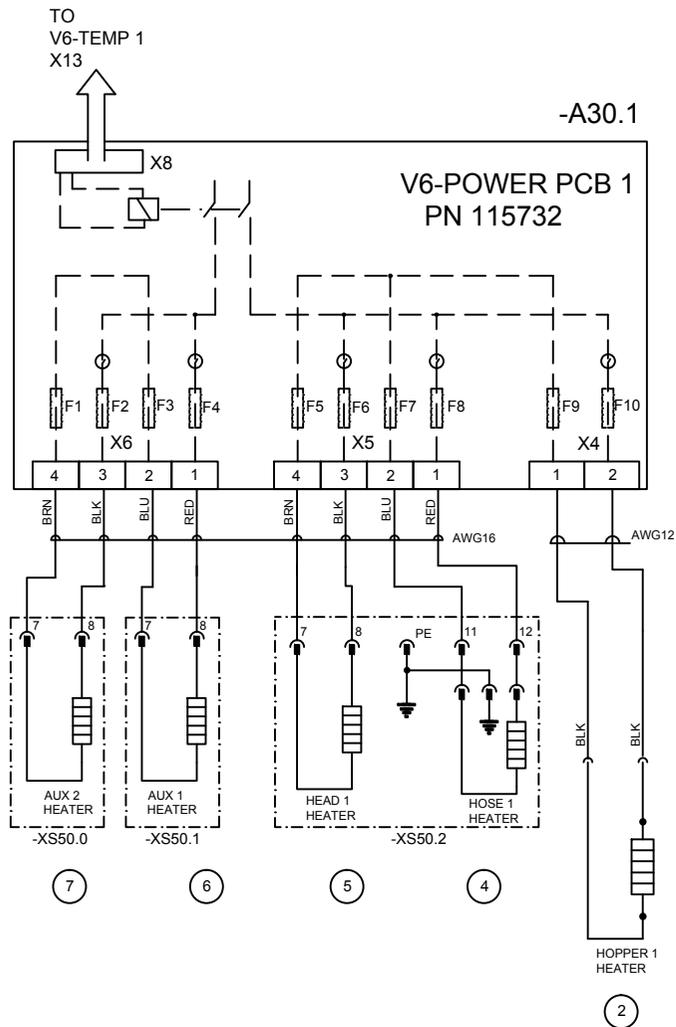


D50/90 V6		TOLERANCES UNLESS OTHERWISE SPECIFIED		Dynatec MECHANICAL, TX				
		U/M		POWER PCBs II				
COMPUTER GENERATED DRAWING	DO NOT SCALE DRAWING	STATUS	REV	DESIGN BY	CHECKED BY	THIS PAGE	OF PAGES	NEXT PAGE
	NEXT REV.	S	B	D. HEERDT	-	40	50	
SCHEM, D50/90, V6		FOR MACHINING STANDARDS AND FINISHES SEE RW/DYNATEC SPEC. APPROD.	SOURCE	DATE	SHEET	OF SHEETS	DRAWING NO.	
			B	08.17.11	4	15	118522	

THIS DRAWING IS THE PROPERTY OF RW/DYNASTY.
 DO NOT REPRODUCE OR DISCLOSE TO
 OTHERS WITHOUT EXPRESS WRITTEN
 CONSENT OF RW/DYNASTY.

DRAW. NO. 118522		REV. 5 B	
REV.	BY	DESCRIPTION	DATE
BOOK	A	ORIGINAL RELEASE	BOOK
			BY
			APPROVED
			DH

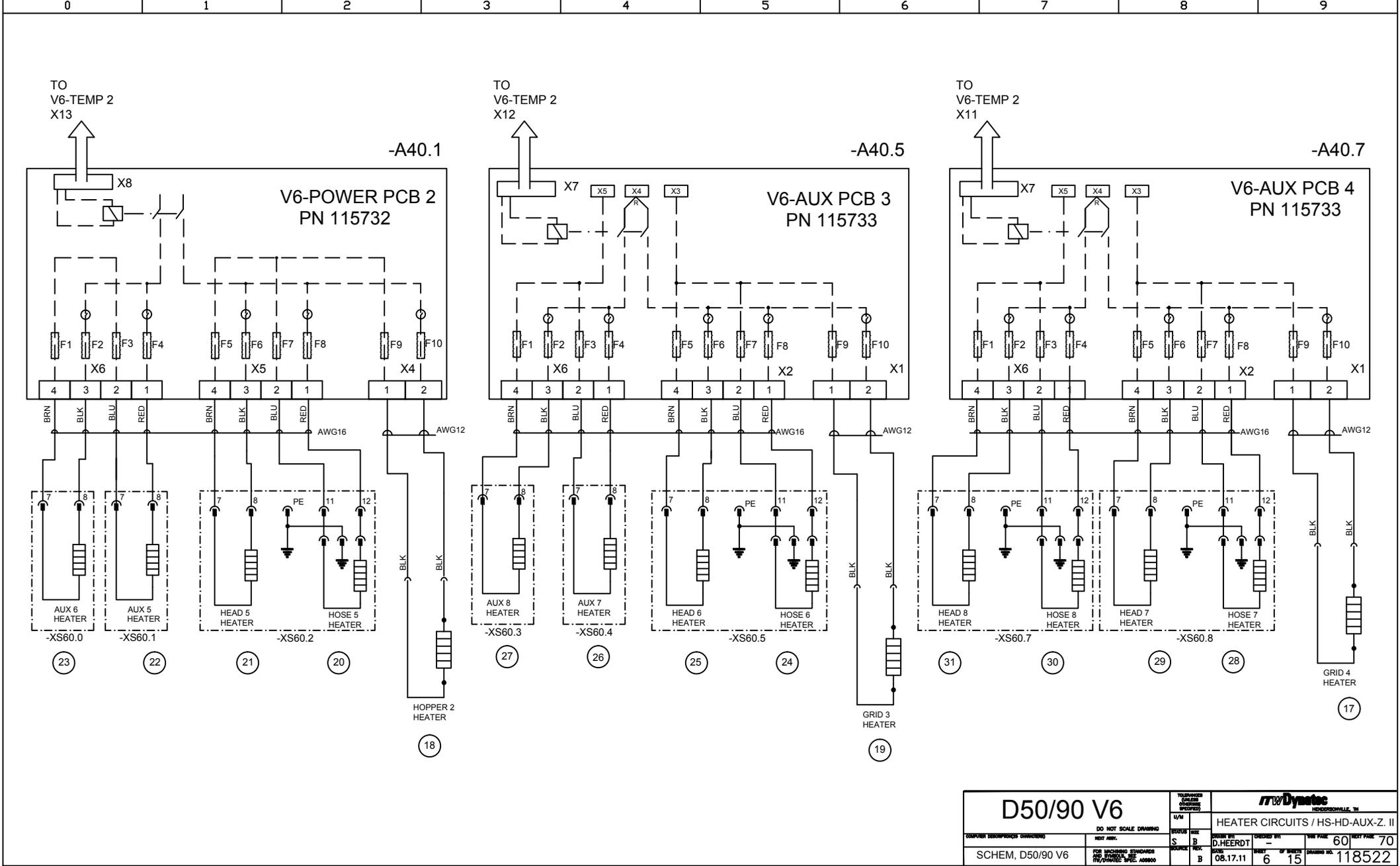
0 1 2 3 4 5 6 7 8 9



D50/90 V6		TOLERANCES UNLESS OTHERWISE SPECIFIED		RW/Dynasty MEMPHIS, TN	
		DO NOT SCALE DRAWING		HEATER CIRCUITS / HS-HD-AUX-Z. I	
COMPUTER RESPONSIBLE DRAWING	REV. A	DATE	BY	CHKD BY	APP'D BY
SCHEM, D50/90 V6	D.HEERDT	08.17.11	S	B	B
FOR MACHINING SCHEDULE RW/DYNASTY, INC. ADDRESS	DATE	REV.	BY	CHKD BY	APP'D BY
	08.17.11	B	5	15	118522
				50	60

THIS DRAWING IS THE PROPERTY OF RW/DYNATEC.
DO NOT REPRODUCE OR DISCLOSE TO
OTHERS WITHOUT EXPRESS WRITTEN
CONSENT OF RW/DYNATEC.

REV.		DESCRIPTION	DATE	BY	APPROVED
0000	A	ORIGINAL RELEASE	0000	DH	

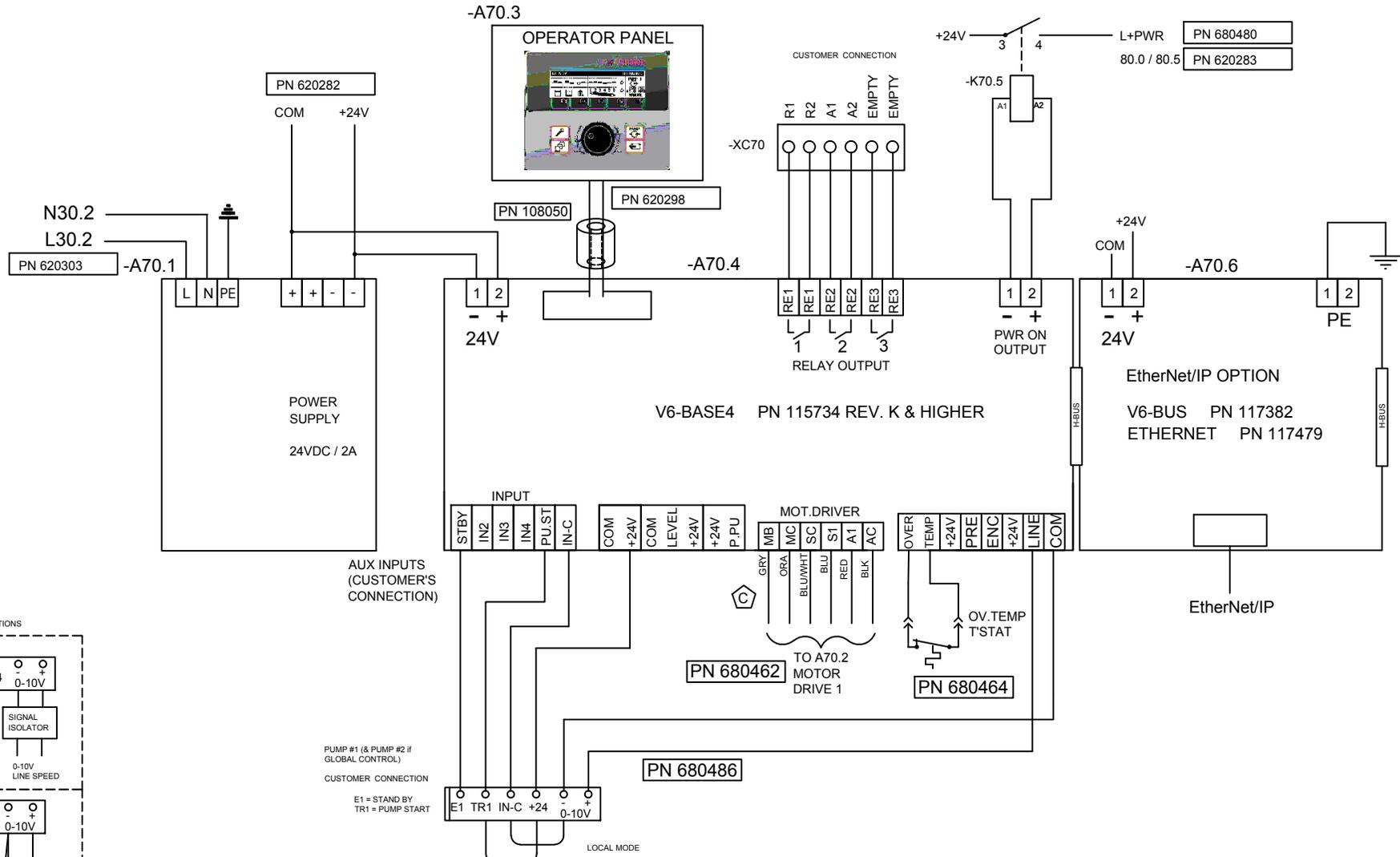


D50/90 V6 DO NOT SCALE DRAWING		TOLERANCES UNLESS OTHERWISE SPECIFIED		RW/Dynatec HEEDERSVILLE, TN	
		U/M S B	DRAWN BY D. HEERDT	CHECKED BY -	DATE 06.17.11
COMPUTER GENERATED DRAWING		NEXT REV.		NEW PART 60	
SCHEM, D50/90 V6		RW/DYNATEC SPEC. APPROV		DRAWING NO. 118522	

THIS DRAWING IS THE PROPERTY OF DYNATEC.
DO NOT REPRODUCE OR DISCLOSE TO
OTHERS WITHOUT EXPRESS WRITTEN
CONSENT OF DYNATEC.

REV. NO.		118522		REV. B	
REL.	REV.	DESCRIPTION	DATE	BY	APPROVED
16057	B	MOTOR CTRL HARNESS REVISED	8.10.16	DH	

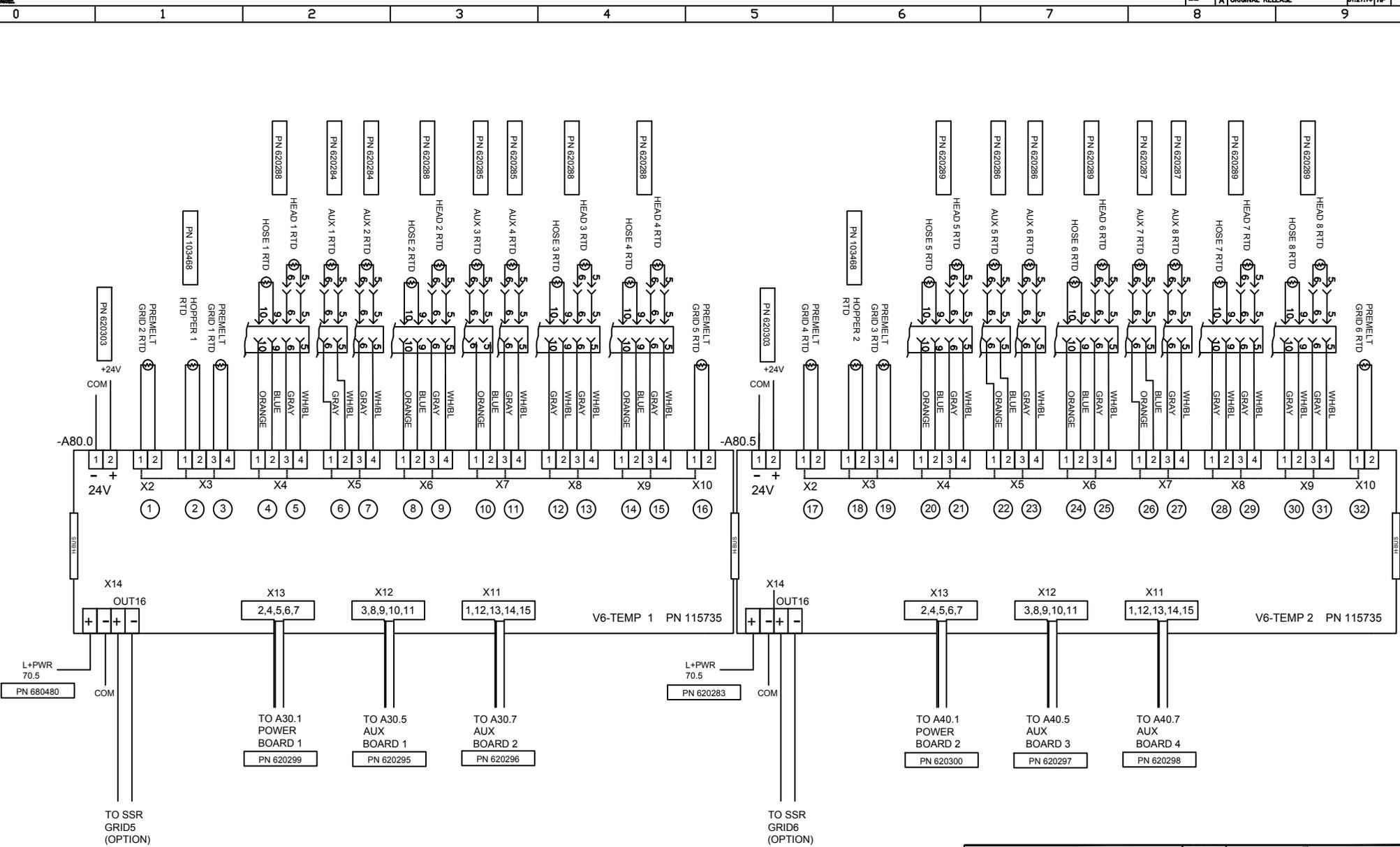
0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---



D50/90 V6		DO NOT SCALE DRAWING		DYNATEC MEMPHIS, TN	
COMPUTER IDENTIFICATION INFORMATION		STATUS		CPU / BASE MODULE	
SCHEM, D50/90, V6	REV. B	DATE	REV.	DATE	REV.
01.27.14	7	15	118522	70	80

THIS DRAWING IS THE PROPERTY OF HYPHEN. DO NOT REPRODUCE OR DISSEMINATE WITHOUT EXPRESS WRITTEN CONSENT OF HYPHEN.

PNL NO.	118522	REV.	8
REL. REV.	A	DESCRIPTION	ORIGINAL RELEASE
DATE	01.27.14	BY	HP

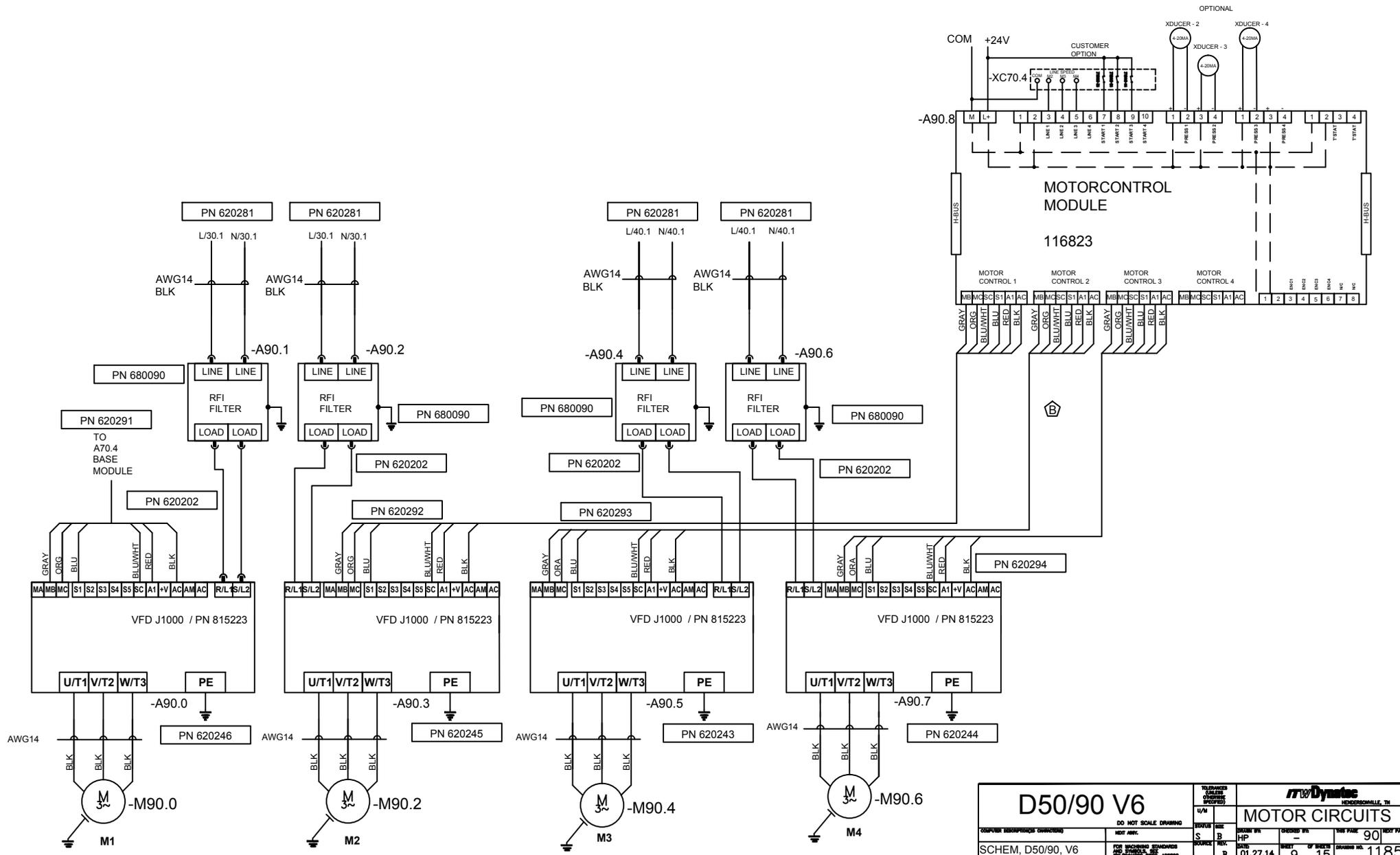


D50/90 V6		VOLTAJES (ELECTRIC SUPPLY)		RTD INPUTS	
DO NOT SCALE DRAWING		U/V	STATUS	DATE	REV.
COMPUTER DESIGNED/DESIGNED	REV. 1	HP	DATE	REV.	DATE
SCHEM. D50/90, V6	REV. 1	HP	01.27.14	8	15
FOR MACHINING STANDARDS	REV. 1	HP	01.27.14	8	15
REV. 1	REV. 1	HP	01.27.14	8	15
REV. 1	REV. 1	HP	01.27.14	8	15

THIS DRAWING IS THE PROPERTY OF PMA/AMTEC.
DO NOT REPRODUCE OR DISCLOSE TO
OTHER PERSONS WITHOUT EXPRESS WRITTEN
CONSENT OF PMA/AMTEC.

DRAW. NO.		118522		REV. 9	
REV.		DESCRIPTION		DATE	
18057	B	MOTOR CTRL HARNESS REVISED		10.18	DH

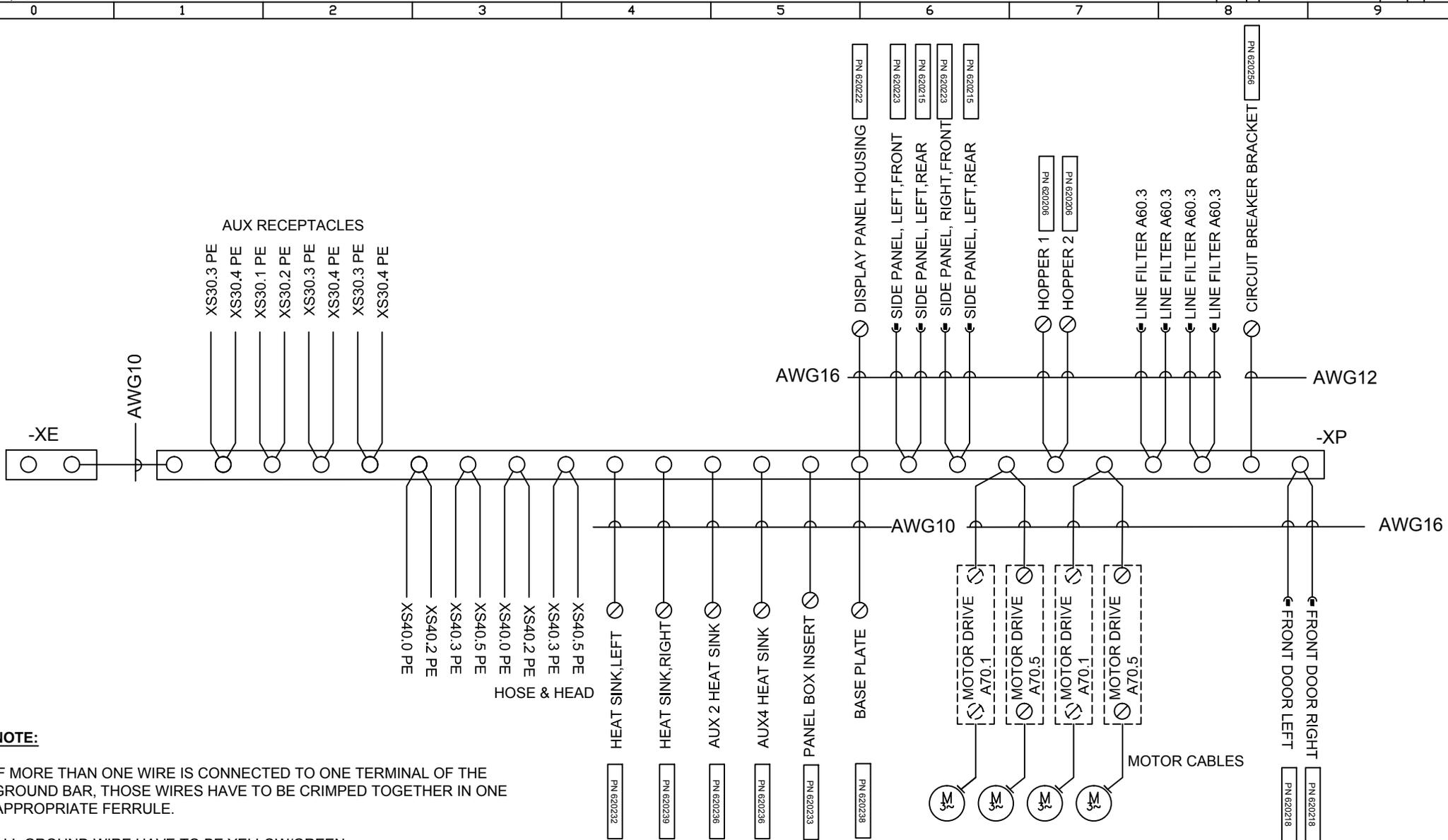
0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---



D50/90 V6		TOLERANCES UNLESS OTHERWISE SPECIFIED		Dynas MEMPHIS, TN	
DO NOT SCALE DRAWING		U/M		MOTOR CIRCUITS	
COMPUTER GENERATED DRAWING	DATE	REV.	DATE	REV.	DATE
SCHEM, D50/90, V6	01.27.14	B	01.27.14	B	01.27.14
SHEET 9		OF 15		DRAWING NO. 118522	

THIS DRAWING IS THE PROPERTY OF rrw/Dynatec.
DO NOT REPRODUCE OR DISCLOSE TO
OTHERS WITHOUT EXPRESS WRITTEN
CONSENT OF rrw/Dynatec.

REV. NO.	118522	REV. B
REV.	DESCRIPTION	DATE BY APPROVED
A	ORIGINAL RELEASE	01.27.14 HP



NOTE:

IF MORE THAN ONE WIRE IS CONNECTED TO ONE TERMINAL OF THE GROUND BAR, THOSE WIRES HAVE TO BE CRIMPED TOGETHER IN ONE APPROPRIATE FERRULE.

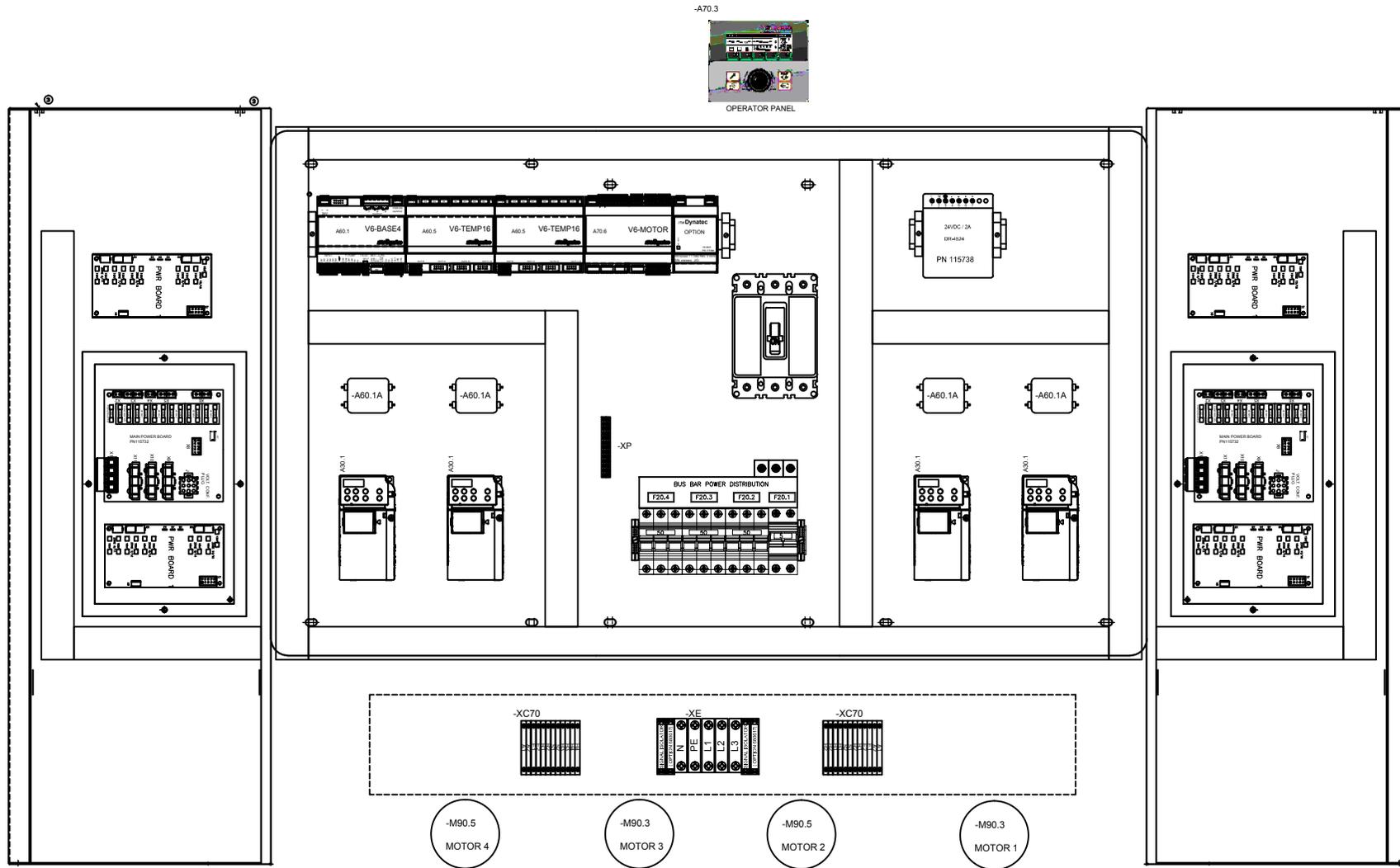
ALL GROUND WIRE HAVE TO BE YELLOW/GREEN.
ALL GROUND TERMINALS HAVE TO BE APPROPRIATELY LABELED.

D50/90 V6		TOLERANCES (UNLESS OTHERWISE SPECIFIED)		rrw/Dynatec MECHANICAL, TX	
DO NOT SCALE DRAWING		UN	REV	GROUNDING SCHE	
COMPUTER GENERATED DRAWING	NOT AEC	REV	HP	DATE	100
SCHEM, D50/90, V6	FOR DIMENSIONS DIMENSIONS AND SYMBOLS SEE DRAWING SPEC. APPENDIX	REV	B	DATE	110
		REV	B	DATE	118522

THIS DRAWING IS THE PROPERTY OF MW/DYNATEC.
DO NOT REPRODUCE OR DISCLOSE TO
OTHERS WITHOUT EXPRESS WRITTEN
CONSENT OF MW/DYNATEC.

REV. NO.	118522	REV. B			
REV.	NO.	DESCRIPTION	DATE	BY	APPROVED
---	A	ORIGINAL RELEASE	01.27.14	HP	

0 1 2 3 4 5 6 7 8 9



D50/90 V6		TOLERANCES UNLESS OTHERWISE SPECIFIED		m/Dynatec MEMPHISVILLE, TN	
		U/M			
DO NOT SCALE DRAWING		STATUS	SIZE	DESIGN BY	CHECKED BY
DRAWING DESCRIPTION (CONTINUED)		S	B	HP	
SCHEM, D50/90,V6		DATE	01.27.14	SHEET	11
REV. NO.		DATE	01.27.14	SHEET	15
FOR UNLESS OTHERWISE SPECIFIED, SEE ASSEMBLY DRAWING NO. 118522		DATE	01.27.14	SHEET	15
		DATE	01.27.14	SHEET	15

THIS DRAWING IS THE PROPERTY OF HYDRAVAC.
DO NOT REPRODUCE OR DISCLOSE TO
OTHERS WITHOUT EXPRESS WRITTEN
CONSENT OF HYDRAVAC.

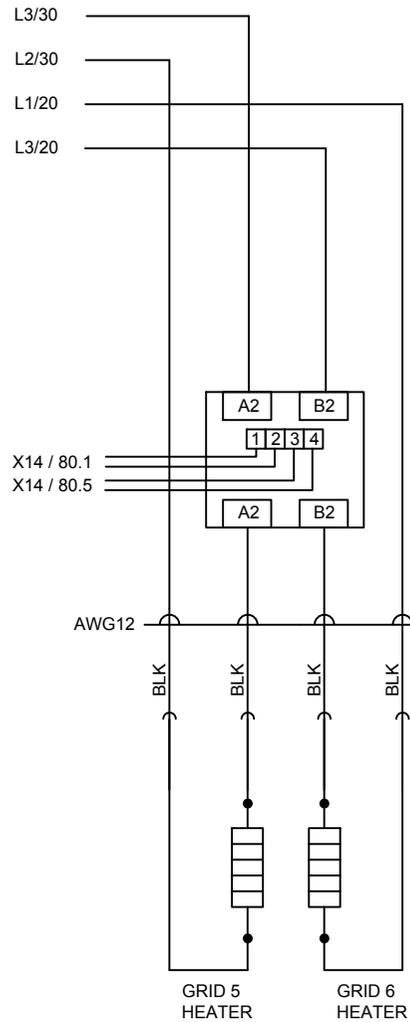
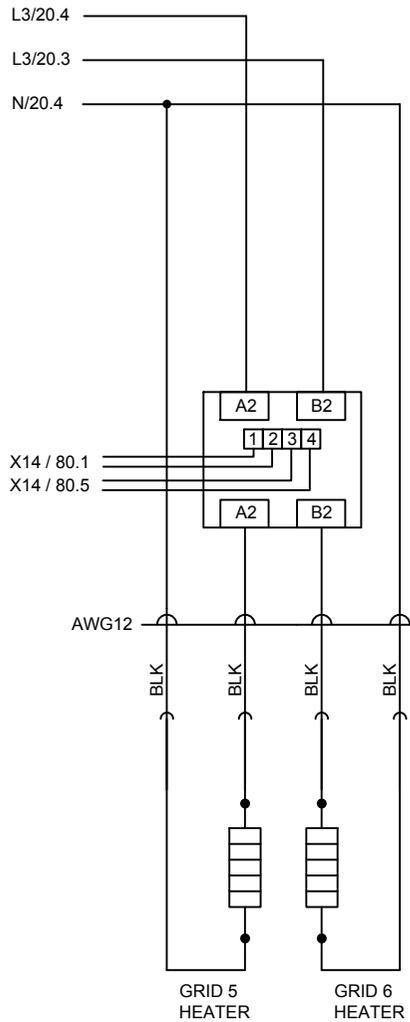
REV. NO.	118522	13	B
REV.	DESCRIPTION	DATE	BY
--	A ORIGINAL RELEASE	01.27.14	HP

0 1 2 3 4 5 6 7 8 9

PREMELT GRID 5 & 6 OPTION

3 PHASE 400V (WYE)

3 PHASE 230V (DELTA)



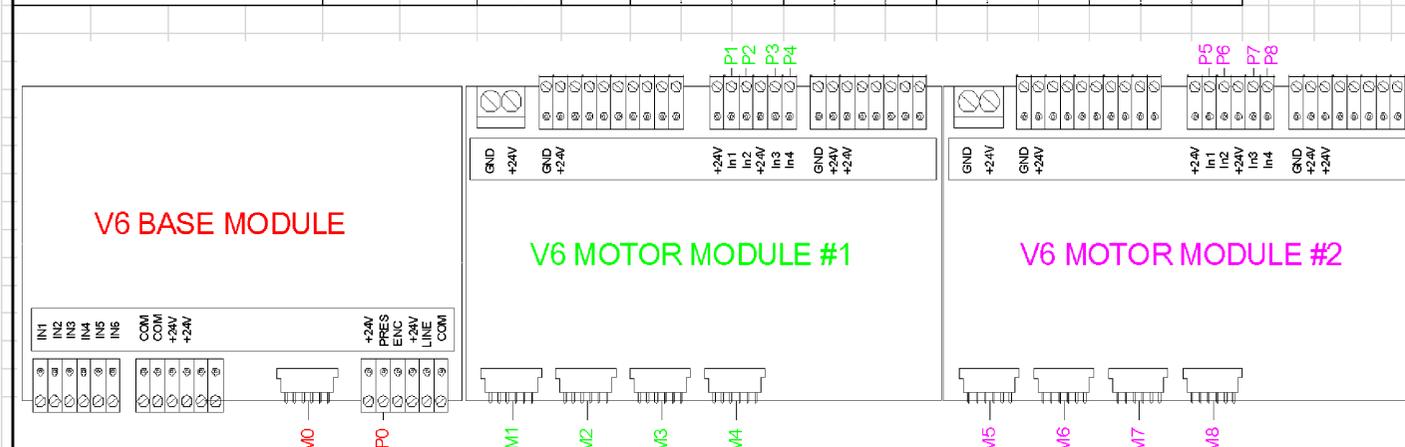
D50/90 V6		HYDRAVAC (PLEASE OPTIONAL SPECIFIED)		mDyntec MEMPHISVILLE, TN	
U/W	REV.	OPTIONS II		THIS PAGE	NEXT PAGE
S	B	DESIGN BY	HP	130	-
DO NOT SCALE DRAWING		CREATED BY	HP	DATE	01.27.14
COMPUTER GENERATED DRAWING		REV.	B	BY	13 15
SCHEM, D50/90 400VAC		FOR UNCHANGED STANDARDS AND SYMBOLS USE REV/DRAWING SPEC. AN8000		DRAWING NO.	118522

THIS DRAWING IS THE PROPERTY OF m/w DYNATEC.
DO NOT REPRODUCE OR DISCLOSE TO
OTHERS WITHOUT EXPRESS WRITTEN
CONSENT OF m/w DYNATEC.

FIG. NO.	118522	REV.	14	DATE	01.27.14	BY	HP	APPROVED
REV.	A	DESCRIPTION	ORIGINAL RELEASE	DATE	01.27.14	BY	HP	APPROVED

DynaControl V6 - Motor Driver / Digital Pressure Read-Out / Transducer Arrangement

NUMBER AND TYPE OF PUMPS						No. Of MOTOR MODULES	Pump 1		Pump 2		Pump 3		Pump 4					
							DRIVER	Pressure	DRIVER	Pressure	DRIVER	Pressure	DRIVER	Pressure				
1	2	3	4	5	6		1.	2.	1.	2.	1.	2.	1.	2.				
Single	-	-	-	-	-	-	M0	P0										
Dual	-	-	-	-	-	1	M0	P0	P1									
2 Single		-	-	-	-	1	M0	P0	M1	P1								
1 Dual / 1 Single		-	-	-	-	1	M0	P0	P2	M1	P1							
2 Dual		-	-	-	-	1	M0	P0	P2	M1	P1	P3						
3 Single			-	-	-	1	M0	P0		M1	P1	M2	P2					
1 Dual / 2 Single		-	-	-	-	1	M0	P0	P3	M1	P1	M2	P2					
2 Dual / 1 Single		-	-	-	-	1	M0	P0	P3	M1	P1	P4	M2	P2				
3Dual		-	-	-	-	2	M0	P0	P3	M1	P1	P4	M2	P2	P5			
4 Single			-	-	-	1	M0	P0		M1	P1	M2	P2	M3	P3			
1 Dual / 3 Single		-	-	-	-	1	M0	P0	P4	M1	P1		M2	P2	M3	P3		
2 Dual / 2 Single		-	-	-	-	2	M0	P0	P4	M1	P1	P5	M2	P2	M3	P3		
3 Dual / 1 Single		-	-	-	-	2	M0	P0	P4	M1	P1	P5	M2	P2	P6	M3	P3	
4 Dual		-	-	-	-	2	M0	P0	P4	M1	P1	P5	M2	P2	P6	M3	P3	P7



Notes: Dual pumps can be equipped with one primary and one secondary transducer input. Secondary transducers can be on any Motor- or XIO-module input. Transducers need a positive (+24V) and one signal terminal. +24V terminals might have to be shared with two wires.

Example:	Motor Driver	Prim. Press. Trans. (1.)	Second. Press. Trans. (2.)
D904 pumps (2 dual, 2 single)	Pump 1: Base Module M0	Base Module P0	Motor Module P 4
every pump output	Pump 2: Motor Module M1	Motor Module P1	Motor Module P 5
has pressure transducer	Pump 3: Motor Module M2	Motor Module P2	-
	Pump 4: Motor Module M3	Motor Module P3	-

D50/90 V6		TOLERANCES (UNLESS OTHERWISE SPECIFIED)		m/w Dynatec MEMPHIS, TN	
COMPUTER GENERATED DRAWING	DO NOT SCALE DRAWING	STATUS	SIZE	MOTOR / PRESSURE CONFIG	
SCHEM, D50/90 400VAC	REV. A	S	B	DATE	130
		B	B	01.27.14	14 14
					118522

THIS DRAWING IS THE PROPERTY OF IN/DMIL. IT IS NOT APPROVED OR RELEASED TO OTHERS WITHOUT EXPRESS WRITTEN CONSENT OF IN/DMIL.

PNL NO. 118522 14 B

REL.	REV.	DESCRIPTION	DATE	BY	APPROVED
---	A	ORIGINAL RELEASE	01.27.14	HP	

0	1	2	3	4	5	6	7	8	9			
REFERENCE	QTY	DESCRIPTION	PN	MANUFACTURER / PN	REFERENCE	QTY	DESCRIPTION	PN	MANUFACTURER / PN			
-Q20.1	1	MAIN SWITCH / CIRCUIT BREAKER		32A / 63A 400V/230V	-A70.4	1	BASE MOUDLE	115734				
-X20.1A	1	DISTRIBUTION BLOCK, 3PH			-A80.1	2	TEMP MOUDLE	115735				
-X20.1B					-A80.5							
-X20.1C					-A70.3	1	KEYPAD / DISPLAY PCB					
-XE	1	TERMINAL BLOCK, POWER SUPPLY			-A90.8	1	MOTOR MOUDLE	116823				
-XP	1	GROUND BLOCK			-A90.1	4	LINE FILTER, 1PH					
-F20.3A	1	FUSES BLOCK			-A90.2							
-F20.3B					-A90.4							
-F20.3C					-A90.6							
-A30.1	2	POWER PCB	115732		-A90.0	4	MOTOR DRIVE BOARD					
-A40.1					-A90.3							
-A30.5	4	AUX PWB	115733		-A90.5							
-A40.5					-A90.7							
-A30.7					-M90.0	4	MOTOR, AC, 3PH					
-A40.7					-M90.2							
	-M90.4											
-XS50.0	16	CONNECTOR, FEMALE SOCKET, 13+PE			-M90.6							
-XS50.2												
-XS50.3												
-XS50.5												
-XS50.6												
-XS50.7												
-XS50.8												
-XS50.9												
-XS60.0												
-XS60.2												
-XS60.3												
-XS60.5												
-XS60.6												
-XS60.7												
-XS60.8												
-XS60.9												
-A70.1	1	DC POWER PCB										

D50/90 V6		TO ENHANCE (OR ORIGINALLY SPECIFIED)		Dynatec HOUSTONVILLE, TN	
DO NOT SCALE DRAWING		U/M	D50/90 V6, BOM		
DATE	REV.	STATUS	REV.	ISSUED BY	ISSUED BY
01.27.14	B	S	B	HP	HP
SCHEM, D50/90 400VAC		REV.	REV.	DATE	DATE
		B	B	01.27.14	15 15
				DATE	DATE
				130	-
				118522	

Gear Pumps, Safety and Operation



WARNING

These instructions should be read thoroughly by all personnel involved with pump operation prior to pump installation, operation, or maintenance.



ATTENTION

If operation of this pump is critical to your business, we strongly recommend you keep a spare pump in stock at all times. As a minimum, a seal kit (O-rings, gaskets, and shaft seal) should be kept in stock so pump refurbishment after internal inspection can be accomplished.

General Description

ITW Dynatec's metering gear pumps are manufactured to precise tolerances. To retain their high performance, these pumps must be carefully installed and maintained. These pumps are CE (Declaration of Conformity) rated.

The gear pumps are positive-displacement. A single, drive shaft transmits force / torque to one or more driving gears, which then engage and deliver force / torque to one or more driven gears. Fluid is directed into the pump through the inlet stream(s). The fluid fills the exposed spaces between the gear teeth, then is conveyed around the inside of the gear housing as the gears turn. Once the path is completed, the gear teeth mesh together and the fluid is displaced. The fluid flows out of the pump through the discharge port(s). There may be multiple, driven gears, each with its own, associated discharge port. There may be single or dual stream pump assemblies.

This manual will not cover all situations which might arise with regard to installation, operation, inspection and maintenance of the pump supplied. ITW Dynatec assumes the personnel assigned to install, operate and maintain the supplied equipment have sufficient technical knowledge to apply generally accepted safety and operational practices, which may not be otherwise covered.

Gear Pump types

Part Number	Delivery rate/ revolution: cc/rev	Pump Type	Shaft seal Part Number
111253	0.15	Single	807729
084E372	0.16	Single	807729
084E428	0.297	Single	807729
109908	0.55	Single	807729
084E374	0.584	Single	807729
084E430	1.168	Single	807729
100860	1.54	Single	807729
084E434	2.92	Single	807729
100861	3.18	Single	807729
100862	4.5	Single	807729
108875	8.5	Single	807729
109690	10.0	Single	807729
109694	20.0	Single	808680
110289	20.0	Single HF precision	806880
110290	30.0	Single HF precision	806880
110291	45.0	Single HF precision	806880
111254	0.15	Dual	807729
084E387	0.16	Dual	807729
084E388	0.297	Dual	807729
109909	0.55	Dual	807729
084E389	0.584	Dual	807729
084E432	1.168	Dual	807729
100863	1.55	Dual	807729
108874	2.92	Dual	807729
100864	3.18	Dual	807729

General Safety Instruction



WARNING

- Installation, operation, and maintenance instructions must be correctly and strictly followed, otherwise, injury to personnel or serious damage to the pump could result.
- ITW Dynatec cannot accept responsibility for unsatisfactory performance or damage resulting from failure to comply with instructions.
- Only trained operators or trained, specialized personnel may handle or operate the pump.
- Always wear proper personal protective equipment. (i.e. Safety glasses, steel-toed shoes, face shield, protective clothing, gloves, respirator, dust mask, etc., as required for safe practices).
- Do not run the pump dry, or with no inlet fluid flow. Make sure the pump is only operated with, and never without, liquid filling the pump housing.
- Do not remove safety guards or other protective devices prior to installation or during operation.
- Be certain all safety devices, machine safety guards, protective electrical connections, temperature monitoring devices, pressure monitoring devices and sealing apparatus are installed and operational prior to starting the pump.
- Pumps may not be used with foodstuffs.
- Do not allow the pump to change temperature rapidly.
- Do not apply open flame to a pump.
- Do not allow leaking fluid to combust.
- Do not expose the pump to liquid nitrogen or other extremely cold substances.
- Do not attempt to quench a hot pump by applying water or other cool liquid to the surface.

If the pump is to be preheated or cooled prior to installation, heat or cool the pump to the operating temperature by use of an approved method, such as a band heater, bar heater, oven, cooling or environmental chamber, liquid bath or heating jacket, which can fully reach the operating temperature of the pumping system. Monitor the pump temperature and ensure the target temperature has been met and maintained. Allow ample time to heat-soak the pump thoroughly and evenly (including the seal arrangement).

- The manufacturer's warranty will be void if any part is replaced, or the pump is modified in any way, without permission from ITW Dynatec.

Installation



WARNING

- Follow all General Safety Instructions.
- Ensure pump is free from protective packing materials and rotates freely.
- Only use the pump as intended, while remaining aware of safety risks, and in adherence to the instructions in this manual.
- **Pump Drive:**
Drive alignment is very important. Ensure backlash is 0.1mm (0.004”) to avoid shock or radial load. In the event of drive shaft connection, two flexible components must be incorporated into each drive shaft to allow for misalignment. These flexible components must have the capacity to distort over the misalignment range while ensuring that any radial load is minimal. Do not allow shaft to put end thrust on the pump.
- **Rotation:**
Ensure drive rotates in correct direction. The pump must be checked for smooth operation by hand.
- **Fixing and Lubrication:**
The pump must be fixed securely to maintain position and alignment. When secured by lubricated bolts, torque them evenly to the suggested torque (see Maintenance).

Start drive and bring up to speed slowly. Flush with process fluid.

Note: motor base plate assemblies should be pre-checked in case the drive alignment has been disturbed.

- In order to ensure normal functioning of the pump and system, monitor the pressure at the outlet of the pump. The monitoring locations should be in the outlet port connections.
- Monitor the pump temperature, after installation and during operation. Note sudden changes in temperature which do not correlate with sudden changes in the temperature of the process liquid. If sudden temperature changes occur, shut down the pump operation and contact trained, specialized personnel for inspection and maintenance.
- Rotate the pump drive shaft by hand after mounting and fully tightening the mounting bolts. The shaft should turn freely.

Operation



WARNING

- Follow all General Safety Instructions.
- Measures must be taken to avoid skin contact. Wear protective clothing.
- Downstream pressure can change rapidly once the pump is started. If the downstream flow passages are blocked or valves are closed, the pump will likely reach dead-head condition before valves can be opened or the blockage removed.

Dead-head condition occurs when the pump reaches maximum pressure achievable at a given speed, with a given fluid viscosity.

Reaching the dead-head condition may cause the pump to fail, or for piping limits to be exposed. Dead head occurs whenever the pump is operating but the applicators are not dispensing.

- Measure the pump temperature after installation, and monitor temperature during operation. Rapid changes in temperature, while process temperatures and ambient temperatures are stable, signals a pending failure.

Safety Notes on Start-Up

- Check to insure that all process safety devices are in place and operational.
- Be certain the pump is fully lubricated and full of fluid prior to starting the motor.
- Be certain the pump temperature has fully reached the process temperature prior to starting the motor. Heat soak the pump sufficiently to ensure all recesses are at process temperature.
- Pump outlet pressure and speed limits are dependant on fluid viscosity and throughput. Pump inlet pressure is an important feature for lubrication and fluid stability. Materials for pump construction are important for corrosion and wear resistance. Consult ITW Dynatec for detailed applications. Normally the pumps are single or dual output. Typical speed ranges are 10-90 rev/ min.
- To avoid contamination of process fluid, the pump should be flushed out to remove test oil. Precaution must also be taken to flush out pumps at plant shutdown, since congealed fluid can cause seizure, when operating PUR.
- Unless fluid purity can be guaranteed (especially from metal fragments), filtration must be installed before pump inlet, to avoid damage to pump internals.
- During start-up, start the motor with a low speed set point, then gradually increase speed to the intended operating speed. An acceleration rate of 20 rpm / sec or less is recommended; 5 rpm / sec is a good starting point, allowing ample acceleration time for downstream apparatus to fill gradually with fluid, and for pressure to rise slowly.
- If at any time during operation the pump does not appear to be running smoothly, or unusual noise is heard, stop the pump immediately to limit internal damage and contact ITW Dynatec!

Heating, Cooling During Operation

If the pump is to be operated outside of room temperature 10°C (50°F) – 45°C (113°F), care must be taken to ensure the process temperature is met and maintained prior to and during operation. Monitor the pump temperature and ensure the target temperature has been met and maintained. Allow ample time for the pump to adjust and stabilize. Ensure any temperature changes occur gently, thoroughly and evenly (including the seal arrangement).

Protect the pump from thermal shocks of greater than 28°C (50°F). Rapid temperature changes must be avoided.

Shutdown

The pump will need to be purged of the process fluid during shutdown. Use of a purging liquid (an inert, lubricating liquid which is safe to the pump and personnel,) is recommended, rather than simply attempting to drain the process fluid from the pump.

Run the pump slowly during the purging process in order to ensure no damage occurs.

Separate the coupling components, connecting the pump shaft to the gearbox or motor, and turn the pump by hand, or with a wrench, when completing the purging and draining.

If no purging liquid is available, and the pump will be run in order to facilitate draining, be cautious to complete the operation in less than 1 minute.

If the pump is to be stored, or if it will sit for a long period without operation or protection, apply rust preventative oil to all internal and external surfaces.

Restarts

On restart, where the product fluid has hardened and solidified in the pump during the shutdown, the fluid must be softened and made completely liquid again prior to restarting the pump. If the product fluid can be softened by heating, preheat the pump and allow the product to completely melt.

If the product fluid cannot be softened easily, or if the hardening of the product fluid is not reversible, the pump must be cleaned prior to restarting.



WARNING

- Take care the product has not changed properties.
- Ensure the fluid is still capable of providing lubrication to the pump internal components.
- Restart slowly and gradually.
- During preheat; do not let polymer sit inside the pump more than 5 hours, due to the risk of breakdown and conversion of the polymer. Breakdown or conversion would result in unsatisfactory lubrication of the pump bearings at start-up and cause pump failure.

Airborne Noise

- Under normal operating conditions, the airborne noise level will be less than or equal to 70 dB.
- If airborne noise levels above 70 dB are noted, the pump is not operating under normal conditions or component failure is imminent. Contact your ITW Dynatec representative for assistance.

Maintenance

Tightening Torque for High Tensile ISO 12.9 Lubricated Bolts (572°F max. / 300°C max.)

Bolt Size & Qty.	Bolt Location	Torque Nm/ Ft.lbs.
M5 (4)	Retainer cap	7.1/ 5.2
M10, 12 (4)	Mounting bolts	41/ 30 at ambient temperature
M10, 12 (4)	Mounting bolts	24/ 18 at production temperature

Notes: If mounting bolts are torqued at production temperature, they should be re-torqued (to 41 Nm/30 Ft lb.) when machine is at ambient temperature.

1 Nm = 8.85 in/lbs. Torques given above are for Metric and UNF threads. Multiply by 0.8 for UNC and BSF threads. Multiply by 0.8 for BSVV threads (multiply by 0.67 for stainless steel).

ITW Dynatec frequently provides special features at their customer's request. Please consult with ITW Dynatec, quoting job and pump references, if questions arise.

Maintenance Notes



WARNING

- Seal failure will eventually occur. Develop a plan to deal with this situation. Take appropriate safety measures if liquid is hazardous.
- BEFORE starting any maintenance procedure, do the following:
 - Shut off all power switches and circuit breakers.
 - Remove any electrical service fuses.
 - Lock electrical service panel supplying power to system.
 - Shut, wire or chain, and lock all valves in pump inlet/outlet hose.
 - If applicable, shut off any pneumatic or other fluid supply lines to the pump.

- Visually check equipment frequently for signs of damage or leakage from shaft seals, gaskets or O-rings.
- Be sure all connections are tight.
- If seal leakage is more than about 10 drops per hour per seal, shut down equipment and repair or replace necessary parts.
- Shaft seals have a limited, finite life which is affected by operating conditions and environment. Expect them to wear and eventually fail. When leakage becomes unacceptable, replace the seal unit with the correct replacement unit, one compatible with pump's operating conditions. Dirty liquids will reduce seal life.
- Cleaning fluids and methods are subject to strict Health and Safety regulations. Avoid contact with skin, do not inhale fumes and protect eyes.
- Packing seals should be replaced when all packing follower travel is exhausted or when packing is damaged and leakage cannot be controlled.
- Where pump out-of-service time is of vital concern and down-time must be minimized, kits of spare parts and seals should be acquired before needed and retained on-site.
- Only trained, specialized personnel, using the appropriate Original Installation, Care and Maintenance Instructions, can perform maintenance, which includes, but is not limited to, Inspection, Repair, Assembly and Disassembly.
- Contact ITW Dynatec for information on having personnel trained.

Pump shaft Leakage

If shaft seal leakage is present the seal should be replaced.

If the pump uses Packing seals:



WARNING

- Slight leakage is necessary to lubricate the packing.
- If not appropriately collected, packing leakage may make floor slippery and/or expose personnel to hazardous fluids. Collect packing leakage properly and safely.
- Tighten the packing follower screws in a crossing pattern, gradually, until the packing is evenly compressed and the leakage diminishes to near zero, then loosen each of the screws, gradually, ¼ turn at a time, until slight leakage occurs. Slight leakage is necessary in order to lubricate the packing and the shaft.
- Be certain to adjust the packing follower properly.
- Do not over-tighten the packing follower. Over-tightening will cause damage to the packing and the shaft.
- Other sealing options are available.
- Re-adjust the packing follower several times through the running-in period, until the seal is thoroughly seated and the rate of leakage is stable.

Cleaning

Before removal from machine, the pump should be rotated for a short period (with inlet supply shut off) to discharge process fluid. Care should be taken, when removing and stripping the pump, to allow for any residual fluid. Pump components can be solvent or ultrasonically cleaned by immersion, using a compartmentalized wire basket. Dry in air. Stubborn residues may be removed with a brass wire brush. Avoid burnishing the sharp edges of gear and gear races.

Fluid immersion in rust inhibitor is advised. If components are to be stored for some time, they should be lightly coated with oil.

Troubleshooting

Problem	Possible Cause	Solution
Pump leaks	Screws not tight.	Re-torque screws to recommended tightening torque.
	Seal scratched or worn.	Replace seal.
Pump will not turn.	1. Low pump temperature.	Check temperature sensor and control loop for proper setting/ operation. Allow sufficient heat-up time.
	2. Drive malfunction.	Verify drive is powered. Check to assure all alarm circuits are clear. Check drive motor current and speed settings. Check all drive couplings.
	3. Process conditions changed.	Check process conditions for proper melt temperature, pressures, viscosities and materials.
	4. Foreign particle.	Send pump for repair to ITW Dynatec.
	5. Possible internal damages.	Send pump for repair to ITW Dynatec.
Excessive seal assembly leakage	1. Worn seal plate.	Send pump for repair to ITW Dynatec.
	2. Low temperature pump start.	Increase temperature. Allow heat soak time.
	3. Worn lip seal.	Replace lip seal.
Reduced pump efficiency / Error with pump delivery	1. Worn gears/ bearings/ plates.	Send pump for repair to ITW Dynatec.
	2. Process conditions changed: <ul style="list-style-type: none"> • Low inlet pressure (cavitation). • High outlet pressure (slippage). 	Check and adjust the recommended process conditions.

Reconditioning

Should reconditioning (overhauling) become necessary, return the pump to ITW Dynatec.

Pump Shaft Seal Replacement

The ITW Part Number for all Tool Steel High Accuracy Pump Shaft Seals (8.5cc and smaller) is PN 807729.



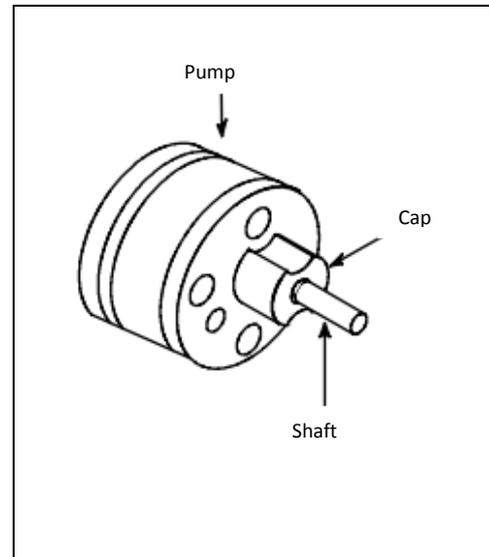
DANGER HOT SURFACE & HIGH VOLTAGE

If the pump is not operable but the heating system will function, raise the temperature of the application system to the operating temperature to aid in the pump disassembly process. Otherwise, a heat gun or other controlled heating method is recommended to melt hardened hot melt material. Never use a torch or an open flame on any of the components of the application system. Once the system is up to temperature, disconnect all incoming power before proceeding.

Pump Shaft Seal (O-ring) Replacement:

In most cases, the pump does not have to be removed from the ASU in order to replace the shaft seal.

1. Disconnect the drive coupling so that the pump may be accessed.
2. Remove the four screws in the pump "cap" and remove the cap
3. Within the cap is the pump shaft seal. Remove the old seal.
4. Clean all pump parts, paying particular attention to the pump shaft seal groove.
5. Lightly lubricate the shaft seal before inserting it in the shaft seal groove.
6. Before re-assembling, wrap a small piece of paper around the shaft so that the shaft's woodruff key seat does not damage the new seal.
7. Re-assemble. Remove paper
8. Re-tighten four screws.
9. Re-connect drive coupling.
10. Return ASU to operation and check pump for leaks.



Transport / Storage



DANGER

- Death or crushing of limbs caused by falling or overturning loads!
- Bodily harm can occur if excessive weight is lifted or moved incorrectly!
- Protection from hot surfaces and hot liquids must be provided by the operator!

Take care not to drop the pump. Read and consider the weight prior to attempting to lift or move the pump. Do not attempt to lift pumps heavier than 25 kg without the use of a crane or other type of lifting assist device. Only qualified personnel may transport pumps weighing more than 25 kg.

When working with pumps that are hot, wear proper protective equipment and note that hot fluid may flow from the pump. Guard against skin contact with hot fluids, or with a hot pump. Follow all precautions of the fluid manufacturer in the handling of the fluid.

In the event that a pump needs to be stored, always protect the pump against water and other contaminants. Store the pump in a clean, dry, and warm environment. Pumps are delivered filled with suitable lubricant and with protective covers in, or over, all openings. These covers should remain in place during the mounting and alignment procedures, as long as possible. Remove the covers just prior to attaching system hoses to the manifold.

While storing spare parts, always protect the parts from water and contaminants. Store the parts in a clean, dry, and warm environment. Spare parts should be lightly coated with rust preventative oil and sealed in an air tight container.

Signal Isolator, V6, PN 117143

General Description

The isolated converter DAT 4531 D is able to measure voltage and current signals. In function of programming, the measured values are converted in a current or voltage signal. The device guarantees high accuracy and performance stability both versus time and temperature.

The programming is made by dip-switch located in the window on the side of the enclosure. By means of dip-switches it is possible to select the input type and range and the output type without recalibrate the device.

Moreover, by Personal Computer the user can program all of the device's parameters for his own necessity.

The 1500 Vac galvanic isolation on all ways (input, output and power supply) eliminates the effects of all ground loops eventually existing and allows the use of the converter in heavy environmental conditions found in industrial applications.

The DAT 4531 D is in compliance with the standard 89/336/CEE on the Electromagnetic Compatibility. It is housed in a plastic enclosure of 12.5 mm thickness suitable for DIN rail mounting in compliance with EN-50022 and EN-50035 standards.

User Instructions

The converter must be powered by a direct voltage applied to the terminals Q and R.

The input channel measures the value from the sensor connected to the terminals I, L and G and transmits the output measure on the terminals N and M.

The input and output connections must be made as shown in the section "Connections".

It is possible to configure the converter on field by dip-switch or Personal Computer as shown in the section "Programming".

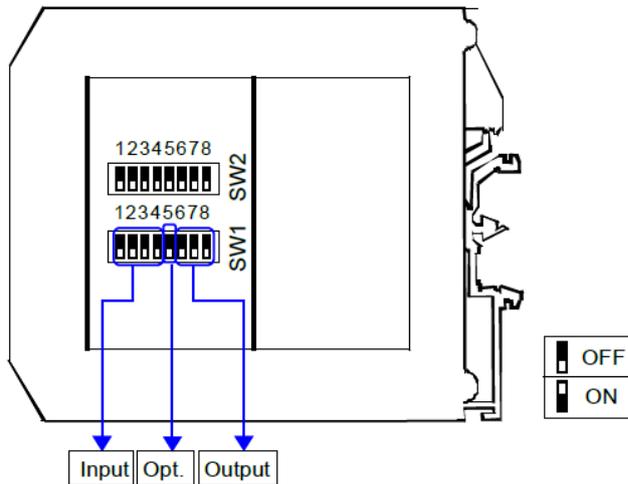
The configuration by dip-switches can be made also if the device is powered (Note: after the configuration the device takes some seconds to provide the right output measure).

Light Signalling

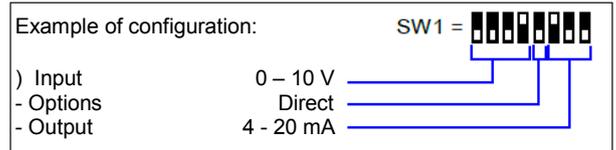
LED	COLOR	STATE	DESCRIPTION
PWR	GREEN	ON	Device powered.
		OFF	Device not powered
		BLINKING	Wrong dip-switches setting

Programming

Configuration by DIP-Switches



- 1) Open the suitable door on the side of the device. Refer to TAB.1.
- 2) Set the input type by the dip-switch SW1 [1..4].
- 3) Set the output type by the dip-switch SW1 [6..8].
- 4) Set the options type by the dip-switch SW1 [5].



NOTE:

It is also possible to set the dip-switches using the wizard of the configuration software following the procedure described in the section “Configuration by PC” until the step 6 and clicking on “Switch”.

DIP-Switch Configuration Tables

TAB.1 - Settings

Input	Output	Options
SW1 1 2 3 4	SW1 6 7 8	SW1 5 Out:
Default *	0÷20 mA	Direct
0÷20 mA	4÷20 mA	Reverse
4÷20 mA	0÷10 V	
0÷10 V	2÷10 V	
2÷10 V	0÷5 V	
0÷5 V	1÷5 V	
1÷5 V		

NOTES:

* If the dip-switches SW1 [1..4] are all set in the position 0 (“Default”), the device will follow the configuration programmed by PC (Input and output type and options).

* Eventual wrong dip-switches settings will be signalled by the blinking of the LED “PWR”.



The WE series of Gefran, are pressure transmitters for using in High temperature environment.

The main characteristic of this series is the capability to read temperature of the media up to 315°C.

The constructive principle is based on the hydraulic transmission of the pressure.

The fluid-filled system assures the temperature stability. The physical measure is transformed in a electrical measure by means the strain-gauge technology.

MAIN FEATURES

- Pressure ranges from:
0-35 to 0-1000 bar / 0-500 to 0-15000 psi
- Accuracy: $< \pm 0.25\%$ FSO (H); $< \pm 0.5\%$ FSO (M)
- Fluid-filled system for temperature stability
- Oil filling meets FDA requirements CFR 178.3620 and CFR 172.878
- Oil filling volume:
WE0 (30mm³); WE1, WE2, WE3 (40mm³)
- 1/2-20UNF, M18x1.5 standard threads; other types available on request
- Other diaphragms available on request
- Autozero function on board / external option
- Drift Autocompensation function (SP version)
- 17-7 PH corrugated diaphragm with GTP coating for ranges below 100 bar-1500 psi

GTP (advanced protection)

Coating with high resistance against corrosion, abrasion and high temperature

AUTOZERO FUNCTION

All signal variations in the absence of pressure can be eliminated by using the Autozero function.

This function is activated by closing a magnetic contact located on the transmitter housing.

The procedure is permitted only with pressure at zero.

AUTOCOMPENSATES INFLUENCE OF MELT TEMPERATURE

Thanks to internal self-compensation, the WSP series transmitter cancels the effect of pressure signal variation caused by variation of Melt temperature.

This reduces at the minimum the read error caused by heating of the filling fluid (typical of all sensors built with "filled" technology).

TECHNICAL SPECIFICATIONS

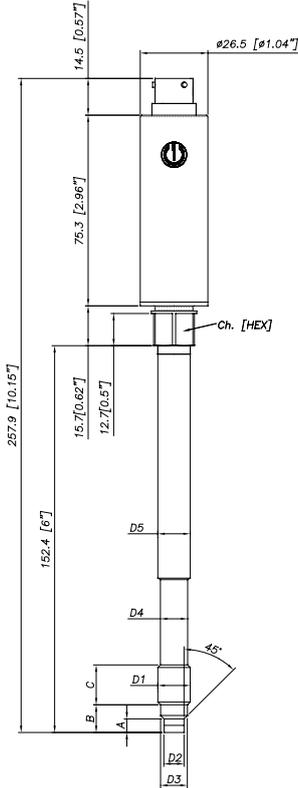
Accuracy (1)	H $< \pm 0.25\%$ FSO (100...1000 bar) M $< \pm 0.5\%$ FSO (35...1000 bar)
Resolution	Infinite
Measurement range	0..35 to 0..1000bar 0..500 to 0..15000psi
Maximum overpressure (without degrading performances)	2 x FS 1.5 x FS above 500bar/7500psi
Measurement principle	Extensimetric
Power supply	10...30Vdc
Maximum current absorption	32mA
Insulation resistance (at 50Vdc)	>1000 MOhm
Output signal Full Scale (FSO)	20mA
Zero balance (tolerance $\pm 0.25\%$ FSO)	4mA
Zero signals adjustment (tolerance $\pm 0.25\%$ FSO)	"Autozero" function
Span adjustment within $\pm 5\%$ FSO	See Manual
Maximum allowed load	See diagram
Response time (10...90% FSO)	~ 1ms
Output noise (RMS 10-400Hz)	< 0.025% FSO
Calibration signal	80% FSO
Output short circuit ingress and reverse polarity protection	YES
Compensated temperature range	0...+85°C
Operating temperature range	-30...+105°C
Storage temperature range	-40...+125°C
Thermal drift in compensated range: Zero / Calibration / Sensibility	< 0.02% FSO/°C
Diaphragm maximum temperature	315°C / 600°F
Zero drift due to change in process temperature (zero)	< 0.04 bar/°C
Zero drift temperature for Autocompensated version (SP) within the temperature range 20°C-315°C inclusive the drift temperature of the housing	< 0.005 bar/°C 100 ≤ p < 500 bar 0.0022 %FS/°C p ≥ 500 bar
Standard Material in contact with process medium	Diaphragm: • 17-7PH corrugated diaphragm with GTP Stem • 17-4 PH
Thermocouple (model WE2)	STD: type "J" (isolated junction)
Protection degree (with 6-pole female connector)	IP65

FSO = Full scale output

(1) BFSL method (Best Fit Straight Line): includes combined effects of Non-Linearity, Hysteresis and Repeatability.

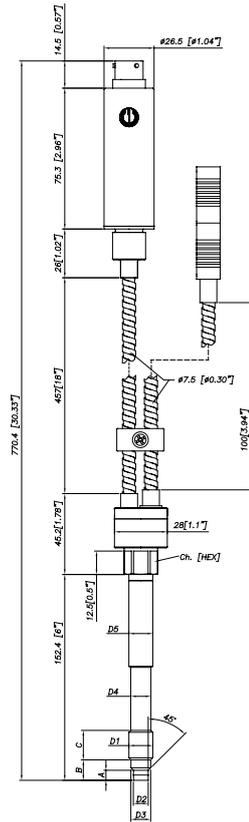
MECHANICAL DIMENSIONS

WE0

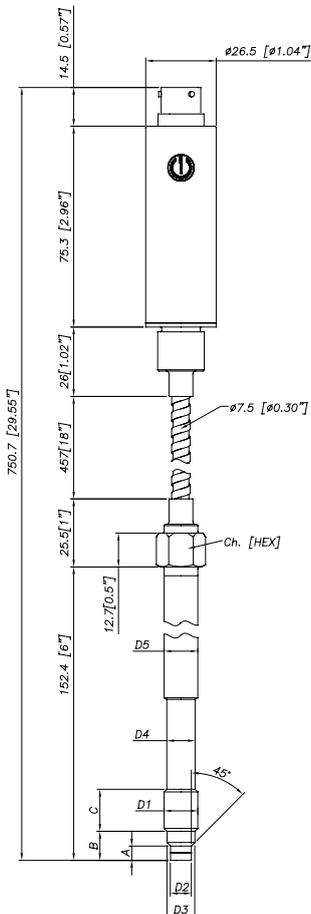


D1	1/2 - 20UNF
D2	$\phi 7.8 - 0.05$ [$\phi 0.31$ " - 0.002]
D3	$\phi 10.5 - 0.025$ [$\phi 0.41$ " - 0.001]
D4	$\phi 10.67$ [$\phi 0.42$ "]
D5	$\phi 12.7$ [$\phi 0.5$ "]
A	5.56 - 0.26 [0.22" - 0.01]
B	11.2 [0.44"]
C	15.74 [0.62"]
Ch [Hex]	16 [5/8"]

WE2

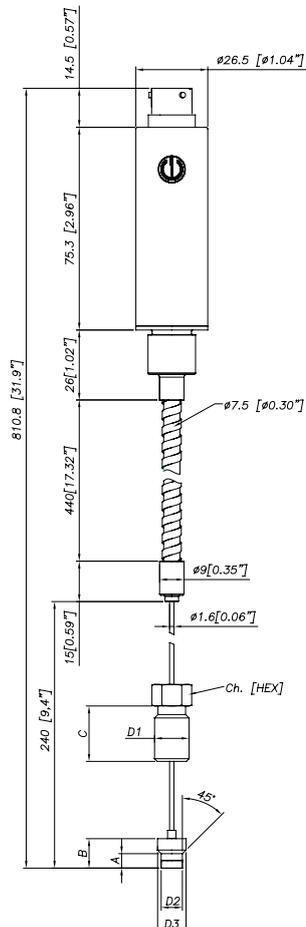


WE1



D1	M18x1.5
D2	$\phi 10 - 0.05$ [$\phi 0.394$ " - 0.002]
D3	$\phi 16 - 0.08$ [$\phi 0.63$ " - 0.003]
D4	$\phi 16 - 0.4$ [$\phi 0.63$ " - 0.016]
D5	$\phi 18$ [$\phi 0.71$ "]
A	6 - 0.26 [0.24" - 0.01]
B	14.8 - 0.4 [0.58" - 0.016]
C	19 [0.75"]
Ch [Hex]	19 [3/4"]

WE3



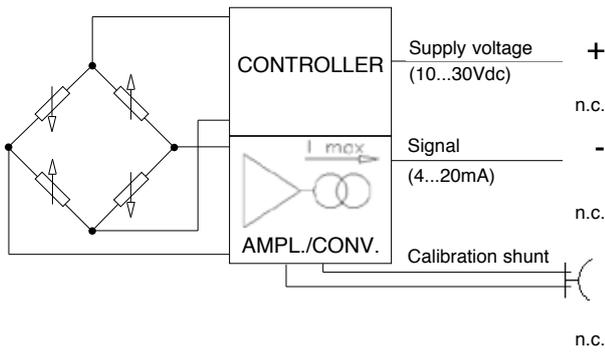
Exposed capillary	
D1	1/2-20UNF
D2	.307/.305" [7.80/7.75mm]
D3	.414/.412" [10.52/10.46mm]
A	.125/.120" [3.18/3.05mm]
B	.318/.312" [8.08/7.92mm]
C	.81" [20.6mm]

NOTE : dimensions refer to rigid stem length option "4" (153 mm – 6")

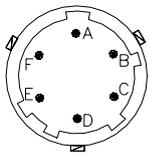
WARNING : For installation use a maximum tightening torque of 56 Nm(500 in-lb)

ELECTRICAL CONNECTIONS

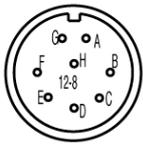
CURRENT OUTPUT (4...20mA, two wires)



6 pin connector
VPT07RA10-6PT2
(PT02A-10-6P)



8 pin connector
PC02E-12-8P Bendix



MAGNETIC AUTOZERO

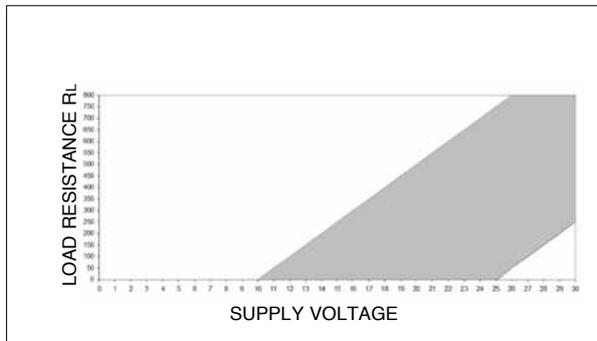
6-pin	8-pin
A	B
C	A
B	D
D	C
E - F	E - F
	G - H

Shield drain wire is tied to connector via cable clamp

EXTERNAL AUTOZERO

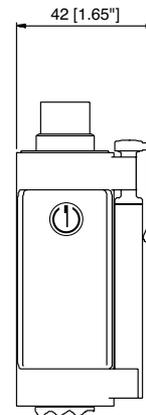
6-pin	8-pin
A	B
C	A
B	D
D	C
E - F	E - F
	G - H

LOAD DIAGRAM



The diagram shows the optimum ratio between the load and supply voltage of the 4...20mA transmitter. For a correct use, choose any combination of load resistance and supply voltage, in the shaded area.

AUTOZERO FUNCTION



The Autozero function is activated through a magnetic contact (external magnet supplied with the sensor). See the manual for a complete Autozero function explanation.

ACCESSORIES

Connectors

6-pin mating connector (IP65 protection degree)
8-pin mating connector

Extension cables

6-pin connector with 8m (25ft) cable
6-pin connector with 15m (50ft) cable
6-pin connector with 25m (75ft) cable
6-pin connector with 30m (100ft) cable

Other lengths

Accessories

Mounting bracket
Dummy plug for 1/2-20UNF
Dummy plug for M18x1.5
Drill kit for 1/2-20UNF
Drill kit for M18x1.5
Cleaning kit for 1/2-20UNF
Cleaning kit for M18x1.5
Fixing pen clip
Autozero pen

Thermocouple for WE2 model

Type "J" (153mm - 6" stem)

CON300
CON307

C08WLS
C15WLS
C25WLS
C30WLS

consult factory

SF18
SC12
SC18
KF12
KF18
CT12
CT18
PKIT309
PKIT312

TTER 601

Cable color code

Conn.	Wire
A	Red
B	Black
C	White
D	Green
E	Blue
F	Orange

