



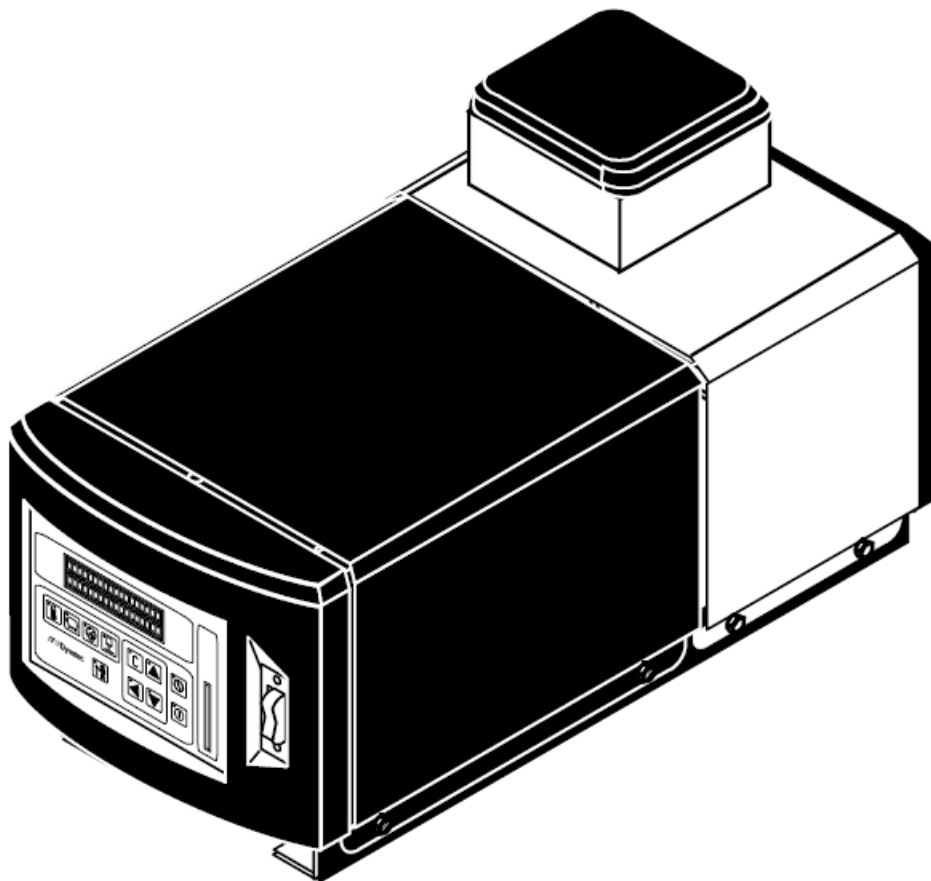
Adhesive Application Solutions | ISO 9001 certified

DYNAMELT S

Adhesive Melt & Supply Unit

With Gear Pump and DynaControl V5.13 and higher

Technical Documentation, No. 20-31, Rev.10.22



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.

Note: Most common screws, nuts and washers called out in the manual are not for sale and they can be obtained locally at your hardware Store. Specialty fasteners are available by contacting ITW Dynatec's Customer Service.

ITW Dynatec Service Parts and Technical Service:

AMERICAS

ITW Dynatec
31 Volunteer Drive
Hendersonville, TN 37075
USA
Tel. +1.615.824.3634
info@itwdynatec.com
service@itwdynatec.com

EUROPE, MIDDLE EAST & AFRICA

ITW Dynatec
Industriestrasse 28
40822 Mettmann
Germany
Tel. +49.2104.915.0
info@itwdynatec.de
service@itwdynatec.de

ASIA PACIFIC

ITW Dynatec
No. 2 Anzhi Street,
SIP, Suzhou, 215122
China
Tel. +86.512.6289.0620
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

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Chapter 1

Declaration of Incorporation / Conformity

EC declaration of conformity

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

Manufacturer

ITW Dynatec
31 Volunteer Drive
37075 Hendersonville, TN

Person established in the Community authorised to compile the relevant technical documentation

Andreas Pahl
ITW Dynatec GmbH
Industriestraße 28
40822 Mettmann

Description and identification of the machinery

Product / Article	Adhesive supply unit
Project number	Dynamelt_S
Commercial name	Dynamelt S
Model	S22, S45 including Transformer Versions
Function	Melting and delivery of hot melt adhesives

It is expressly declared that the machinery fulfils all relevant provisions of the following EU Directives or Regulations:

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) Published in L 157/24 of 6/9/2006
2014/35/EU	Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits Published in 2014/L 96/357 of 3/29/2014
2014/30/EU	Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast) Published in 2014/L 96/79 of 3/29/2014

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
EN 349:1993 + A1	Safety of machinery - Minimum gaps to avoid crushing of parts of the human body
ISO 12100-2012	Safety of machinery - General principles for design - Risk Assessment and risk reduction

Hendersonville, TN, 10/23/2018

Place, Date

S. Shirgaonkar

Signature
Shishir Shirgaonkar
Engineering Director

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Chapter 2

Safety Instructions

General Considerations



- 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.



Read and adhere to the manual!

1. Read and follow these instructions.
Failure to do this could result in severe personal injury or death.
2. Keep the binding rules for accident prevention valid for your country and the place of installation. Also keep the approved qualified technical rules for safety-conscious and professional work.
3. Additional safety instructions and/ or symbols are located throughout this manual. They serve to warn maintenance personnel and operators about potentially hazardous situations.
4. Inspect the machine for unsafe conditions daily and replace all worn or defective parts.
5. Keep work area uncluttered and well lit. Remove all material or things not needed for the production from the workspace of the equipment!
6. All covers and guards must be in place before operating this equipment.
7. Subject to technical modifications without notice!
8. To ensure proper operation of the equipment, use specified electrical and/ or air supply sources.
9. Do not attempt to alter the design of the equipment unless written approval is received from ITW Dynatec.
10. Keep all manuals readily accessible at all times and refer to it often for the best performance from your equipment.

Warning Labels

1. Read and obey all of the warning labels, signs and caution statements on the equipment.
2. Do not remove or deface any of the warning labels, signs and caution statements on the equipment.
3. Replace any warning labels, signs and caution statements which have been removed or defaced. Replacements are available from ITW Dynatec.

Safety Symbols in this Manual

Mandatory signs

	General mandatory sign		Wear foot guard!
	Read and adhere to the documentation!		Wear protective gloves!
	Switch the unit voltage-free before working! Main switch OFF!		Wear protective clothing!
	Wear headgear, protective goggles and ear protection!		

Warning signs

NOTE: The dangers and risks exist if the corresponding instructions are not heeded and the precautionary measures are not taken!

	Caution, danger spot! This sign points to possible dangers for life and physical condition or to possible risks for machine and material or to possible risks for environment. The word “DANGER” in addition with this points to possible dangers of life The words “WARNING” and “CAUTION” in addition with this sign point to possible risks of injury. The word “ADVICE” in addition with this sign points to possible risks for machine, material or environment.		Danger, high voltage! This sign points to possible dangers for life and physical condition caused by electricity. Risk of injury, mortal danger!
			Caution, hot surface! This sign points to possible risks of burns. Risk of Burns!
			Caution, high pressure! This sign points to possible risks of injury caused by high pressure. Risk of injury!
			Caution, rotating rolls! This sign points to possible risks of injury caused by inrunning nip (at rolls). Risk of injury!

Prohibition signs

	Fire danger! Smoking prohibited!		Fire danger! Fire and open flames prohibited!
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Safe Installation and Operation



Read and adhere to the manual!

1. Read this manual before applying electrical power to the equipment. Equipment may be damaged by incorrect electrical connections.
2. 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.
3. Do not use adhesive that is dirty or that may be chemically contaminated. Doing so can cause system clogging and pump damage.
4. 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.
5. Do not operate the hopper or other system components without adhesive for more than 15 minutes if the temperature is 150° C (300° F) or more. To do so will cause charring of the residual adhesive.
6. 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.
7. Never attempt to lift or move the unit when there is molten adhesive in the system.
8. In case of an emergency or exceptional incident, press the emergency stop button in order to stop the unit quickly.
9. Use the unit only as it is intended to.
10. Never let the unit run unattended.
11. Operate the unit only in a faultless and fully functional condition. Check and make sure that all safety devices work in proper form!



Smoking, fire and open flames prohibited! Fire danger!

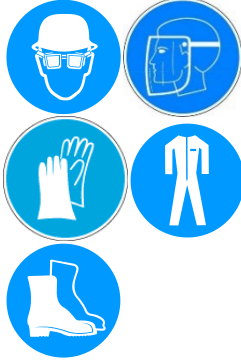
Make absolutely sure that there is no smoking and no fire being lit in the work area!

Explosion/ Fire Hazard

1. Never operate this unit in an explosive environment.
2. Use cleaning compounds recommended by ITW Dynatec or your adhesive supplier only.
3. Flash points of cleaning compounds vary according to their composition, so consult with your supplier to determine the maximum heating temperatures and safety precautions.

Choice of Adhesive**DANGER! HARMFUL FUMES!**

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.

Eye Protection & Protective Clothing**WARNING****EYE PROTECTION & PROTECTIVE CLOTHING REQUIRED**

1. It is very important that you PROTECT YOUR EYES when working around hot melt adhesive equipment!
2. Wear a face shield conforming to ANSI Z87.1 or safety glasses with side shields which conform to ANSI Z87.1 or EN166.
3. Failure to wear a face shield or safety glasses could result in severe eye injury.

4. It is important to protect yourself from potential burns when working around hot melt adhesive equipment.
5. Wear heat-resistant protective gloves and long sleeved, protective clothing to prevent burns that could result from contact with hot material or hot components.
6. Always wear steel reinforced safety shoes.

Electrical**DANGER HIGH VOLTAGE**

1. 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.
2. Disconnect, lockout and tag external electrical power before removing protective panels.
3. A secure connection to a reliable earth ground is essential for safe operation.
4. 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.
5. Notify the maintenance personnel immediately, if cables are damaged. Provide for exchanging the defective components immediately.

Lockout/ Tagout**Switch the unit voltage-free before working!
Main switch OFF!**

1. Follow OSHA 1910.147 (Lockout/ Tagout Regulation) for equipment's lockout procedures and other important lockout/tagout guidelines.
2. Be familiar with all lockout sources on the equipment.
3. 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.

High Temperatures



WARNING HOT SURFACE

1. Severe burns can occur if unprotected skin comes in contact with molten adhesive or hot application system parts.
2. Face shields (preferred) or safety glasses (for minimum protection), heat-resistant protective gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.

High Pressure



WARNING HIGH PRESSURE PRESENT

1. To avoid personal injury, do not operate the equipment without all covers, panels and safety guards properly installed.
2. To prevent serious injury from molten adhesive under pressure when servicing the equipment, disengage the pumps and relieve the adhesive system's hydraulic pressure (i.e. trigger the heads, hand-held applicators, and/or other application devices into a waste container) before opening any hydraulic fittings or connections.
3. 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.
4. Either of the two High Pressure symbols shown may be used on ITW Dynatec equipment.
5. Keep the given operating pressure.
6. Notify the maintenance personnel immediately, if hoses or components are damaged. Provide for exchanging the defective components immediately.

Protective Covers



WARNING DO NOT OPERATE WITHOUT GUARDS IN PLACE

1. Keep all guards in place!
2. To avoid personal injury, do not operate the application system without all covers, panels and safety guards properly installed.
3. Never get your extremities and/or objects into the danger area of the unit. Keep your hands away from running parts of the unit (pumps, motors, rolls or others).

Servicing, maintenance

1. Only trained and qualified personnel are to operate and service this equipment.
2. Before any service work disconnect the external power supply and the pressure air supply!
3. Never service or clean equipment while it is in motion. Shut off the equipment and lock out all input power at the source before attempting any maintenance.
4. Follow the maintenance and service instructions in the manual.
5. Keep the maintenance rates given in this documentation!
6. Any defects in the equipment that impact safe operation have to be repaired immediately.
7. Check screws that have been loosened during the repair or maintenance, if they are tight again.
8. Replace the air hoses in preventive maintenance regularly, even if they have got no viewable damages! Adhere to the manufacturers` instructions!
9. Never clean control cabinets or other houses of electrical equipment with a jet of water!
10. Adhere to the current safety data sheet of the manufacturer when using hazardous materials (cleaning agents, etc.)!

Cleaning Recommendation

- Filters are disposable and need to be replaced regularly. DO NOT boil in mineral oil, solvents or water; the sealant used in filter assembly may become brittle and very likely disintegrate when boiled.
- When cleaning other components in mineral oil, remove all non-metallic items (O-rings, seals, filter cartridge, etc.) away from chemicals before components are subjected to hot mineral oil cleaning.
- If there is not a specific rebuild kit available or directions on how to clean a part, please treat it as a replacement item and do not attempt to clean/rebuild.

Secure transport

1. Examine the entire unit immediately after receipt, if it has been delivered in perfect condition.
2. Let damages in transit certify by the carrier and announce them immediately to the ITW Dynatec.
3. Use only lifting devices that are suitable for the weight and the dimensions of the equipment (see drawing of the equipment).
4. The unit has to be transported upright and horizontally!
5. The unit has to cool down to room temperature before packaged and transported.

Treatment for Burns from Hot Melt Adhesives

Measures after being burned:

1. 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.
2. Cool burnt parts immediately!
3. Do not remove adhesive forcibly from the skin!
4. 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.
5. When working near a hot melt application system, always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body.
6. Always have first-aid information and supplies available.
7. Call a physician and/or an emergency medical technician immediately. Let the burns medicate by a medic immediately.

Measures in case of fire

1. Please heed that not covered hot parts of the engine and molten hot melt may cause heavy burns. Risk of burns!
2. Work very carefully with molten hot melt. Keep in mind, that already jelled hot melt can be very hot, too.
3. When working near a hot melt application system, always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body!

Measures in case of fire:

Wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body.

Firefighting - burning hot melt:

Please keep attention to the safety data sheet given by the adhesive manufacturer.

**EXTINGUISH FIRE****Appropriate extinguishing agents:**

Foam extinguisher, Dry powder, Spray, Carbon dioxide (CO₂), Dry sand.

For safety reasons not appropriate extinguishing agents: None.

Firefighting - burning electrical equipment:**Appropriate extinguishing agents:**

Carbon dioxide (CO₂), Dry powder.

Keep attention to environmental protection standards

1. When working on or with the unit, the legal obligations for waste avoidance and the duly recycling / disposals have to be fulfilled.
2. Keep attention, that during installations, repairs or maintenance matters hazardous to water, like adhesive / adhesive scrap, lubricating grease or oil, hydraulic oil, coolant and cleaner containing solvent do not pollute the ground or get into the canalization!
3. These matters have to be caught, kept, transported and disposed in appropriate reservoirs!
4. Dispose these matters according to the international, national and regional regulations.

Chapter 3

Description and Technical Specs

3.1 Applicable Safety Regulations

Intended Use

The Dynamelt S Adhesive Supply and Melt Unit (ASU, Melter) may be used only to melt and supply suitable materials, e.g. adhesives. When in doubt, seek permission from ITW Dynatec.



If the unit is not used in accordance with this regulation, a safe operation cannot be guaranteed.

The operator - and not ITW Dynatec - is liable for all personal injury or property damages resulting from unintended use!



Intended use includes, that you

- read this documentation,
- heed all given warnings and safety instructions, and
- do all maintenance within the given maintenance rates.

Any other use is considered to be unintended.

Unintended Use, Examples

The Melter may not be used under the following conditions:

- In defective condition.
- In a potentially explosive atmosphere.
- With unsuitable operating/processing materials.
- When the values stated under Specifications are not complied with.

The Melter may not be used to process the following materials:

- Toxic, explosive and easily flammable materials.
- Erosive and corrosive materials.
- Food products.

Residual Risks

In the design of the Melter, every measure was taken to protect personnel from potential danger. However, some residual risks cannot be avoided.

Personnel should be aware of the following:



- Risk of burns from hot material.
- Risk of burns from hot Melter's components.
- Risk of burns when conducting maintenance and repair work for which the system must be heated up.



- Risk of burns when attaching and removing heated hoses.
- Material fumes can be hazardous. Avoid inhalation. If necessary, exhaust material vapors and/or provide sufficient ventilation of the location of the system.
- Risk of pinching parts of the body at running parts of the unit (pumps, motors, rolls or others).
- The safety valves may malfunction due to hardened or charred material.

Technical changes

Any kind of technical changes having impact to the security or the operational liability of the system should only be done by written agreement of ITW Dynatec. Suchlike changes made without given a corresponding written agreement will lead to immediate exclusion of liability granted by ITW Dynatec for all direct and indirect subsequent damages.

Using foreign components

ITW Dynatec takes no responsibility for consequential damages caused by using foreign components or controllers that have not been provided or installed by ITW Dynatec.

ITW Dynatec does not guarantee that foreign components or controllers used by the operating company are compatible to the ITW Dynatec-system.

Setting-up operation

We recommend asking for an ITW Dynatec-service technician for the setting-up operation, to ensure a functioning system. Let yourself and the people working with or working on the system be introduced to the system on this occasion.

ITW Dynatec takes no responsibility for damages or faults caused by any untrained personal.

3.2 Description Dynamelt S

The Dynamelt S Series Melter is a computer-controlled hot-melt supply and melt unit designed on metric standards. Its "all-icon" control panel, with choice of display languages, is internationally operator friendly. It is available for 240V or 400V service.

Available in two hopper sizes the Dynamelt S Melter uses a microprocessor temperature control to closely control the temperature of hot-melt adhesive for up to six hoses and six heads. Temperature setpoints are operator-selected for up to 14 zones and the system automatically provides warnings and alarms for operator errors and system malfunctions.

The Dynamelt system 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 Melter is not in active use, enabling rapid return to normal operation.

With these flexible temperature programming features, the Dynamelt 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.

A four-layered, shielded CPU board protects the microprocessor from external interference. 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. An optional remote control panel gives control and monitoring flexibility.

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 gear pump is installed to assure a smoother and higher precision flow. The single or dual pump is driven by a single drive.

To take advantage of ITW Dynatec's innovative Dynafiber adhesive fiberizing technology, the Dynamelt S Auxiliary Wattage model has been developed to combine high performance, precise control and better bond strength with up to 40% adhesive savings.

The Dynamelt's Teflon-coated hopper accepts adhesive in all popular forms, including pellets, slugs and blocks. The Melter can accommodate air-actuated automatic applicators (heads), electric applicators, hand-held applicators and/or special applicators. Options available include pressure gauge, drop-in grid, pendant control and a seven-day scheduler

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	< 60 dbA (at 1 meter)

Physical:

Dimensions	see dimensional layouts on following pages
Number of hoses/ applicators	2, 4 or 6 hoses/ applicators
Number of hopper temperature zones	1 or 2 (add 1 for optional drop-in grid)
Number of pumps	1
Gear pump	See Model Designation Matrix
Maximum recommended pump speed	90 revolutions per minute
Enclosure	styled, durable metal and high temp polymer, dust and splatter resistant
Hose connections	standard = universal 15-pin Amphenol connectors at Melter wrench-secured fluid fittings (#6 JIC)
Hopper (tank) capacity	S22 = 22 kg/ 48 lb S45 = 45 kg/ 100 lb
Hopper construction	welded aluminum, cast-in heaters, TFE Teflon coated
Filtration	hopper bottom screen filter manifold: large pleated pump outlet filter
Weight, empty	S22 = 79kg/ 175lb S45 = 114kg/ 317 lb
Adhesive form	accepts most forms

Electrical:

Service requirements	200-240 VAC, Melters = 50-60 Hz, see also Wattage Chart 400 VAC, Melters = 50-60 Hz, see also Wattage Chart
Power consumption, system maximum	200-240 VAC, or 400VAC system = S22 / S45 = 11,650 W
Power consumption, hopper	230/400 VAC system, S22 / S45 = 2,500 W 5,000 W (with drop-in grid)
Hopper heater type	cast-in tubular
Temperature control	microprocessor-based proportional integral derivative (PID)
Temperature sensors	100 Ohm Platinum RTD standard 120 Ohm Nickel RTD optional
Electrical connectors	durable, latching connectors
Motor	1/4 hp, alternating current (AC) motor, direct drive, horizontal orientation
Maximum current available for hose & head	230/400 VAC: 1200 W

Pressurized Air:

Air pressure supply (optional pneumatic pressure relief valve)	0.7 to 7.0 bar (10 to 100 psi)
--	--------------------------------

Performance:

Adhesive temperature control range, standard models	10°C to 218°C (50°F to 425°F)
Adhesive temperature control range, optional high-temp models	10°C to 232°C (50°F to 450°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	500 to 50,000 centipoise
Warm-up time, full hopper	approximately 30 minutes
Adhesive delivery rate, open line *	up to 0.38 kg/min (0.83 lbs/min) (4.5cc gear pump)
Typical adhesive melt rate *	S22 = up to 22.6 kg/h (50 lb/h)/ S22 Grid = up to 41.3 kg/h (91 lb/h) S45 = up to 23.1 kg/h (50.9 lb/h)/ S45 Grid = up to 45.6 kg/h (100.4 lb/h)
Adhesive pressure	up to 68 bar (1000 psi) maximum

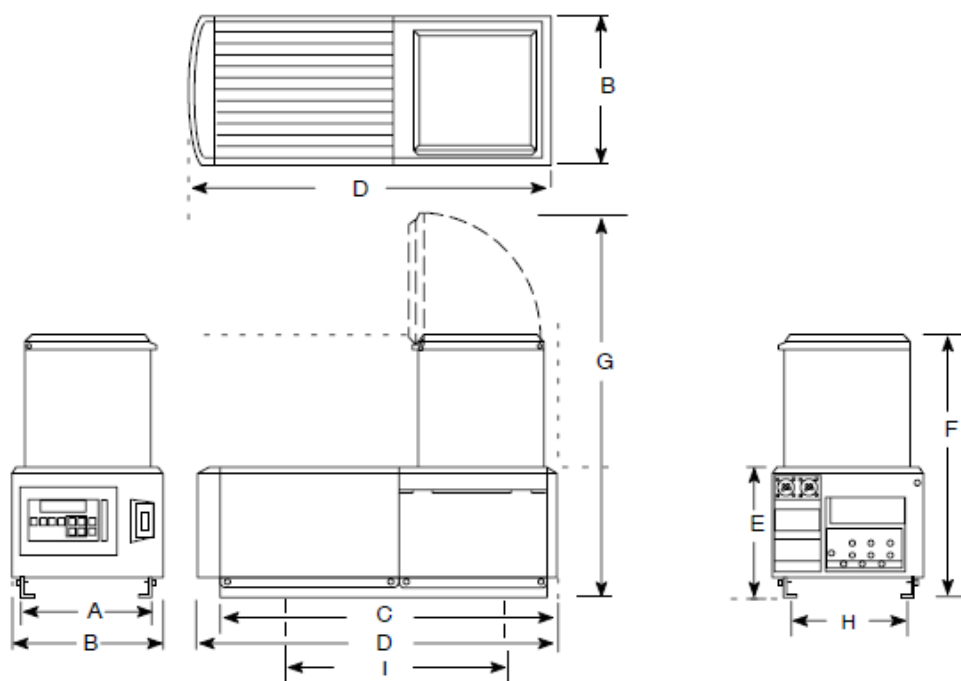
* depends on adhesive used

DynaControl V5 Temperature Controller:

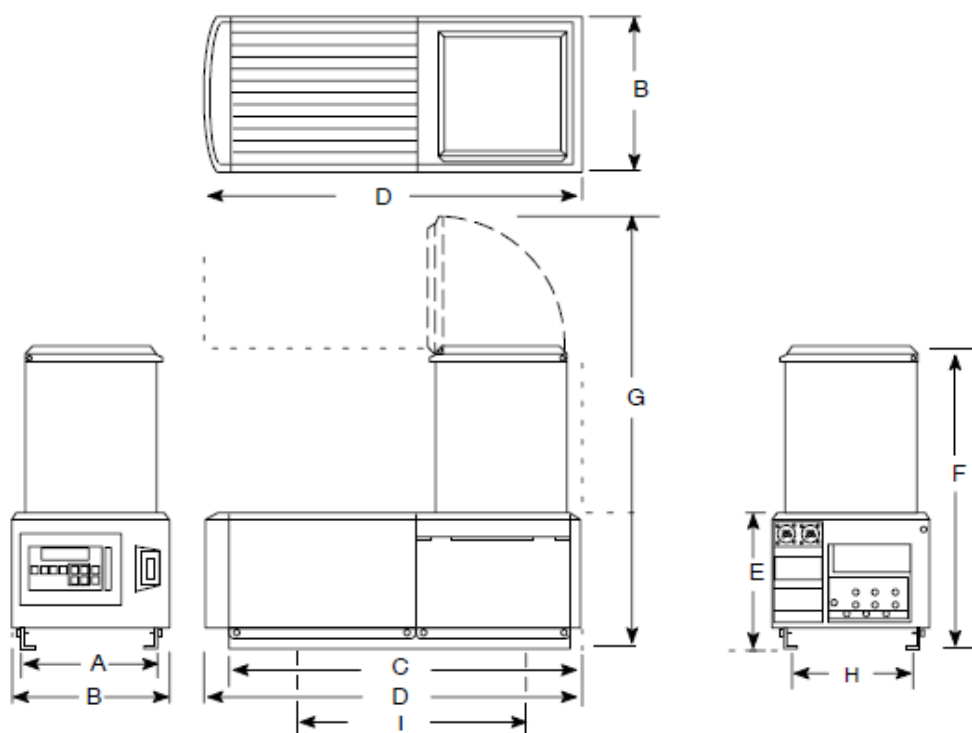
Power board	5 zones per board, modular construction
Auxiliary board	4 zones per board, modular construction
Display type	long life, bright fluorescent
Temperature control zones	5-15 triac-output, can be combined with solid-state relay output (optional)
Solid state relay control signal	20 mA/ 12V
Fuses	5x20 mm, hose/ head: T6.3AL time delay

Other

Display languages	English, French, German, Spanish, Swedish, Italian, Portuguese, Japanese and Dutch
Operator interface	digital display with simplified, all-icon keypad
Temperature stand-by	yes
High and low temperature alarms	yes
Ready interlock	yes
Password protection	yes
Sequential heating	yes (hopper, hose, head staged heating)
Sensor open alarm	yes
RS232 and RS485 communications capable	yes
CE approval	yes

Dimensions

Installation Dimensions: DM S22: 22 kg (48 lb) Hopper Capacity



Installation Dimensions: DM S45: 45 kg (100 lb) Hopper Capacity

Dimensions	A	B	C	D	E	F	G	H	I *
S22 mm S22 inches	304.8 12	355.6 14	787 31	838 33	304.8 12	610 24	889 35	248.9 9.8	381 15
S45 mm S45 inches	" "	" "	" "	" "	" "	1016 40	1295 51	" "	" "

* Distance between the mounting holes.

Wattage Capacity for 240V and 400V Melters



NOTE

In general:

- Each zone, hose or head, has a maximum wattage capacity of 1200W.
- Each output board has a maximum wattage capacity of 2400W.
- Additional to these zone and board limitations, there is no overall limitation.

For all 240V and 400V Melters:

Wattage	Hose 1 *	+	Head 1 *	+	Hose 2 *	+	Head 2 *	=	Wattage Total #
									
Wattage	Hose 3 *	+	Head 3 *	+	Hose 4 *	+	Head 4 *	=	
									
Wattage	Hose 5 *	+	Head 5 *	+	Hose 6 *	+	Head 6 *	=	
									

* 1200W max. for each zone Hose or Head.

Max. 2400W for each of two Hose/Head zones.

Notes on Melter with High Output Power Auxiliary Zones:

- 2-Hose Melters can be equipped with 2 High Power Auxiliary Zones.
- These zones can provide wattage up to 2400W per zone for each of both.
- Using High Power Aux. zones does not reduce the available wattage for hoses and heads (with the above mentioned limitations).

Note:

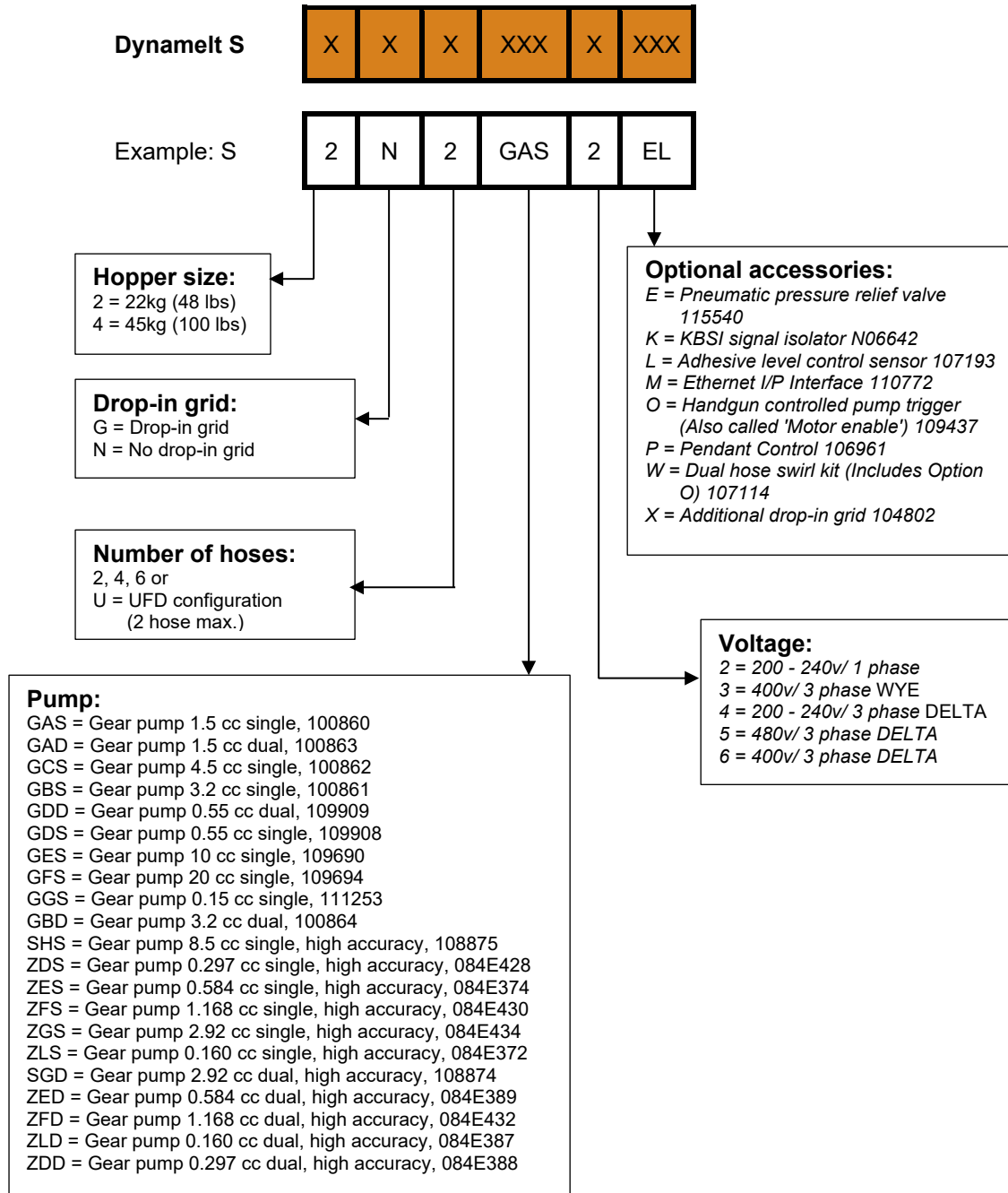
The Wattage Chart on next page shows the maximum current of the power service and the circuit breaker size. Use that chart to determine the adequate power service for your Melter.

Wattage Chart S22 / S45

Standard DM-S & DMS-APS											
		Hopper	Hose& Head 1/2	Hose& Head 3/4	Hose& Head 5/6	Premelt Grid 1	Premelt Grid 2	Circuit Breaker 3 PH 400V	Circuit Breaker 3 PH 240V	Max. Amps * Single-Phase	Circuit Breaker Single-Phase 240V
S22/45	2 Hoses	2500W 10.4A	2400W 10A	-	-	-	-	20A 104100	20A 104100	20.4	30A 100746
S22/45	2 Hoses 1 Grid	2500W 10.4A	2400W 10A	-	-	2500W 10.4A	-	20A 104100	30A 100747	31	50A 100748
S45	2 Hoses 2 Grids	2500W 10.4A	2400W 10A	-	-	2500W 10.4A	2500W 10.4A	-	-	41	50A 100748
S22/45	4 Hoses	2500W 10.4A	2400W 10A	2400W 10A	-	-	-	20A 104100	30A 100747	30.4	50A 100748
S22/45	4 Hoses 1 Grid	2500W 10.4A	2400W 10A	2400W 10A	-	2500W 10.4A	-	20A 104100	50A 109494	41	50A 100748
S45	4 Hoses 2 Grids	2500W 10.4A	2400W 10A	2400W 10A	-	2500W 10.4A	2500W 10.4A	-	-	50	50A 100748
S22/45	6 Hoses	2500W 10.4A	2400W 10A	2400W 10A	2400W 10A	-	-	20A 104100	50A 109494	41	50A 100748
S22/45	6 Hoses 1 Grid	2500W 10.4A	2400W 10A	2400W 10A	2400W 10A	2500W 10.4A	-	20A 104100	50A 109494	50	50A 100748
S45	6 Hoses 2 Grids	2500W 10.4A	2400W 10A	2400W 10A	2400W 10A	2500W 10.4A	2500W 10.4A	-	-	50	50A 100748
DM-S & DM-S-APS with High Power Aux-Zones											
		Hopper	Hose& Head 1/2	AUX Zone 1	AUX Zone 2	Premelt Grid 1	Premelt Grid 2	Circuit Breaker 3 PH 400V	Circuit Breaker 3 PH 240V	Max. Amps * Single-Phase	Circuit Breaker Single-Phase 240V
S22/45	2 Hoses 2 AUX	2500W 10.4A	2400W 10A	2400W 10A	2400W 10A	-	-	20A 104100	50A 109494	41	50A 100748
S22/45	2 Hoses 2 AUX 1 Grid	2500W 10.4A	2400W 10A	2400W 10A	2400W 10A	2500W 10.4A	-	20A 104100	50A 109494	50	50A 100748

* Max. total Amps must be limited to the current rating of the circuit breaker.

Model Designation Matrix



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Chapter 4

Installation



CAUTION

- Before installation, please read this documentation carefully.
- Pay attention to all the installation and connecting advices.
- Heed all safety instructions mentioned in Chapter 2.
- All installation and start-up work must be carried out by qualified and trained technical personnel.

Mounting the Dynamelt S Melter

The S Melter can be mounted on most flat surfaces, on either an open or a solid frame (as shown below). Access is needed for the main electrical power and the serial communication connections to come in from below the unit and connect under the DynaControl keypad.

There is a cutout in the baseplate, directly below the pump shaft, which allows adhesive to drain.

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

For installation dimensions, see illustrations in Chapter 3.

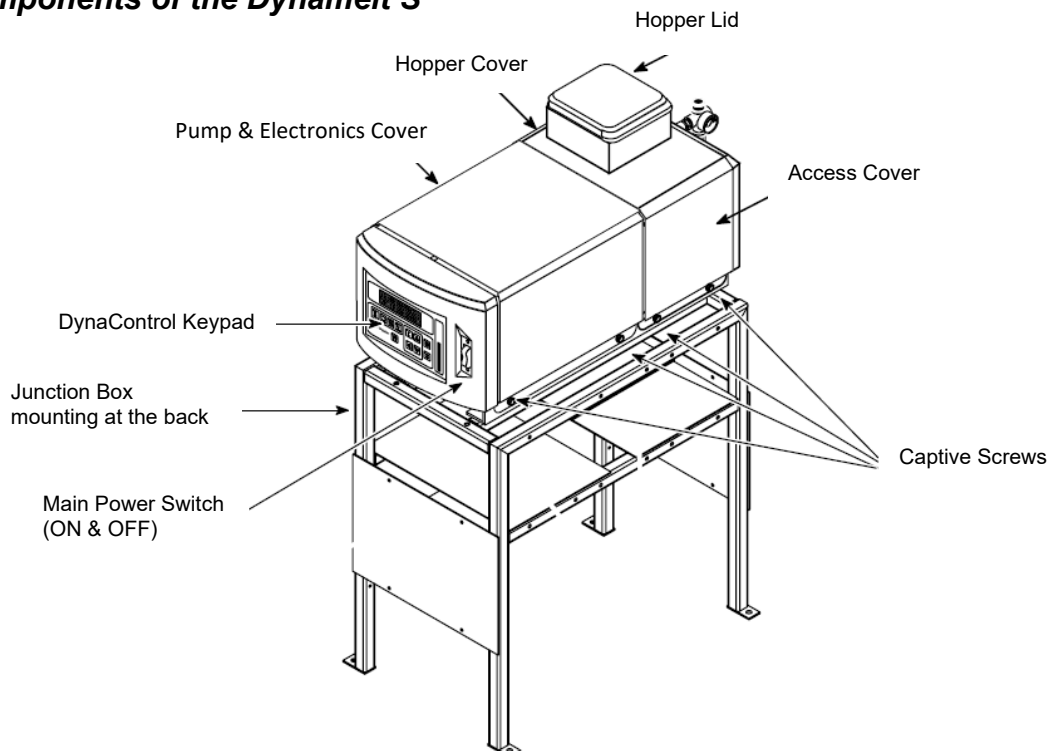
Lifting the Melter



WARNING

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

Components of the Dynamelt S



Pre-Installation**CAUTION**

An appropriate power cord and overload protection must be provided by the customer as part of the Melter installation.

To determine if your electrical system has the correct circuit breaker size and wire gauge for the installation of this hot-melt system, including the Melter, hoses, applicator heads and air heaters, see the Wattage chart in Chapter 3 before proceeding.

Installation**CAUTION**

- Re-read Chapter 2 "Safety Precautions" before performing any installation procedures.
- All installation procedures must be performed by qualified, trained technicians.

After the Dynamelt S Melter has been properly mounted, the following general sequence should be followed for installation. Refer to the component drawings on previous pages for orientation and location of described items.

1. Make sure that incoming line power to the Melter is disconnected and the unit's Main Power Switch is turned OFF.

**DANGER HIGH VOLTAGE**

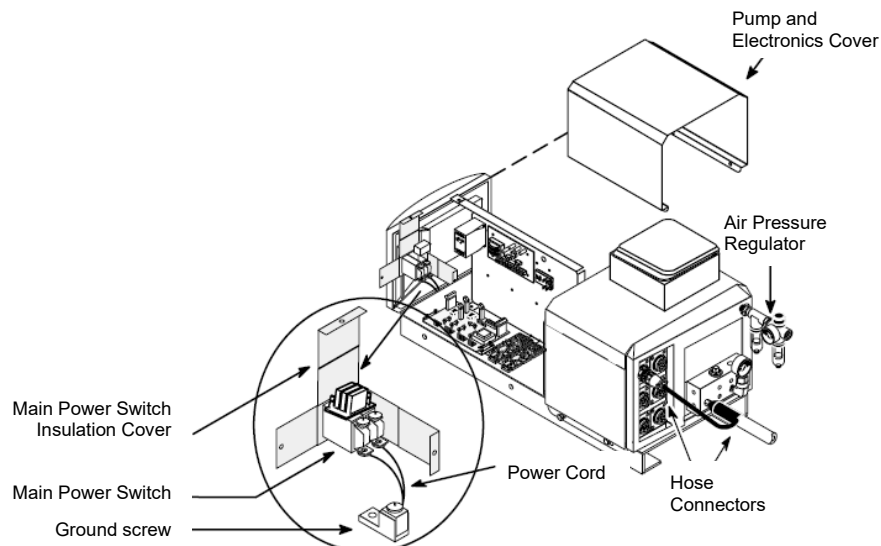
- Disconnect and lock out input power to the application system before starting any installation procedures.
- Make sure there is no electrical power on the leads you will be connecting.

2. Loosen the 2 captive screws on the bottom of each side of the pump and electronics cover. Remove cover. Select correct plug for your Melter's amperage. Run the power cord through the hole in the bottom of the base plate. Open Main Power Switch insulation cover and attach the power cord at the switch's connectors. Attach ground wire to ground screw provided in the base plate.

On the Motor Control Interface printed circuit board (PCB) (see location illustration on next pages), move Voltage Selection jumper (J3) to its Down position (board is diagrammed in Ch. 7).

**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 Dynamelt controller.



- At installation, the customer must make the following terminal connections into the Melter's PCBs. The PCBs do not need to be removed from the Melter in order to make connections.

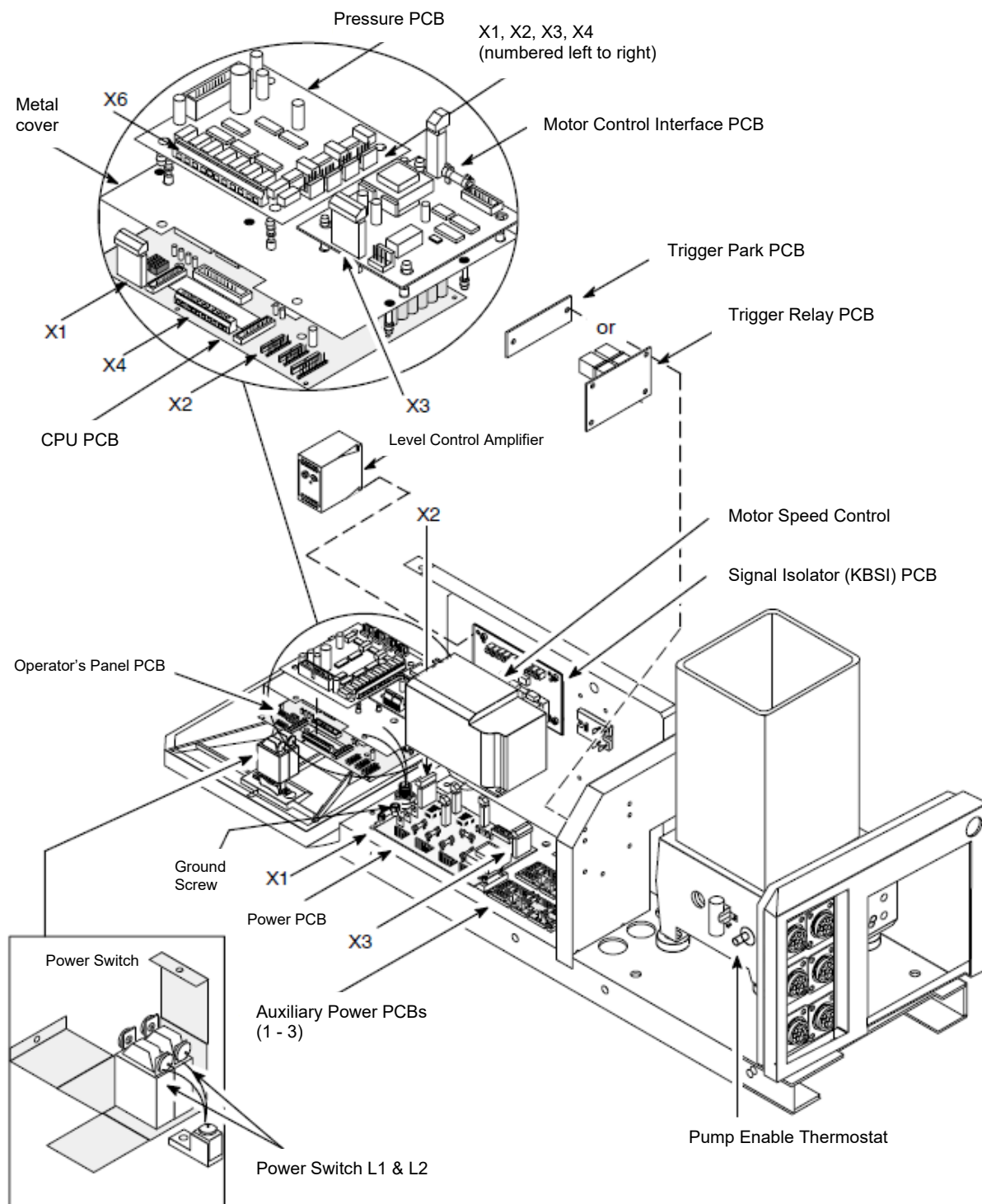
See the detailed layout on the next page for locations, and refer to the detailed layout drawings of the PCBs in Ch. 7, if needed.

Terminal	Circuit	Location
Required connections for standard 240 VAC 1-phase Melter:		
--	Input Power from Main Power 240VAC	Main Power Switch/ L1, L2
PE	Ground	PCB Heat Sink Ground Screw
Required connections for 240 VAC, 3-phase Delta Melter:		
--	Input Power from Main Power 240VAC	Main Power Switch/ L1, L2, L3
PE	Ground	PCB Heat Sink Ground Screw
Required connections for 400 VAC, 3-phase, Melter:		
--	Input Power from Main Power, 400VAC	Main Power Switch/ L1, L2, L3
N	Neutral, 400VAC	Power PCB/ X2/ N
PE	Ground	PCB Heat Sink Ground Screw
Non-essential connections; connect if feature is desired:		
R1, R2	Normally Open Ready (parent machine interlock)	Power PCB/ X3/ pins 1 & 2
A1, A2	Normally Closed Alarm (controller display alarms)	CPU PCB/ X1/ pins 1 & 2
E1, E2	External Standby (controller standby mode)	CPU/ X4/ connect 5 and 9 or 10
P1, P2	Program Select 1&2 (controller program selection)	CPU/ X4/ connect 1 to 9 or 10**
P3, P4	Program Select 3&4 (controller program selection)	CPU/ X4/ connect 7 to 9 or 10**
Options: Make connections for the following if installed on your Melter:		
S1, S2	Tachometer (line speed tracking)	MCI*/ X3/ 0 (ground) & 10 (+)
H1, H2	Hand-Held Applicator, Footswitch	MCI*/ X3/ TR
	Level Control (input)	CPU PCB/ X4/ 3 to 9 or 10
	Low Adhesive Level (output alarm)	CPU PCB/ X1/ pins 3 & 4
	Pressure Transducer(s) (1 to 4 transducers)	PSI PCB/ X1, X2, X3, X4
	Pressure Transducer(s) (high & low psi alarms)	PSI PCB/ X6
	System Status Lights	Relay Output PCB/ K1 thru K4

* MCI = Motor Control Interface PC Board

**** Program Selection Table:**

P1/P2 Pin 1	P3/P4 Pin 7	Program #
open	open	= Program 1
closed	open	= Program 2
open	closed	= Program 3
closed	closed	= Program 4



Location of PCBs & Customer Connections

4. The adhesive hoses are connected at the rear cover (see illustration below). Make your electrical hose connections at the six numbered connects on the left side of the cover.

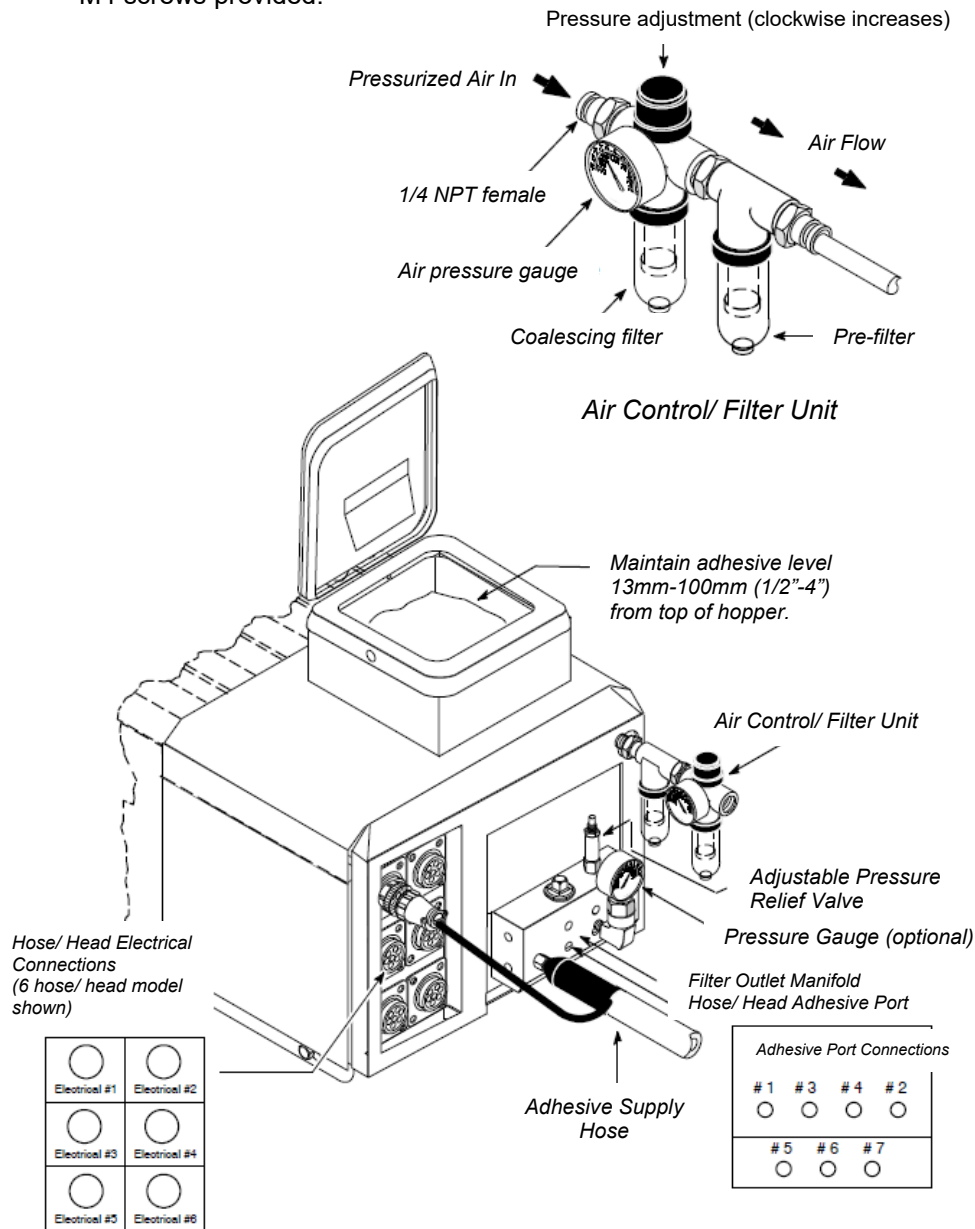
Route hoses so that there is at least an eight-inch radius at any bend. Do not hang hoses without proper support. Do not crimp, clamp, squeeze or tie hoses.

The hose adhesive ports are located at the bottom of the filter block, to the right of the electrical connections. There are seven ports for the use of up to six hoses and for the (optional) adhesive pressure gauge. The seven ports are arranged on two planes (three are on a 45-degree slant from the other four) in order to give flexibility in mounting the hoses.

When making hose connections, use the numbered guides shown on the illustration to coordinate; i.e. when using one hose make your hookup to electrical connection #1 and adhesive port #1. When using two heads/ hoses, hookup hose/ head #1 to electrical connection #1 and adhesive port #1, then hookup hose/head #2 to electrical connection #2 and adhesive port #2, etc.

Refer to the hose and applicator manuals for further details on these items.

5. Install the hose manifold outlet cover by sliding it into place and attaching with the two M4 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 Melter 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.

Quality of Compressed Air



CAUTION

- In any case, the air has to be clean and dry!
- The min. requirement for compressed air supply to solenoids to control automatic Applicators is ISO 8573-1:2010 class 2:4:3.
We recommend installing the ITW Dynatec's Air Control Kit PN 100055.
- The min. requirement for compressed air supply to solenoids to control Adhesive Supply Unit is ISO 8573-1:2010 class 7:4:3.

Compressed air quality classes according to ISO 8573-1:2010 class 7:4:3:

ISO 8573-1: 2010	Solid particles				Water		Oil
Class	Maximum number of particles per m ³			Mass concentration	Vapor pressure dew point °C	Liquid g/m ³	Total oil content (liquid, aerosol and mist) mg/m ³
	0.1-0.5 µm	0.5-1 µm	1-5 µm	mg/m ³			
0	As stipulated by the equipment user, stricter requirements than class 1.						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -70	-	0.01
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40	-	0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -20	-	1
4	-	-	≤ 10,000	-	≤ +3	-	5
5	-	-	≤ 100,000	-	≤ +7	-	-
6	-	-	-	≤ 5	≤ +10	-	-
7	-	-	-	5-10	-	≤ 0.5	-
8	-	-	-	-	-	0.5 - 5	-
9	-	-	-	-	-	5 - 10	-
X	-	-	-	> 10	-	> 10	> 10

Field Installation of Controller Options

Customers who choose to modify their Melter with ITW Dynatec manufactured options should assure that only qualified technicians perform such installations. The installation of options that require specific procedures and/ or calibration are outlined in this chapter.

Before controller options are installed, always turn the controller's main power switch OFF. In most cases, turning the controller OFF will assure that the controller will retain its programmed parameters and configuration. Re-booting is not necessary.

However, in the case of field installation of the 7-Day Scheduler, the controller must be re-booted. Then the system configuration and all system parameters must be re-programmed (refer to Chapter 5).

Note: any time that the controller is re-booted it will be restored with the controller's defaults.

Pump Enable (Ready) Thermostat Calibration

The Pump Enable (Ready) Thermostat is preset to 135°C (275°F), unless the customer has specified a different preset temperature on his original Melter order. Generally, the pump enable is set approximately 30°C (50°F) lower than the application setpoint.

If a different temperature other than the factory preset temperature is desired, use the following procedure to re-calibrate the thermostat.

Note: The thermostat must be re-calibrated and the controller's pump enable temperature must be re-programmed.



CAUTION

DO NOT set the pump enable thermostat lower than the softening point of your adhesive or pump damage may result.

As an example: the operator desires to lower the preset Pump Ready temperature to 107°C (225°F).

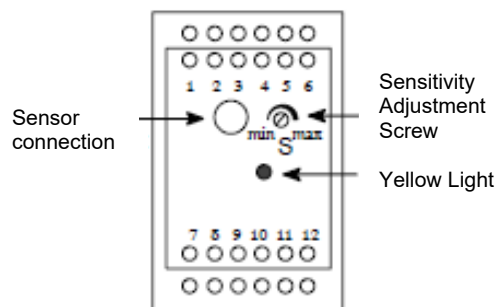
1. At the controller keypad, set the hopper temperature to the temperature at which you want the pump to start, i.e. 107°C (225°F).
2. Remove the hopper access cover and locate the thermostat (refer to illustration on previous pages).
3. Wait for the hopper temperature to stabilize at 107°C (225°F), then:
For thermostats with purple & black wire leads or with tan wire leads: turn the thermostat's adjustment screw counter-clockwise to increase the temperature (or clockwise to decrease it) until you hear the pump's solenoid switch on. Adjust no further.
4. Replace the hopper access cover.
5. At the keypad, re-set the hopper's temperature to its correct "run" temperature.
6. Re-program the controller's pump enable temperature to 107°C (225°F) (refer to Ch. 5).

Adjustment of the Optional Level Control

To adjust the adhesive level sensitivity: access the control's amplifier, located on the panel mount under the pump and electronics cover (see previous pages).

On the amplifier (diagrammed at right) 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.



Installation of the Optional Tach Generator or a DC Tracking Signal

The installation of a tach generator or a similar DC tracking signal allows speed tracking of the gear pump through voltage following. Multiple motor boards may be wired in parallel to the tach generator. On the DynaControl controller, voltage following is referred to as the "AUTO" Mode of the motor control.

Installation Procedure



DANGER HIGH VOLTAGE

Dynamelt systems use electrical power that can be life threatening. Disconnect and lock out input power to the application system before starting any installation procedures.

1. Disconnect and lockout input power to the application system.
2. Remove the pump and electronics cover and locate the Motor Control Interface Board (see layout illustration in Chapter 7). The device will be connected to the "0" and "10" terminals on X3.
3.
 - A. To install a tach generator:**
 - i. If, when facing the shaft on the tach generator, the rotation of the shaft is *clockwise*, connect the black lead wire to the "0" terminal and connect the white lead wire to "10".
 - or
 - ii. If, when facing the shaft on the tach generator, the rotation of the shaft is counter-clockwise, connect the black lead wire to the "10" and connect the white lead wire to "0".
 - iii. Verify that the gear pump motor is running at full speed when set to 100% in MANUAL mode. The output of the tach generator can be adjusted, depending on the application, but it must be at least 10 VDC to obtain full adhesive gear pump speed.

Note: under no conditions will the motor ever run faster than this speed (100% Manual).

B. To install a similar DC tracking device (not a tach generator):

Connect the DC tracking voltage signals to the terminals so that the negative lead is connected to "0" and the positive lead is connected to "10".

Note: the tracking voltage must be at least 0-10 VDC, but not more than 0-25 VDC.

4. Re-install the Melter's pump and electronics cover.
5. Re-connect input power and restore the application system to normal operation.

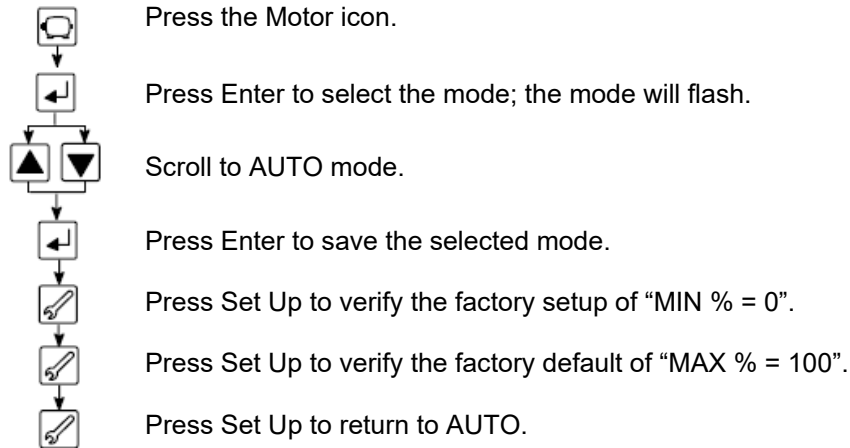
Proceed to "Calibration of the Optional Tach Generator or DC Tracking Signal".

Calibration of the Optional Tach Generator or DC Tracking Signal

After installation of a tach generator (or a similar DC tracking signal), the device must be calibrated at the DynaControl controller.

Prior to calibration, turn the application system ON and allow all components to warm up to normal operating temperatures (above ready temperatures).

1. Perform the following sequence at the controller keypad:



2. Energize the parent line (tracking signal) to its full speed (at least 10 VDC at the "0" and "10" terminals at X3 on the Motor Control Interface printed circuit board).

3. On the Motor Control Interface printed circuit board (see illustration in Chapter 7) locate and adjust the web speed scaling potentiometer (VR1) clockwise until the "SET %" is below 99.8. Then adjust counter-clockwise until it equals 99.8%.

4. The system is now calibrated so that full parent machine speed corresponds to full speed of the gear pump.

The amount of adhesive dispensed can now be adjusted by trimming the pump RPM at the AUTO menu of the controller by adjusting the "MAX %" value down from the factory default of 100%.

Adjusting the "MIN %" value corresponds to the pump speed when the parent line is stopped (0.0 volts at the "0" and "10" terminals). In most applications, the factory default (MIN % = 0) is used.

Installation of Optional 7-Day Scheduler



DANGER HIGH VOLTAGE

Dynamelt systems use electrical power that can be life threatening. Disconnect and lock out input power to the application system before starting any installation procedures.



CAUTION

Printed circuit boards (PCBs) and their components are extremely static sensitive. Observe the cautions listed in Ch. 7 when handling these items.

These instructions are provided for field installation of the 7-Day Scheduler (all units).

1. Remove the pump and electronics cover of the adhesive supply unit (ASU, Melter) (refer to Ch.8.).
2. Locate the CPU PCB behind its metal cover. The cover has cutouts over the chips to facilitate their removal and installation. Reference the board's layout drawing in Chapter 7.
3. When removing the scheduler chip, the PCB's metal cover may need to be removed. The scheduler chip is installed on the upper right-hand side of the CPU board at IC5. Note the orientation of the scheduler chip to the board; it has a black dot on its upper edge.
4. If replacing a chip, insert a small screwdriver under it, and slowly begin to lift the chip from its socket using a rocking motion. Carefully work the screwdriver under the length of the socket, until the chip releases from the socket. Remove the old chip.
5. Carefully align the new chip to the socket, orienting the chip in the same manner as the old chip. Note: be sure that all the pins are directly over their corresponding sockets before pushing the chip into position.
6. Slowly insert the new chip by pushing it directly down onto the sockets.
7. Visually inspect to assure that all pins are in their corresponding sockets.
8. Replace the pump and electronics cover.
9. Re-connect input power to the application system and start up the Melter.
10. Re-boot the controller. The DynaControl controller must now be re-programmed using instructions for the 7-Day Scheduler.

Typical Start-Up and Shut Down of the DYNAMELT S Application System

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

Start Up Procedures

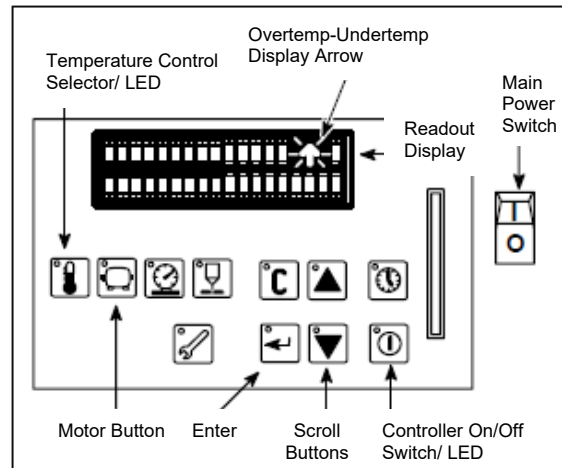
1. Fill the Melter's hopper with clean hot-melt adhesive to within a couple of centimeters (inches) of the top of the hopper. Close the hopper lid immediately to prevent contaminants from falling in. (Cover your bulk supply of adhesive to prevent contaminants also.)
2. Switch ON the Main Power Switch at the DynaControl keypad. The controller display will come on and the Melter will begin to heat up.
3. If it is not ON, depress the controller's On/Off Switch. Its green LED will illuminate.
4. Allow adequate time (approximately 20-30 min.) for the adhesive to melt and the temperatures of the temperature zones to stabilize. Monitor the display to see when "H" (Heating) changes to "R" (Ready). The Undertemp arrow (refer to Ch. 5) will blink and the Temperature Control Selector's LED will blink until the temperature zones are up to ready temperature.
5. When temperatures are ready, the motor is enabled to pump adhesive.

a. If Motor is in Auto Program:

Adhesive will begin to pump when the production line begins to operate.

b. If Motor is in Manual Program:

- i. Depress Motor button.
- ii. Scroll to "Manual".
- iii. Depress Enter.
- iv. Scroll to desired speed.
- v. Adhesive will begin to pump after "R" (Ready) condition is attained.

**Shut Down Procedures**

1. *If Motor is in Auto Program:*
Turn OFF the Main Power Switch.
2. *If Motor is in Manual Program:*
 - a. Turn OFF the motor by depressing the Motor button, then scroll to STOP.
 - b. Turn OFF the Main Power Switch.
3. *If 7-Day Scheduler is in use: Turn ON and OFF with the Controller On/Off Switch.*

Note: Except in the case of the 7-Day Scheduler, use of the Main Power Switch to turn the unit OFF will avoid unexpected Melter activation in the event of a power outage.

Storage and Disposal of the DYNAMELT S 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. Relieve residual adhesive pressure.
3. Clean or replace both the outlet filter and the primary filter, following the instructions detailed in Chapter 6.
4. Shut OFF all pressure and power sources.
5. Release residual air pressure.
6. Remove all residual adhesive and wipe components clean.
7. Remove all air lines and all power supply cables.
8. Pack the unit in a corrosion-proof manner.
9. 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. Relieve residual adhesive pressure.
3. Release residual air pressure.
4. Remove all residual adhesive.
5. Remove all air and adhesive supply hoses and all power supply cables.
6. Dismantle all components and sort into mechanical and electrical components.
7. Arrange for all components to be recycled.

Chapter 5

DynaControl V5 Controller

5.1 Controller Set-Up

Temperature Control Functions in General

The DynaControl microprocessor-based proportional temperature control in the Melter performs a number of functions that help to maintain adhesive setpoints in all temperature zones of the DYNAMELT 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 Melter, hoses and applicators may be programmed and maintained.

CPU Module

The central processing unit (CPU) of the microprocessor temperature control.

Cold Start

When the Melter resets itself to default setting due to either a malfunction or to a deliberately initiated cold start procedure. When the Melter is turned ON via the Main Power Disconnect Switch.

Default Settings

The factory-set programmable system values that will be in effect if the user does not enter new values. See “controller’s default settings” on next pages.

Error Indication Alarms

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.

Power, Aux & Grid PCBs

The Power printed circuit board (PCB), Auxiliary PCBs and Grid PCBs provide control signals to, and monitoring signals from, all the temperature zones in the Melter. The standard unit’s hopper, hoses and applicators are controlled by the Power PCB. Additional hoses and applicators are controlled by the Aux PCB(s). Optional pre-melt grids are controlled by the Grid PCB.

Mechanical High-Temperature Protection

A mechanical, redundant thermostat located on the hopper which turns OFF the system at 232°C (450°F) [or 276°C (529°F) for optional high temperature units].

Microprocessor-based Proportional Temperature Control

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

Over-Temperature Setpoint

The programmable temperatures that will cause alarms (blinking up and down display arrows) 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.

Pump Enable Temperature

The pump enable temperature protects the pump, pump shaft, motor and motor control board from damage by not allowing the pump to activate until a low limit (the programmed pump enable temperature) is achieved.

RTD Sensors

The standard Dynamelt system uses 100-ohm platinum resistance temperature detector sensors for all temperature controls.

Ready Temperature

The programmable temperature, on gear pump models, which allows the Melter pump to turn ON. The default ready temperature range is a deviation of $\pm 20^{\circ}\text{C}$ ($\pm 36^{\circ}\text{F}$) 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 Melter 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.

Setpoint

A programmable temperature that has been selected for hopper, hoses and applicators.

Setpoint Limitation

This is a universal maximum temperature for all zones. The programmer cannot program a temperature setpoint higher than the setpoint limitation.

Standby Condition

The system condition where the Melter, 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 or de-activated, the controller will sound a short alarm (beep).

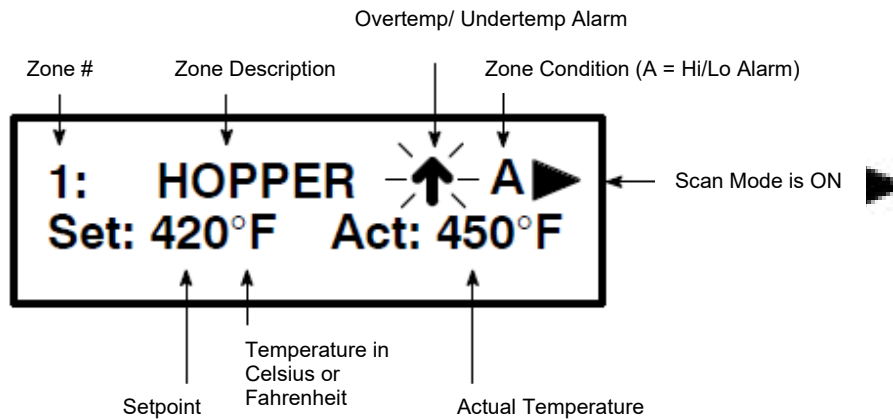
Temperature Zone Enable

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

Temperature Zone Offset

Due to the separation between the heaters and sensors in some systems, the controller can be programmed to display a temperature for a zone which is different from the sensor's actual temperature. The temperature zone offset mathematically corrects for these temperature differences. Each zone may have an individual offset.

DynaControl Display During Normal Operating Mode



Error Indication Alarms

The following illustrations show the display screens that will be activated when one or more error indication alarm conditions occur.

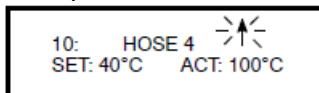
The conditions that will trigger an alarm are:

- When a hopper, hose or head has exceeded its selected over-temperature setpoint, which is the setpoint plus its Hi/Lo alarm setting (see example 1 below), or when it is below its selected under-temperature setpoint, which is the setpoint minus its Hi/Lo alarm setting (see ex. 3).
- When a hopper, hose or head sensor has an open circuit (see ex. 2).

When an alarm condition occurs, the current display will be interrupted only if a sensor failure occurs. This is accompanied by a continuous audible alarm signal (if the beeper is “active”). If more than one alarm condition occurs simultaneously, all alarm condition will be displayed sequentially.

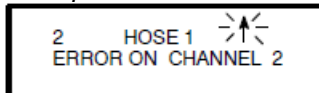
Error Indication Alarm Display Examples

Example 1



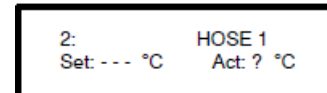
Message: Blinking up arrow indicates overtemp.

Example 2



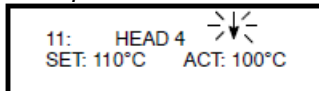
Message: Hose 1 Sensor is Open

After pressing “C” →



Message: Zone is switched Off, no sensor detected.

Example 3



Message: Blinking down arrow indicates undertemp.

Operator Response to Error Indication Alarms

If an alarm occurs during operation, the audible alarm (beeper) will sound if enabled. The controller will switch off the internal power to the heaters and an appropriate error indication display will appear.

Pressing the “C” (clear) key resets the error and turns off the audible alarm. If several zones display alarms, each must be acknowledged by pressing key “C”. The alarm display is switched off. The operator must either switch OFF the indicated temperature zone(s) (via the DynaControl keypad) or troubleshoot the problem.

Low temperature alarms will not open the main contactor and are only indicated by the up and down blinking display arrows and auxiliary alarm output contacts.

A sensor failure is displayed and the main contactor opens and the audible alarm sounds. When the actual temperature exceeds the setpoint limitation plus a tolerance of 15°C (30°F), a sensor open is displayed and main power is switched off. When the actual temperature falls below the minimum allowed temperature value 10°C (50°F), there is a sensor short alarm.

Settings for a Typical Operation

Note: The values given here are approximate settings for a typical packaging operation. 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).
- Melter 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: 219°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 keypad. (These are not the “default” settings, see following section).

- Applicator (head) and hose setpoints: 177°C (350°F).
- Hopper setpoint: 150°C (300°F).
- All zones are switched off, except for the hopper and the optional drop-in grid.
- Motor rpm: 0 in the “Manual” mode.
- Standby: 80°C (140°F) under setpoint.
- Hi and low alarms: ± 12°C (20°F) from setpoint.
- Pump enable temperature: 132°C (270°F).

Default Settings of the DynaControl Controller

Default settings are the manufacturer's preset values to which the system will return if the DynaControl is subjected to an internal memory reset (also referred to as a "re-boot"). While you can change your programmed values to anything within the system's limits, the default settings cannot be changed.

To cause an internal memory reset (re-boot), do the following:

1. Turn the DynaControl power switch OFF, and
2. Turn the main power ON again while pressing both the "Scroll Up" and "Scroll Down" keypad buttons simultaneously until the temperature icon's LED lights.

Defaults

- Language: English
- Audible alarm (beeper): "2" (beeps for a failure/ error only).
- Setting for Customer Access Code: "9999".
- Temperature setpoint for each zone: -- -- -- (Off)
- Hopper ready temperature: 79°C (174°F).
- Over-temperature limit: Your chosen setpoint limitation + 15°C (30°F).
For example: if your setpoint limitation is 218°C (425°F), then your over-temp limit = 233°C (455°F).
- Standby temperature for all zones: 80°C (140°F) lower than programmed setpoints.
- Hi/ lo limit deviation for all temperature zones: ± 20°C (36°F).
- Temperature zone offset: 0°C (0°F).
- Sequential heating: #1 = first hopper, then hose/ head.
- Setpoint limitation: 218°C (425°F).
- Pump enable temperature: 135°C (260°F).
- Minimum pump speed: 0% of full speed (gear pump models only).
- Maximum pump speed: 100% of full speed (gear pump models only).

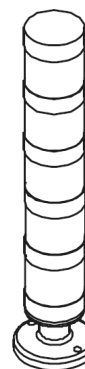
Helpful Tips for the User

- When the Melter is turned ON, all temperature setpoints and other operating parameters will be exactly where they were when the Melter was turned off.
- When the Melter 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 heat-ups have been set. However, if hopper temperature is above ready temperature when the Melter is turned on, all hose and head sequential heat-ups will be bypassed and hoses and heads will be turned ON.

Optional System Status (Stack) Lights

Stack lights ease remote monitoring of the system's status. On the basic, four-color stack light, the lower, clear light illuminates when the system is turned ON. The middle, green light indicates that the system has warmed up to temperature setpoints ("ready"). The upper, red light illuminates only in an alarm condition and is accompanied by an audible alarm. The audible alarm is housed within the upper (black) section of the stack. The blue light is user configurable.

Other setups are possible, for example, the alarm may be wired to indicate low adhesive level, standby or open/shorted sensor.



Black:
audible alarm

Red:
alarm

Blue:
user configured

Green:
system ready

Clear:
system On

5.2 Controller Programming Instructions

DynaControl CONTROLLER, for GEAR PUMP MODELS, V.5.13S and Up

Controller Safety Consideration



DANGER HIGH VOLTAGE

Never open the control panel without switching off the main disconnect switch (item “N” on next page) to ensure that it is disconnected from its power source.

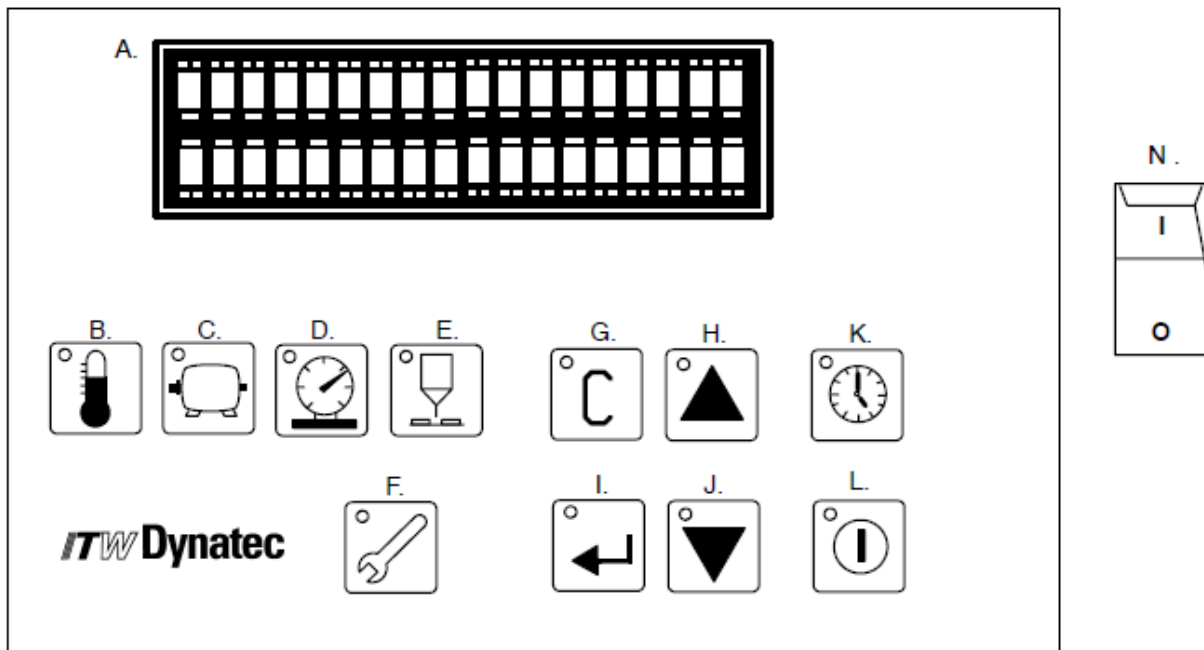
The printed circuit boards should always be carefully removed. DO NOT handle the boards except by their edges. Read the section on PCBs in Chapter 7 of this manual for further cautions.

Software Version

You can determine the software version of your controller by noting it when it comes up on the display at startup:

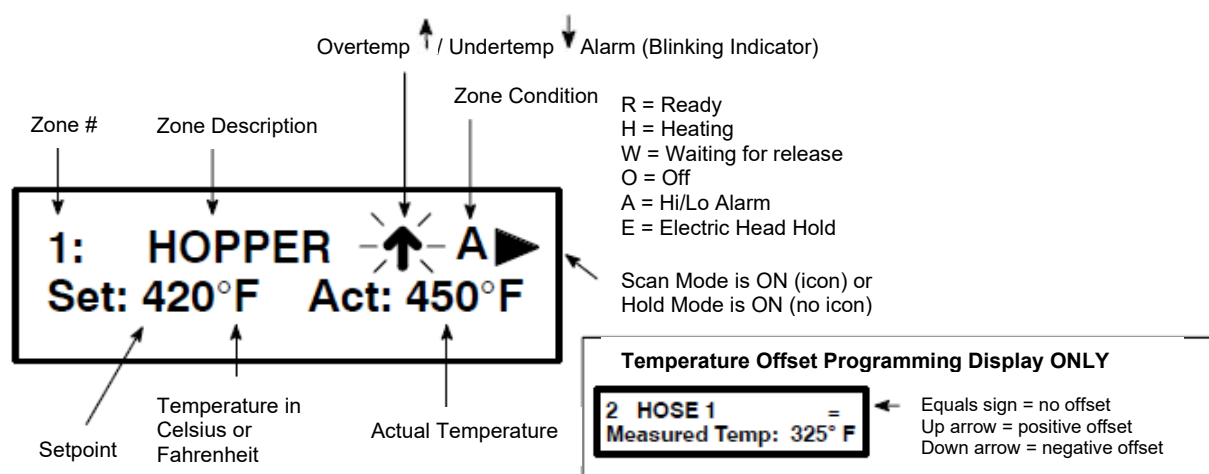
```
*** ITW Dynatec ***  
DynaControl V 5.xx S
```

Current Software Version

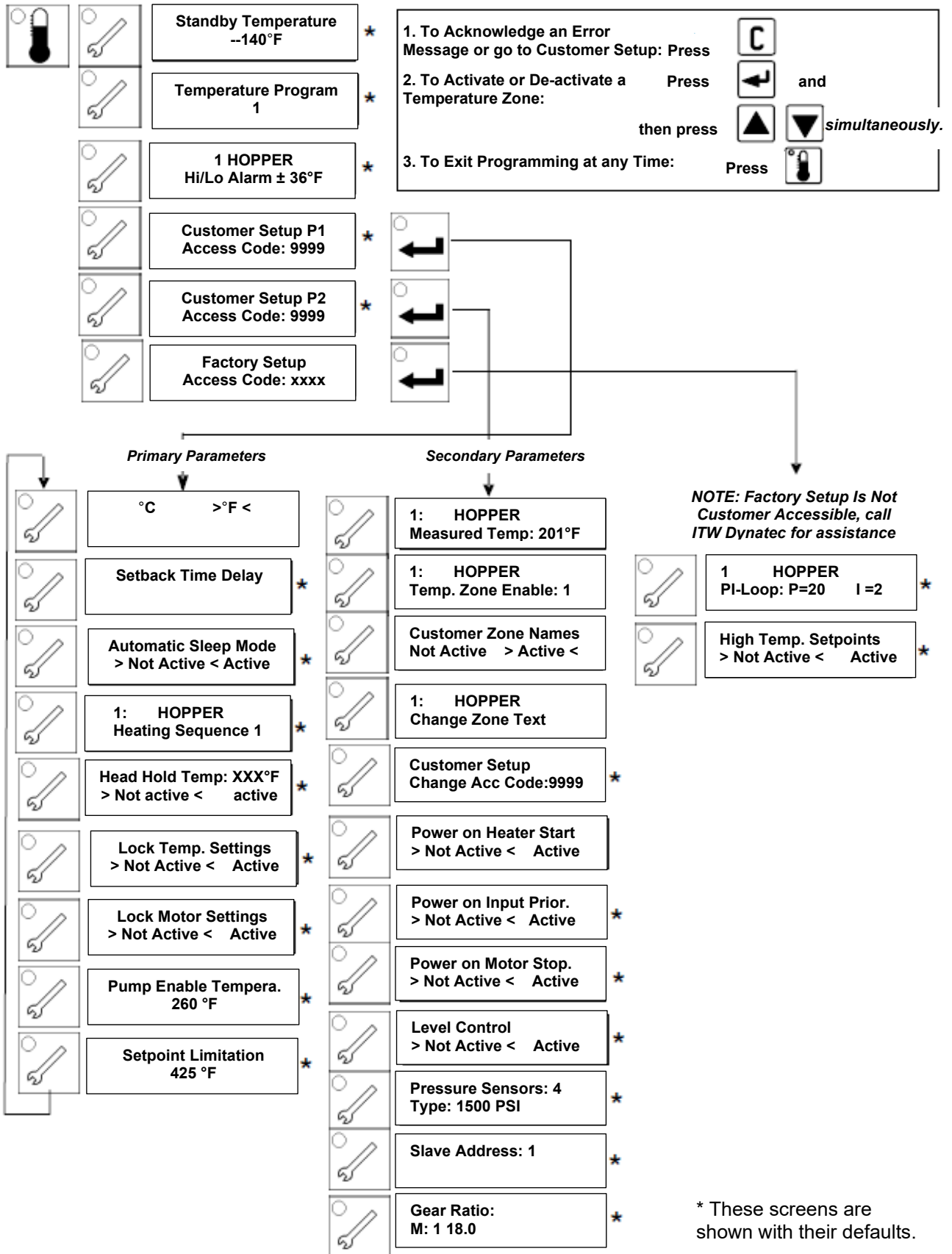
DynaControl Keypad**Keypad Layout (as diagrammed above):**

A. Readout Display	H. Vertical Scroll, UP
B. Temperature Control	I. Enter
C. Gear Pump Motor Control	J. Vertical Scroll, DOWN
D. Pressure Readout (Option)	K. Seven-Day Scheduler (Option)
E. Pattern Control (Option)	L. DynaControl On/Off Switch
F. Set Up	N. Main Power Switch On (I) /Off (O)
G. Clear/ Cancel	

Each keypad pushbutton has an LED which lights when selected. When main power is ON, the LED for the DynaControl's On/Off Switch (item "L" above) is continuously ON.

DynaControl Display Reference

DynaControl Menu Structure, V5.13S and up



Setting Your System's Configuration

Below is the step-by-step process of setting up the controller with your system configuration. Press the buttons in the sequence illustrated and follow the arrows through the configuration. For notes on each step, see point "Configuration Set Up Steps" on next pages.

Note: Whenever an Access Code is required, enter your individual code. When a wrong code is entered, the controller will take you back to the beginning of the setup process. If you have lost your code, call ITW Dynatec Customer Service or contact your local representative.

Turn the Controller On



Press the DynaControl ON/ OFF button.

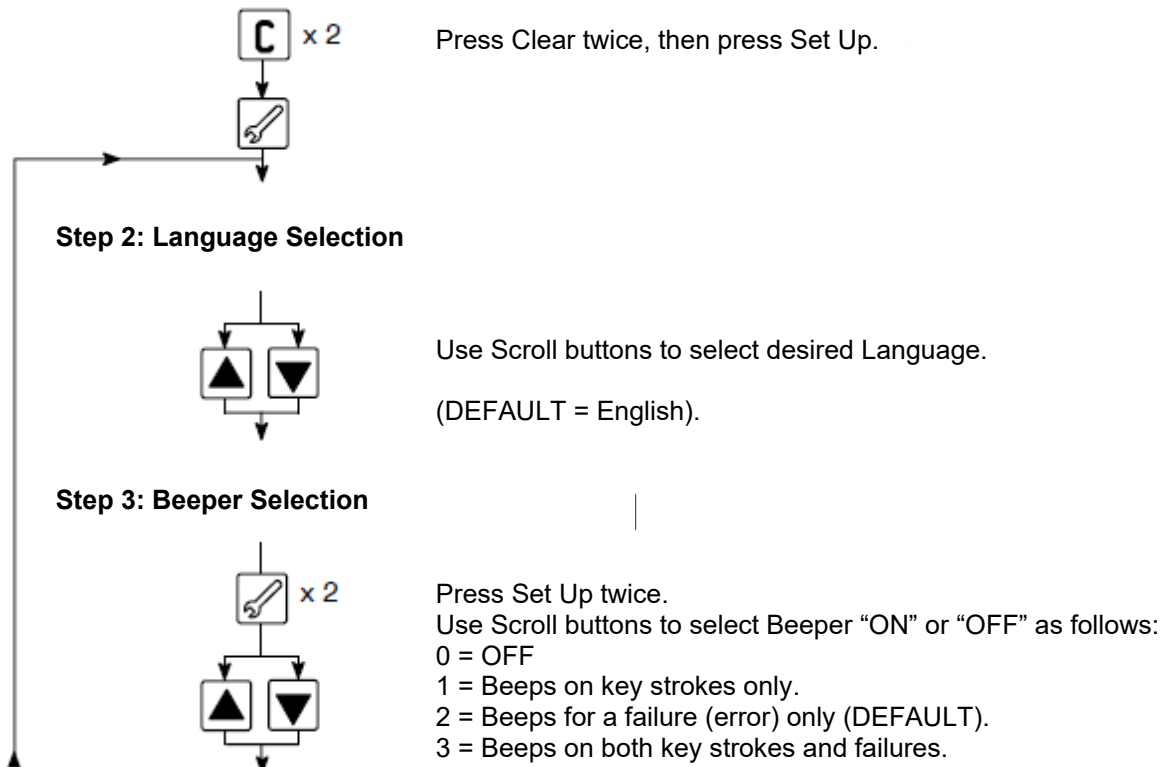
If your Melter was shipped from the ITW Dynatec factory and you specified desired settings, then the controller has been pre-programmed accordingly. The controller will automatically proceed to Temperature Setpoint Programming and a screen such as the one illustrated below ("2. Hose 1") will be displayed. The programmer should proceed to program desired temperature setpoints.

However, to verify or modify programmed setpoints, the programmer should bypass this screen ("2. Hose 1") and follow the entire programming sequence starting with Step 1.

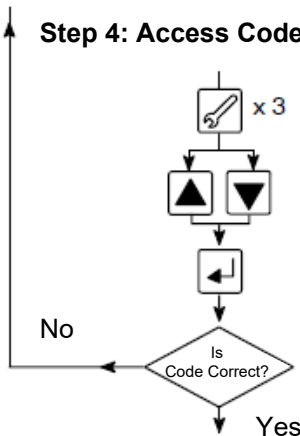
2. HOSE 1
Set: 135 _F Act: 82_F

NOTE: For notes on each step, see point "Configuration Set Up Steps" on next pages.

Step 1: Opening the Menu



Step 4: Access Code Required



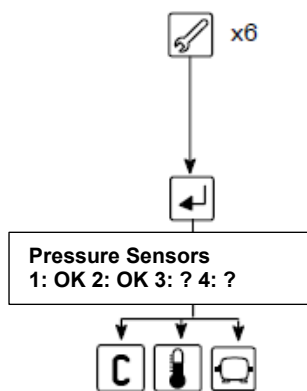
Press Set Up three times,

Scroll to allow access to system parameters:
Enter your 4-digit Access Code (DEFAULT = 9999).

Press Enter.

Note: The correct code allows you to proceed. The wrong code takes you to the beginning of the program.

Step 5: Optional Pressure Transducer Calibration. *If option is not installed, press Set Up to bypass .*



Press Set-Up to initiate Pressure Transducer Calibration.

NOTE: To calibrate, all transducers must be at “0” pressure. Motors must be turned OFF and time allowed for system pressure to drop to “0”.

Press Enter. The controller will calibrate all transducers.

When completed, the screen will read “OK!”

You will then see this screen. It indicates if the sensors are either “OK” or “?”.

A “?” appears if there is no transducer present. If a transducer is present, the “?” indicates the transducer may be: defective, not correctly connected or out of range.

Press Clear, the Temperature icon or the Motor icon to end Calibration.

Configuration Set Up Steps

Turn the Controller On

The controller is turned On or Off by pressing the DynaControl On/ Off button.

If your controller has been pre-programmed and you wish to program your temperature setpoints, you may begin with the temperature zone screen that appears now, i.e. "2. Hose 1".

Bypass the "Setpoint Temperature Programming" display which appears by proceeding to Step 1.

If you wish to progress through the entire programming sequence, proceed with Step 1.

NOTE: See illustrations on previous pages

Step 1: Opening the Configuration Menu

The Basic Configuration menu is opened by pressing the "Clear" button twice, followed by pressing the "Set Up" button.

Step 2: Language Selection

The unit is capable of displaying several alphabets and several languages. Use the Scroll buttons to select a language.

Languages available are: English, German, French, Spanish, Swedish (Svenska), Italian, Japanese, Portuguese and Dutch.

Step 3: Beeper On/ Off Selection

The DynaControl has a built-in beeper (alarm) which serves to confirm settings that have been keyed in and which serves as an alarm signal for error indication. The beeper can be activated or de-activated.

Press "Set Up" twice, then use the Scroll buttons to select "On" or "Off" as follows: 0 = OFF; 1 = beeps only on key strokes; 2 = beeps only for a failure and 3 = beeps on either key strokes or failures.

Step 4: Access Code Required to Proceed to System Parameters

To prevent unauthorized changes to DynaControl's basic configuration and system parameters, your access code must be entered at this point in order to continue.

Press "Set Up" three times, then press "Scroll Down" and enter your four-digit access code. Then, either press "Enter" to confirm or "Set Up" to return to the beginning of the menu. An incorrect code takes you back to the beginning of the configuration menu.

Step 5: Optional Pressure Transducer Calibration

Press "Set Up". After assuring that all transducers are at zero pressure, motors are OFF and system pressure is at "0", calibrate the pressure transducers by pressing "Enter".

After calibration a "Pressure Sensors" screen indicates the status of each transducer. If the transducer connected to a numbered port is not "OK", a "?" appears.

The "?" indicates one of the following:

1. no pressure transducer is present,
2. the transducer is defective,
3. the transducer is not correctly connected, or
4. the transducer is out of range.

Press "Clear", the "Motor" icon or the "Temperature" icon to end the configuration sequence.

Your system's configuration is now set up and complete. Proceed to parameter setup.

Setting Your System's Parameters

Parameter Setup refers to the process of setting up 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 limits. Choices must be made for program selection and motor conditions. If desired, temperature zone offsets and/ or a temperature zone enable may be selected.

For ease of programming, the controller's parameters are divided into three categories: basic, primary (frequently-used) and secondary (seldom-used) parameters. After programming the basic parameters, your access code is required to enter the menus of the primary and secondary parameters.

On the following pages is the step-by-step process for setting up the DynaControl with your system's parameters. Press the buttons in the sequence illustrated and follow the arrows through the menus. The sequence is continuous, so follow it in the given order.

NOTE: Refer to the point **"Basic Parameters Setup Steps"** on next pages for notes on each step.



NOTE

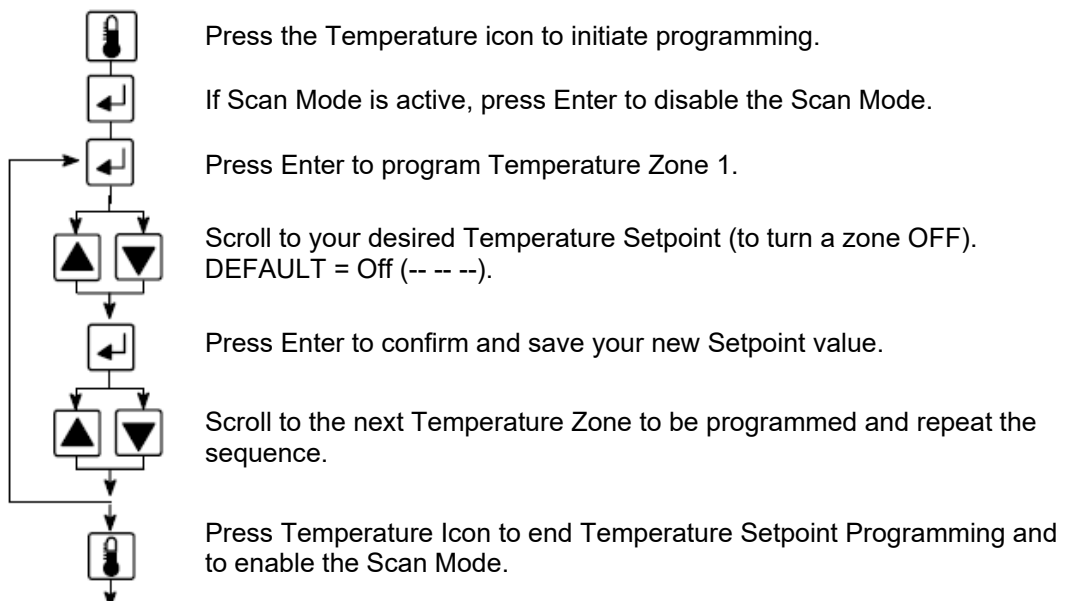
Note: If your controller does not respond to temperature setpoints programming, a previous user may have locked the temperature setpoints and motor settings to further programming.

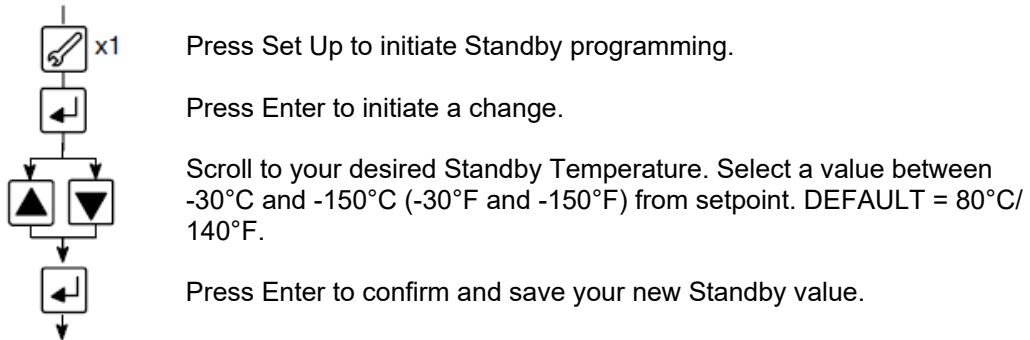
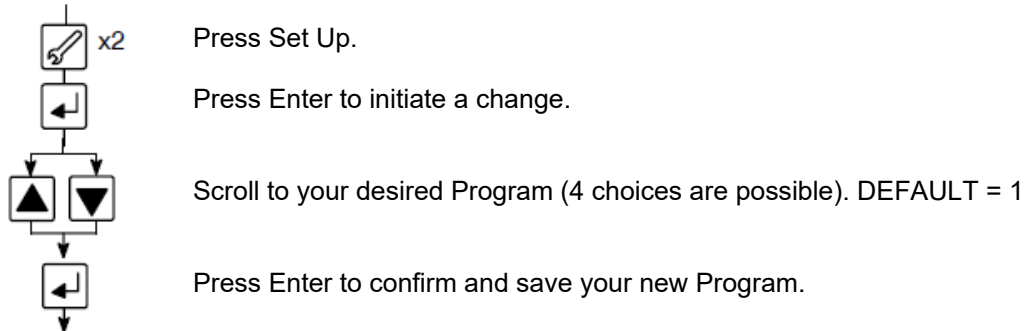
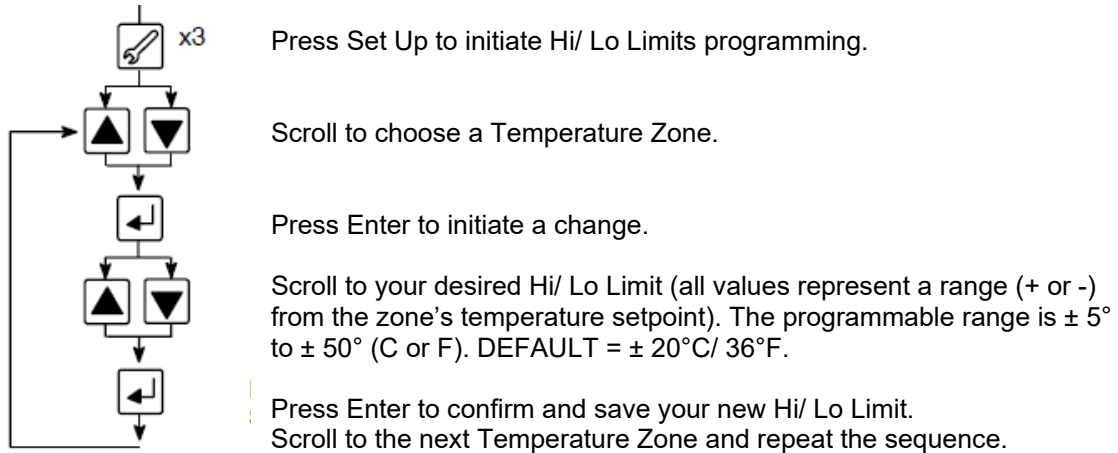
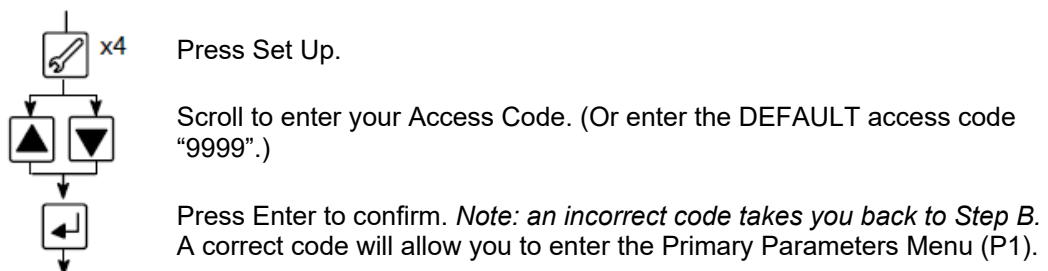
If this is so, before programming any parameters is possible, the "Lock Temperature Setpoints" and "Lock Motor Settings" parameters must be de-activated. Follow these steps to de-activate:

Advance to the Lock Temperature Setpoints screen: press the Temperature icon, press Set Up four times, enter your access code and press Enter, press Set Up five times to advance to "Lock Temperature Settings", then Scroll to "Not Active" to allow programming.

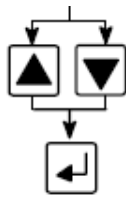
Now advance to "Lock Motor Settings" by pressing Set Up once and scroll to "Not Active". (Complete programming instructions for these steps are found on next pages, Steps K & L). Then press the Temperature icon to return to Step A.

Step A: Setpoint Temperature Programming



Step B: Standby Temperature Programming**Step C: Choosing a Temperature Program****Step D: Temperature Hi/ Lo Limits Programming****Programming the Primary (Frequently-Used) Parameters (P1)****Step E: Customer Setup Access Code Programming**

Step F: Choosing the Temperature Scale



Scroll (toggle) to choose Celsius or Fahrenheit.

Press Enter.

Step G: Setback Time Delay Programming



Press Set Up.

**Setback Time Delay:
After Motor Stop ***

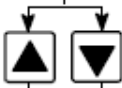
or

**Setback Time Delay:
After Extern. Contact**

is displayed.



Press Enter.



Scroll to the desired hour (0 to 7). DEFAULT = 0:00



Press Enter to save your choice.



Scroll to the desired minute (:00 to :59).



Press Enter to save your choice.



Scroll to choose either "Setback in (hour: min.): After Motor Stop" * or "Setback in (hour: min.): After External Contact".



Press Enter to save your choice.

** Selection available for gear pump models only.*

Step H: Sleep Mode



Press Set Up.



Scroll to activate the Sleep Mode. DEFAULT = Not Active



Press Enter to save your choice.



Scroll to the desired Sleep Mode duration (0.1 to 9.9 hours). DEFAULT = 4



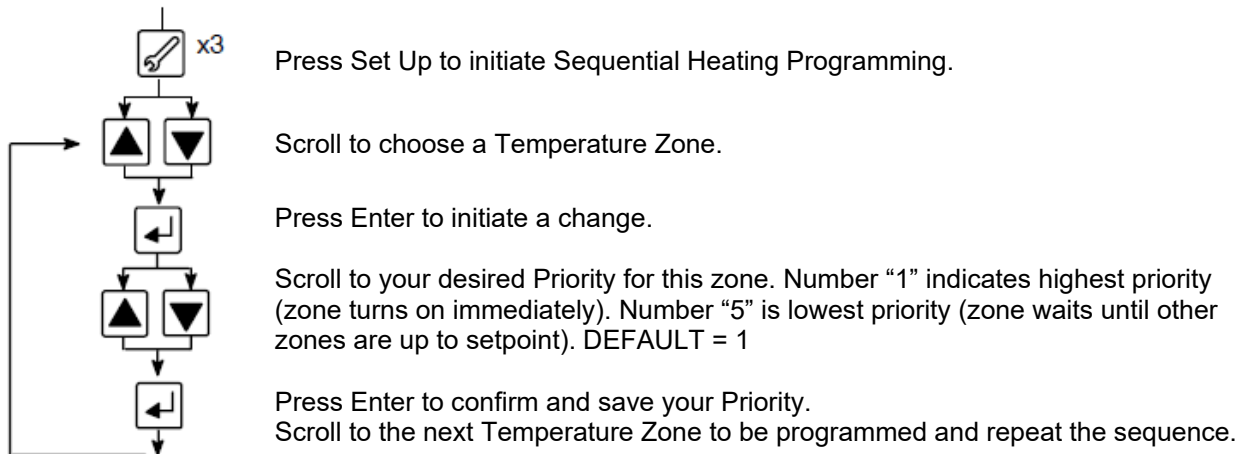
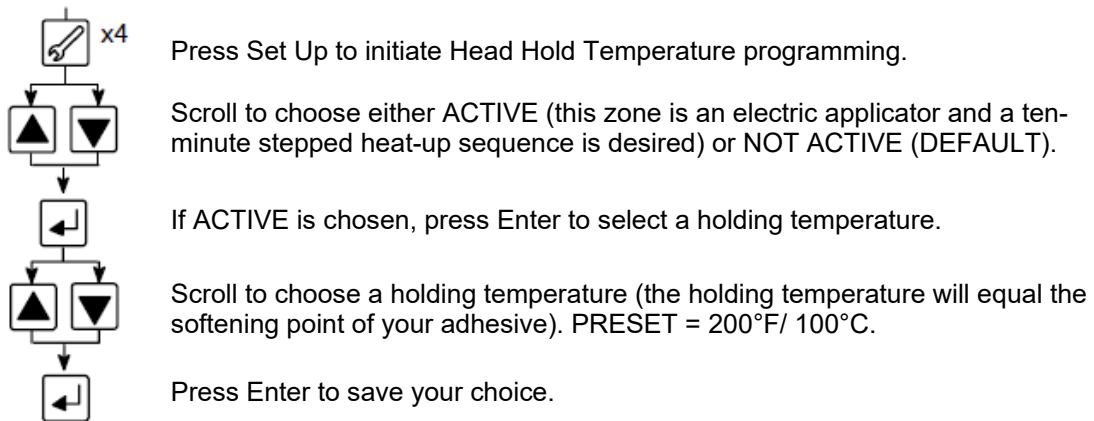
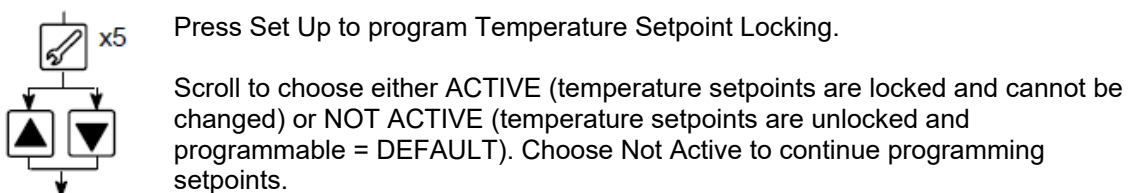
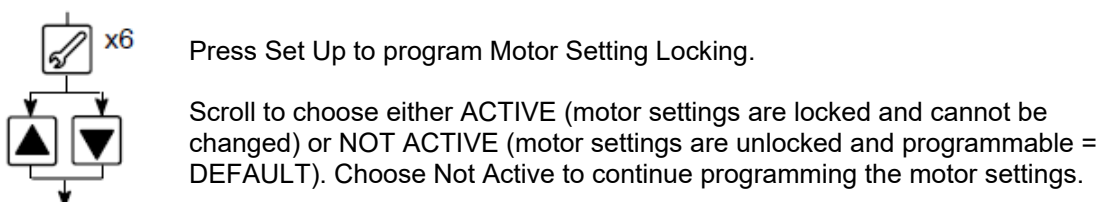
Press Enter to save your choice.

When the ASU is in Sleep Mode, the display will read as follows:

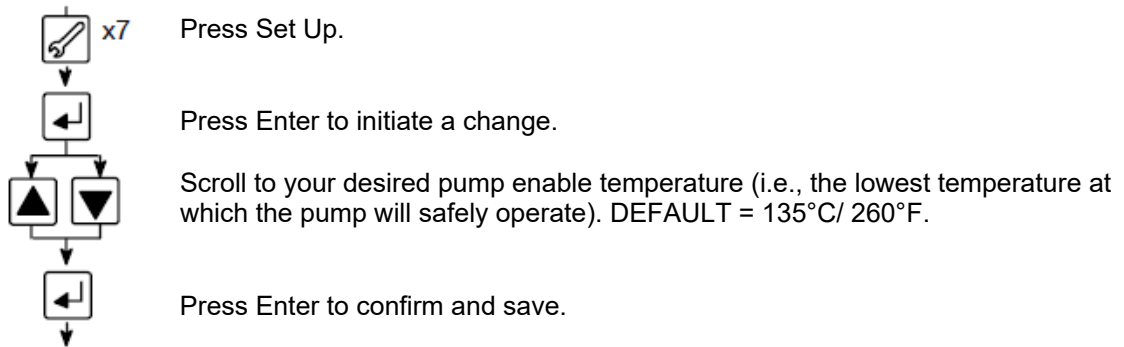
Press ON to Start

To override Sleep Mode: press the DynaControl ON/ OFF key

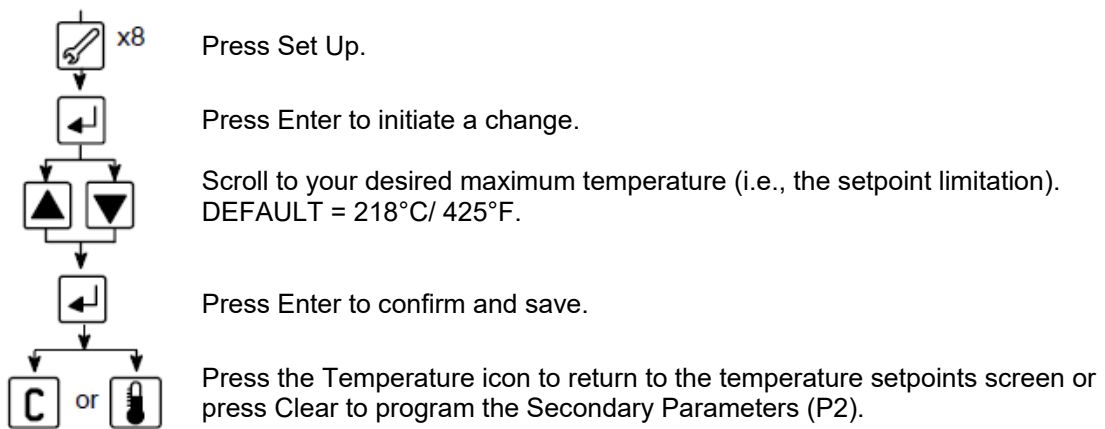


Step I: Sequential Heating Programming**Step J: Head Hold Temperature****Step K: Lock Temperature Setpoints****Step L: Lock Motor Settings**

Step M: Pump Enable Temperature Programming

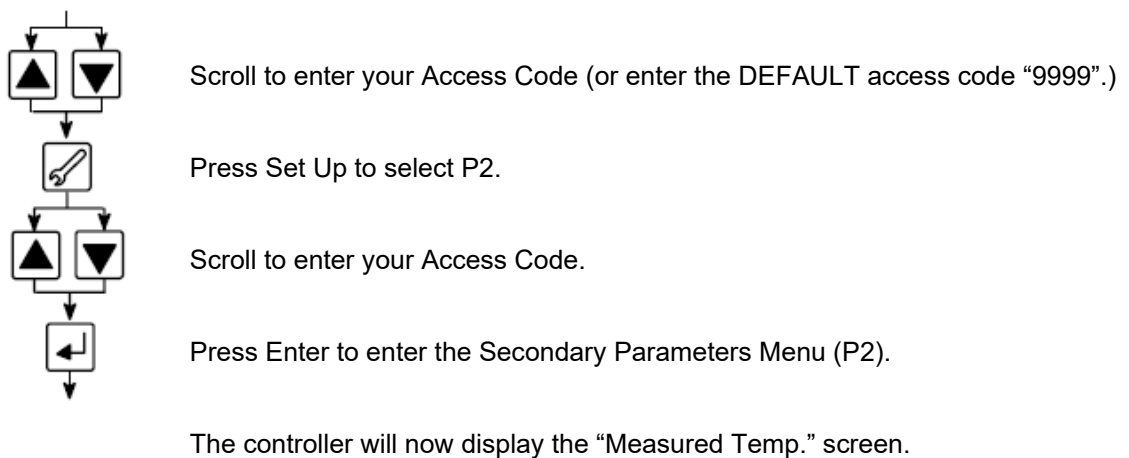


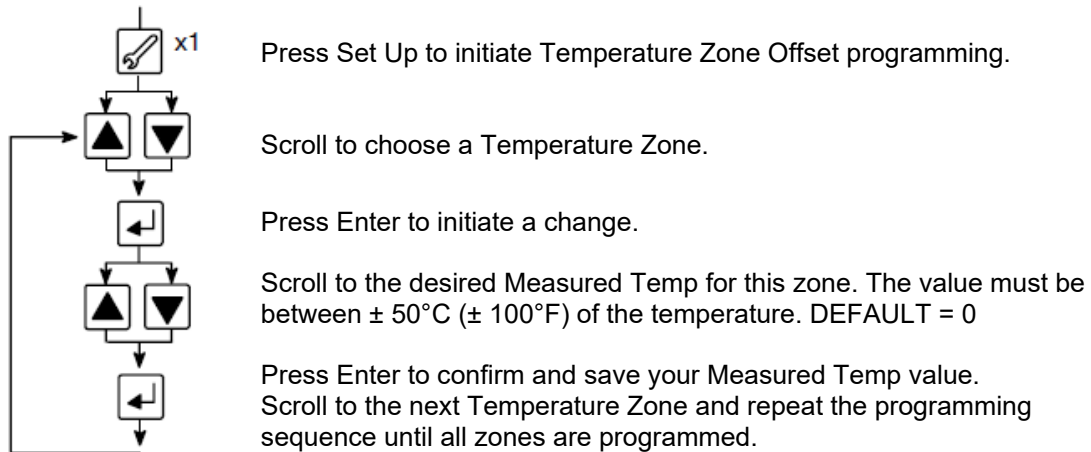
Step N: Setpoint Limitation Programming



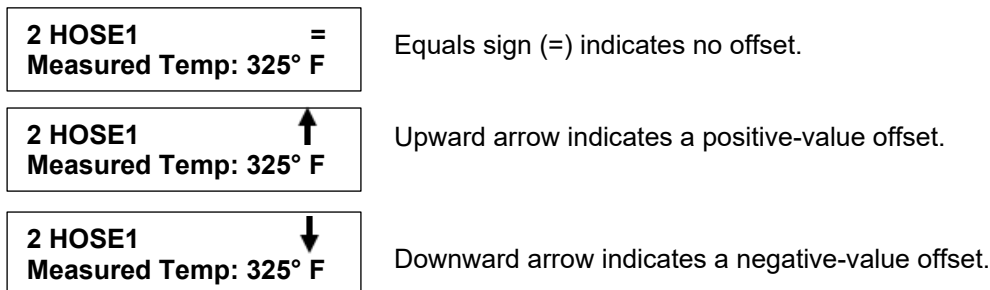
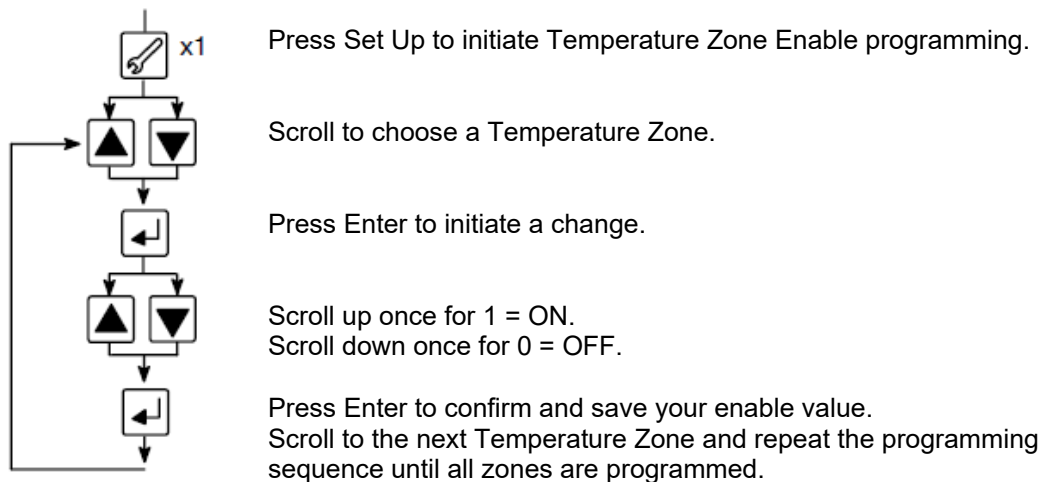
Programming the Secondary (Seldom-Used) Parameters (P2)

Step O: Customer Setup Access Code Programming

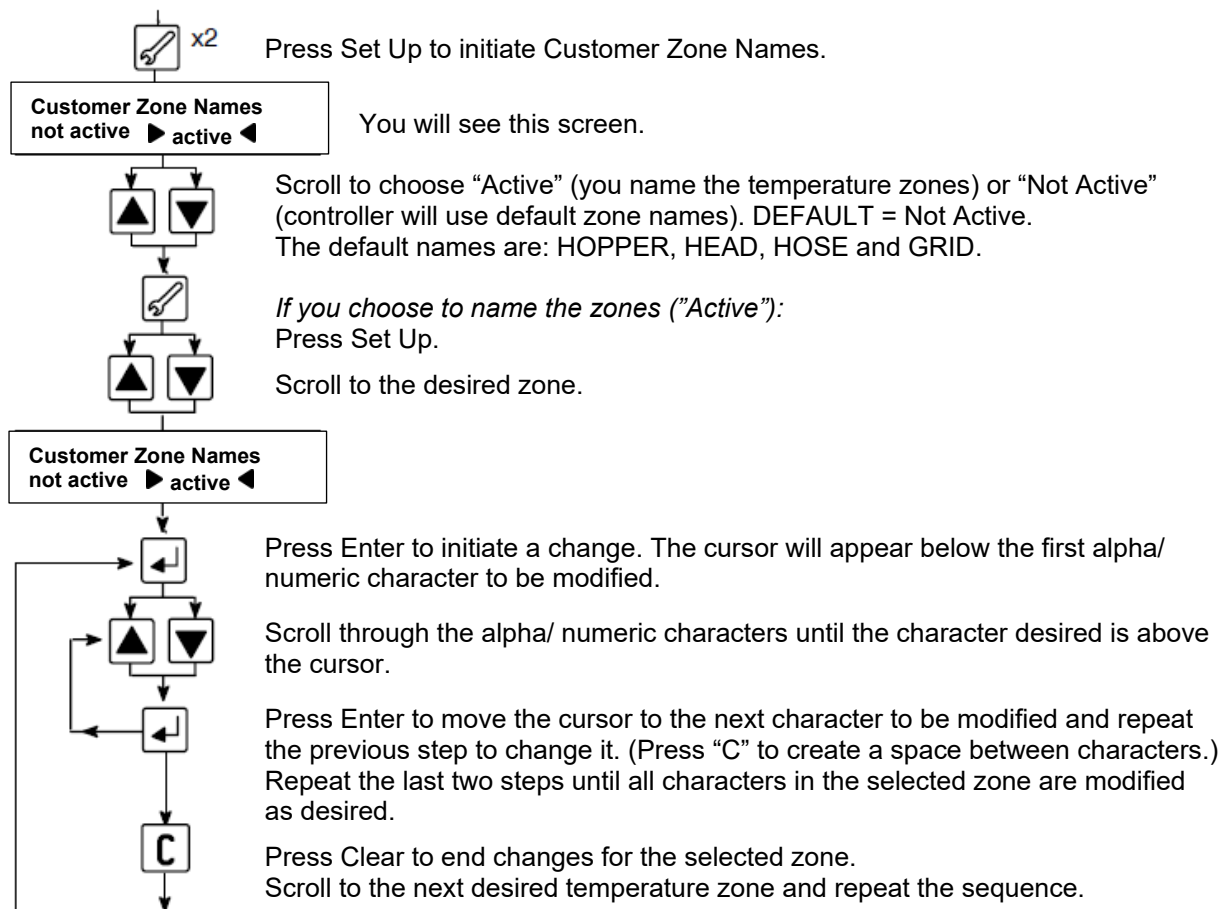


Step P: Measured Temperature Programming (Temperature Zone Offset)

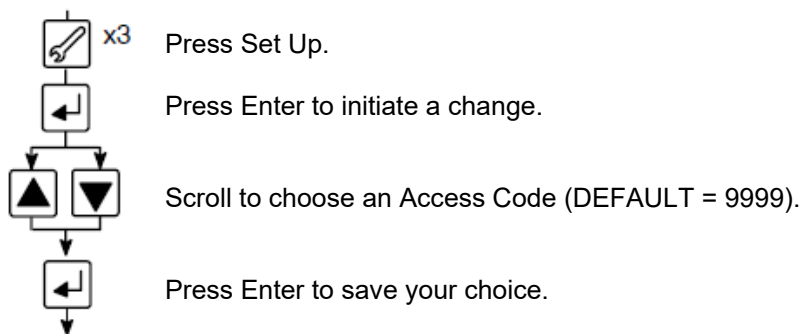
Upon completion of this step, the display will indicate the type of offset (or lack of such) as illustrated below:

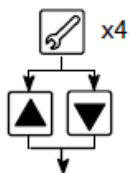
**Step Q: Temperature Zone Enable Programming**

Step R: Customer Zone Names



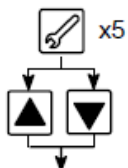
Step S: Changing Your Access Code



Step T: Power On Heater Start Programming

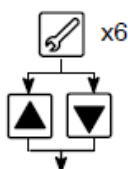
Press Set Up to initiate Power on Heater Start.

Toggle to select "Active" (DEFAULT for European setup) or "Not Active" (DEFAULT for US setup).

Step U: Power On Input Priority Programming

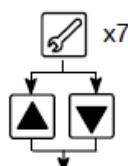
Press Set Up to initiate Power on Input Priority.

Toggle to select "Active" (input contacts set priority) or "Not Active" (keypad programming sets priority/ DEFAULT).

Step V: Power On Motor Stop Programming

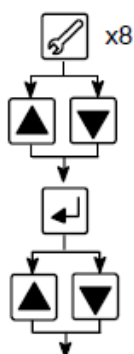
Press Set Up to initiate Power on Motor Stop.

Toggle to select "Active" (motor Off at power on) or "Not Active" (motor On at power on/ DEFAULT).

Step W: Level Control Status Programming

Press Set Up to initiate Level Control Status.

Toggle to select "Active" (level control in use) or "Not Active" (level control not in use/ DEFAULT).

Step X: Pressure Sensors Programming

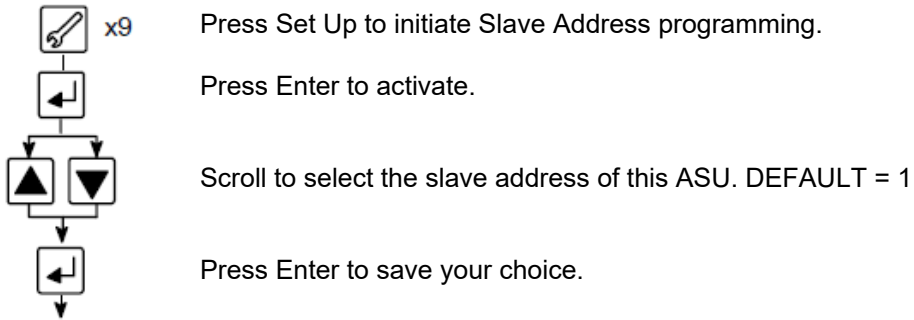
Press Set Up to initiate Pressure Sensors programming.^

Toggle to select the number of pressure transducers on the ASU. DEFAULT = 4

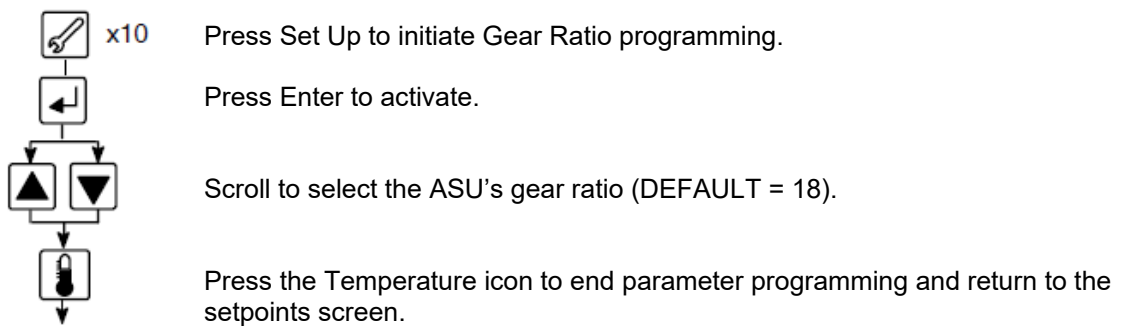
Press Enter to activate transducer Type.

Scroll to select the PSI rating of the pressure transducers on the ASU. (DEFAULT = 1500 PSI/ 1000 BAR)

Step Y: Slave Address Programming



Step Z: Gear Ratio Programming



Basic Parameters Setup Steps

If programming locks are active:

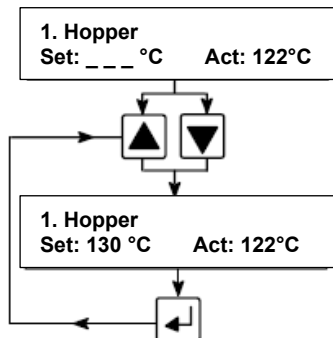
Advance to "Lock Temperature Setpoints" and "Lock Motor Settings" screens and select "Not Active" at each.

Then press the Temperature icon to return to setpoint temperature programming.

NOTE: Refer to the point "**Setting Your System's Parameters**" on previous pages for notes on each step.

Step A: Setpoint Temperature Programming

Each temperature zone must be programmed with a temperature setpoint.



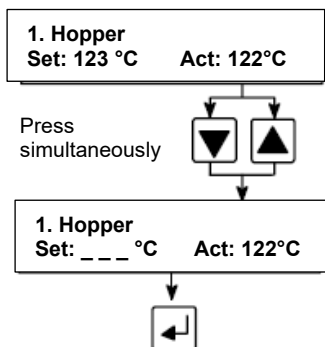
Press "Enter" to program Temperature Zone 1.

To program or change a setpoint, use the "Up Scroll" or "Down Scroll" buttons to find the desired setpoint, then save the new value by pressing "Enter".

Scroll to the next temperature zone and repeat this process until each zone has a temperature setpoint programmed.

Switch off any unused zones by following the procedure outlined in the following section.

Switching Temperature Zones On and Off



Press
simultaneously

Any temperature zone which is not being used in a given program should be switched OFF so that it will not display "Error".

To do this, activate a setpoint change by pressing "Enter", then simultaneously press both the "Up Scroll" and "Down Scroll" buttons. Once this is done, "___" appears as the setpoint value. When the zone is later switched ON, its formerly programmed setpoint will be retained.

To turn a temperature zone ON, activate the setpoint value by pressing "Enter", then change the value by using the "Up Scroll" and then "Down Scroll". Save your change by pressing "Enter" once more.

Step B: Standby Temperature Programming

It is possible to reduce the temperatures of all the temperature zones to a "Standby" condition. The amount of the temperature reduction is programmed via the temperature parameter setup menu. Only one standby temperature is accepted for the entire system; all zones will be lowered to it.

A "typical" standby temperature is approximately 30°C (50°F) lower than setpoint, depending on adhesive used and customer preference. Numerically, the controller will accept any standby temperature within the range of -30°C and -150°C (-30°F and -150°F).

Press "Set Up", then press "Enter". Scroll to desired Standby temperature. Press "Enter" to save.

Activating the Temperature Standby

Press for 5
seconds



1. **STANDBY MODE**
Set: 123°C Act: 122°C

To activate a standby, press the "Temperature Control" button for at least five seconds. You will see the words "STANDBY MODE" alternating on the display, which indicates that the ASU is in standby.

To de-activate standby, once again press the "Temperature Control" button for at least five seconds. The standby display will then disappear.

Step C: Choosing a Temperature Program

Up to four separate temperature programs can be programmed into the controller, though only one program is active at any given time. Setpoints may differ from one program to another. When switching between programs, the new program's setpoints take over, so there may be error alarms if the new program's unused temperature zones are turned ON.

The programs are referred to as: Program 1, Program 2, Program 3 and Program 4.

Press "Set Up", then press "Enter". Scroll to desired program. Press "Enter" to save.

Step D: Temperature Hi/ Lo Limits Programming

For each temperature zone setpoint, an individual high and low limit can be set. During operation, these limits activate the error alarms which alert the operator to over-temp and under-temp conditions in the temperature zones of the adhesive application system. They also cause over-temp zones to be automatically turned OFF.

Each hi/ lo limit is a range (+ and -) from setpoint. Thus a setpoint of 150°C which has been programmed with a 10° hi/ lo limit will activate an under-temp alarm when the zone's temperature falls below 140° and will activate an over-temp alarm when the zone's temperature rises above 160°. Refer to Display Reference illustration under point DynaControl Keypad on previous pages.

The smallest hi/ lo limit programmable is $\pm 5^\circ$ (C or F) and the largest hi/ lo limit programmable is $\pm 50^\circ$ (C or F).

Press "Set Up", then Scroll to choose a temperature zone. Press "Enter". Scroll to the desired Hi/Lo Limit value. Press "Enter" to save. Scroll to the next temperature zone and repeat.

Step E: Customer Setup Access Code Programming

To prevent unauthorized changes to the primary and secondary parameter programming, your Access Code is required at this point in order to continue to the Primary Parameter Menu (P1).

Press "Set Up", then Scroll to the value of your access code (or enter the default access code "9999"). Press "Enter". A wrong access code will take you back to Step B.

Step F: Choosing the Temperature Scale

Toggle to choose either Celsius or Fahrenheit with the Scroll arrows, then press "Enter".

Step G: Setback Time Delay Programming

The Setback Time Delay allows programming of a delay from the time the "external standby" terminals (for connection, see Chapter 3) are connected or automatically by a motor stop (this option available for gear pump models only) until the Melter enters its standby mode.

Note: this step bypasses Step J: Head Hold Temperature (used on electric applicators only).

The time delay selected must be in the range from 0:00 (which represents an immediate entry into standby, i.e. no delay, although in actuality, it may take up to a minute for a 0:00 setback to activate) to 7:59 (seven hours and 59 minutes).

Press "Set Up". Press "Enter" to program. Scroll to the desired hour (0 to 7), press "Enter" to save. Scroll to the desired minute (0 to 59), press "Enter" to save. Scroll to choose "Setback in (hour: minute): After "Motor Stop" (this option is available to gear pump models only) or "Setback in (hour: minute): After External Contact", press "Enter" to save.

Factory default for setback time delay is "external contact" and no time delay.

Step H: Sleep Mode

To use the Sleep Mode, the Melter must be in Setback. During Sleep Mode, all heaters are turned OFF and all motors are stopped.

Sleep Mode and Time Delay Setback can work together. For example, if you program a Time Delay Setback of one hour and Sleep Mode of three hours, then the Melter is going into Setback one hour after the external setback is activated and it will go into Sleep Mode three hours after the setback begins.

The minimum programmed Sleep Mode duration is 0.1 hour (six minutes) and the maximum is 9.9 hours.

Press "Set Up", scroll to activate, then press "Enter". Scroll to the desired hours duration (0.1 to 9.9), press "Enter" to save.

Step I: Sequential Heating Programming

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 Melter is powered on. Zones with higher priority numbers (Priority 2 through Priority 5) do not begin heating until all zones with lower priority values have reached the low limit of their setpoints. Zones which are switched OFF are not applicable.

The most common heating sequence for the Dynamelt Melter is first hopper, then hose/head. This allows the larger mass of adhesive in the hopper to begin heating first. This sequence (hopper, then hose/head) is also the controller's default heating sequence.

The current status of a temperature zone in the heating sequence can be seen on the LED display (see Display Reference for illustration on previous pages). The status is designated by a letter in the upper right of the screen, as follows:

O = Temperature zone is switched OFF.

W = Temperature zone is waiting for release; zones with lower priority values have not yet reached setpoint.

H = Temperature zone is ON and in initial heating sequence, but has not reached setpoint.

R = Temperature zone is ON and has reached setpoint. It is ready.

A = Temperature zone is ON and alarm condition (high or low) has been reached.

E = For electric applicators only: the controller holds electric applicators at an operator-selected temperature for ten minutes before releasing to the operating setpoint.

By changing setpoints and/ or switching off zones, zones may be released earlier.

Press "Set Up", Scroll to choose a temperature zone, press "Enter". Scroll to desired priority and press "Enter". Scroll to next zone and repeat sequence.

Step J: Head Hold Temperature

Head Hold Temperature applies to systems utilizing electric applicators only. After programming the temperature (to the softening point of your adhesive, see your adhesive manufacturer), the controller holds all electric heads at the operator-selected temperature for ten minutes before releasing them to operating setpoint. This feature allows for the stabilization of the electric valves. When using this feature, the electric applicators must be programmed to priority 2 or higher in Step I.

Press "Set Up". If an electric applicator is installed, Scroll to "Active" programming, press "Enter" to initiate holding temperature programming, Scroll to select a holding temperature, press "Enter" to confirm and save the chosen temperature.

Step K: Lock Temperature Setpoints

Temperature Setpoints Locking is a safety feature which allows the programmer to turn the keypad off to further temperature setpoint programming. Selecting the “Active” mode locks in your programmed setpoints and turns off the keypad. Selecting “Not Active” unlocks the keypad and allows programming (this is the default). Before Parameter Programming can begin, Temperature Setpoint Locking must be made “Not Active”.

Press “Set Up”, then Scroll to choose either “Active” or “Not Active”.

Step L: Lock Motor Settings

Motor Settings Locking is a safety feature which allows the programmer to turn the keypad off to further motor programming. Selecting the “Active” mode locks in your programmed settings and turns off the keypad. Selecting “Not Active” unlocks the keypad and allows programming (this is the default). Before Parameter Programming can begin, Motor Settings Locking must be made “Not Active”.

Press “Set Up”, then Scroll to choose either “Active” or “Not Active”.

Step M: Pump Enable Temperature 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 board. The default pump enable temperature is 121°C (250°F). The selectable range for the pump enable temperature is 40°C – 196°C (100°F – 385°F).

Press “Set Up”, press “Enter”, then Scroll to your desired Pump Enable Temperature. Press “Enter” to save.

Step N: Setpoint Limitation Programming

The Setpoint Limitation is a universal maximum temperature for all temperature zones. The controller will not allow the operator to program a higher setpoint than the value of the setpoint limitation. The default setpoint limitation is 190°C (375°F). The selectable range for the setpoint limitation is 40°C – 218°C (100°F – 425°F).

Press “Set Up”, press “Enter”, then Scroll to your desired Setpoint Limitation. Press “Enter” to save.

Step O: Customer Setup Access Code Programming

To prevent unauthorized changes to the secondary parameter programming, your Access Code is required at this point in order to continue.

Press “Set Up”, then Scroll to the value of your access code (or enter the default access code “9999”). Press “Set Up” to select the Secondary P2 Menu, then Scroll to enter your Access Code (or enter the default access code “9999”) again. Press “Enter”.

Step P: Measured Temperature Programming (Temperature Zone Offset)

The Temperature Zone Offset is a mathematical factor which compensates for differences in temperature between the placement of the system's heaters and sensors. The offset may be up to $\pm 50^{\circ}$ (C or F) of the temperature. An offset is often used for large applicator heads, print rolls, printwheels or other custom devices.

Important Note: Usually no offset is required on standard equipment.

Each temperature zone may be programmed with a different offset. If a zone is programmed with a positive-valued offset, an "Up" arrow will appear on the display. If a zone is programmed with a negative-valued offset, a "Down" arrow will appear. If a zone is programmed with no offset, an equal sign ("=") will appear on the display.

Press "Set Up", then Scroll to choose a temperature zone. Press "Enter", then Scroll to the desired offset value (anywhere between $\pm 50^{\circ}$ C or $\pm 100^{\circ}$ F). Press "Enter" to save. Scroll to the next temperature zone and repeat.

Step Q: Temperature Zone Enable Programming

The Temperature Zone Enable allows you to eliminate inactive temperature zones from the DynaControl display, in order to make scrolling from one zone to another less time consuming. It is especially useful for small systems with fewer zones.

Press "Set Up", then Scroll to choose a temperature zone. Press "Enter", then Scroll up to "1" to turn the zone ON, or Scroll down to "0" to turn the zone OFF. Press "Enter" to save. Scroll to the next temperature zone and repeat.

Step R: Customer Zone Names

Customer Zone Names allows the programmer to change the name of any temperature zone to any word up to 14 or 15 characters in length.

Note: the temperature zone number and the last three characters on the line cannot be changed.

Press "Set Up". Choose "Not Active" to use the controller's default zone names. Choose "Active" to write your own temperature zone names.

Press "Set Up". Scroll to the temperature zone whose name you desire to modify. Press "Enter". A cursor (^) will appear under the first position (character) which can be changed. Scroll through the alpha/ numeric characters until your desired character is in the selected position. Press "Enter" to save your choice and to move to the next position in the word. Repeat the "Scroll"/ "Enter" sequence until your new name is spelled out. Press "Enter" to save the new name.

To modify the name of another temperature zone, press "Clear" then Scroll to the desired zone. Repeat the above sequence, spelling out new names for as many zones as you desire. Press "Clear" to end Customer Zone Names programming.

Note on selecting characters: When scrolling to the desired alpha/ numeric character, use the "up" scroll button to access the characters rapidly in ascending order. Use the "down" scroll button to access the characters more slowly in descending order. Use the "Clear" button to remove the character. Use the "Enter" button to move the cursor to the next position in the name.

Step S: Changing Your Access Code

Press "Set Up", press "Enter", then Scroll to choose the desired access code. Press "Enter" to save.

Step T: Power On Heater Start Programming

With this programming step you choose to turn the Melter's heaters ON (be active) or OFF (be inactive) whenever the controller is powered ON. If you choose "Not Active", you will need to manually turn the heaters ON, via the controller, after each power ON.

Note: an active Seven-Day Scheduler (option) overrides this parameter. See "Seven-Day Scheduler" in this chapter for more details.

Press "Set Up", then Scroll to choose "Active" or "Not Active". Press "Set Up" to continue.

Step U: Power On Input Priority Programming

Programming at this step affects both Standby programming and Temperature Program programming.

Choosing "Active" allows an external contact (input) to take priority over keypad programming of both of these functions. This priority becomes apparent after the Melter is powered OFF and then ON again.

So, for example, if "active" is chosen here, the selections for standby (On or Off) and temperature program (program #1, 2, 3, or 4) will revert to the choice made at the external contact once the Melter is powered ON.

Choosing "Not-Active" allows keypad programming of the two functions to take priority. In this case, the temperature program last used will be retained after the Melter is powered ON and standby condition will remain as programmed.

Press "Set Up", then Scroll to choose "Active" or "Not Active".

Step V: Power On Motor Stop Programming

Programming at this step determines if your motor is ON (select "not active") or OFF (select "active") when the Melter is turned On. If you choose "Active", you will need to manually turn the motor ON, via the controller, after each power ON.

Press "Set Up", then Scroll to choose "Active" or "Not Active".

Step W: Level Control Status Programming

Programming at this step lets the controller know if a level control device is in use on the Melter. Select "Active" if there is a level control device in use or select "Not Active" if there is not a level control device in use.

Press "Set Up", then Scroll to choose "Active" or "Not Active".

Step X: Pressure Sensors Programming

Programming at this step lets the controller know how many pressure transducers and the PSI rating of the transducers installed on the Melter. Default = 1500 PSI/ 1000 BAR.

Press "Set Up" and Scroll to choose the number of transducers installed. Press "Enter" and Scroll to select the PSI rating of the transducers.

Step Y: Slave Address Programming

Slave addresses are used for serial communication. If a user has multiple Melters and desires to control them all through a PLC, each Melter needs a numeric slave address for identification.

Press "Set Up" and press "Enter". Scroll to choose a slave address for this Melter. Press "Enter" to save.

Step Z: Gear Ratio Programming

The gear ratios of a gear motor need to be programmed only when a CPU board is replaced. Typically, ITW Dynatec ships gear motor Melter with an 18 to 1 gear ratio, though a special application may require a special gear ratio.

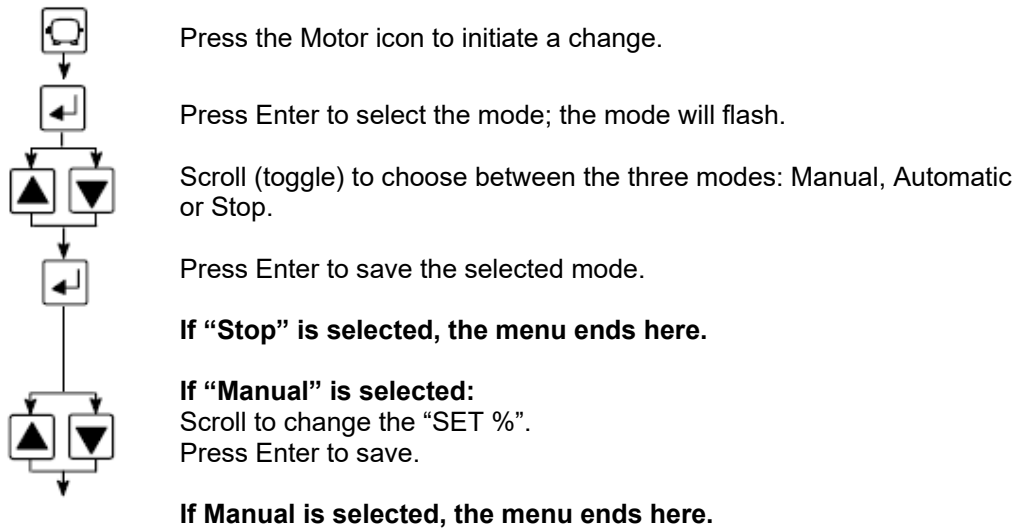
Press “Set Up” and press “Enter”. Scroll to select a gear ratio for this Melter. Press the Temperature icon to end parameter programming and return to the temperature setpoint screens.

PARAMETER PROGRAMMING IS COMPLETE.

PROCEED TO MOTOR CONTROL PROGRAMMING (*if applicable*).

Motor Control Programming

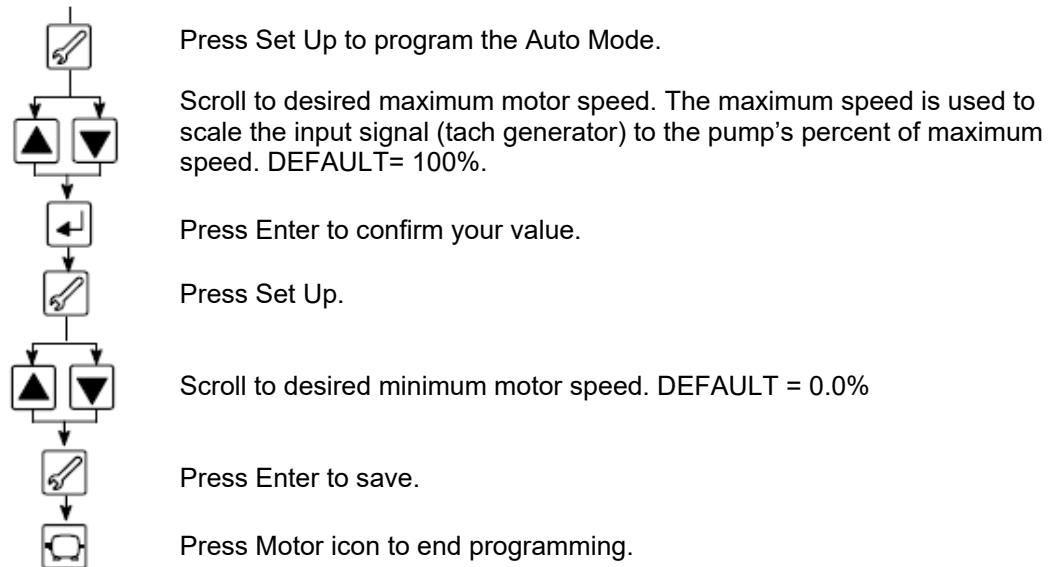
Motor Control Programming (see also next page)



If “Auto” is selected, follow instructions listed below:

To Adjust Minimum/ Maximum Speeds for Auto Mode (see also next page)

The Auto Mode is used when a tach generator is employed.



Actual Digital RPM Readout Option

Units installed with the optional Digital RPM Readout require no additional programming to display the pump's actual rpm value (0 -90 rpm).



Press the Motor icon to view the readout. You will then see this screen:

Motor 1: Manual (or Auto)
Set: xx.x% xxxx rpm

Motor Control Programming

The Melter's motor can be programmed to run in manual or automatic modes or it can be switched off. When the Motor icon is pressed, the LED displays "Manual", "Auto" or "Stop" to indicate which mode is currently programmed.

In "Auto" mode, the display reads the value of minimum speed until production begins. Then the readout will begin to accelerate automatically as it reads a DC signal and tracks production speed. Auto mode requires that a maximum input signal of 10 VDC (customer supplied) be connected to the Melter. See Chapter 3 for more details.

In "Manual" mode, the readout displays the "SET" % (of Full Speed) to the percent of full speed value programmed into the controller. If a tachometer (option) is connected to the motor, the readout will also display the actual motor RPM.

Press Motor icon. Press Enter. Scroll to desired mode (Auto, Manual or Stop). Press "Enter" to confirm. If Stop is selected, menu ends here. If Manual is selected, Scroll to desired setpoint. Press Enter to save.

If Auto is selected, follow instructions in the next programming sequence.

To Adjust Minimum/ Maximum Speeds for Auto Mode

The Melter's motor 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 (tach generator) 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 throughout 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 %" to 50% will allow the pump to slow down and adhesive output will decrease by 50%.

Press "Set Up" to program the maximum motor speed value, Scroll to desired value, press "Enter" to save. Press "Set Up" again to program minimum motor speed, Scroll to desired value, press "Enter" to save. Press Motor icon to end.

PROGRAMMING IS NOW COMPLETE FOR THE STANDARD DYNAMELT MELTER.

IF YOUR MELTER HAS OPTIONAL CONTROLLER FEATURES, CONTINUE WITH THE PROGRAMMING INSTRUCTIONS ON THE FOLLOWING PAGES.

Programming of Other Optional Features

Seven-Day Scheduler

The Seven-Day Scheduler allows the operator to program main power ON and OFF times which coincide with his daily production schedule throughout the work week. Up to ten “events” may be scheduled. An event is a specific day and time or every day at the same time.

A Melter which has an active seven-day scheduler should be turned ON at the main power switch (item “N” on illustration under point DynaControl Keypad on previous pages). It should never be turned off by the main power switch while the scheduler is active. To turn the Melter OFF (temporarily overriding the scheduler), use the DynaControl on/ off keypad icon (item “L” on illustration under point DynaControl Keypad on previous pages).

In the event of a power outage, or a manually switched main power ON, an active scheduler overrides the “Power On Heater Start” parameter (see Parameter Setup “Step T”). That is, if the scheduler is in “Switch ON” at the time of a power ON, the heaters will be turned ON. Likewise, if the scheduler is in “Switch OFF” at the time of a power ON, the heaters will be turned OFF.

When the seven-day scheduler is programmed and active, the green LED on the scheduler icon on the controller keypad (item “K” on illustration under point DynaControl Keypad on previous pages) flashes continuously and the controller screen is blank (i.e., no display). Time-of-day is indicated on a 24-hour day/ 60-minute hour clock; i.e. 12:00 pm = 12:00 and 12:00 am = 24:00.

Seven-Day Scheduler Programming



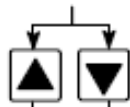
Press the Seven-Day Scheduler icon to initiate programming. Time and day will be displayed as illustrated below. The time display will flash to indicate the active mode.

00:00 Friday



Press Set-Up.

Step a: Time-of-Day Programming



Program the controller's clock with the correct time of day: Scroll to the current “hour” (numerically: 00:00 to 23:00).



Press Enter to confirm.



Scroll to the current “minutes” (:00 to :59).



Press Enter to confirm.



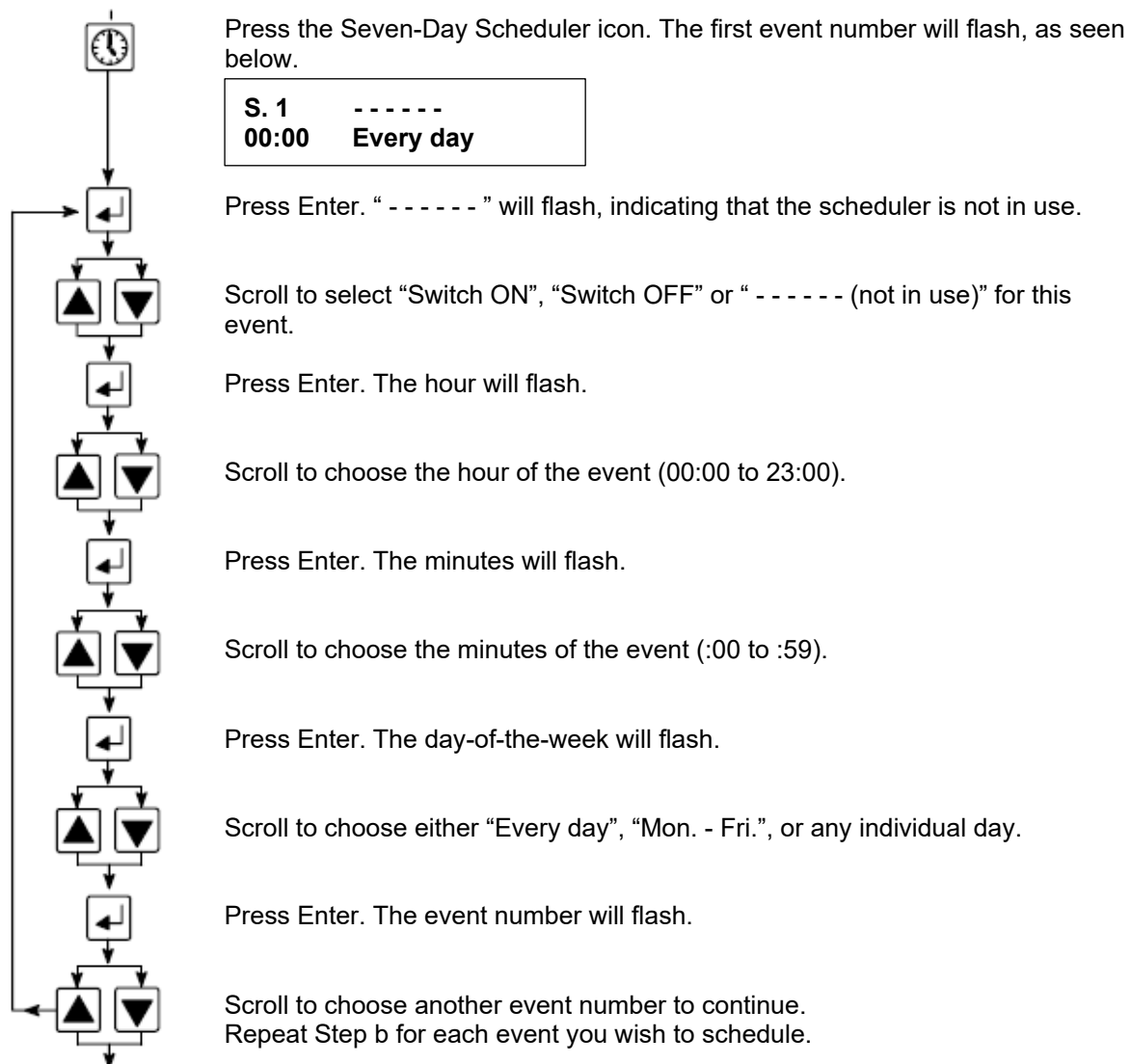
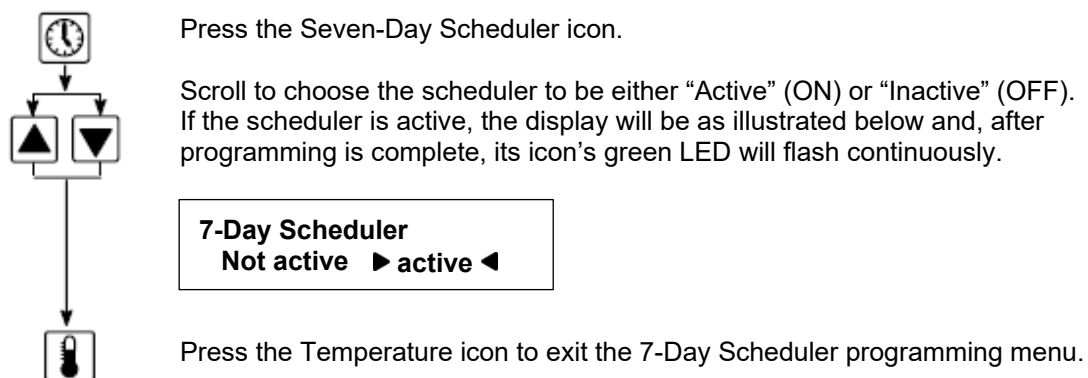
Scroll to the current day of the week (Sunday thru Saturday).



Press Enter to confirm. On the display, the colon (:) will flash.

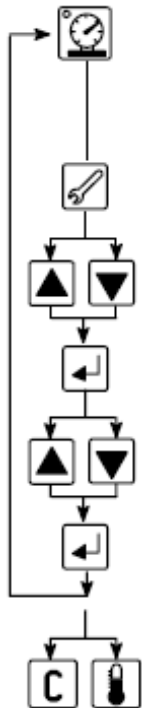
Step b: Event Programming

Note: a scheduler "event" is either a "Switch ON" or a "Switch OFF" time.

**Step c: Turning Seven-Day Scheduler ON or OFF**

Pressure Control Programming

System pressure, as read by optional pressure transducers, may be monitored at the controller by pressing the pressure control icon. Up to four transducers may be monitored per pressure board. Pressure is measured in “psi” if your system setup is “US” or in “bar” if your setup is “EU”.



Press Pressure Control icon. You will then see this screen:

Pressure Readout
System 1: xxxx psi

Press Set-Up.

Scroll to select the low alarm pressure value for your first transducer (DEFAULT = 0).

Press Enter to confirm and save your choice.

Scroll to select the high alarm pressure value for your first transducer (DEFAULT= 1000).

Press Enter to confirm and save your choice.

Repeat to program each “system” (transducer) on your ASU.

Press Clear or the Temperature icon to end.

Level Control Prompt

The DynaControl’s screen is automatically interrupted and an audible alarm sounds to prompt the operator to re-fill the Melter’s hopper with adhesive. If the hopper is not refilled, the alarms repeat every two minutes.

Low Tank Level
Press C to Clear

When you see this screen and hear the alarm...



Press “C” to clear alarm.
Re-fill the hopper.

DynaControl Features

Ready Light Display

Each button (icon) on the keypad has a light diode (LED) in its upper left corner. A constant light indicates that the button has been pressed (selected). A flashing light on the Temperature Control button (as in the example at right) indicates that a zone(s) is not up to ready temperature. A flashing light on the Seven-Day Scheduler (optional) button indicates that the scheduler is programmed and active.



Press On to Start or “Blank” Screen at Startup

If a controller screen reading “Press On to Start” is the first screen to come up after powering on, this indicates that your Melter will not begin heating until you manually turn its heaters on (by pressing ON). This condition is a default of the EU setup. This condition may be re-programmed at Step “T” of the programming sequence to allow automatic heating at power on.

If the first screen to come up after powering on is “blank” (i.e., no display message) this indicates that your Melter has an active Seven-Day Scheduler (option) and the scheduler is in a “Switch Off” event. See Seven-Day Scheduler programming in this chapter for more details.

Temperature Scan/ Hold Modes

At any time during production, the operator may choose to “scan” through all the temperature zones, or to “hold” the display of one particular zone on the LED readout.

In Scan mode, each of the temperature zones are displayed (in numeric order) at intervals, one after the other. Scan mode is indicated on the display by a small triangle in the upper right corner (see illustration below). In the Hold mode, one temperature zone is displayed constantly (and no triangle appears). Pressing the Temperature Control button (illustrated above right) activates the Scan mode.

1. Hopper
Set: 123°C Act: 122°C



The Scan mode is de-activated, and the Hold mode activated, by any of the following buttons: “Up Scroll”, “Down Scroll”, “Clear” or “Enter”. After any controller power on, the controller will start up in the Scan mode.

Alarm/ Error Indication

2 TEMP ZONE HOSE 1
ERROR ON CHANNEL 2



If an alarm condition occurs during operation, the Melter's main power output (internal relay) will be switched off and an appropriate error indication will appear in the display (see example at left; for more examples, see Chapter 4). If the controller is in Scan mode at the time of the alarm, the Scan mode will be de-activated and the temperature zone which has the alarm condition will appear in the display.

To acknowledge the error and clear the error indication message, press the “Clear” button (illustrated at right). By doing this, the faulty zone is switched off and the Melter is again ready for operation. If several zones show alarm conditions, each error must be acknowledged by pressing “Clear”.



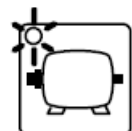
Pump Enable Indication Arrow on Motor Display

MOTOR 1:
0 RPM



A flashing down arrow on the motor display indicates that the actual temperature is too low for the motor to turn on. This indication may occur in any of the three motor modes: Manual, Auto or Stop.

A flashing LED on the motor button indicates that zones with temperature priority #1 have not reached pump enable temperature.



Gear Motor Quick Stop or Quick Start

To Stop: If the Melter is running in either Manual or Auto mode, it can be quickly stopped by first pressing the “Motor” button, followed by pressing “Enter”.

To Start: If the Melter is stopped and Manual mode is flashing, press the “Motor” button, then scroll to select either “100%” (fast start), “50%” (half-speed start) or “0%” (very slow start), then press Enter.

Hour Meter

Setback in (hour: minute)
Elapsed Hours: 1234

Press “Clear”, then press the “Clock” key for at least five seconds to display the Hour Meter.



The hour meter counts the total elapsed hours the electronics of the Dynamelt Melter have been running. The counter begins with the first Power On of the Melter and cannot be reset. Any time the Melter is in standby is not counted. Any time the Melter is powered on for less than 30 minutes is not counted. If the CPU printed circuit board is replaced with a new board, the counter will start over at “0”.

Setback Remaining Time Readout

Setback in 1:30 (h:m)
Elapsed Hours: 1234

Press “Clear”, then press the “Clock” key to read a display of the remaining time of a setback (in hours: minutes) which has a programmed time delay.



Re-programming Your System’s Parameters

It is not necessary to re-boot the DynaControl in order to change your system’s parameters (setpoints). Use the following procedure:

Note: If Lock Temperature Setpoints and Lock Motor Settings are not active, begin at step 4 and omit step 7.

1. Start at the temperature zone display.

1. Hopper
Set: ___ °C Act: 122°C

2. Press “Set Up”  until you advance to “Customer Setup”.
Enter your four-digit access code.
3. Press “Set Up” until you advance to “Lock Temperature Setpoints”.
Choose “Not Active”.
Press “Setup” once to advance to “Lock Motor Settings”.
Choose “Not Active”.

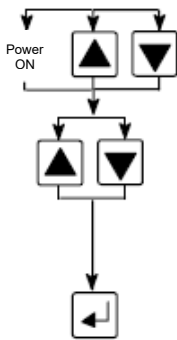
4. Press “Temperature” icon . Then follow either “a” or “b” below:

- a. To re-program a temperature zone: scroll “Up” or “Down”   to the desired zone.
- b. To re-program any other parameter: press “Set Up” until you advance to the parameter’s screen. If desired parameter has multiple screens, scroll “Up” or “Down” until the desired screen is displayed.

5. Press "Enter" . The setpoint will flash.
6. Scroll "Up" or "Down" to the new desired setpoint.
Press "Enter" to confirm and save.
7. Press "Set Up" until you advance to "Lock Temperature Setpoints".
Choose "Active".
Press "Setup" once to advance to "Lock Motor Settings".
Choose "Active".
8. Press "Temperature" icon to exit.
9. If desired, press "Temperature" icon again to enter Scan Mode.

Restoring Factory Defaults (Re-Bootng)

Rebooting your DynaControl controller will restore its factory defaults and wipe out all programmed setpoints. To perform this sequence, first turn the controller's On/Off switch OFF, then:



Turn ON the controller's On/Off switch while pressing and holding both the Scroll Up and the Scroll Down buttons for approximately five or six seconds. Release buttons.

The screen will read "SYSTEM SETUP".

Use Scroll buttons to choose desired system:

US = English language, Fahrenheit temperature scale and heaters powered ON at startup.

EU = English language, Celsius temperature scale and heaters powered OFF at startup.

Press Enter to confirm and save your chosen System Setup.

Chapter 6

Maintenance and Repair Notes

6.1 Security advices for maintenance and repair



Heed all security advices given in Chapter 2.

Use only original parts from ITW Dynatec, otherwise ITW Dynatec's warranty is void!

Maintenance and repair work is only permitted for skilled personnel!

Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or heavy burns!

High Voltage! Risk of injury and mortal danger!

- All electrical connections must be made by qualified electrical personnel.
- Care must be taken to assure proper grounding prior to any disassembly.
- Lockout and tag the electrical sources as required.
- Make sure there is no electrical power on the leads you will be connecting.
- When covers are removed, high voltage sources create an electrocution hazard.
- Wear appropriate safety equipment when working with high voltage sources.

Parts and surfaces of the unit get very hot. High temperatures! Risk of heavy burns!

High adhesive temperature and adhesive pressure! Risk of injury or heavy burns!

Always assume that the system is under pressure, proceed with caution.

Keep a cool-pack, or bucket of clean water near the work area.

Place a heat-resistant catchment container/underlay under the components. Hot adhesive may come out.

CAUTION: At working temperature, molten adhesive could cause heavy burns. Let spilled out adhesive cool down first, before removing it!

CAUTION: Use only lint-free cleaning cloth and suitable cleaner for cleaning! Do not damage surfaces! Do not scratch above them with sharp-edged tools, otherwise the components will get leaky and inoperable!

All maintenance and repair work has to be done at working temperature, except as noted otherwise. Else there is a risk of damaging the unit components!

Before any service work disconnect the external power supply and switch the unit voltage-free:

1. Switch off the main switch and the controller.
2. Disconnect the power supply respectively remove the plug / cable.
3. Guard the unit against unauthorized restarting!

Before any service work the adhesive pressure must be relieved throughout the system. Switch the unit pressureless:

1. Disconnect the pressure air supply.
2. Turn the pressure regulator to zero bar, if necessary. Wait approximately 1 minute until the pressure is relieved.

Equipment Preparation for Maintenance & Repair

- Adhesive processing equipment must be worked on while hot enough to soften any material residue within the assembly. This depends on the type of adhesive used with the equipment. This may require the system to be up to operating temperature before disassembled, to prevent damage to fasteners and components.
- Once disassembled, the individual parts may be cleaned by immersion in approved solvent. Surface deposits may be removed by lightly scrapped with a brass device or scrapper. Care must be taken not to damage sealing surfaces with sharp objects or sand paper.
- Components such as O-rings, fasteners and relief valves should be discarded and replaced by certified ITW Dynatec replacement parts.

Re-Assembly Procedures and General Cautions

Unless noted, the 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 must be replaced whenever hot-melt equipment is re-assembled. All new O-rings must be lubricated with O-ring lube (PN 001V078).

TAPERED PIPE THREADS are found on air pipe 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.

SOME FITTINGS used for adhesive on hot melt equipment 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. Excessive torque may damage straight-threaded parts and the use of power wrenches is not recommended.

HOT-MELT RESIDUE must 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 must always be re-tightened at operating temperature.

Cleaning Recommendation

- Filters are disposable and need to be replaced regularly. DO NOT boil in mineral oil, solvents or water; the sealant used in filter assembly may become brittle and very likely disintegrate when boiled.
- When cleaning other components in mineral oil, remove all non-metallic items (O-rings, seals, filter cartridge, etc.) away from chemicals before components are subjected to hot mineral oil cleaning.
- If there is not a specific rebuild kit available or directions on how to clean a part, please treat it as a replacement item and do not attempt to clean/rebuild.

6.2 Maintenance plan



CAUTION

- Heed all security advices given in Chapter 6.1.
- Use only original parts from ITW Dynatec, otherwise ITW Dynatec's warranty is void!
- Please use only the indicated lubricants and keep the prescribed maintenance intervals. Consider in addition the enclosed regulations of manufactures.
- Punctual and conscientious maintenance of the unit secures not only a trouble-free function, but prevents also for expensive repair costs.
- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Place a heat-resistant catchment container/underlay under the components. Hot adhesive may come out.
- Use only lint-free cleaning cloth and suitable cleaner for cleaning! Do not damage surfaces! Do not scratch above them with sharp-edged tools, otherwise the components will get leaky and inoperable!

Maintenance plan:

Operating time/ frequency	Inspection point / maintenance notes
Continuous	• Remove dropped out adhesive and scrap adhesive and search for the cause of that, eliminate the cause. • Listen for abnormal sounds of the unit, e. g. from the motors, pumps, etc.
Once a day	• Clean the Melter and components from dirt.
Once a week	• Check pump and their seals for wearing and leaks and replace if necessary. • Check output filter for clogging and replace if necessary. • Check pressure relief valves for function and replace if necessary. • Check air supply connections for leaks and tighten if loose or replace if necessary. • Check the solenoid valves for proper function and replace it if necessary. • Check for adhesive residue in the manifold drip tray. If residue is found, inspect and replace the pump seal, as required.
Every 3 months	• Inspect primary filter. Clean or replace the filter as required. • Check pump mounting screws for tightness and tighten if necessary. • Check all hose fittings for tightness and tighten if necessary. • Due to temperature differences a loosening of threads (threaded connections) is possible. Check all parts with threads, all screw fittings and fasteners for tightness and tighten them if necessary.
Once a year	• Clean the Melter. • Complete check-up for wearing.
Every two years	• Complete maintenance.

6.3 General Cleaning

The Dynamelt S series Melter 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 Melter's finish, avoid prolonged contact with strong solvents.

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

6.4 Purging the Filter Manifold of Adhesive and Pressure

As a safety precaution, purge the filter manifold of pressure and adhesive before changing the output filter or before removing any of the hoses or applicators from their manifold port.

	WARNING Heed all security advices given in Chapter 6.1. Maintenance and repair work is only permitted for skilled personnel! Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns! During the purging procedure, hot adhesive can come out of the manifold under high pressure. Avoid splashing hot adhesive. Stand clear of the Melter until all pressure is relieved. Components and adhesive are hot. Take every precaution to prevent the material and hot surfaces from contacting the skin.
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1. The system should be at operating temperature.
2. Turn the pump/ motor OFF.
3. Switch the unit voltage-free and pressureless.
4. Guard the unit against unauthorized restarting.
5. Place a heat-resistant catchment container/underlay under the manifold's purge drain. Hot adhesive may come out!
6. Locate the purge drain screw on the side of the filter manifold (see illustration on next page). The purge drain screw is the bottom-most port on the manifold.
7. With a 5mm Allen wrench, slowly loosen the purge screw. Do not attempt to remove the purge drain screw. Allow the adhesive and pressure to drain. All the adhesive will flow into the heat-resistant container.
8. After adhesive pressure has been relieved, re-tighten the purge screw.

After finishing the maintenance or repair works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the voltage supply and the compressed air supply. Heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Continue production.

6.5 Preventive Maintenance

Preventive Maintenance Schedule

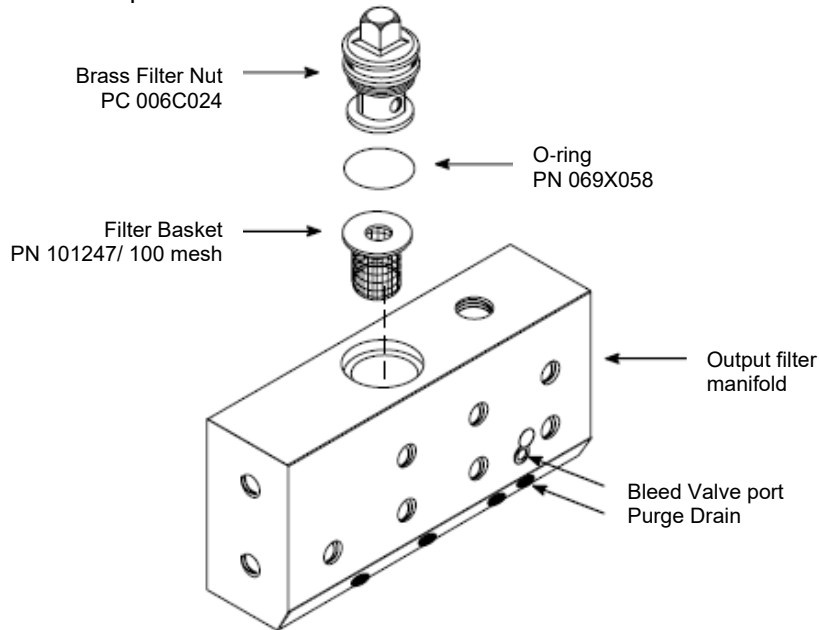
The Dynamelt S requires periodic maintenance to function reliably.
Refer to 6.2 Maintenance Plan.

The hopper is fitted with a coarse screen to prevent large debris from entering the system. Normally this screen does not require cleaning.

The Melter's parts that require regular, periodic maintenance are as follows:

Output Filter

The output (pump) filter cartridge 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 Melter. See illustration.



Output Filter Manifold (located on the Hose Connection Panel)

Use the following procedure to replace the output filter:

	WARNING
	Heed all security advices given in Chapter 6.1.
	Maintenance and repair work is only permitted for skilled personnel!
	Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns!
	Use the output filter manifold's purge valve to relieve adhesive pressure before performing any pump filter maintenance. See point 6.4 "Purging the Filter Manifold of Adhesive and Pressure" for detailed instructions.
	During the purging procedure, hot adhesive can come out of the manifold under high pressure. Avoid splashing hot adhesive. Stand clear of the Melter until all pressure is relieved.
	The filter cartridge will be covered with hot adhesive and must be handled with proper tools. Components and adhesive are hot. Take every precaution to prevent the material and hot surfaces from contacting the skin.

To replace the Output Filter:

1. The system should be at operating temperature.
2. Turn the pump/ motor OFF.
3. Switch the unit voltage-free and pressureless.
Before proceeding, follow instructions to point 6.4 "Purge the Filter Manifold of Adhesive and Pressure" on previous pages.
Leave purge screw open for this procedure.
4. Guard the unit against unauthorized restarting.
5. Place a heat-resistant catchment container/underlay under the purge valve drip tray.
Hot adhesive may come out!
6. Unscrew and remove the brass filter nut (15.8 mm or 5/8" nut).
7. With needle nose pliers, pull the filter basket out of the manifold body.
8. Clean the char and debris inside the filter basket.
9. Replace the filter basket as needed.
10. Before replacing the filter basket, replace the o-ring on the filter nut.
Apply o-ring lubricant (PN N07588) to the new o-ring.
11. 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 purge screw.

After finishing the maintenance or repair works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the voltage supply and the compressed air supply. Heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Continue production.

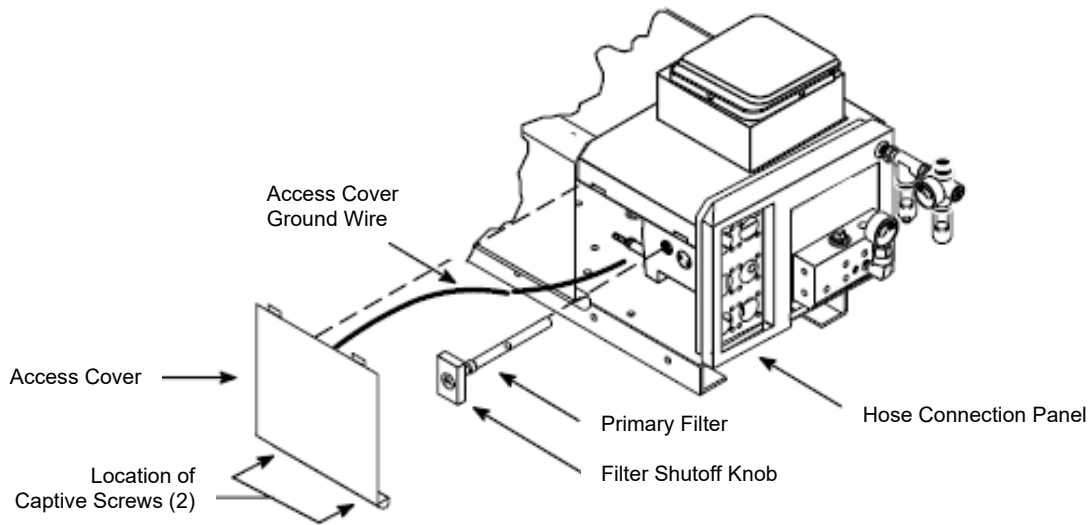
Hose Fittings

All hose fittings should be checked for tightness after every three months of operation.

Fasteners

Check that all fasteners and screws are tight after the first ten hours of operation.
Re-check all fasteners after every three months of operation.

Primary Filter Cleaning



1. Pump all adhesive out of the hopper.
2. Turn the pump/ motor OFF.
3. Switch the unit pressureless.
Before proceeding, follow instructions to point 6.4 "Purge the Filter Manifold of Adhesive and Pressure" on previous pages.
Leave purge screw open for this procedure.
4. Lower the temperature of the application system to the adhesive's softening point.



WARNING HOT SURFACE

**The Melter will still be hot during this procedure.
Use insulated gloves and protective clothing when removing the primary filter.**

5. Remove the access cover via two captive screws. Do not pull out the ground wire attached.
6. Wearing gloves, unscrew the filter retaining nut and pull the primary filter out of the hopper.
7. 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.
8. Apply a coat of anti-seize compound onto the threads of the filter retaining nut and re-install into the hopper.
9. 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.
10. Replace the access cover and restore the Melter to normal operation.
Tighten purge screw.

After finishing the maintenance or repair works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the voltage supply and the compressed air supply. Heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Continue production.

Pump Shaft Leak

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

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

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 Heed all security advices given in Chapter 6.1. Maintenance and repair work is only permitted for skilled personnel! The flushing fluid will splash easily. Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns! Components and adhesive are hot. Take every precaution to prevent the material and hot surfaces from contacting the skin.
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1. Pump out as much of the molten adhesive as possible.
2. Reduce the pump speed 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. Disconnect one of the supply hose's adhesive feed from its applicator head. Do not disconnect the electrical power to the head (since that would disable the pump). Put the hose in a secured position within a heat-resistant 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.
5. Slowly increase the pump speed. Pump as much of the flushing 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 filter cartridge. Install a new O-ring on the filter nut (lubricate the new O-ring with O-ring lubricant prior to installation) and tighten the brass filter 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

7.1 General Troubleshooting Notes



NOTE: Please re-read all security advices given in Chapter 2 before performing any troubleshooting or repair procedures.

All troubleshooting or repair procedures must be performed by qualified, trained technicians.



DANGER HIGH VOLTAGE

The Dynamelt Melter uses electrical power that can be life threatening and hot-melt adhesives that can cause serious burns. Only qualified persons should perform service on the Melter.



WARNING HOT SURFACE

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

Some of the procedures in the following Troubleshooting Guide require working near hot adhesive.

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

Use proper tools for handling hot melt components.



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 Dynamelt's DynaControl 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 5 of this manual.

Preliminary Checks: Verify the following before proceeding:

1. The Melter is switched on.
2. The Melter is supplied with power.
3. The Melter is supplied with pneumatic air (if applicable).
4. Pneumatic and electrical connections are correct.
5. Adhesive is in the hopper.
6. The temperature controller is in operation. The setpoints are correct for the Melter, Heated Hoses and Applicators. All components are heating properly.

Error Messages:

ERROR ON CHANNEL X = temperature zone "X" has an open or shorted sensor.

EEPROM ERROR = new software installed. Re-boot controller.

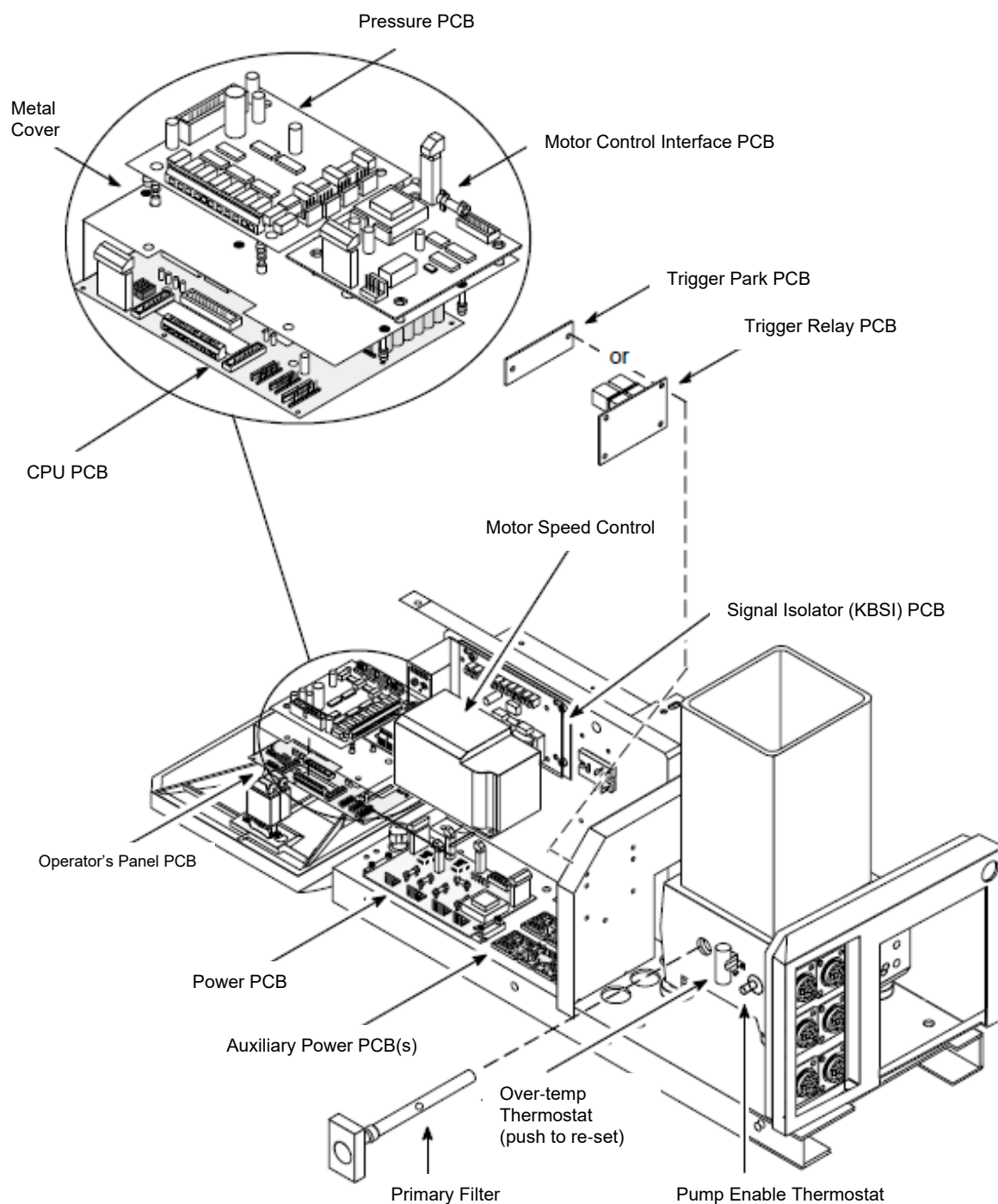
HOPPER OVERTEMP = indicates a serious problem which requires service by ITW Dynatec.

Hose/ Applicator Troubleshooting Tip

Hose or Applicator problems can be isolated by electrically connecting the Applicator and hose to an alternate socket on the Melter. 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 Melter.

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 Dynamelt S Series Melter includes a mechanical (redundant) overtemp thermostat that acts as a safety backup. If the Melter's hopper temperature should exceed 232°C (450°F), the thermostat will cause the Melter'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 204°C (400°F).

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

Pump Enable Thermostat

The pump enable thermostat is a low-temperature safety feature of the Dynamelt Melter designed to prevent the pump from powering on before the adhesive is molten. It is a cartridge thermostat, located to the right of the overtemp thermostat (see illustration on previous page) and it is factory set at 135°C (275°F). The thermostat is adjustable so that operators using adhesives with extraordinarily high or low melting points can tailor the low-temp setting to their production's needs.

Refer to Chapter 4 for instructions on calibration of this thermostat.

Lithium Battery on CPU PCB

The CPU Printed Circuit Board contains a lithium battery which powers the optional 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.

Handling Printed Circuit Boards (PCBs)

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



DANGER HIGH VOLTAGE

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



CAUTION

Modules and 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 Melter (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 Melter, each PCB must be individually packaged inside a metalized, 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 modules or 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 S Series PCBs.

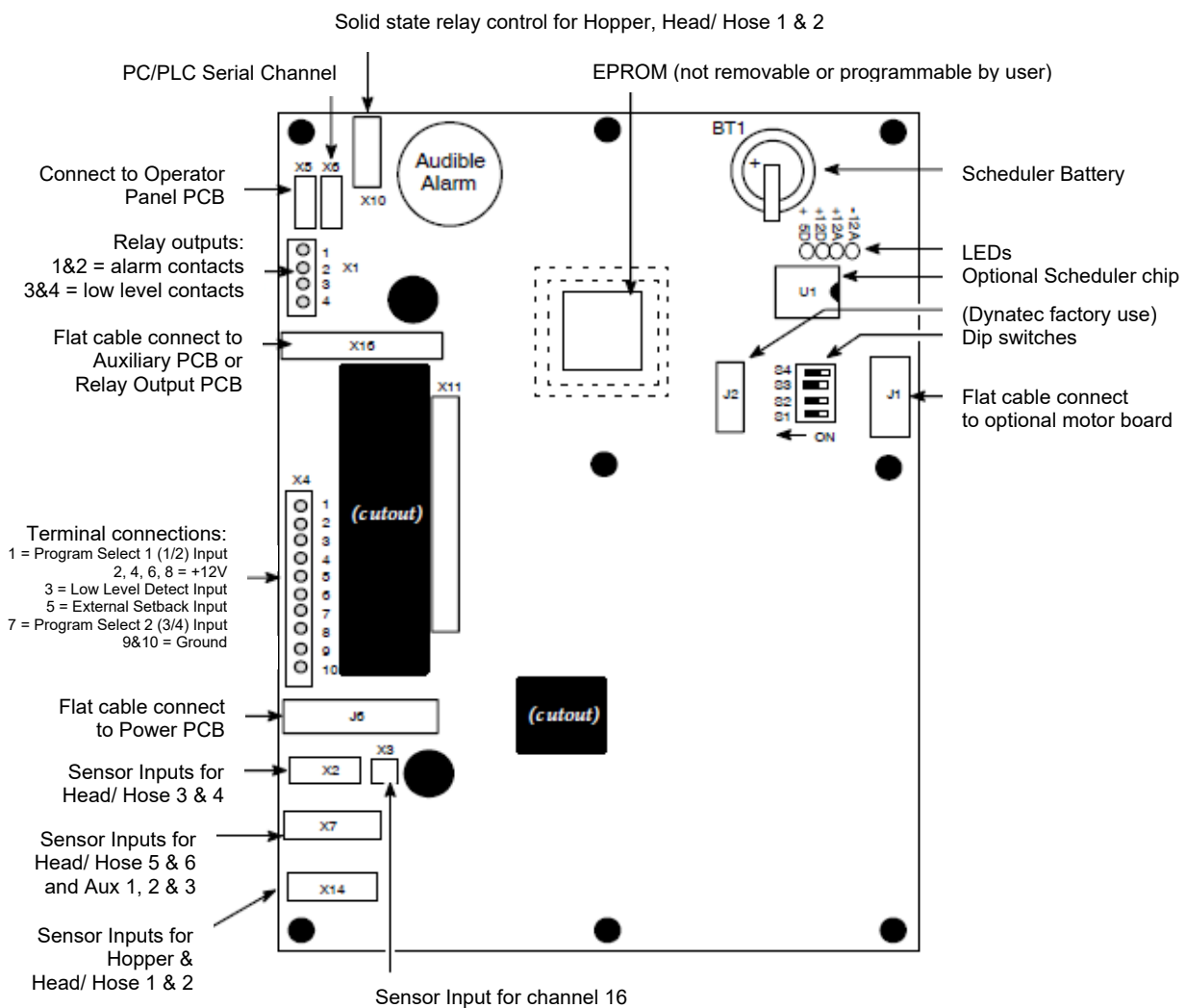
7.2 CPU PCB

The CPU PCB (Printed Circuit Board) contains the controller's CPU chip (built into the board) and optional 7-Day Scheduler chip. The CPU chip (EPROM) can only be reprogrammed at ITW Dynatec's factory.

The CPU board is mounted directly behind the Operator's Keypad PCB, behind a protective, metal cover. All of the user terminals are located outside of the protective cover.

The Low Level relay is fixed at normally open. The High/ Low Alarm relay is fixed at normally closed. During normal operation, the two red indicator lights are always ON.

Set the dip switches as follows: set S1 to ON; set S2, S3 & S4 to OFF.



Layout of Components on CPU Board

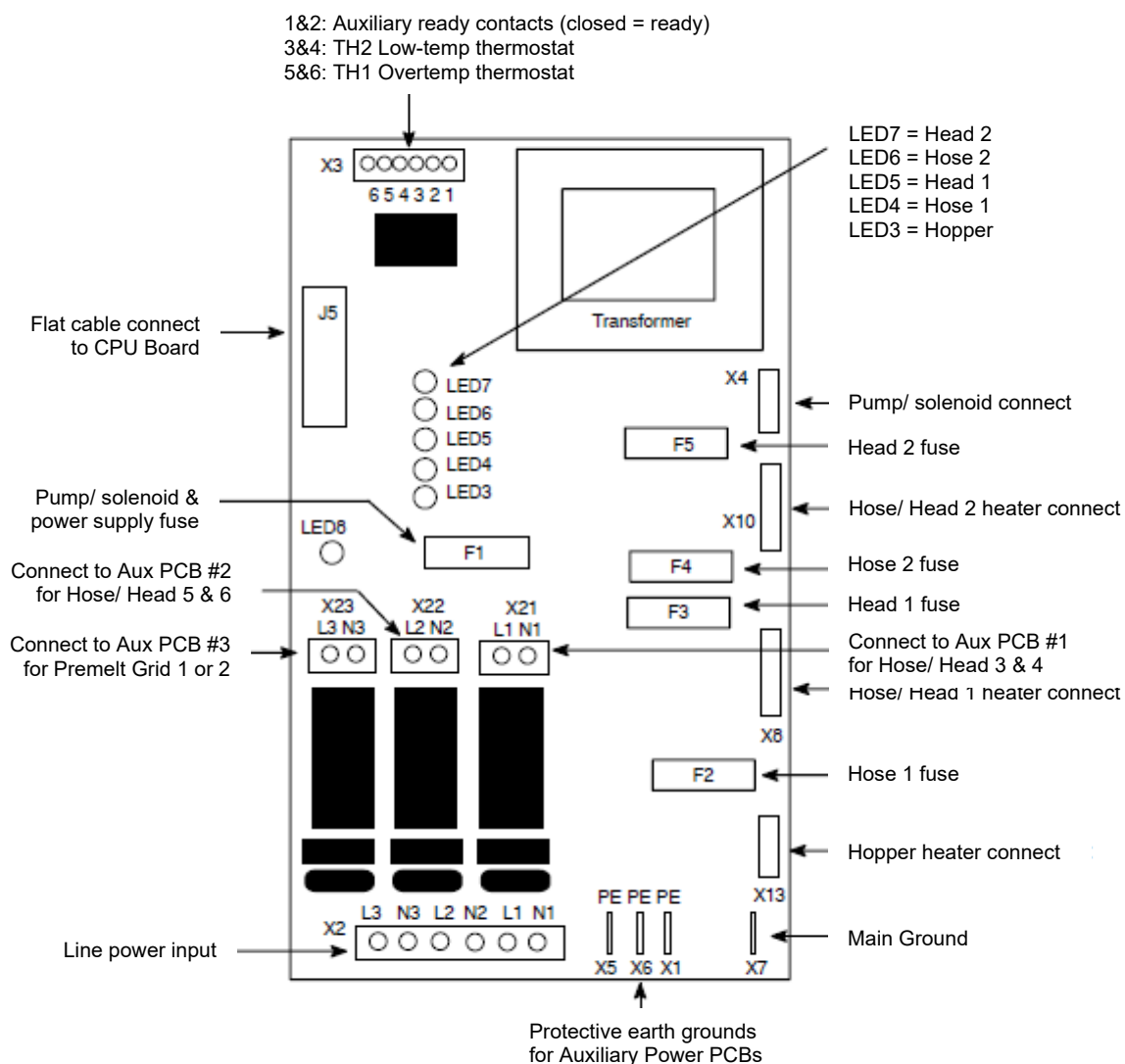
7.4 Power PCB

The DynaControl has one power board and, depending on the number of hose/ heads on your Dynamelt Melter, up to three auxiliary zone boards. If the Melter has 1 or 2 hose/ heads, it will have only the main power board pictured below (for zones 1 to 5). If the Melter has more hoses/ heads, up to three auxiliary zone PCBs are employed to accommodate additional temperature zones. The Auxiliary (AUX) PCBs connect to the power board as diagrammed below.

The Power PCB is mounted to the Melter's base plate, in the pump and electronics compartment.

The green LEDs 3 thru 7 cycle on and off as individual zones come up to temperature. LED 8 indicates that the relay power supply is ON; it lights continuously.

All power board fuses are 6.3AF amp.



Layout of Components on Power Board

7.5 Auxiliary Power PCBs

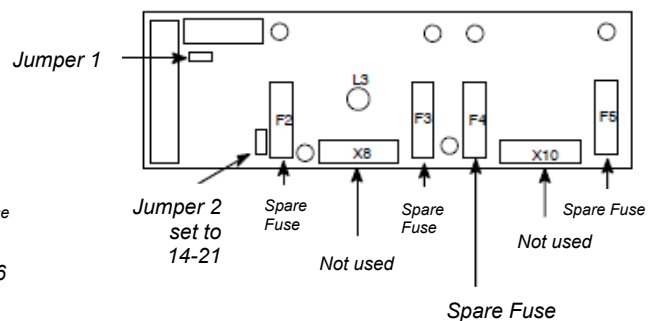
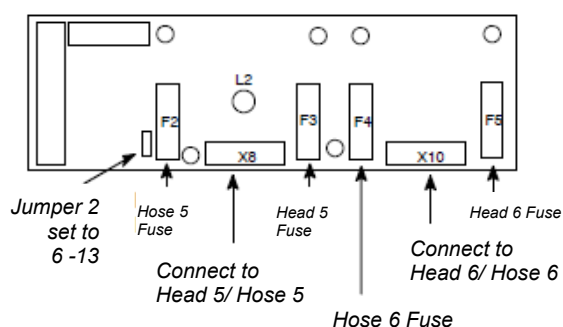
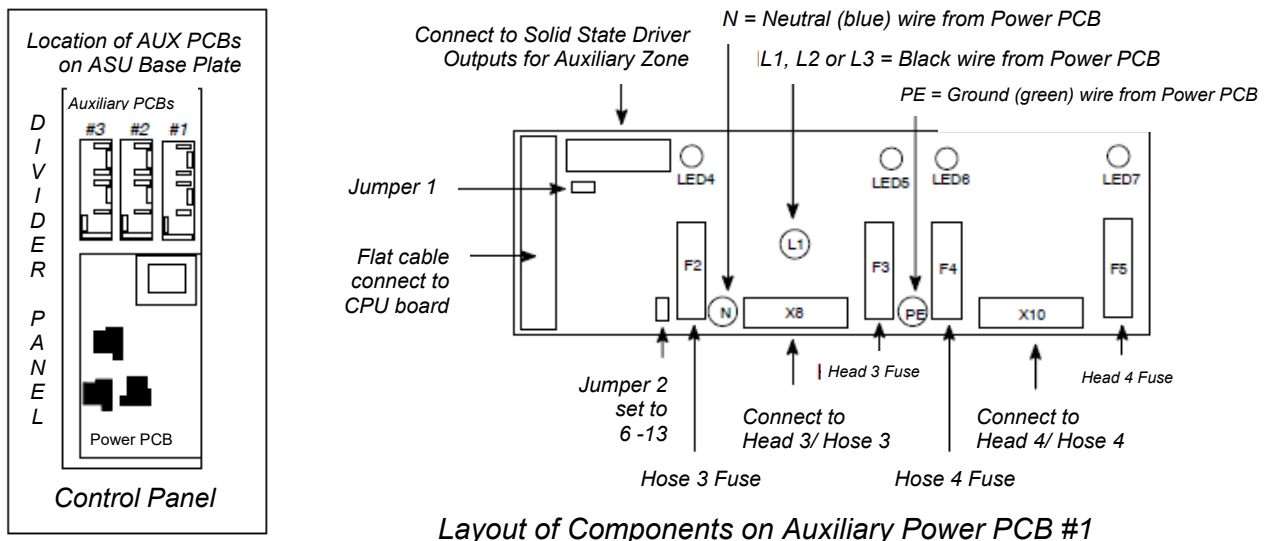
When the adhesive supply unit employs more than three hoses and three heads and/ or drop-in grids, Auxiliary Power (AUX) PCBs are added to the system to accommodate the additional temperature zones.

The addition of hose/ head 3 and 4 requires Auxiliary PCB #1. The addition of hose/ head 5 and 6 requires Auxiliary PCB #2. The addition of a grid requires Auxiliary PCB #3. AUX PCB 2 & AUX PCB #3's basic layouts are identical to AUX PCB #1 (detailed below), however their fuses and connects are seen in the two smaller illustrations below.

Jumpers: Each AUX board has a JMP 2 jumper. Only AUX #1 and AUX #3 have a JMP 1 jumper.

Important Note: if a jumper exists in the JMP 1 position on AUX #2, it must be removed. The factory configuration for each board's jumpers is diagrammed below.

All board fuses are 6.3 amp, AF. The green LEDs 4 thru 7 cycle on and off as individual zones are heating.



7.6 Motor Control Interface Printed Circuit Board

Note: Only gear pump Melters require this board.

The Motor Control Interface PCB is located on the back of the metal cover which protects the CPU board, facing the motor.

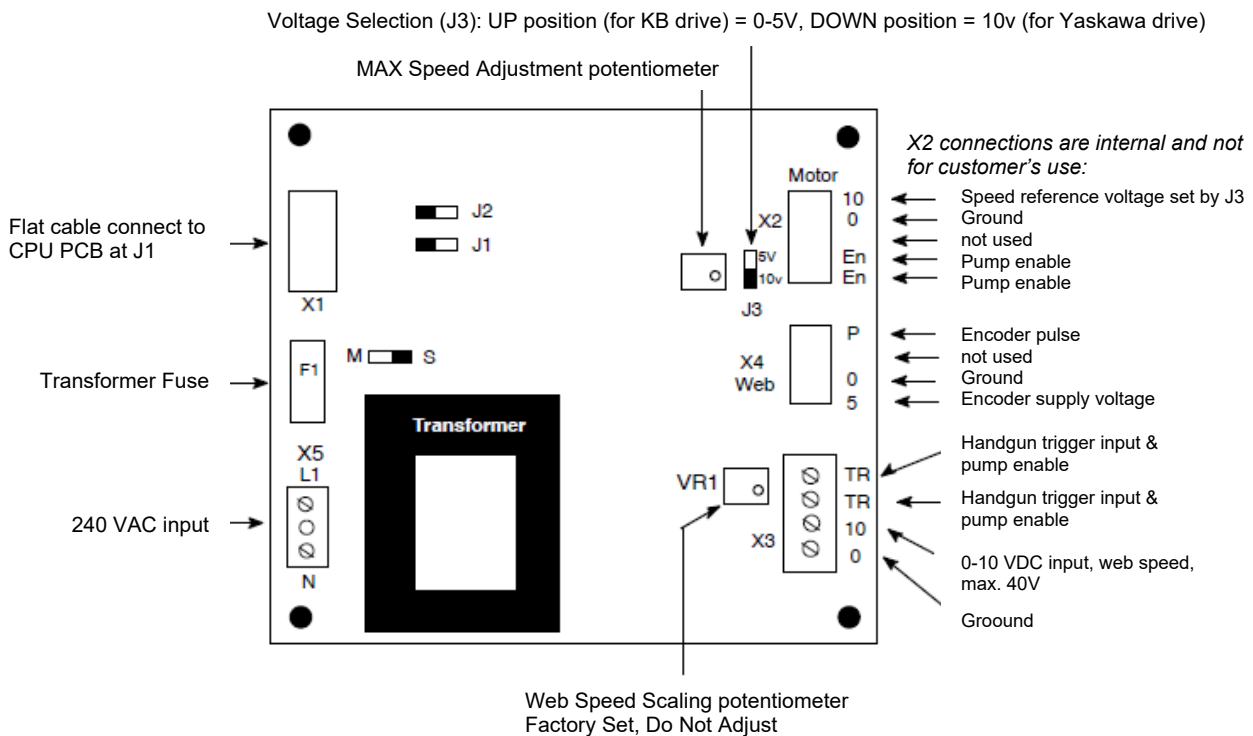
The three jumpers (J1, J2 and J3) should always be set in the positions diagrammed below. The M/S selection jumper must be set in the "S" position.

"MAX" speed adjusting pot: This pot adjusts the maximum output voltage of the motor speed control board. It is factory preset to full pump motor rpm (100%). Normally, this pot does not need adjustment. Turning clockwise increases the voltage. To verify adjustment, set the motor to "manual" mode and to 100% speed. Then adjust the pot to desired maximum speed ($\pm 5\%$).

NOTE: Do not attempt to use the MAX pot adjustment to trim the line speed to a given value.

Proper automatic line speed following is accomplished with correct motor programming into the controller (see Chapter 5).

"ENCODER" connections: the optional Digital RPM Readout's encoder is installed onto these board connections.



Layout of Components on Motor Control Interface Board

7.7 Motor Speed Control Drive

The Motor Speed Control is located on a bracket mounted on the divider panel within the pump and electronics compartment of the Melter. 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

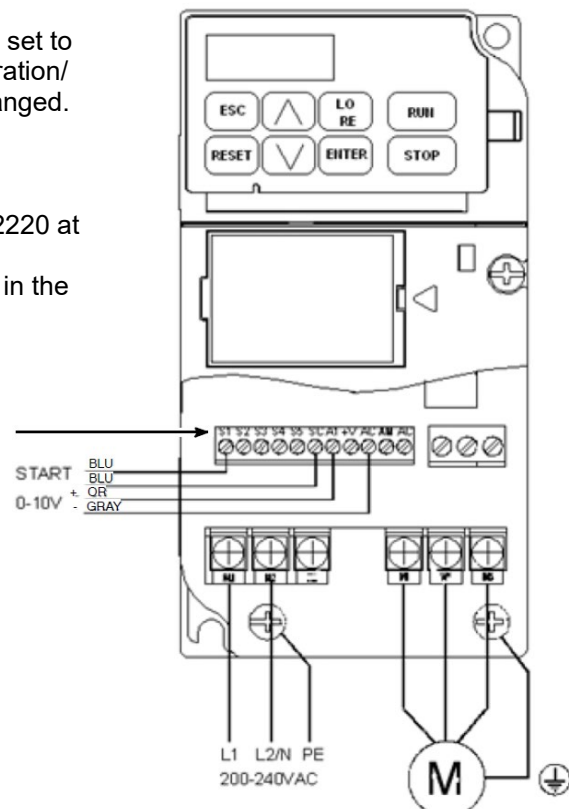
The acceleration and deceleration times are factory set to 10 seconds. If an application requires faster acceleration/ deceleration, corresponding parameters can be changed.

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

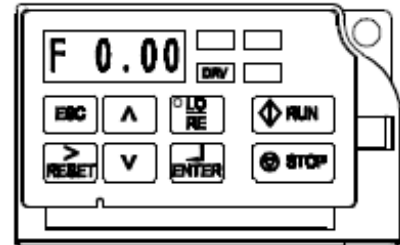


Layout of Motor Control Drive

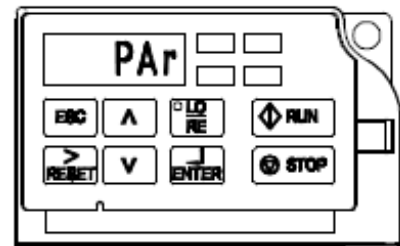
Accessing, Programming and Monitoring Motor Control Parameters

To Access and Change Parameter Values

J1000 Digital Operator power-up state →

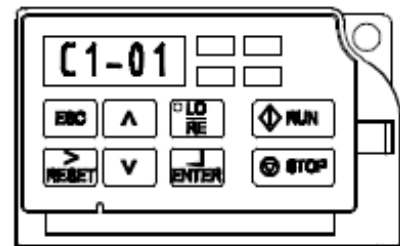


- Step 1. Press the  key once. The digital operator shows the parameter menu (PAr), then press the  key.



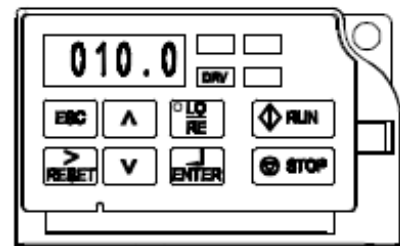
- Step 2. Press the  key to select the digit you would like to change. Next use the  and  keys to select the parameter group, sub-group or number, then press the  key.

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



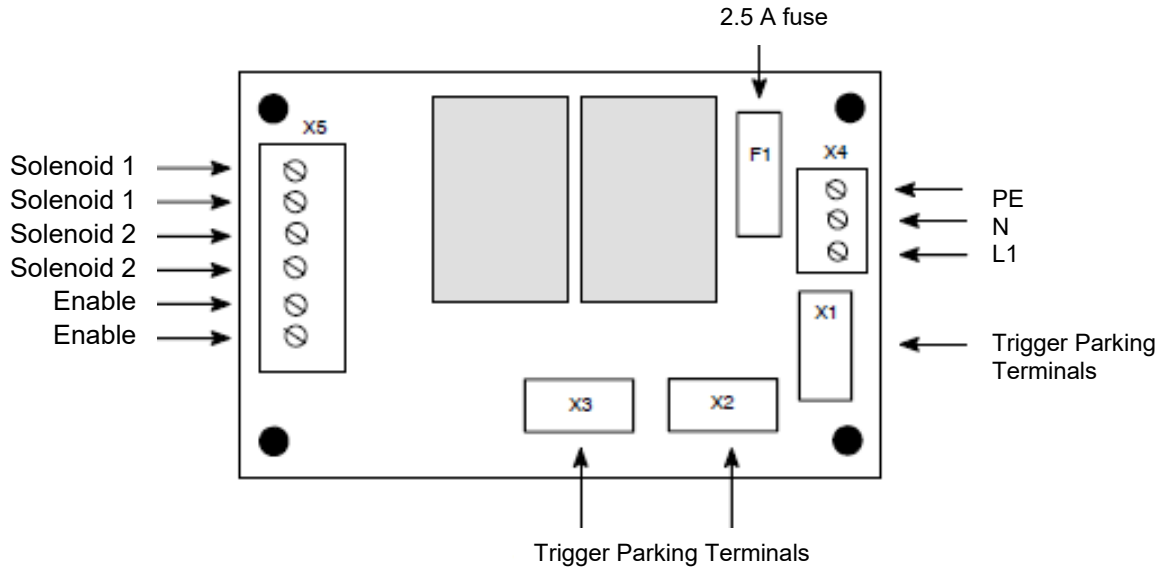
Change Parameter Value

Note: On the Motor Interface PCB, change Voltage Selection jumper J3 to 10V (down position).

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

7.8 Optional Trigger Relay PCB

When hand-held applicators are utilized in a Dynamelt S system, the optional Trigger Relay PCB replaces the standard Trigger Parking PCB. The trigger switches of the hand-held applicator(s) terminate on the Trigger Relay PCB.

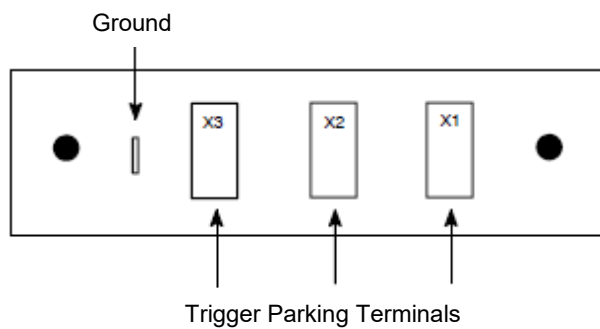


Layout of Components on Optional Trigger Relay Board

7.9 Trigger Signal Parking PCB

When hand-held applicators are utilized in a Dynamelt S system, their trigger switches terminate on the Trigger Relay PCB. When hand-held applicators are not used, these trigger switches terminate on the Trigger Signal Parking PCB, which is mounted onto the unit's heat shield.

There is one trigger switch per hose/ applicator.



Layout of Components on Trigger Signal Parking Board

7.10 Optional Signal Isolator PCB

The Signal Isolator (KBSI) Board is detailed in the appendix of this manual.

7.11 Optional System Status (Stack) Light Relay Output Extension Board

The System Status Light Relay Output Extension Board is used with the system status lights option. The board occupies the slot near the Power PCB normally occupied by the third Auxiliary Power PCB. It requires software V5.13S or higher. Its contacts are rated for 250VAC/ 2 amps max.

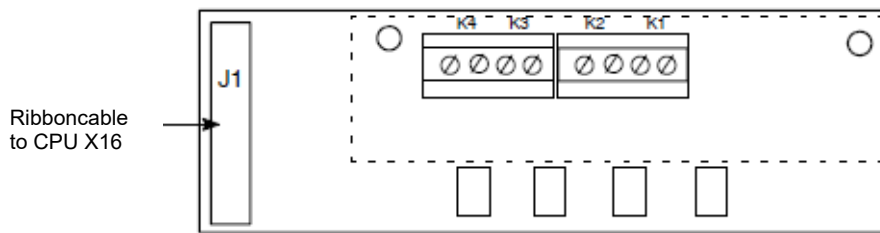
Its functions operate according to customer connections (K1, K2, K3 and K4).

K1: N.O. contact will close when all installed motors are in automatic mode.

K2: (for future use)

K3: N.O. contact will close when standby is active.

K4: N.O. contact will close when the power is on.



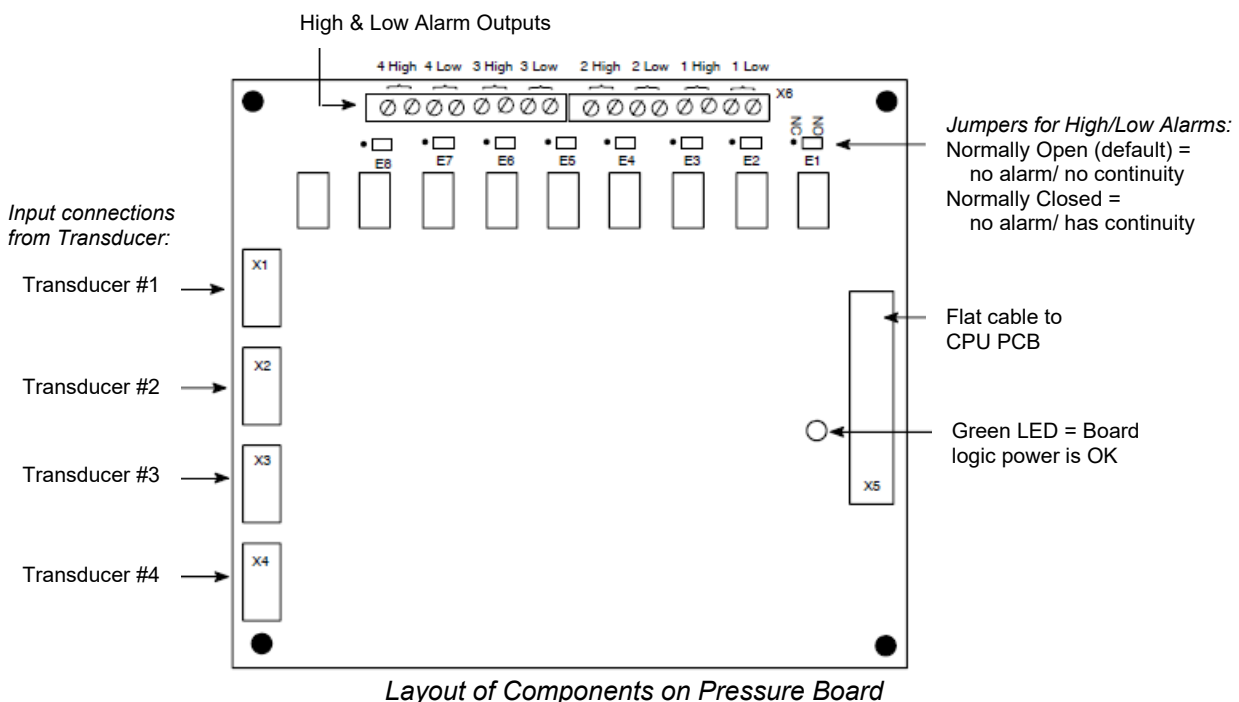
Layout of Components on System Status Light Board

7.12 Optional Pressure (PSI) Printed Circuit Board

The Pressure (PSI) PCB allows the controller to monitor up to four psi transducers. It is located on the back of the metal cover which protects the CPU board, mounted above the Motor Interface PCB.

The 8 pairs of terminals at the top edge of the board (as seen below) are for the high and low alarm outputs of the relays. The eight jumpers for the high/ low alarm output relays (E1 thru E8) are factory set to Normally Open (default) and are illustrated below in default position.

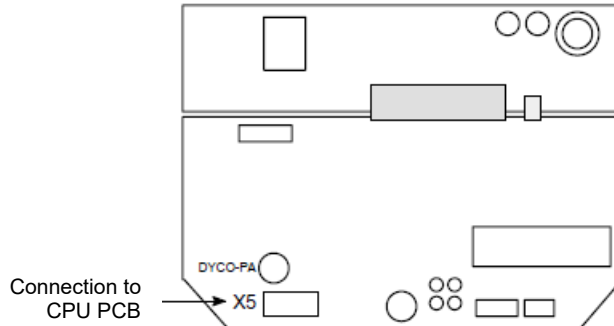
The leads from the pressure transducers are connected at the left of the board (as seen below).



Layout of Components on Pressure Board

7.13 Operator's Panel Printed Circuit Board

The Operator's Panel PCB is located behind the DynaControl keypad (see illustration on page 7-2). On Melters which employ the optional Pendant Control, it is located within the pendant. The Operator's Panel PCB connects to the CPU board. There are no adjustors, jumpers or user-replaceable parts on this board.



7.14 Heater and Sensor Resistance Values

The resistance values given in the four tables on the following page will aid in troubleshooting when a sensor or heater malfunction is suspected.



DANGER HIGH VOLTAGE

Before unplugging connectors from the PCBs, ground yourself to the Melter 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.

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

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).

Temperature °F	°C	Resistance in Ohms
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)

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.

Hose Length		Resistance
Meter	Feet	in Ohms (240V)
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

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.

Watts	Resistance in Ohms (240V)
200	288
270	213
350	165
500	115
700	82

Nominal Head Heater Resistance

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

Melter's Heaters	S22 & S45 Hopper	S22 & S45 Drop-in Grid
Quantity Heaters	2	1
Resistance in Ohms for each Heater	46	32.9

Nominal Heater Resistance

7.15 Error Indication Alarm Troubleshooting Guide

The operation of error indication alarms is described in Chapter 5. 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.

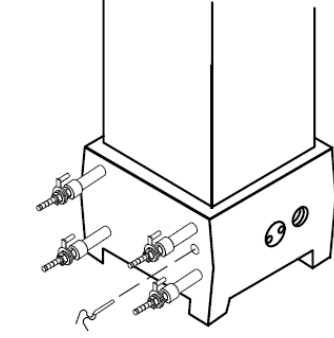


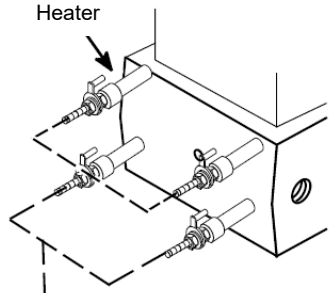
NOTE: The temperatures measured on the outer surface may deviate significantly from the temperatures set and displayed. This can lead to a false conclusion (e.g. defective heating). Such a difference is normal and depends also largely on the materials used.

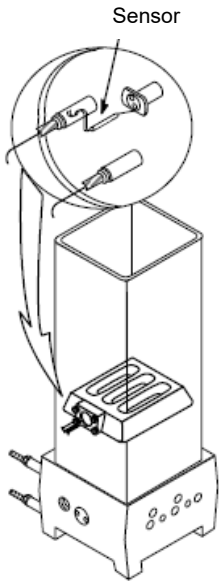
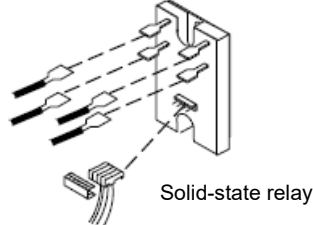
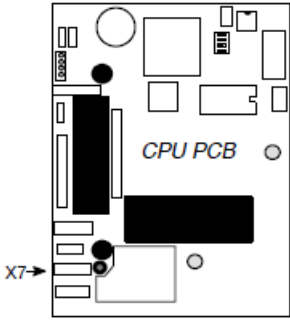
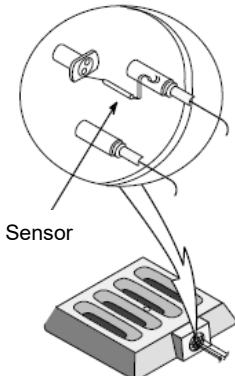


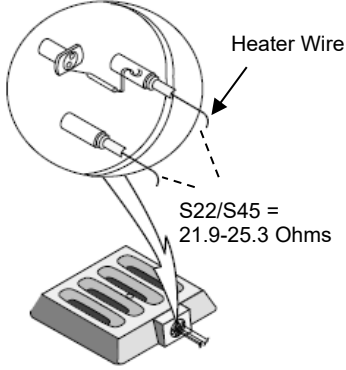
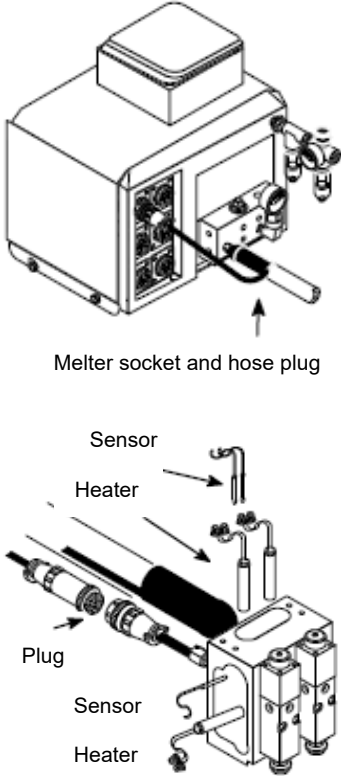
DANGER HIGH VOLTAGE

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

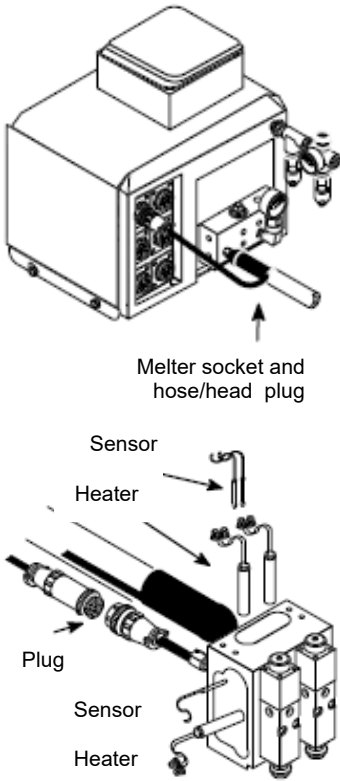
Problem	Possible Cause	Solution
1. Hopper (Tank) Overtemp 	- Setpoints have been programmed without enough deviation. - Hopper sensor inoperative. - Power PCB is inoperative. - Hopper control triac on Power PCB is inoperative.	- Re-program setpoints, allowing a larger deviation between the high and low limits. - Replace hopper sensor if resistance does not comply with the resistance table in this manual. - Use a clamp-on ammeter to monitor current. If the PCB is functioning, it will read 0 if LED 3 (Hopper) is OFF. If LED 3 is ON, the ammeter should read 10.4 amps for S22/S45. If not working properly, replace Power PCB. - In an over-temperature condition, the DC voltage from the hopper LED on the Power PCB should be OFF. If it is not OFF, the triac is inoperative and should be replaced.
2. Hopper Sensor Open	- Sensor cable has become unplugged from CPU PCB. - Hopper sensor inoperative.	- Verify that hopper sensor cable is properly connected at X14 on the CPU PCB. - Replace hopper sensor if resistance does not comply with resistance table.

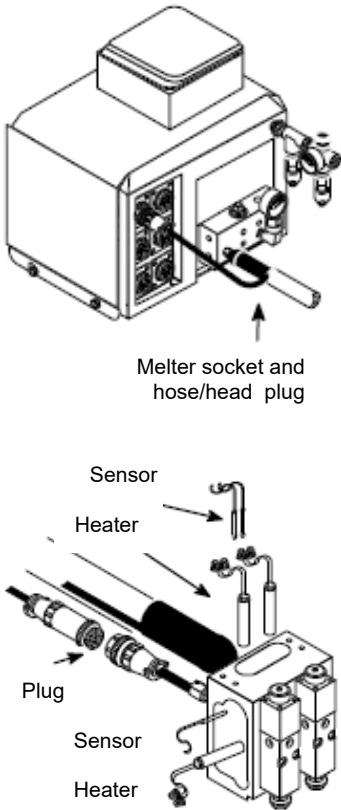
Problem	Possible Cause	Solution
3. Hopper Sensor Short	- Short-circuit caused by debris where sensor plugs into CPU PCB. - Pinched sensor lead wire. - Hopper sensor inoperative.	- Verify that sensor plug is clean and correctly connected at X14 on the CPU PCB. - Visually inspect sensor lead wire for break, kink, damage, etc. If no obvious damage, use an ohmmeter to measure continuity from the sensor lead to the plug at the CPU PCB. Repair or replace any damaged wire. - Replace hopper sensor if resistance does not comply with resistance table.
4. Hopper Heater Open  $S22/S45 = 41.5 - 48.2 \text{ Ohms}$	- Disconnection in hopper heater circuit. - Disconnection between Power PCB and the CPU PCB. - The Melter circuit breaker (on the front panel) is inoperative. - Open hopper heater element.	- Inspect hopper heater wiring for proper connections. - Verify that all connections are properly made between the Power and CPU boards. - 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 PCB and the hopper heater - Remove all lead wires from both hopper heater elements. Use an ohm meter to measure resistance across each element. Infinitely high resistance values indicate an open heating element which must be replaced.

Problem	Possible Cause	Solution
5. (Optional) Drop-in Grid Overtemp 	1. Setpoints have been programmed without enough deviation. 2. Grid sensor inoperative. 3. Grid control solid-state relay inoperative.	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. A functioning relay will read 7.3 amps (for S22 or S45) or 10.4 amps (for the S22G/S45G Drop-in Knife Grid). Replace inoperative solid-state relay. 
6. (Optional) Drop-In Grid Sensor Open 	1. Sensor cable has become unplugged from CPU PCB. 2. Disconnection between Power PCB and the CPU PCB. 3. Drop-in Grid sensor inoperative.	1. Verify that grid sensor cable is properly connected at X7 on the CPU PCB. 2. Verify that all connections are properly made between the Power PCB and the CPU PCB. 3. Replace grid sensor if resistance does not comply with resistance table.
7. (Optional) Drop-In Grid Sensor Short 	1. Short-circuit caused by debris where sensor plugs into CPU PCB. 2. Pinched sensor lead wire. 3. Drop-in Grid sensor inoperative.	1. Verify that sensor plug is clean and correctly connected at X7 on the CPU PCB. 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 X7 on the CPU PCB. Repair or replace any damaged wire. 3. Replace grid sensor if resistance does not comply with resistance table.

Problem	Possible Cause	Solution
8. (Optional) Drop-in Grid, Heater Open 	1. Disconnection in grid's heater circuit. 2. Disconnection between Power PCB or Aux Power PCB and solid-state relay. 3. Main circuit breaker tripped. 4. Open Drop-in Grid heater element.	1. Inspect grid's heater wiring for proper connections. 2. Verify that the Power PCB or Aux Power PCB is properly connected to the solid-state relay. 3. Refer to the schematic in Chapter 11 to locate the main circuit breaker. If it is tripped, do not re-set it without checking for causes. Visually and electrically inspect for a short circuit to ground in the grid's heater circuit. This will be limited to between the grid's control relay and the grid's heater. 4. 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 which must be replaced..
9. Hose/ Head (no.) Overtemp 	1. Hose/ Head setpoints incorrectly programmed. 2. Hose/ Head triac on Power or Aux PCB is inoperative. 3. Disconnection between Power and/ or Aux PCB and the CPU PCB. 4. Hose/ Head sensor circuit inoperative.	1. Re-program setpoint to allow a larger deviation. 2. Use a clamp-on ammeter to monitor hose current. If hose current does not cycle on and off, then triac is inoperative and Power or Aux PCB must be replaced. 3. Verify that Power and Aux PCBs are properly connected to the CPU PCB. 4. 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- Melter plug and socket are okay, hose may have intermittent short or open circuit. Repair or replace hose, hose harness, Power PCB or Aux PCB as appropriate.

		Alternately, problem can be isolated by connecting the affected hose to a different Melter hose socket to tell whether the problem is in the hose or in the Power or Aux PCB. c. If head-to-hose and hose-to- Melter 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.
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Problem	Possible Cause	Solution
10. Hose/ Head (No.) Sensor Open  Melter socket and hose/head plug Sensor Heater Plug Sensor Heater	1. Disconnection between hose and Melter. 2. Hose sensor harness unplugged from Power or Aux PCB. 3. Disconnection between Power or Aux PCB and the CPU board. 4. Hose/ Head sensor circuit inoperative.	1. Visually examine connector for proper contact and seating. If pins or housings are damaged, repair or replace hose or hose harness (in Melter). 2. Verify that affected hose is properly connected to Power or Aux PCB. Replace or repair damaged hose harness as necessary. 3. Verify that all PCBs are properly inserted in their connections on the CPU board. 4. Replace head sensor if resistance does not comply with resistance table. Use hose schematic to check hose sensor resistance at Melter socket, repair or replace hose, hose harness, Power PCB or Aux PCB as appropriate.

Problem	Possible Cause	Solution
11. Hose/ Head (No.) Sensor Short	1. Debris at connection between hose/ head and Melter. 2. Debris at connection between hose/ head harness and Power or Aux PCB. 3. Hose/ Head sensor circuit inoperative.	1. Visually inspect hose plug and Melter socket for cleanliness and proper contact and seating of pins. 2. Visually inspect that the affected hose plug at Power or Aux PCB is clean and properly installed. 3. Using the hose schematic, check hose sensor resistance at Melter 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 PCB or Aux PCB as appropriate.
12. Hose/ Head (No.) Heater Open  Melter socket and hose/head plug Sensor Heater Plug Sensor Heater	1. Disconnection between hose/ head and Melter. 2. Disconnection between hose/ head harness and Power PCB or Aux PCB. 3. Disconnection between cartridge heater and cable assembly inside head. 4. Open head heater element.	1. Visually examine affected hose/ head plug and Melter 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 Melter 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 Melter hose/ head harness as appropriate. 2. Verify that the hose harness is properly inserted into its Power or Aux PCB 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. Head fuse on Power PCB or Aux PCB inoperative.	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 PCB may be the cause. However, fuse failure is usually due to a problem in the head heater circuit, not the Power or Aux PCB.
	6. Open wiring inside Melter.	6. Visually inspect Melter wiring and use an ohmmeter and the wiring diagram to locate open wire in head heater circuit. Repair or replace Melter hose har-ness or other Melter wiring as necessary.

7.16 Operation of the Melter's Gear Pump

Manual or Automatic Pump Operation



Choose "Manual", "Stop" or "Automatic" gear pump operation via the "Motor" pushbutton (see icon above) on the DynaControl keypad. 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 either X3 on the Motor Control Interface Printed Circuit Board (for a tach generator) or at terminals 9 (+) and 10 (-) of the (optional) Signal Isolator Board.
2. The "Automatic" 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 under Ch.5.

7.17 Pump Output Adjustments

When the adhesive in the Melter'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, follow the procedure outlined on the next page. The relief valve is factory set at 27 bar (400 psi).

Output can also be adjusted by using the (optional) flow control valve located between the outlet filter manifold and the hose. This valve will operate as long as adhesive pressure is below the pressure setting of the pressure relief valve. *To adjust:* using the knob on top of the valve, turn counterclockwise to open the valve, allowing more adhesive to flow or turn clockwise to close the valve, decreasing the amount of adhesive flow.

Thus adhesive output volume and pressure can be fine-tuned for a particular application by coordinating the settings of the motor speed control (at the keypad) and the pressure relief and (optional) flow control valves on the outlet filter manifold.

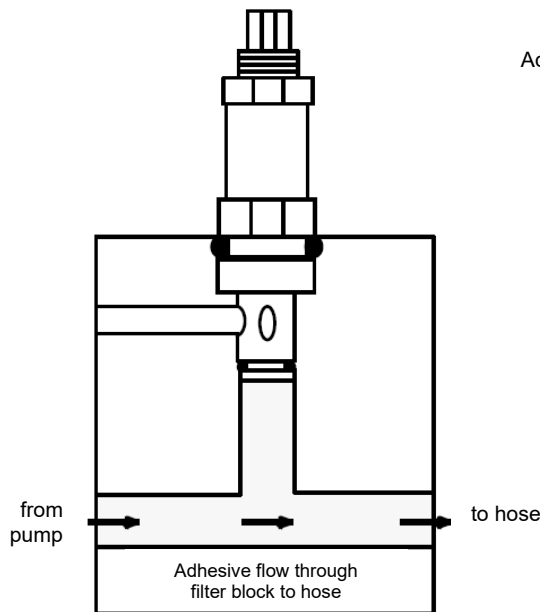
7.11 Adjustable Adhesive Pressure Relief Valve

Dynamelt pumps 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.

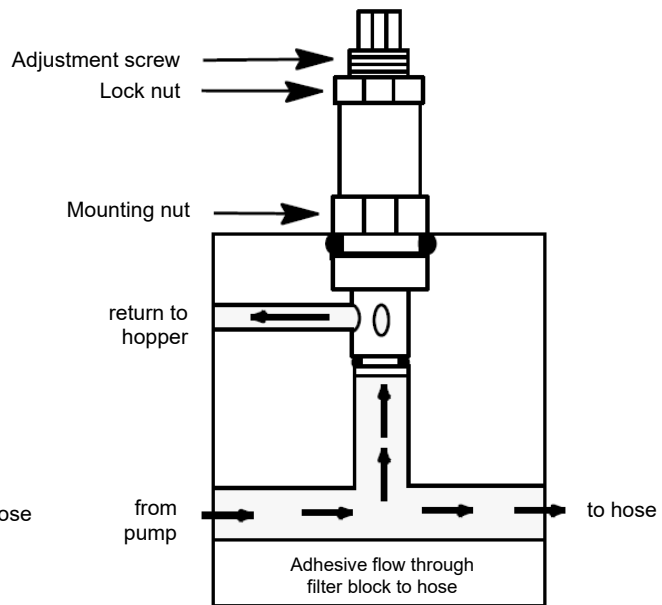
Normally Closed (Unrelieved):

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 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 temperatures of all zones to normal operating temperatures.
2. At the controller, set the motor speed to "0" so the gear motor is not turning.
3. Locate the pressure relief valve on the filter manifold (where the hoses attach).
4. At the controller, turn the motor ON to desired operating speed.
5. Locate the valve's adjustment screw and loosen its lock nut.
6. Actuate (open) the valves on the applicator(s) in order to fill them with adhesive and purge air from the system.
7. Close the valves (those opened in the last step) to stop the flow of adhesive.
8. Using a 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.**

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

7.13 Troubleshooting the Melter Pump

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 (28 bar) pressure relief valve factory setting on 20 cc/rev gear pumps. Motor overload will result if 400 psi (28 bar) is exceeded.

Note: the RPM readout will not operate when used with the 20cc/rev standard pump.

Gear Pump Troubleshooting Guide



WARNING HOT SURFACE & HOT ADHESIVE

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

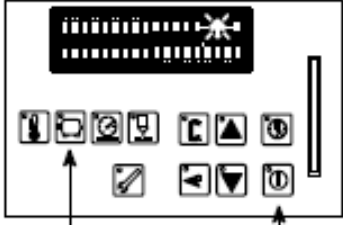


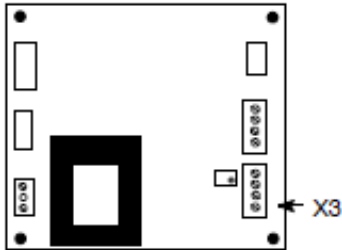
Some of the procedures in the following Troubleshooting Guide require working near hot adhesive.

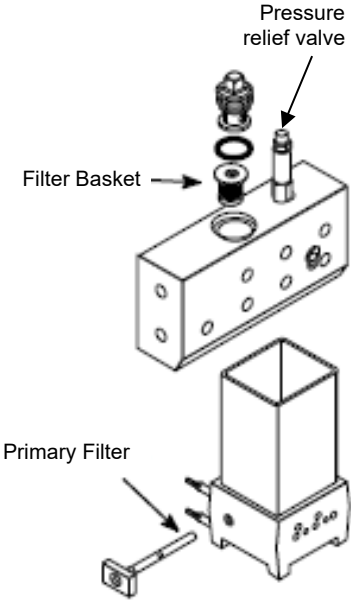
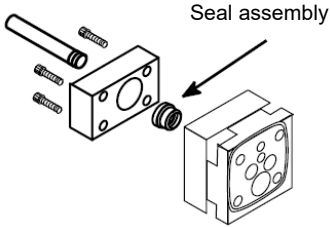
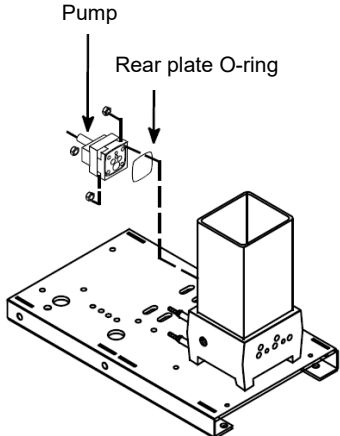


Face shields (preferred) or safety glasses (for minimum protection), heat-resistant protective gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.

Use proper tools for handling hot melt components.

Problem	Possible Cause	Solution
1. Pump doesn't operate in "Manual" mode, power light doesn't light.  Motor Button Power Light	- Motor On/Off is OFF at the controller keypad. - Hopper temperature is below ready setpoint. - No incoming electrical power.	- Check keypad setting. - 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. - Check to see if Melter temperature control is operating. If not, check for presence of incoming supply voltage.

Problem	Possible Cause	Solution
2. Pump doesn't operate in "Manual" mode, power light is ON, hopper is at "Ready" condition.	1. "Manual" motor is set at zero (at the keypad). 2. If pump On/Off is being controlled by a remote switch (i.e., a hand-held applicator), the switch or switch circuit may be open. 3. Low temp alarm. 4. Faulty Motor Control Interface Board.	1. Re-program motor. 2. Check condition of the remote switch (the hand-held applicator). 3. Verify that Melter is warmed up and that hopper temperature is above the factory-set pump enable temperature. 4. If the board is faulty it must be replaced.
3. Pump doesn't operate in "Auto" mode, power light is ON, hopper is at Ready condition.  Motor Control Interface PCB	1. Parent machine is not running. 2. "Auto" motor is set at zero (at controller keypad). 3. No incoming line following signal. 4. Internal Melter connections or Motor Control Interface PCB inoperative. 5. Low temp alarm.	1. Check parent machine. 2. Re-program pump. 3. Check for presence of 0 to 10 VDC control signal at X3 of Motor Control Interface PCB. If signal is not present, check connection at X3 and tachometer drive connections. If control signal is present there, the problem is within the Melter. 4. Check for the presence of 0 to 10 VDC control signal at X3 of Motor Control Interface PCB. Check Melter connections (S1 & S2). If the signal is not present, the problem is in the connection. If the signal is present there, the problem is most likely a faulty Motor Control Interface Board. 5. Verify that Melter is warmed up and that hopper temperature is above the factory-set pump enable temperature.
4. Pump runs but there is no adhesive output.	1. Melter is out of adhesive. 2. If pump/motor has been serviced and leads reversed, pump will run backwards with no output.	1. Add adhesive to hopper. 2. Check pump/motor wiring to schematic.

Problem	Possible Cause	Solution
5. Low or inconsistent adhesive output. 	1. Filter(s) clogged. 2. Adhesive used is too viscous. 3. Clogged hose. 4. Clogged applicators. 5. The fixed pressure relief valve is opening.	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.
6. Adhesive leak at pump shaft seal. 	1. Pump seal is incorrectly positioned inside the seal and bearing assembly. 2. Pump seal inoperative.	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.
7. Adhesive leak at pump-to-hopper interface. 	1. O-ring in pump's rear plate is inoperative. 2. Pump retaining screws are missing or loose. 3. Helicoil insert pulled out of hopper.	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 screws are tightly assembled to the hopper. 3. Remove pump and inspect hopper. Repair or replace hopper as necessary.

Chapter 8

Disassembly & Re-assembly Procedures

Disassembly Procedures



NOTE: Please re-read all security advices given in Chapter 2 before performing any troubleshooting or repair procedures.

All Disassembly & Re-assembly Procedures must be performed by qualified, trained technicians.



DANGER HIGH VOLTAGE

Once the system is up to temperature, disconnect and lockout all incoming power before proceeding.

Dynamelt systems use electrical power that can be life threatening and hot-melt adhesives that can cause serious burns. Only qualified persons should perform service on the Melter.



WARNING HOT SURFACE

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

Some of the procedures in this chapter require working near hot adhesive.

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

Use proper tools for handling hot melt components.

When needed, cross-reference the exploded-view component drawings in Chapter 10 with each procedure in addition to the instructions and illustrations given in this chapter. Read the "Cautions" under point Re-Assembly Procedures before re-assembling the Melter.

Re-Assembly Procedures

Unless noted, the S Series Melter'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* must be replaced whenever hot-melt equipment is re-assembled. All new O-rings must be lubricated with O-ring lube (PN 108689).

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 Melter 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* must 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 must be re-tightened at operating temperature.

To Remove the Pump & Electronics Cover

1. Loosen the four captive screws (two on each side) along the bottom of the pump and electronics cover.
2. Lift the cover straight up and off.

To Remove the Hopper Cover

1. Loosen the two captive screws along the bottom of the hopper cover and the screw near the top corner of the access cover.
2. Remove the screw that attaches to the heat shield.
3. Lift the hopper cover up and off.

To Remove the Hopper Lid

1. Remove the four flat head screws which are located one on each side of the lid base.
2. Pull the lid up to remove.

a. Lid Seal Replacement:

In older units, a lid seal (o-ring) is located inside the lid base. Remove the old seal, which rests against the top of the hopper. Install the new seal into the groove provided.

Hi-Temperature (Overtemp) or Pump Enable Thermostat Replacement

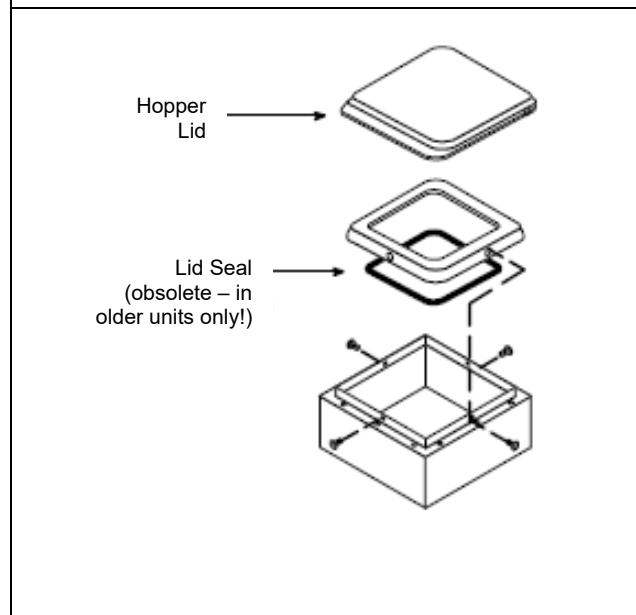
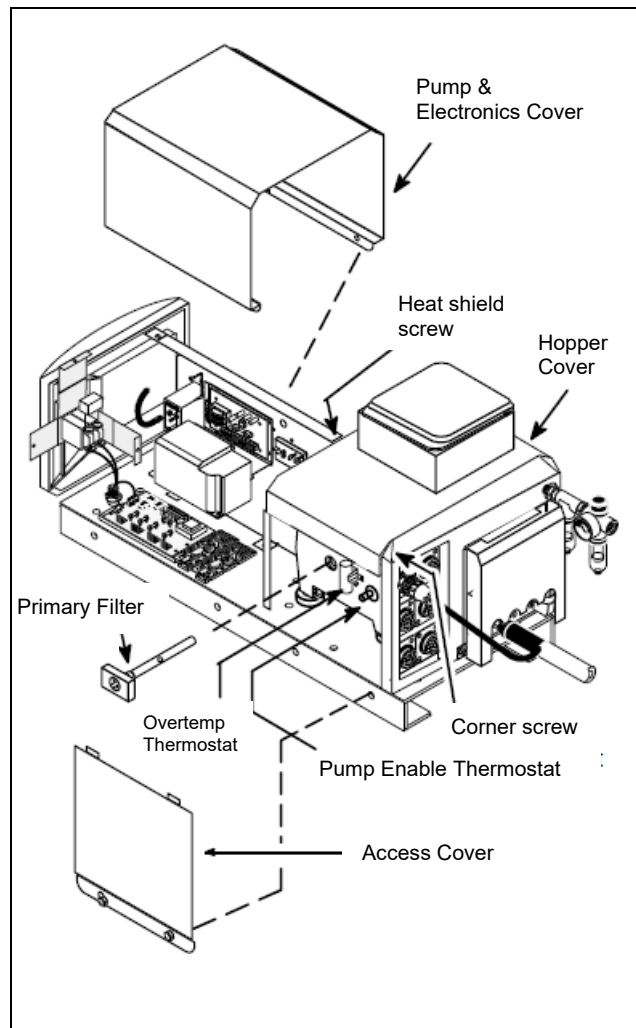
Loosen two captive screws to remove the access cover.

a. Hi-Temperature Thermostat Replacement:

Remove the two 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:

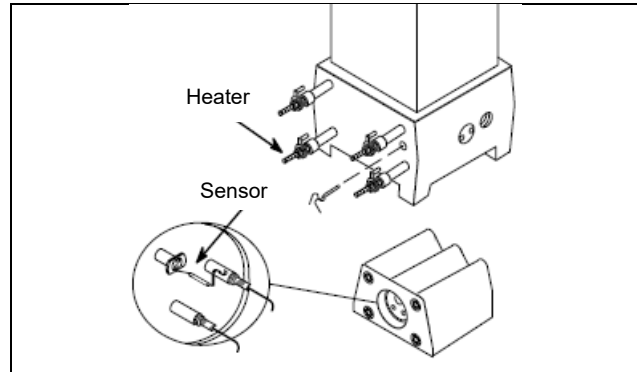
Disconnect thermostat wires from Power board at X3, terminals 3 & 4, remove old thermostat from hopper. Insert new thermostat into hopper. Connect wires to Power board at X3, terminals 3 & 4. Calibrate thermostat, counter clockwise adjustment raises temp.



To Access the RTD Sensors

Remove the pump and electronics cover.

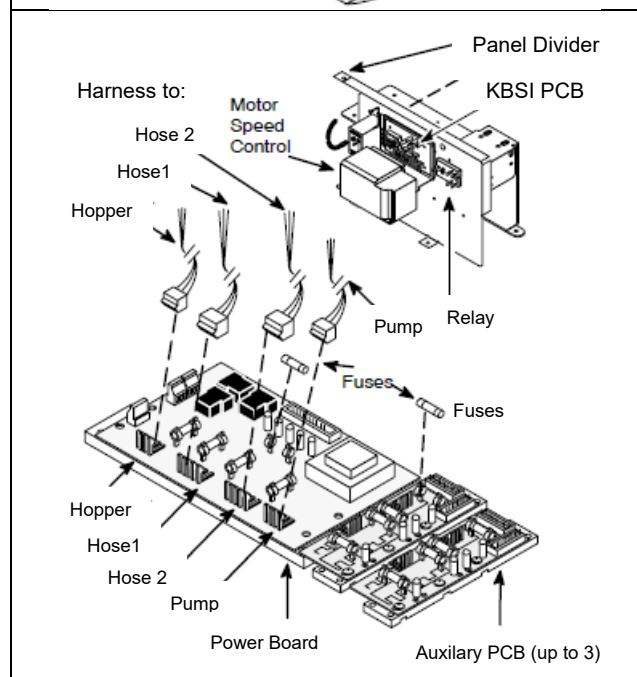
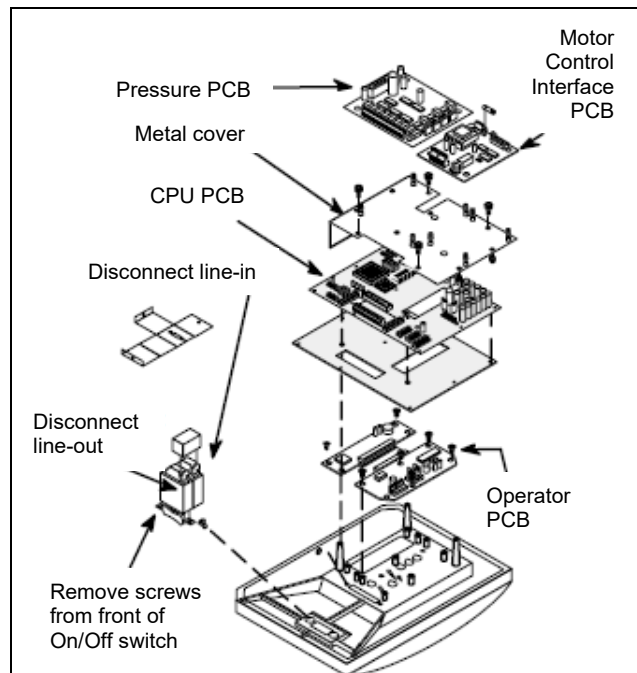
- a. **RTD for Melter:** Each Melter has one RTD located between the two cast-in heaters. This RTD slips into its adapter and is easily plugged in electrically.
- b. **RTD for Drop-in Grid:** If the optional drop-in grid is installed, there is a second RTD located in the grid. This RTD slips into its adapter and is easily plugged in electrically.



To Access the Electrical Components

(See illustration under Ch.10)

1. Verify again that the main power is OFF. Remove the pump and electronics cover.
 2. Remove the screw located on the top of the front end-cover which allows it to fully open on its hinge.
- a. **Main On/ Off Switch Replacement:** Located on the control panel. Open the two snaps on the circuit breaker cover. The switch is freed via two screws from the front, and is removed through the back.
 - b. **Fuse Replacement:** The Power PCB and (optional) Auxiliary PCBs contain 6.3 A fuses which can be accessed without removing the boards from the Melter. These PCBs are mounted onto the base plate.
 - c. **Relay Replacement:** Located on panel divider on Melters with grids and/or auxiliary wattage, it is removed with two M4 screws.
 - d. **Printed Circuit Board Replacement:** Reference the section entitled "Handling Printed Circuit Boards" under Ch.7.1. Remove the metal cover to access the Operator's and CPU Boards. The (optional) RTD Expansion PCB is mounted onto the CPU Board. The (optional) Motor Control Interface and Pressure PCBs are mounted onto the back of the metal cover. The Power PCB and (optional) Auxiliary PCBs are mounted to the Melter's base plate. The Motor Speed Control and the (optional) KBSI PCB are on the panel divider. The diagram at right shows the Power Board's harness connects.



Notes: the fuses (on the Power and Auxiliary boards) are the only customer-replaceable parts on the PCBs. For replacement of the Scheduler's Lithium battery, return the CPU board to ITW Dynatec..



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

(See illustration under Ch.10)

Remove the pump and electronics cover.

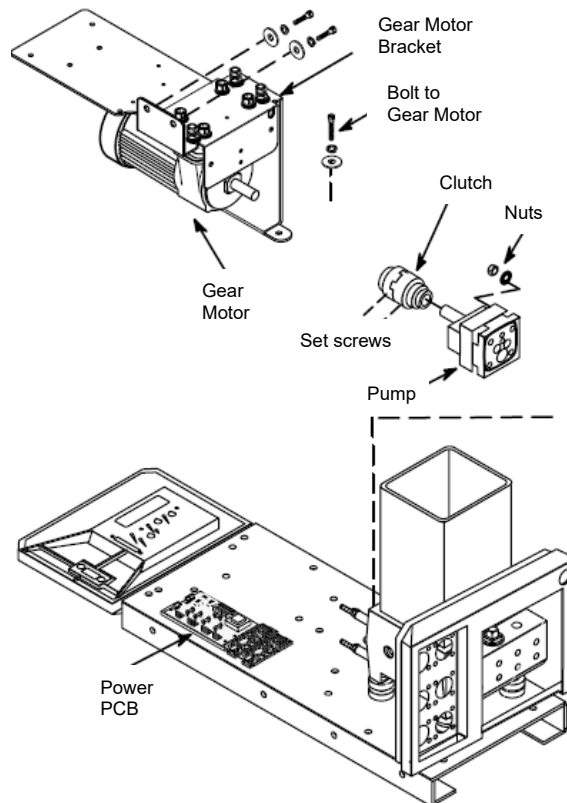
Remove the access cover.

Remove the screw located on the top of the front end-cover which allows it to fully open on its hinge.

Turn off the filter shutoff valve.

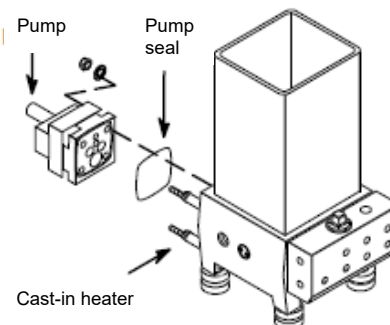
Gear Pump and Motor Removal

1. Disconnect the motor electrically from the Melter by disconnecting up to three wires (one wire per phase) that connect to the Motor Speed Control PCB and one ground wire. Remove the bolts and lock washers which connect the motor to the motor bracket.
2. Remove the four bolts and lock washers which connect the motor bracket to the base.
3. Remove the four 10mm nuts and lock washers that hold the pump to the hopper, using a special thin wall deep socket.
4. Disconnect the coupling. Remove the pump assembly from the end of the unit.



Pump Seal (O-ring) Replacement:

1. Remove the pump from the Melter (see instructions above, Gear Pump and Motor Removal).
2. Remove the external pump seal from its groove on the back of the pump adapter plate (this is the seal located between the adapter plate and the hopper).
3. Reference the pump exploded-view illustration (in Chapter 10) for your specific pump.



Note on the Cast-in Heaters

The two cast-in heaters installed in the base of the hopper are not replaceable and will last the life of the Melter.

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 under Ch.3/Installation). Though there is no “dedicated” port for the gauge, ports #2 or #4 are preferred. Fittings are included in the kit.

Drop-in Grids:106972 (DM S22G / DM S45G)

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

NOTE: To connect the grid 106972 on the controller in the S-unit you need to order also the AUX Power board kit,S22/45, PN 122667 (including PN 106095 PCB asy, AUX PWR, DMS and PN 106379 Cable asy, EXP PT,1A)! The kit PN 122667 (qty. 1) is needed for any combination of 1) single grid, 2) dual grid, or 3) “U” UFD option.

Gear Pumps

For higher tolerances and precision, several gear pumps are available for the Dynamelt. Gear pumps give better service for continuous applications or applications which require more control over the volume of adhesive pumped. See Appendix “Pumps” for available gear pumps.

Dual Pumps: Note: all dual pumps require Two-Filter Manifold PN 102049, see below.

Gear Pump Repair Kit, PN 103151

The kit contains the following items needed to repair all Dynatec manufactures gear pumps from 0.15cc to 20cc. See list of pumps supported by this kit.

Gear Pump Repair Kit PN 103151 BOM:

PN	Description	Qty
018X031	Bearing ball 1/8 dia.	6
069X061	Shaft seal, Dynatec pump	1
069X064	O-ring 041	3
069X225	O-ring 042	1
078F017	Retaining ring, ext., .50D	4
078I001	Key Woodruff #404	1
N00188	O-ring 022	1
N00198	O-ring 113	2

List of gear pumps supported by the kit 103151:

PN	Description	Code
111253	0.15cc single	GGs
111254	0.15cc dual	GGD
109908	0.55cc single	GDS
109909	0.55cc dual	GDD
100860	1.5cc single	GAS
100863	1.5cc dual	GAD
100861	3.2cc single	GBS
100864	3.2cc dual	GBD
100862	4.5cc single	GCS
109690	10cc single	GES
109694	20cc single	GFS

Two-Output, Two-Filter Manifold: PN 102049

The two-output, two-filter manifold is required with a dual gear pump. It allows the operator to adjust the two pressure relief valves independently of each other.

Filter Manifold Assembly w. Dump Valve: PN 112567

A valve allows regulation of adhesive flow for more consistent, instantaneous lay down of glue. The option includes an outlet filter manifold, filter basket, cover, valve, cover and hardware.

Level Control Assembly: PN 107193

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.

UFD Kit: PN 107356

The installation of this kit converts the standard Melter into an "auxiliary wattage" model in order to accommodate ITW Dynatec's adhesive fiberizing technology. This technology results in higher performance with up to 40% adhesive savings.

APS (Automatic Purge System) Model

A Dynamelt S APS model is available in 10kg and 22kg hopper sizes. The APS model is equipped with all the pneumatic and controller safety devices necessary to melt polyurethane adhesives. PUR adhesives produce extremely strong bonds and are environmentally desirable, however they require the elimination of moisture in the Melter.

Controller Options**EtherNet/ IP Adapter Kit: PN 110772**

This kit connects the DMS Melter to an EtherNet network so that all system parameters can be transmitted and received, allowing full remote operation of the Melter.

Line Speed Tracking for Gear Pump Models PN 113376

This option allows the speed of the motor and Melter to follow the speed of a production line via a reference voltage input.

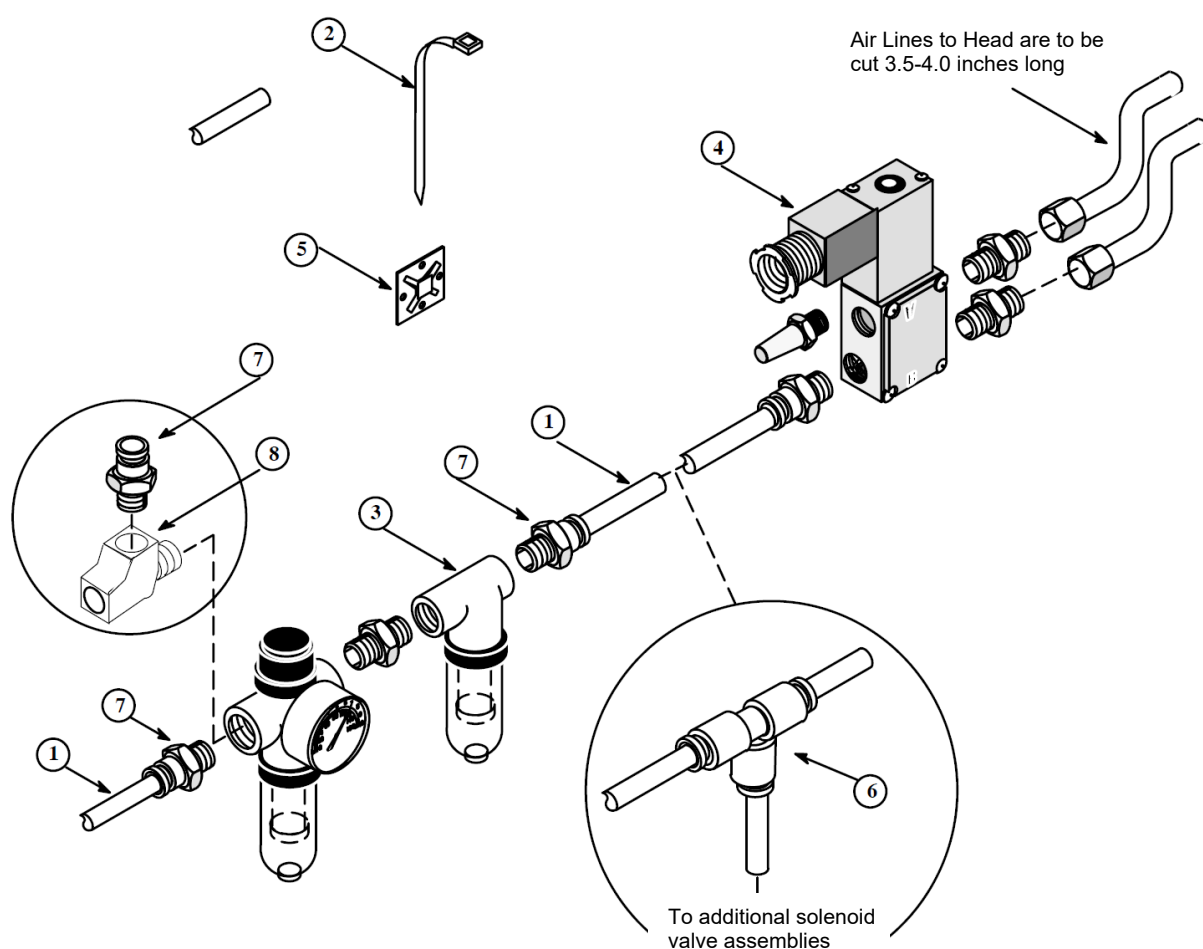
One of the following devices must be installed:

- **PN 015D050 Tach Generator:** a mechanically operated device which produces a reference voltage that allows the Melter's gear pump to track a parent machine's production line speed.
- **PN N06642 Signal Isolator:** a device which conditions a parent machine's production line's DC speed voltage or 4-20 mA current reference to allow the Melter's gear pump to track line speed. See Appendix for details.

Air Control Kit PN 100055

Item No.	Part Number	Description	Quantity
1	N06438	Nylon Tubing, .250 Dia.	10'
2	N00318	Cable Tie, .09 x 3.62 Lg	10
3	105610 *	Filter/Regulator Assembly	1
4		Solenoid Valve Assembly	1
5	N04264	Cable Tie Anchor	3
6	N06504	Push-in Union Tee Fitting	1
7	N06430	Male Connect Fitting	3
8	N04531	Fitting, st Tee, 1/4NPT, brass	1

* see next page.

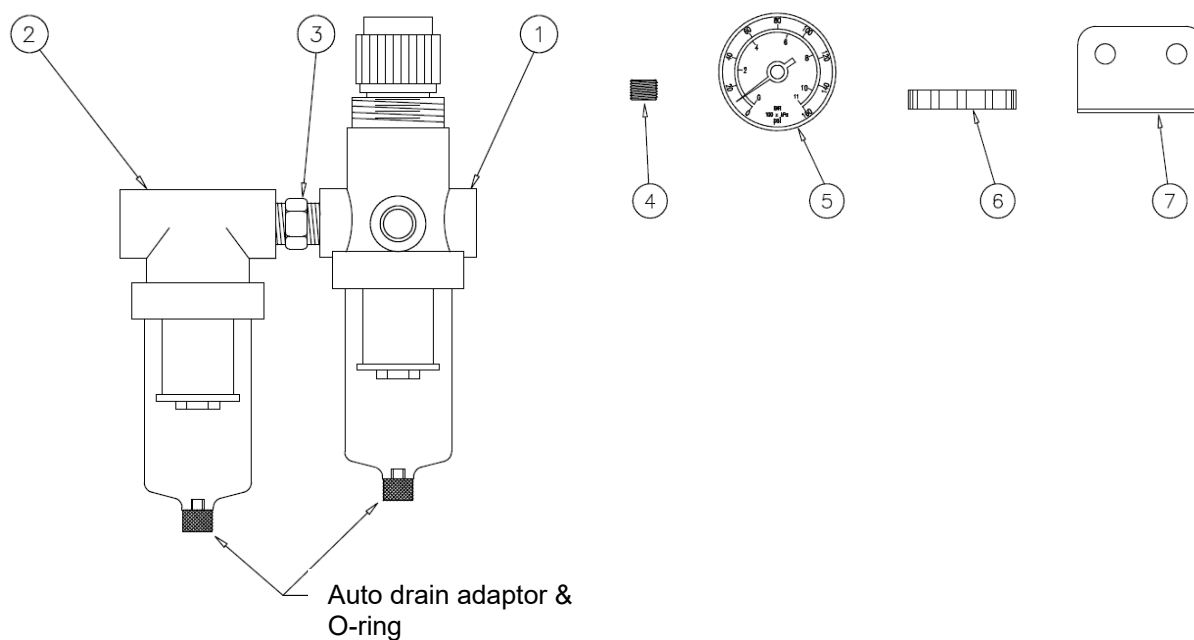


Filter/Regulator Assembly, PN 105610

This Filter/Regulator assembly (maintenance unit) is contained in Air Control Kit PN 100055.

Item No.	Part Number	Description	Quantity
1	N02774	Filter/ Regulator 1/4 NPT	1
2	100081	Filter coalescing 1/4 NPT	1
3	072X228	Fitting pipe nipple 1/4 NPT	1
4	-	Plug flush 1/8 NPT	1
5	-	Pressure gauge	1
6	-	Mounting nut	1
7	-	Mounting bracket	1

Notes: Items 4-7 are supplied unassembled and bagged with the filter/ regulator assembly.



Recommended Service Parts List

Category	Part Number	Description	Quantity
Mechanical and others:	108689	Silicone Lubricant, O-ring, Dow 112, 0.25	2
	N02937	Thread Sealant	1
	L15653	Kit, Flushing Fluid, 1 gallon	1
	103151	Gear pump repair kit	1
	109982	Pressure relief valve repair kit	1
	107183	RTD sensor, Hopper	1
	104166	Over-Temp Thermostat & Insulator	1
	036B015	Pump Enable Thermostat	1
	807729	Pump Shaft Seal (Zenith/ TSHA pumps)	2
	069X064	O-ring 041, Pump to Hopper (pump seal, Dynatec pumps)	2
	N00196	O-ring 111	2 to 6
	069X058	O-ring 028 (filter plug)	1 or 2
	N00181	O-ring 014 (outlet filter/ manifold)	2 or 4
	N00192	O-ring 032 (outlet filter/ manifold)	2
	N06006	O-ring 224 (Digital RPM Readout option)	1
	069X058	O-ring 028 (Zenith Pump adapter)	1
	N00179	O-ring 012 (Zenith Pump adapter)	2
	N00190	O-ring 024 (Zenith Pump adapter)	1
	N00188	O-ring 022 (Zenith Pump adapter)	1
	069X240	O-ring 036 (Zenith Pump adapter)1	1
	115283	Motor Speed Control Kit, Y (including ferrules, screws wire, terminals, and programmed version of motor control PN 115138)	1
	123274	Motor Speed Control, VF, 230V, 3PH,1/2HP, Yaskawa (programmed version of motor control PN 115138)	1
Electrical:	100474	Main Power Switch, 400V, 3p, 30A	1
	100748	Main Power Switch, 240V, 1p, 50A	1
	116268	Solid-State Relay	1
	108566	Fuse, T6.3AF 5x20, fast (PC Boards)	5
	104117	Fuse, 6.3A, MET, 5mmx20mm (Power PCB)	1
	102762	Fuse 1A (Motor Control Interface PCB)	1
Printed Circuit Boards & Modules:	113006	CPU PCB	1
	115578	Power (I/O) PCB, 240v Replacement Kit	1
	106095	Auxiliary Power PCB	1
	110090	Motor Control Interface PCB, 240V	1
Filter Replacements:	101247	Filter Basket, 100 mesh (standard)	2
	101246	Filter Basket, 40 mesh (option)	2
	102752	Primary Filter Assembly (for DM S22 & S45)	1

Chapter 10

Component Illustrations and Bill of Materials



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.

This chapter contains the component illustrations (exploded-view drawings) for each assembly of the Dynamelt S Melter. These drawings are useful for finding part numbers as well as for use when maintaining or repairing the equipment.

Note: Most common screws, nuts and washers called out in the manual are not for sale and they can be obtained locally at your hardware Store. Specialty fasteners are available by contacting ITW Dynatec's Customer Service.

Cabinet Assembly

Item No.	Part Number	Description	Quantity
1	100616	Front cover end	1
2	100617	Rear cover end	1
	110333	Rear Cover End (for use with Nordson connectors)	1
3	100889	Hopper Cover, DMS05	1
4	100890	Hopper Cover, DMS10	
5	100891	Hopper Cover, DMS22	
6	101889	Hopper Cover, DMS45	
7	106375	Heat shield	1
8	102079	Key pad label	1
9	106090	Base, Model 22 & 45	1
	106089	Base, Model 05 & 10	1
10	111268	Pump and Electrical Cover	1
11	100887	Access Cover, DMS10	1
	100888	Access Cover, DMS22/DMS45	1
12	115051	Screw M4 x 6mm	4
13	107389	Screw M4 x 8mm	4
14	100749	Hinge	2
15	107389	Screw M4 x 8mm	1
16		Hopper Collar Gasket, DMS05/10 (included in Lid Assembly)	1
		Hopper Collar Gasket, DMS22/45 (included in Lid Assembly)	1
17	102058	Cover, Hose, Dual Filter (option)	1
	109796	Cover, Hose, Single Filter	1
18	103289	Lid Assembly (available as an assembly only) DMS05/DMS10	1
	103290	Lid Assembly (available as an assembly only) DMS22/DMS45	1

* see separate drawing and/or bill of material.

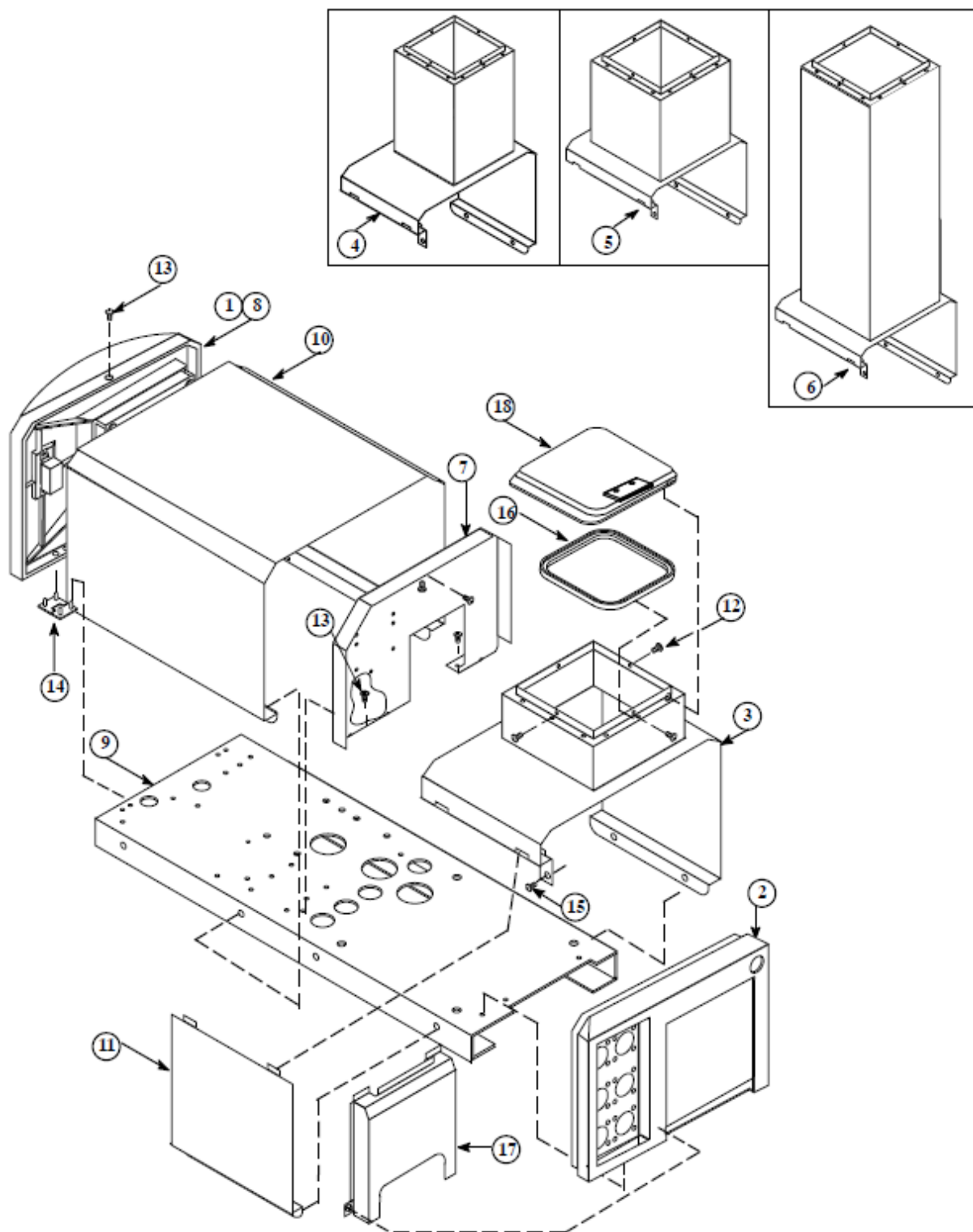


Illustration: Cabinet Assembly

Drive Assembly, Gear Pump, PN 107084

For following units: 240V single, 240V delta, 400V delta, 480V delta.

Item No.	Part Number	Description	Quantity
1	107254	Gear motor 240V 3ph	1
4	N00697	Spring lock washer 1/4	4
5	107671	Flat washer 9/32x5/8x1/6	8
6	105865	Hex nut M6x1	12
7	105818	Bracket, motor mount	1
8	101156	Screw M6x20mm	4
9	104662	Screw M6x16mm	4
10	102172	Coupling, jaw, shaft .75/.50	1
11	123274	Motor Speed Control, VF, 230V, 3PH, 1/2HP, Yaskawa (programmed version of motor control PN 115138)	1
12	106978	Filter, RFI, 240V Line	1
13	104396	Cable tie	4
14	106111	Screw M4x12mm	4
17	108050	Filter, ferrite core	1
18	110090	PCB asy, motor control interface	1
19	115338	Cable asy, motor speed control	1
20	106394	Cable asy, ribbon, motor control	1
21	109432	Cable asy, motor power	1
22	115336	Cable asy, drive power	1
23	107389	Screw M4x8mm, pan head with lock washer	4
24	115153	Mounting plate	1
25	109813	Screw, M4x8mm	4
26	115337	Wire asy, ground, gear pump	1
27	107185	Wire asy, round, RFI filter	1
28	109345	Nut plate, speed control mounting	1
29	107391	Nut M4	2
30	109344	Bracket, speed control mounting	1
32	106111	Screw M4x12mm	6
33	826233	Bracket, fuse mounting	1
34	048F104	Rail, terminal mounting H32	.5 ft
35	105256	End stop, DIN rail, ES35	2
36	804536	Fuse, 20A, LP-CC, 1.5x.4in (not shown)	6
37	818596	Fuse block, 2P,LPCC30	3

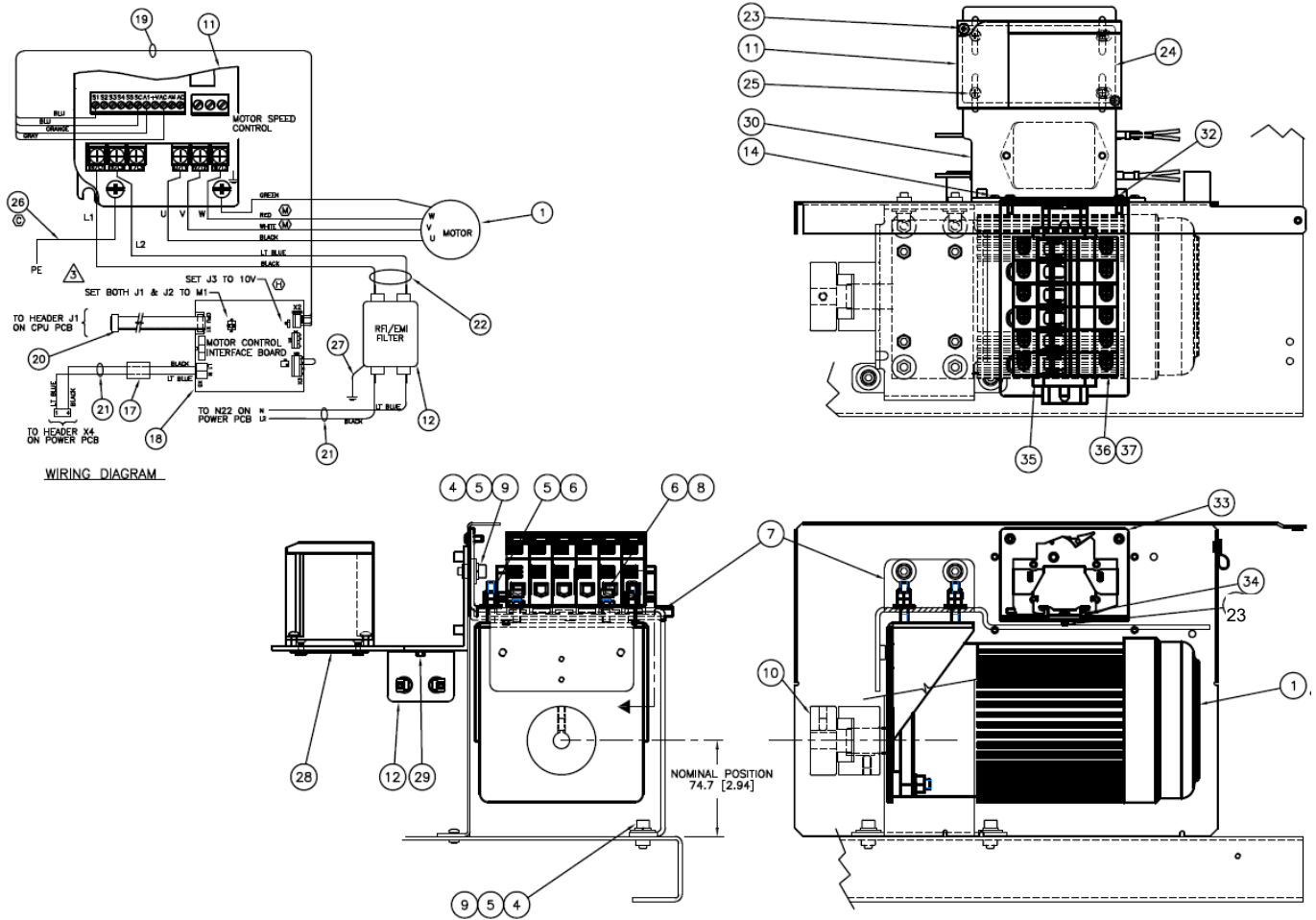


Illustration: Drive Assembly, Gear Pump, PN 107084

Drive Assembly, Gear Pump, PN 123811

For following unit: 400V-Y.

Item No.	Part Number	Description	Quantity
1	107254	Gear motor 240V 3ph	1
4	N00697	Spring lock washer 1/4	4
5	107671	Flat washer 9/32x5/8x1/6	8
6	105865	Hex nut M6x1	12
7	105818	Bracket, motor mount	1
8	101156	Screw M6x20mm	4
9	104662	Screw M6x16mm	4
10	102172	Coupling, jaw, shaft .75/.50	1
11	123274	Motor Speed Control, VF, 230V, 3PH, 1/2HP, Yaskawa (programmed version of motor control PN 115138)	1
12	106978	Filter, RFI, 240V Line	1
13	104396	Cable tie	4
14	106111	Screw M4x12mm	4
17	108050	Filter, ferrite core	1
18	110090	PCB asy, motor control interface	1
19	115338	Cable asy, motor speed control	1
20	106394	Cable asy, ribbon, motor control	1
21	109432	Cable asy, motor power	1
22	115336	Cable asy, drive power	1
23	107389	Screw M4x8mm, pan head with lock washer	4
24	115153	Mounting plate	1
25	109813	Screw, M4x8mm	4
26	115337	Wire asy, ground, gear pump	1
27	107185	Wire asy, round, RFI filter	1
28	109345	Nut plate, speed control mounting	1
29	107391	Nut M4	2
30	109344	Bracket, speed control mounting	1
32	106111	Screw M4x12mm	6
33	826233	Bracket, fuse mounting	1
34	048F104	Rail, terminal mounting H32	.5 ft
35	105256	End stop, DIN rail, ES35	2
36	804536	Fuse, 20A, LP-CC, 1.5x.4in (not shown)	3
37	048I126	Fuse block, 2P,LPCC30	3
38	104161	Terminal 105A, 600V, 4AWG	1
39	104162	Endplate for 104161	1

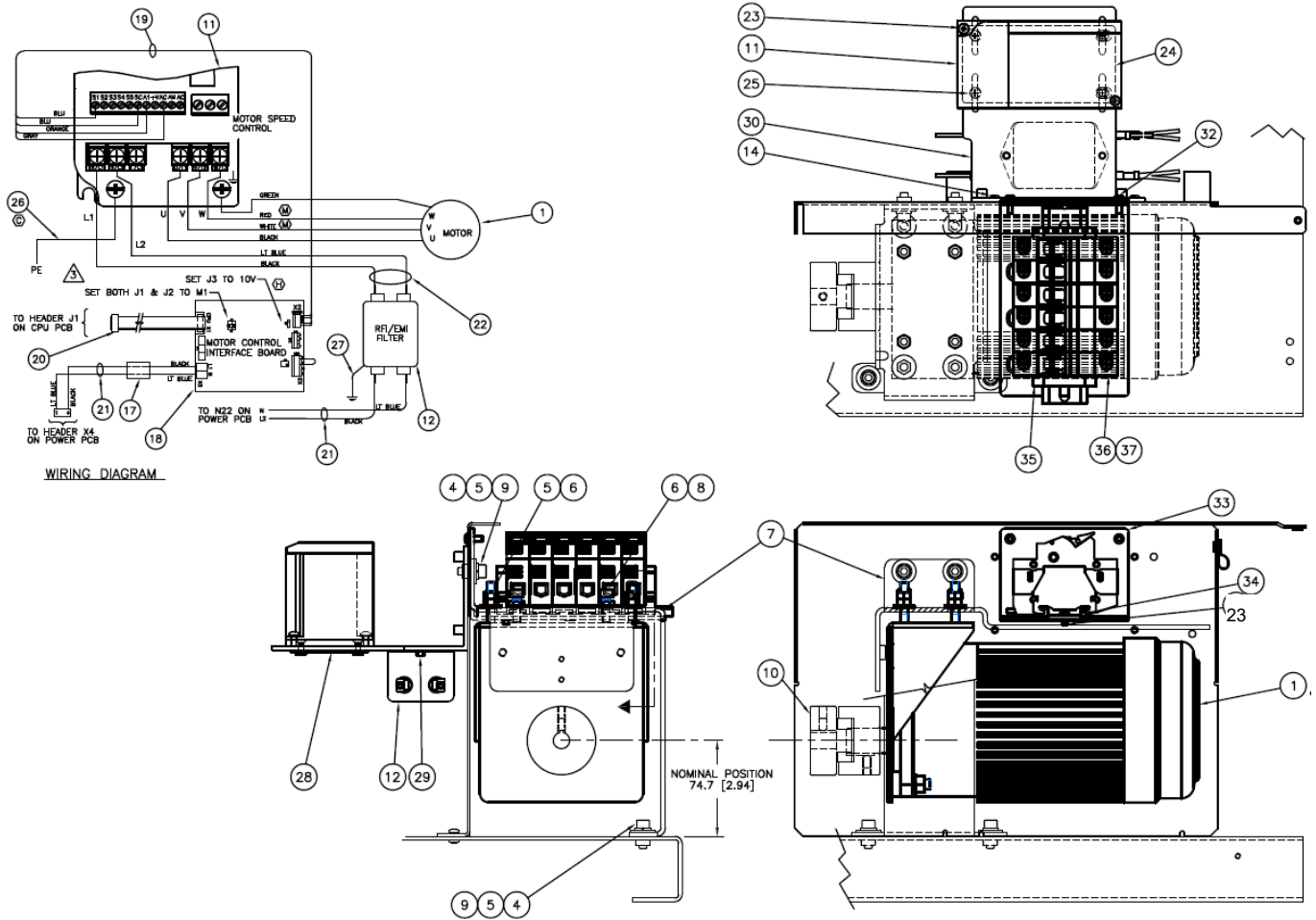


Illustration: Drive Assembly, Gear Pump, PN 123811

Drive Kit, no motor or drive, PN 819235

Item No.	Part Number	Description	Quantity
1	110090	PCB asy, motor control interface	1
2	N00697	Spring lock washer 1/4	12
3	107671	Flat washer ^9/32x5/8x1/6	12
4	109345	Nut plate, speed control mounting	1
5	107391	Nut M4	2
6	107185	Wire asy, round, RFI filter	1
7	104662	Screw M6x16mm	4
8	105865	Hex nut M6	16
9	106978	Filter, RFI, 240V Line	1
10	104396	Cable tie	4
11	106111	Screw M4x12mm	4
12	108050	Filter, ferrite core	1
13	115337	Wire asy, ground, gear pump	1
14	115338	Cable asy, motor speed control	1
15	106394	Cable asy, ribbon, motor control	1
16	109432	Cable asy, motor power	1
17	115336	Cable asy, drive power	1
18	109344	Bracket, speed control mounting	1
19	106935	Plate, motor mounting	1
20	106936	Screw, M6x45mm	4
21	101156	Screw, M6x20mm	4
22	105818	Bracket, motor mounting	1
23	107389	Screw M4x8mm with washer	2
24	106111	Screw M4x12mm	2
25	826233	Bracket, fuse mounting	1
26	048F104	Rail, terminal mounting, H32	.5
27	105256	End stop, DIN rail, ES35	2
28	804536	Fuse, 20A, ALP-CC, 1.5x.4in (not shown)	6
29	818596	Fuse block, 2P,LPCC30	3

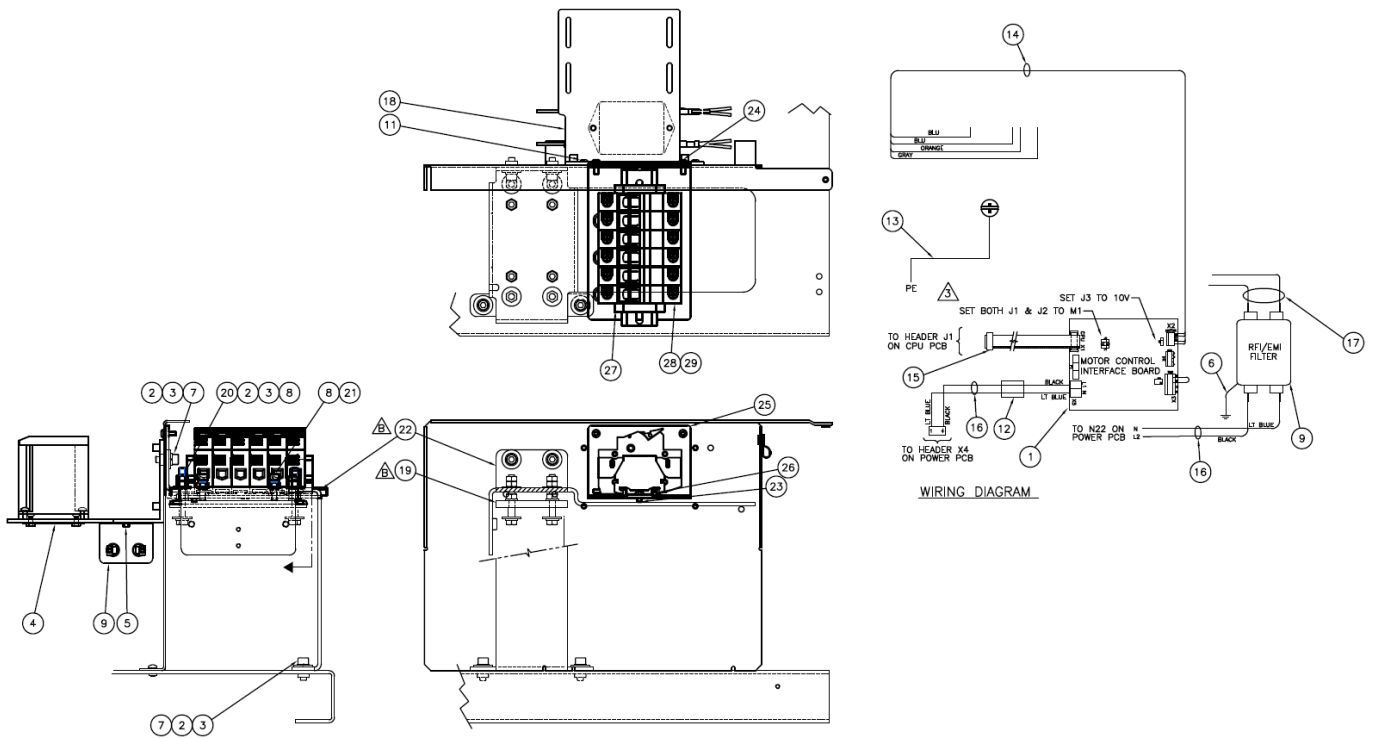
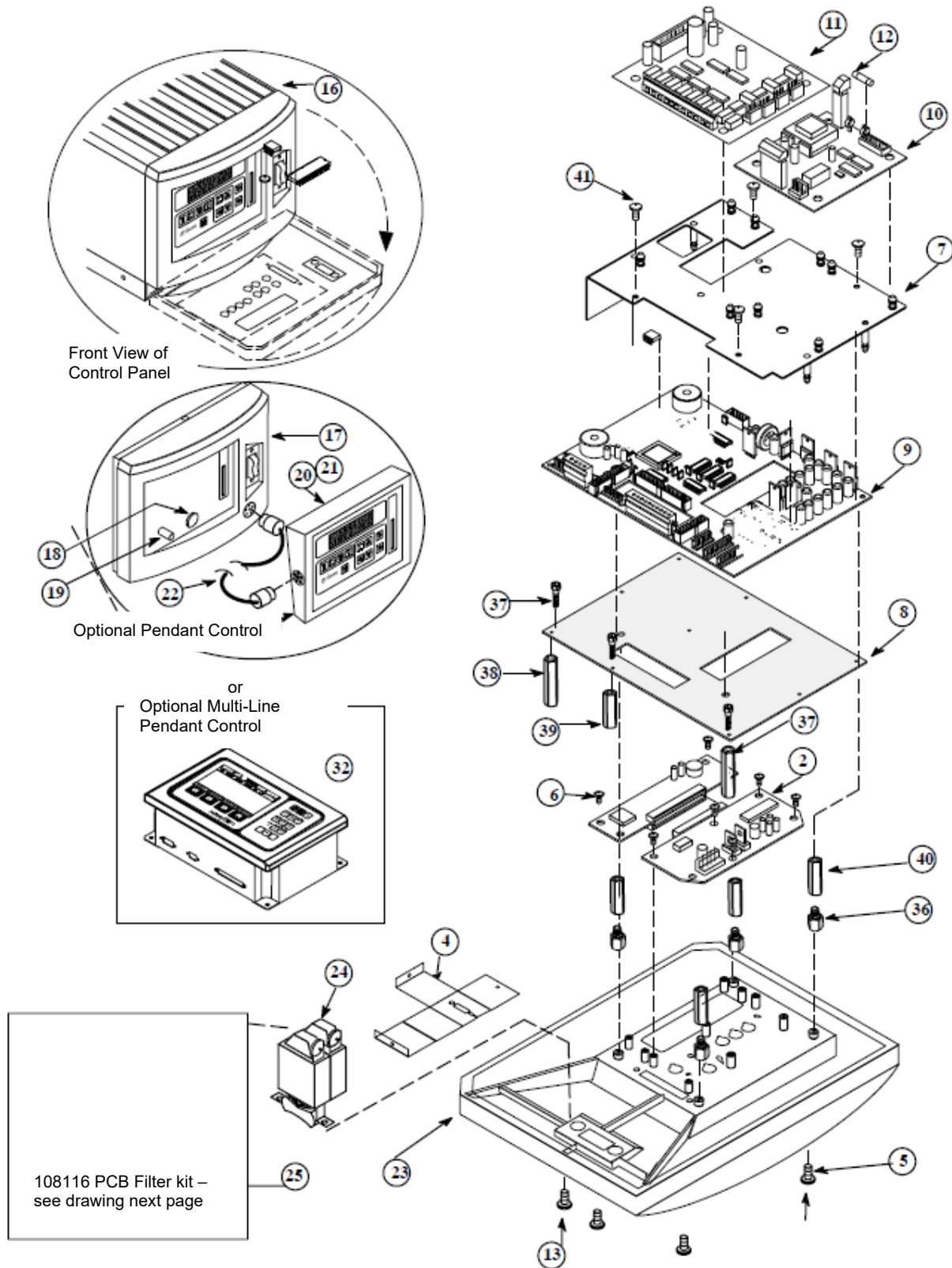


Illustration: Drive Kit, no motor or drive, PN 819235

Typical Front Panel Assembly

Item No.	Part Number	Description	Quantity
2	107032	Operator panel board	1
4	104119	Insulation cover	1
5	104133	Screw M4x5/8	4
6	105051	Screw M4x1/4	10
7	106003	Key pad cover	1
8	106092	Key pad insulation	1
9	113006	CPU PCB	1
10	110090	Motor Control Interface Board, 240V/400V (option)	1
11	106147	Pressure (PSI) Board (option)	1
12	102762	Fuse 1A	1
13	105163	Screw M3x8mm	2
16	111116	Front cover replacement kit, standard	1
17	111117	Front cover replacement kit, with pendant kit (without light)	1
	110772	Front cover Ethernet/IP kit (not shown)	
	111497	Front cover Ethernet/IP with pendant kit (not shown)	
18	105605	Pendant Power On Light (option)	1
19	105606	Pendant Standby Reset Switch (option)	1
20	108121	Pendant Control (option)	1
21	103340	Pendant Control Bracket (option)	1
22	107176	Pendant Cable asy, DM, 6m (20')	1
	103244	Pendant Cable 12m (40')	1
	105056	Pendant Cable 30m (100')	1
23	100616	Front Panel (part of one of the front panel kits)	1
24	104100	Main Power Switch, 240V, 3 Phase, 20A	1
	100747	Power Switch, 400V, 3 Phase, 30A	
	100748	Main Power Switch, 240v, Single Phase, 50A	
25	108116	PCB Filter kit	1
32	109695	Pendant Control, Multi-line, Assembly (option)	1
33	109647	Ribbon Cable Assembly, 20 ft. (not shown)	
36	104123	Standoff M4 male/female	4
37	112380	Screw 8-32x1/2	3
38	-	-	-
39	112382	Standoff, hex, 8-32x0.88	3
40	110237	Standoff, hex, M4x28	4
41	106424	Screw M4x8mm, button head	4

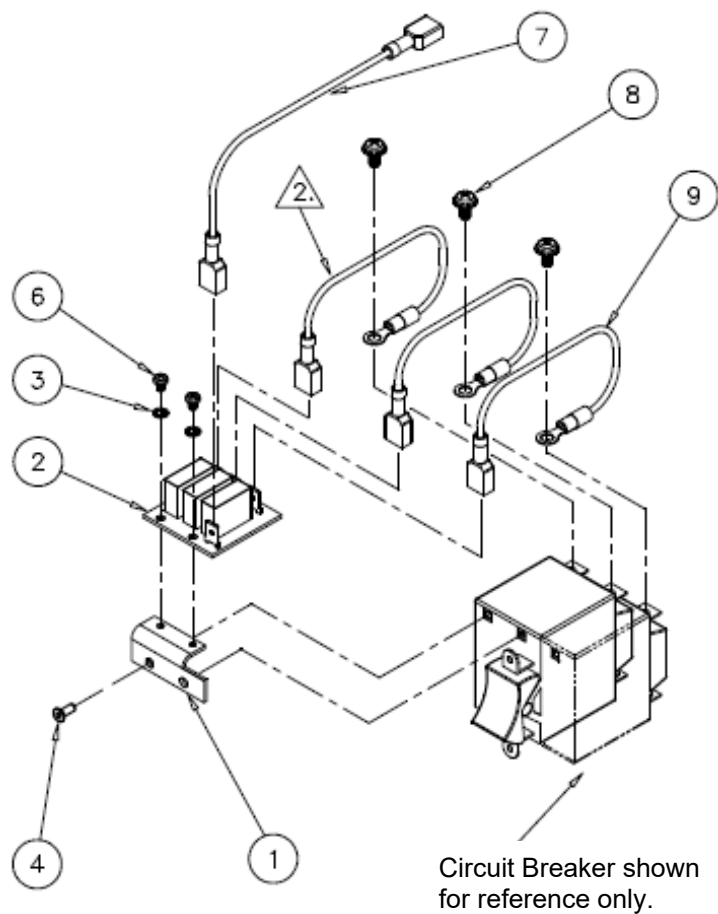


PCB Filter Kit, PN 108116

Item No.	Part Number	Description	Quantity
1	108115	Bracket	1
2	108048	PCB asy	1
3	105327	Washer M3	2
4	105163	Screw 6-32x0.25	1
6	101627	Screw M3x6mm	2
7	106827	Wire asy, ground, cover	1
8	See table *	Screw	3
9	108205	Wire asy, power to Y2 cap	See table *

*** Table:**

Circuit Breaker, PN	Description	Item 8 PN	Item 9 Quantity
100746	Circuit breaker 30A, 2p, 240V	107389	2
100747	Circuit breaker 30A, 3p, 400V	-	3
100748	Circuit breaker 50A, 2p, 240V	107208	2
104100	Circuit breaker 20A, 3p, 400V	-	3



Internal Electrical Components

Item No.	Part Number	Description	Quantity
1	048H384	Solid State Relay, DUAL 40A240VAC 80AMA	1
2	101304	Receptacle Hole Cover	Optional
3	106387	Harness Assembly, Hose	1
4	108566	Fuse, 6.3A, MET, 5mm x 20mm (Fast Blow)	2
	104117	Fuse, 6.3A, MET, 5mm x 20mm (Slow Blow) (use in F1 pos. only)	1
5	107193	Level control (option)	1
6	110954	Screw M6x3/8 (Quantity = Quantity of receptacle)	Optional
7	108500	Nut, Keps, M3 (Quantity = Quantity of receptacle covers)	Optional
8	105199	Connector, cable, 3/4 NPT	1
9	106090	Base plate, DMS 22/45	1
10	106094	Power PCB (available as kit only, PN 115578)	1
11	106095	Auxiliary Power PCB (option)	
12	106375	Heat shield panel	1
13	106376	Pump And Electrical Divider Panel	1
14	106435	Heat Sink, (part of Power Board)	1
15	106436	Heat Sink (part of Auxiliary Power Board)	
16	106528	Thermal Pad, Power PCB	1
17	106529	Thermal Pad, Auxiliary PCB (option)	
18	106960	Front Cover Kit Standard	1
19	N06642	Signal Isolator PC Board, #KBSI—240D (option)	1
20	106615	Velcro Tabs	4
21	102446	Screws M4x10mm for Velcro tabs (105164 flat washer)	4
22	106977	Trigger Park PC Board	1
23	106976	Trigger Relay PC Board, 1 Hose, 240V (option)	
24	100617	Back Cover End	1
25	-	Ground Terminals	
26	107466	Fuse 5x20mm 2.5A	1
27	106978	Filter, RFI (EMI) Line, 240V	1
28	106111	Screw M4x12mm	4
29	107389	Screw M4x8mm with lock washer	2
30	123274	Motor Speed Control, VF, 230V, 3PH, 1/2HP, Yaskawa (programmed version of motor control PN 115138)	1
32	115153	Mounting Plate, Yaskawa Speed Control	1
33	106148	Motor Interface PC Board, 240V/400V (see Electrical Assembly)	1
34	109344	Motor Speed Control Mount Bracket	1
35	109345	Nut plate	1
36	106111	Screw M4x12mm	4
37	105164	Flat washer #8	2
38	107531	Screw M4x20mm	2
39	106157	Lock washer M4	2
40	105562	Ground lug 8-4 GA	1
41	107208	Screw M5x8mm	1
42	109813	Screw M4x12mm	4
43	107391	Nut, Keps, M4	2
44	103404	Screw M3x10mm	4
45	106812	Terminal Faston tab, .25"	4

* The 108566 fuses should be used in the heater circuits.
The 104117 fuse should be used in the F1 position on the power board.

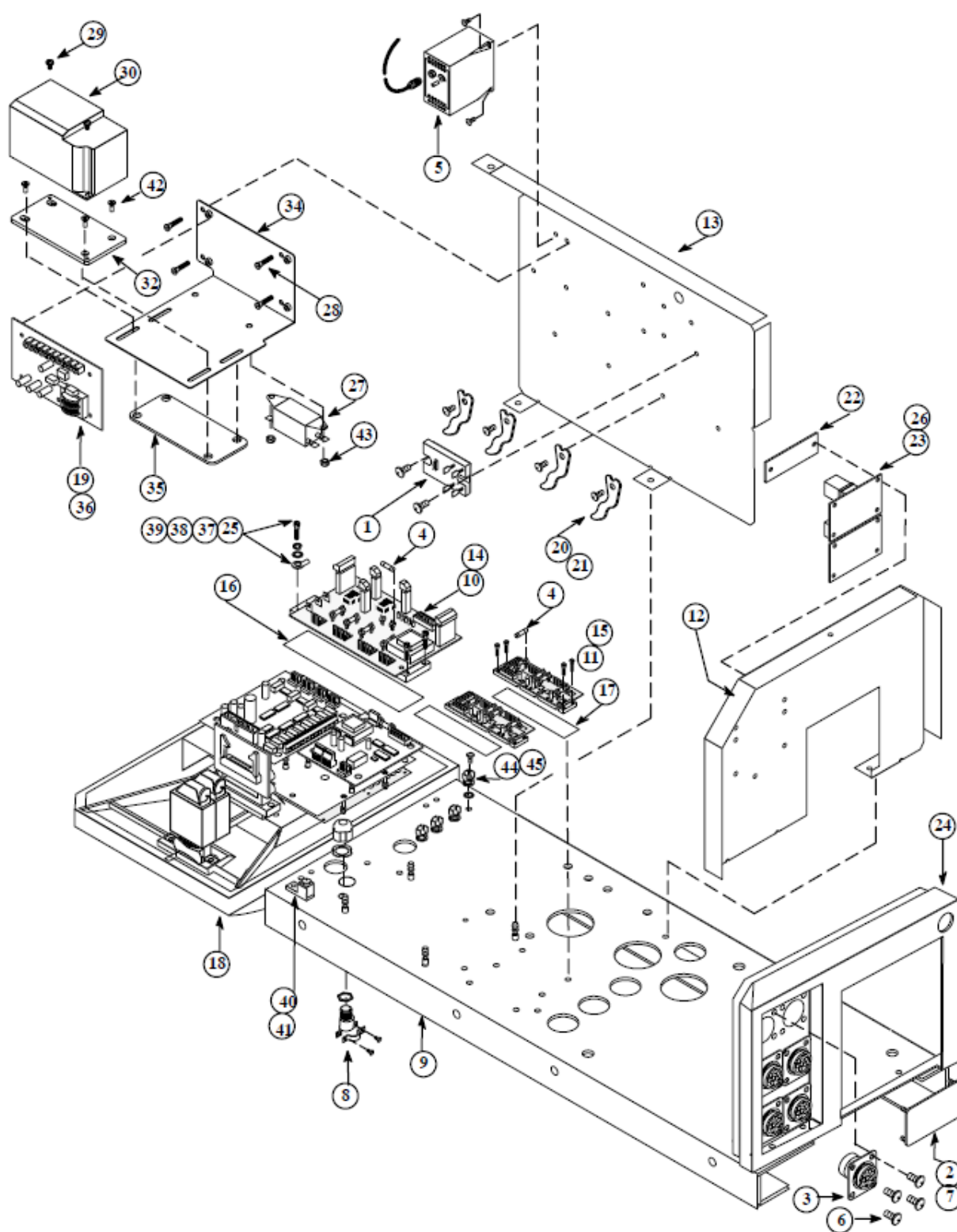
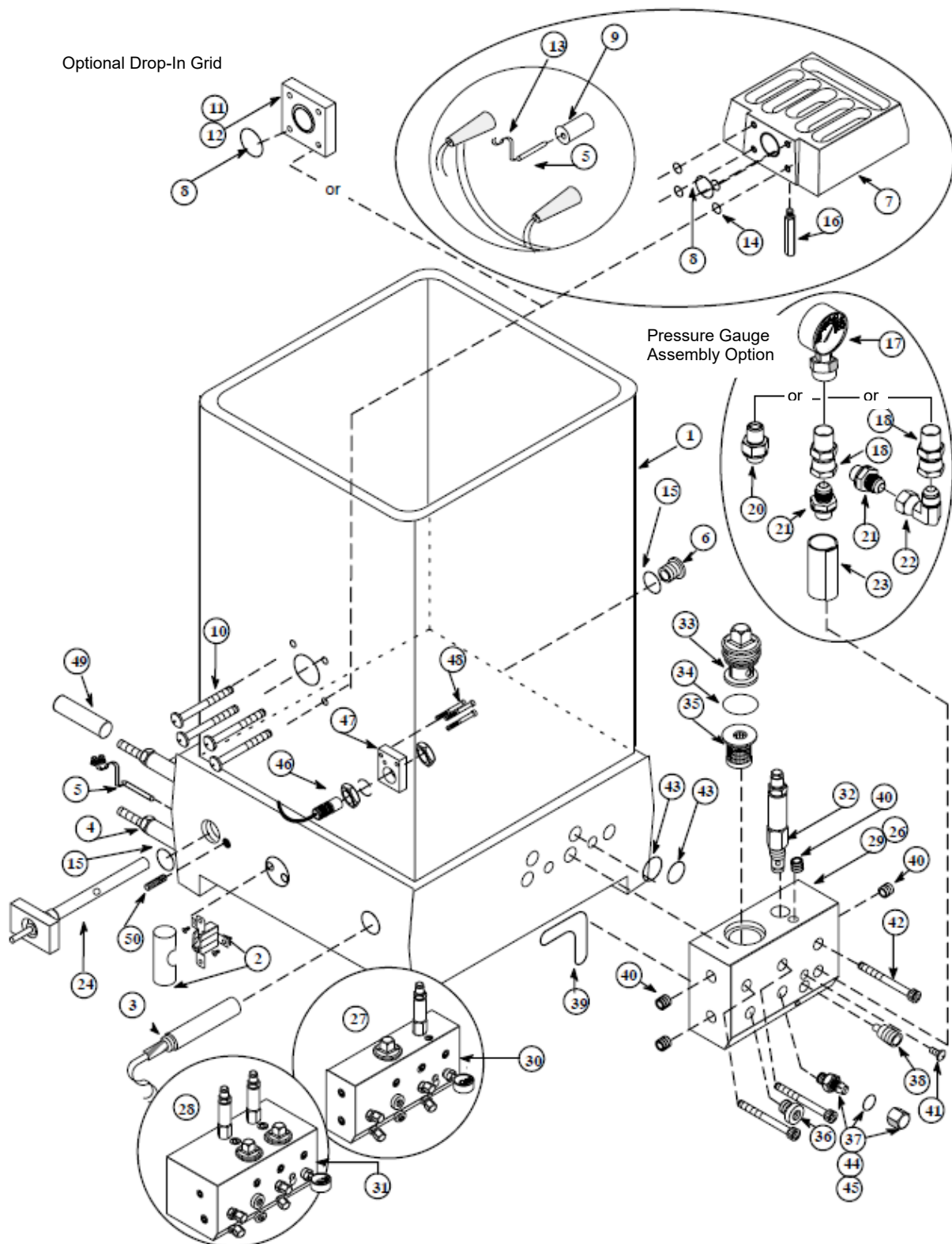


Illustration: Internal Electrical Components

DM S22 & DM S45 Grid, Melt, Filter and Pressure Relief Section

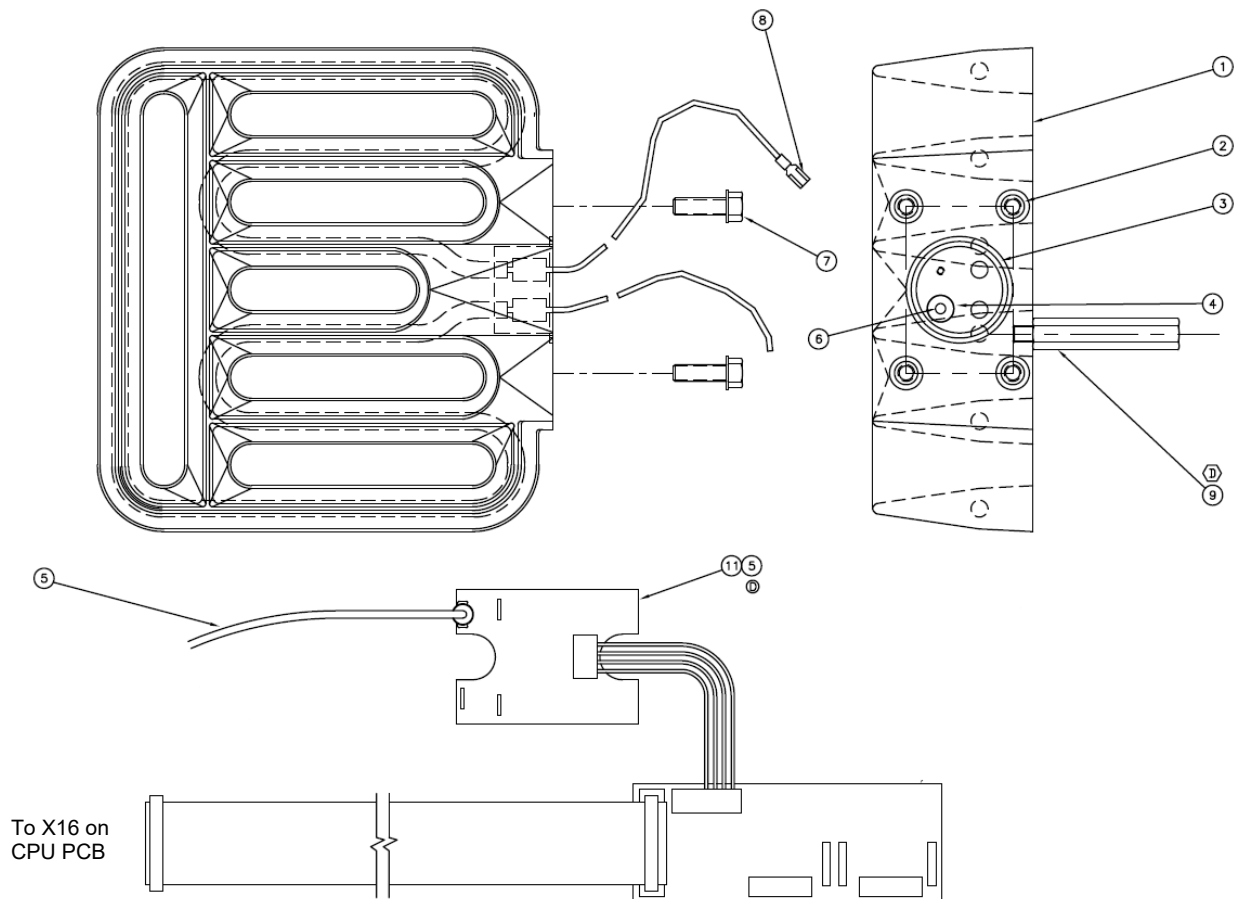
Item	PN	Description	Qty
1	100437	Hopper, DM S22, 240V/400V, or	1
	101891	Hopper, DM S45, 240V/400V (note: this hopper is not shown)	1
2	104166	Mechanical Overtemp Thermostat Assembly	1
3	036B015	Pump Enable Thermostat	1
4	not replaceable	Cast-in heater	4
5	107183	Temperature Sensor, RTD, PT 100 (option)	1
6	N00094	Fitting, Plug, #12	1
	106972 *	Drop-In Grid (option) (items 7-10 and 13-14)	
7	104802	Drop-In Grid (option)	1
8	N00192	O-ring 032 (option)	1
9	106174	Sensor Adapter (option)	1
10	108297	Screw M8x20mm	4
11	105149	Block-off Plate (used in place of grid)	1
12	N07402	Button Head Screw 5/16-18 x 3/4 (used with block-off plate)	4
13	107183	Temperature Sensor assembly, including: - 102282 Connector, 2POS., 100, 22GA, IDC - N07958 Sensor RTD, PT100, .187X1.25	2
14	N00181	O-ring, #-014	4
15	N00210	O-ring, -912 (included with Filter shut-off)	
16	107526	Stand-off Support, 3"	1
	101175	Pressure Gauge Assembly (option) (items 17-23)	1
17	101174	Pressure Gauge (option)	1
18	104325	Fitting Adapter, #6 x 1/4 NPT (option)	1
20	103330	Fitting, Adapter, 1/4 BSPP x 1/4 NPT	1
21	101624	Fitting, #6 JIC x 1/4 BSPP (includes N00196 O-ring)	1
22	N07830	Fitting, 90 deg., #6 JIC Male x #6 JIC Female	1
23	102987	Insulator Cuff	1
24	102752	Filter Shut-Off Assembly	1
25	104890	Flow Control Assembly (option)	1
26	105603	1-2 Hose, Single Pump, Filter Manifold Assembly (standard)	1
27	105614	4—6 Hose, Single Pump, Filter Manifold Assembly (option)	1
28	103283	4—6 Hose, Dual Pump, Filter Manifold Assembly (option)	1
29	105602	Filter Manifold (for assembly 105603)	1
30	100896	Filter Manifold (for assembly 105614)	1
31	102049	Filter Manifold (for assembly 103283)	1
32	101840	Pressure Relief Valve 100-1000psi (Qty 2 for 103283)	1
33	006C024	Filter Nut (Qty 2 for 103283)	1
34	069X058	O-ring 028 (Qty 2 for 103283)	1
35	101246	Filter Basket, 40 mesh/420 micron (option) (Qty 2 for 103283)	1
	101247	Filter Basket, 100 mesh/149 micron	
36	101625	Plug 1/4-18 BSB (105614 Qty 2/ 103283 Qty 1)	2
37	101624	Hose fitting BSB (105614 Qty 4/ 103283 Qty 6)	1
38	104852	Drain Plug (103283 Qty 2)	1
39	N00192	O-ring 032	1
40	N00754	Plug fitting, Flush, 1/4 NPTF (Qty 6 for 103283)	4
41	101833	Tamper Proof Screw 10-32x1/2 (Qty 2 for 103283)	1
42	105110	Screw M8 x 55mm (filter block to hopper)	3
	106182	Screw M8 x 90mm (used with 103283 dual)	3
43	N00181	O-ring, -014	2-4
44	N08024	Cap Nut	4-6
45	N00196	O-ring 111	4-6
46	107193	Level Control (option)	1
47	108635	Bracket, Sensor Guard	1
48	108636	Screw, Shoulder, M6 x 6 x 25	3
49	102411	Cap, Hi-temp.	4
	107179	Cable asy, UFD with grids	1

* see separate drawing and BOM.



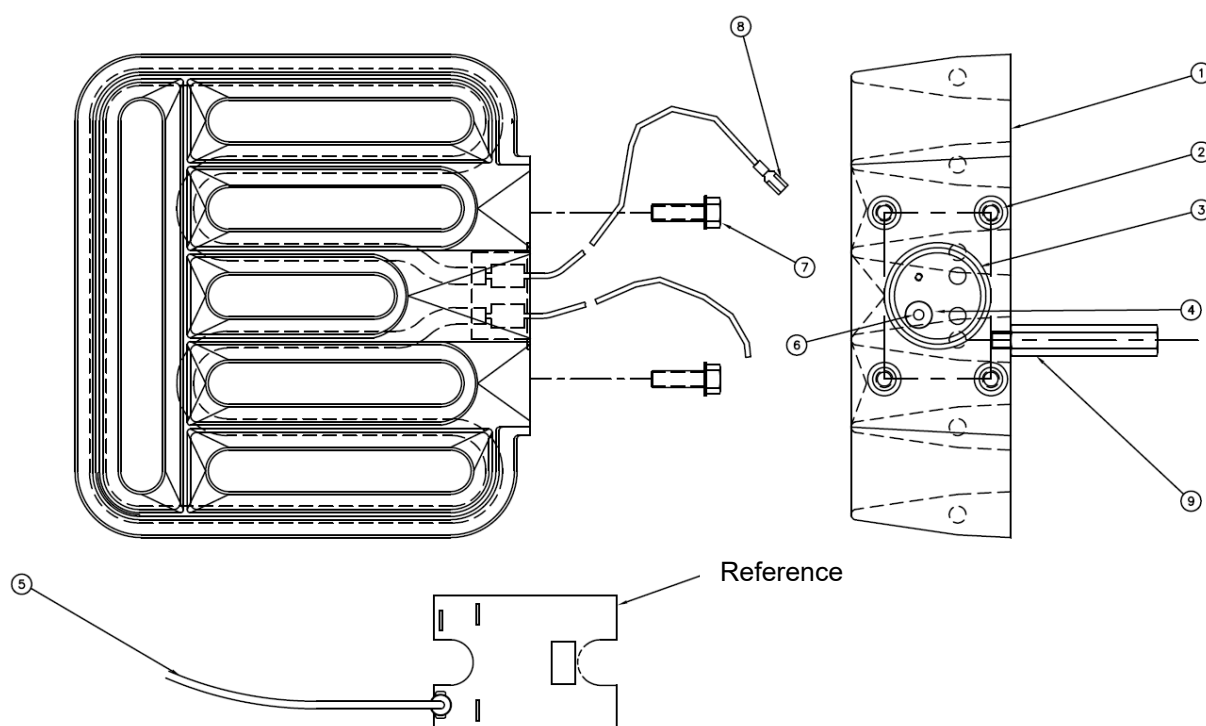
Drop-In Grid (option), PN 106972

Item No.	Part Number	Description	Quantity
1	104802	Drop-In Grid	1
2	N00181	O-ring, #-014	4
3	N00192	O-ring 032	1
4	106174	Sensor Adapter	1
5	107204	Wire asy	1
6	107183	Temperature Sensor assembly, including: - 102282 Connector, 2POS., .100, 22GA, IDC - N07958 Sensor RTD, PT100, .187X1.25	1
7	108297	Screw M8x20mm	4
8	N05889	Terminal, female, 16-14	1
9	107525	Support, lower grid	1
11	048H384	Solid-state relay, dual	1



Drop-In Grid, second layer, (option), PN 122666

Item No.	Part Number	Description	Quantity
1	104802	Drop-In Grid	1
2	N00181	O-ring, #-014	4
3	N00192	O-ring 032	1
4	106174	Sensor Adapter	1
5	107204	Wire asy	1
6	107183	Temperature Sensor assembly, including: - 102282 Connector, 2POS., .100, 22GA, IDC - N07958 Sensor RTD, PT100, .187X1.25	1
7	108297	Screw M8x20mm	4
8	N05889	Terminal, female, 16-14	1
9	107526	Support, upper grid	1



Bypass Filter Manifold Assembly, (option), PN 109779

Item No.	Part Number	Description	Quantity
1	109780	Manifold Filter lock1	1
4	N01124	Level seal plug 1/16-27 NPT	4
3	N00754	Level seal plug 1/4-18 NPT	4
4	N00181	O-ring 014	2
5	N00192	O-ring 032	1
6	104852	Filter drain plug M10x1.5	1
7	101833	Tamper proof screw 10-32x1/2	1
8	101625	Hex Socket Head Plug Fitting (all are not shown) 1/4 BSPP	5
9	101624	Straight Fitting #06 37° SAE x 1/4 BSPP	6
10	N00196	O-ring 111	6
11	N08024	Fitting Cap #06 37° SAE	6
12	101247	Filter Basket, 100 Mesh	1
	101246	Filter Basket, 40 Mesh (option)	1
13	006C024	Filter nut	1
14	069X058	O-ring 028	1
15	101840	Pressure relief valve	1
16	109781	Manifold Bypass Assembly (items 17-22)	1
17	111821	Bypass valve body	1
18	111822	Bypass valve stem	1
19	N00177	O-ring 010	1
20	N00360	O-ring 906	1
21	111823	Hex nut M8x1.25	1
22	001U002	Lube silicone (not shown)	1
23	109791	Manifold Dump Valve Plug Assembly (items 24-28)	1
24	109792	Dump Valve Plug	1
25	N00183	O-ring 016	1
26	N00179	O-ring 012	1
27	001U002	Lube silicone (not shown)	1
28	106328	Screw M4x16mm	4
29	001U002	Lube silicone (not shown)	1
30	107324	Anti-Seize Compound (not shown)	1
31	N02937	Thread Sealant, w/TFE, Jet-Lube (not shown)	1
32	109793	Screw M8x65m	3
33	109796	Cover, output manifold	1

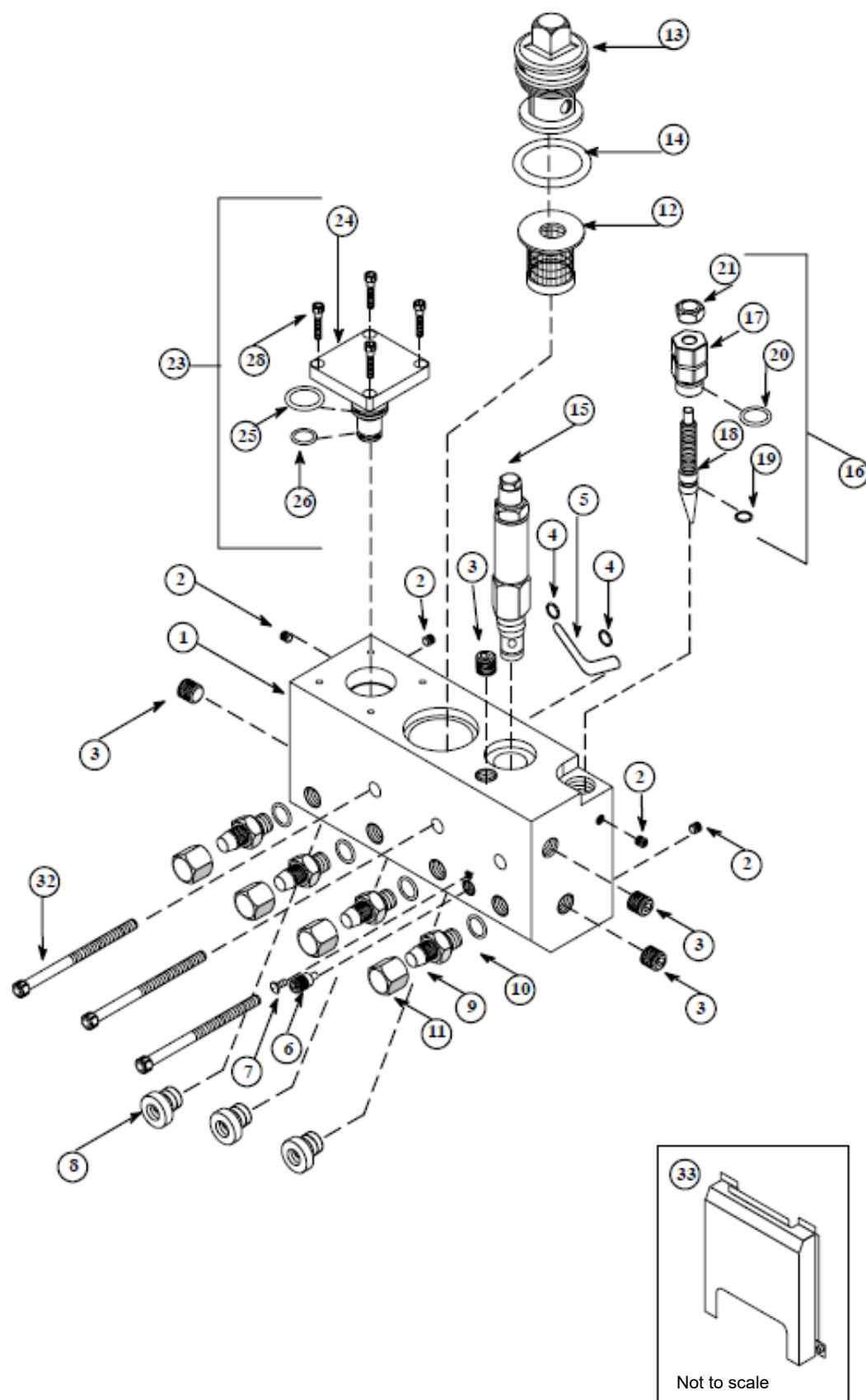
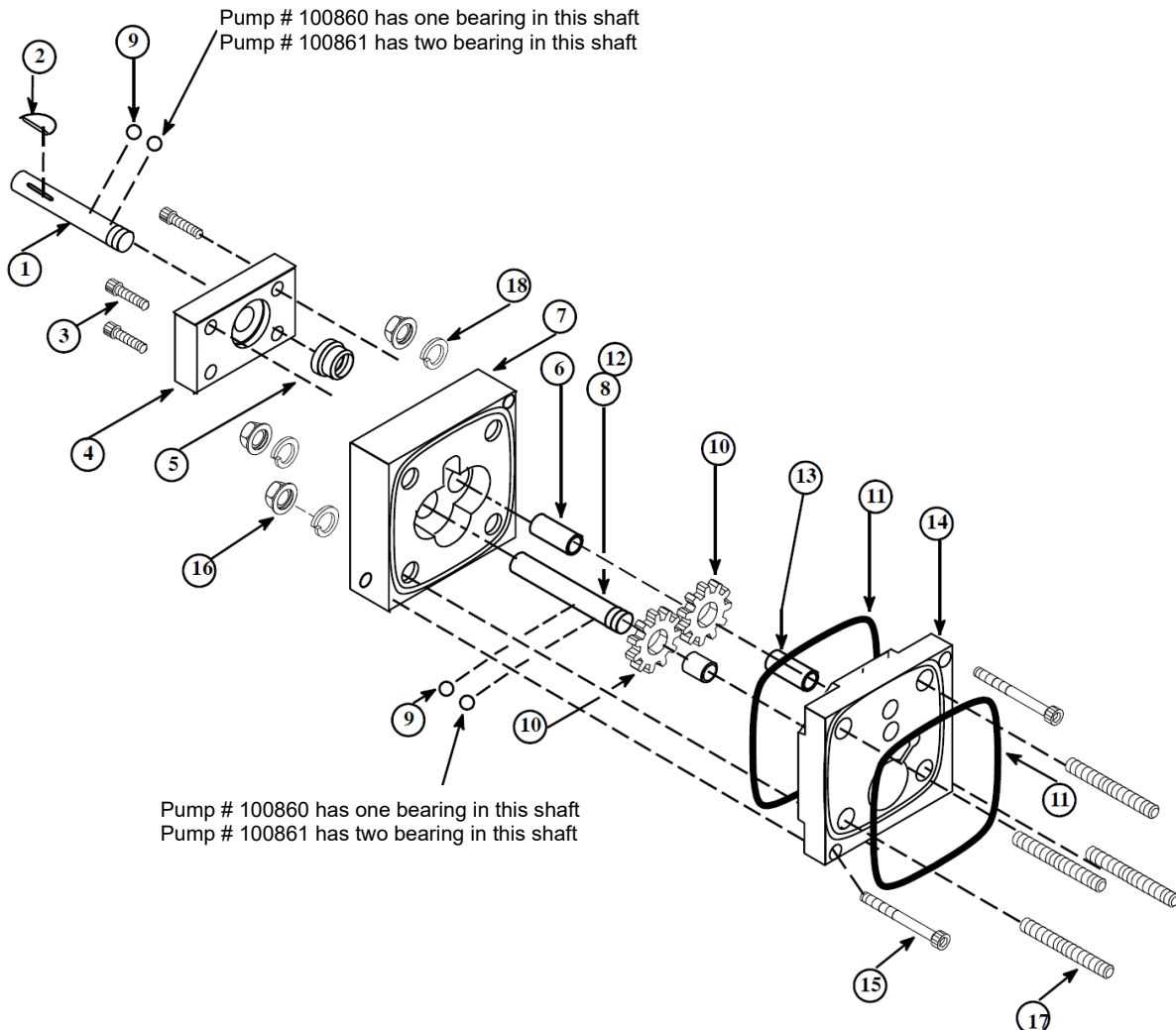


Illustration: Bypass Filter Manifold Assembly, (option), PN 109779

Single Gear Pump Assembly 1.54 cc/rev., PN 100860

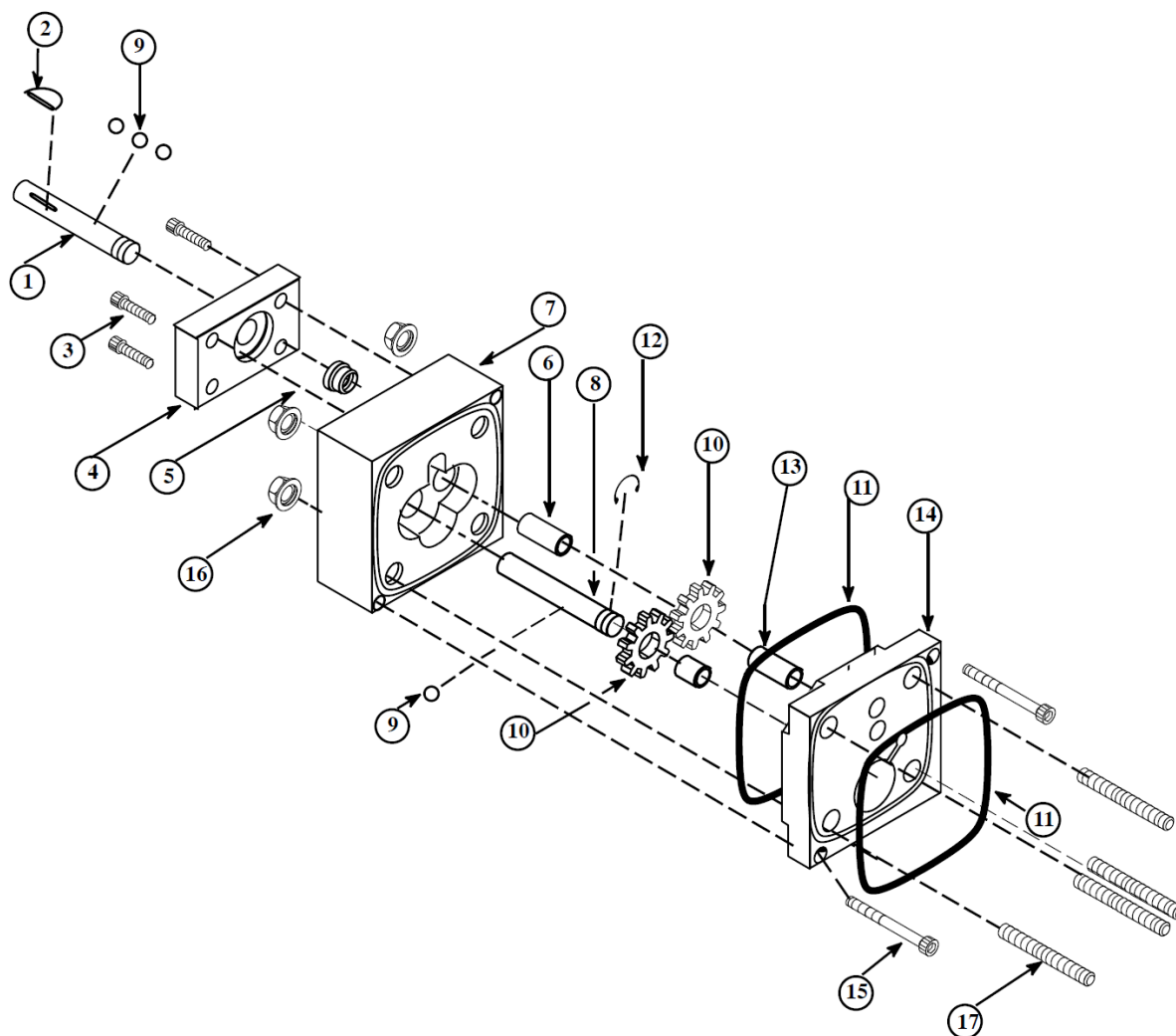
Single Gear Pump Assembly 3.2 cc/rev., PN 100861

Item No.	Part Number 100860	Part Number 100861	Description	Quantity
1	012D079	012D077	Drive Shaft	1
2	078I001		Key, Woodruff	1
3	101626		Screw M5x12mm	4
4	069X160		Seal Retainer & Bearing Housing	1
5	069X061		Shaft 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		O-ring 041, Pump Seal	2
12	078F017		Shaft Retaining Ring	4
13	018X041		Bearing Sleeve, Rear Plate	2
14	100865		Rear Plate Assembly	1
15	100908		Screw M4x25mm	2
16	104158		Flange Nut M10	4
17	104072		Threaded stud M10-1.5 x 100mm	4



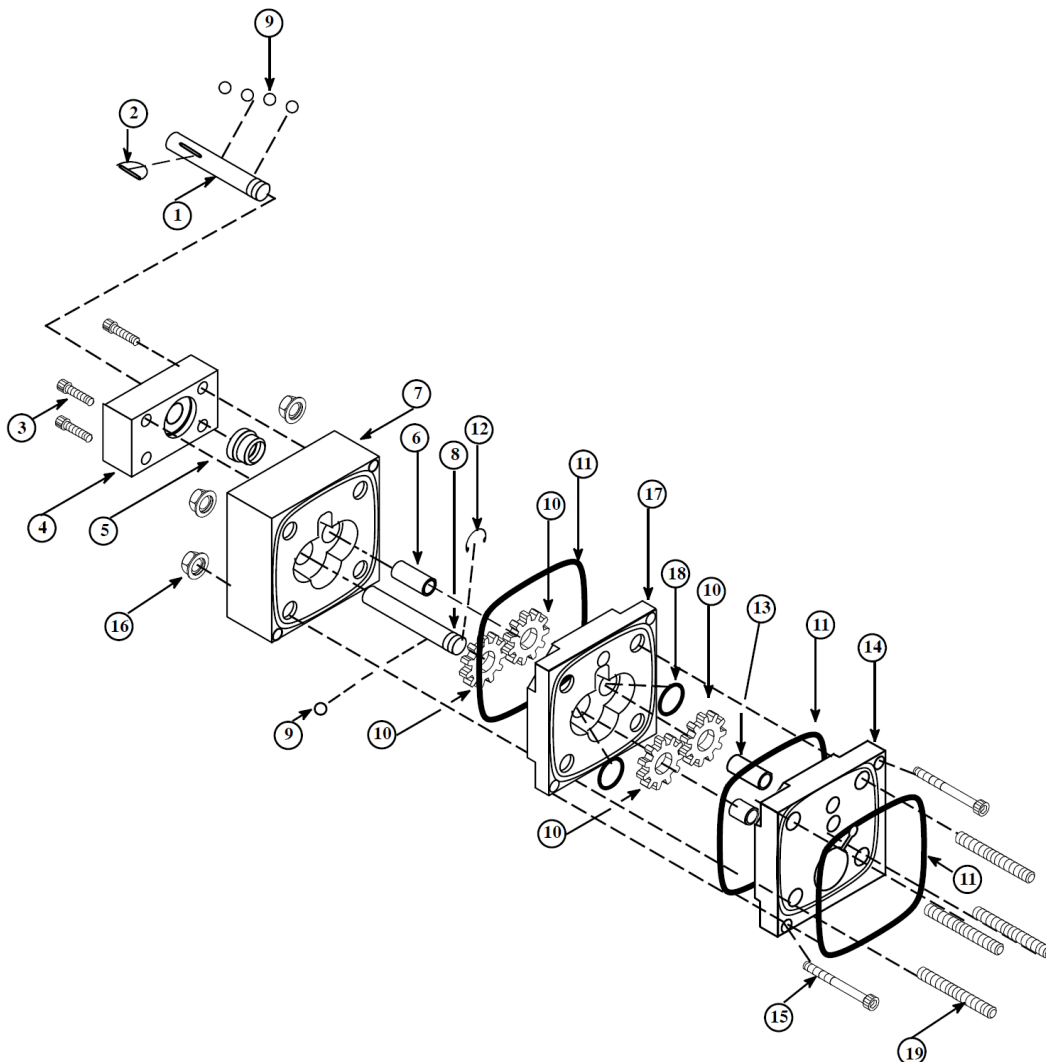
Single Gear Pump Assembly 4.50 cc/rev., PN 100862

Item No.	Part Number	Description	Quantity
1	012D072	Drive Shaft	1
2	078I001	Key, Woodruff	1
3	101626	Screw M5x12mm	4
4	069X160	Seal Retainer & Bearing Housing	1
5	069X061	Shaft 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 (see illustration for quantity)	4
10	012C018	Drive Gear	2
11	069X064	O-ring 041, Pump Seal	2
12	078F017	Shaft Retaining Ring	4
13	018X041	Bearing Sleeve, Rear Plate	2
14	100865	Rear Plate Assembly	1
15	100908	Screw M4x25mm	2
16	104158	Flange Nut M10	4
17	104072	Threaded stud M10-1.5 x 100mm	4



Dual Gear Pump Assembly 3.2 cc/rev., PN 100864

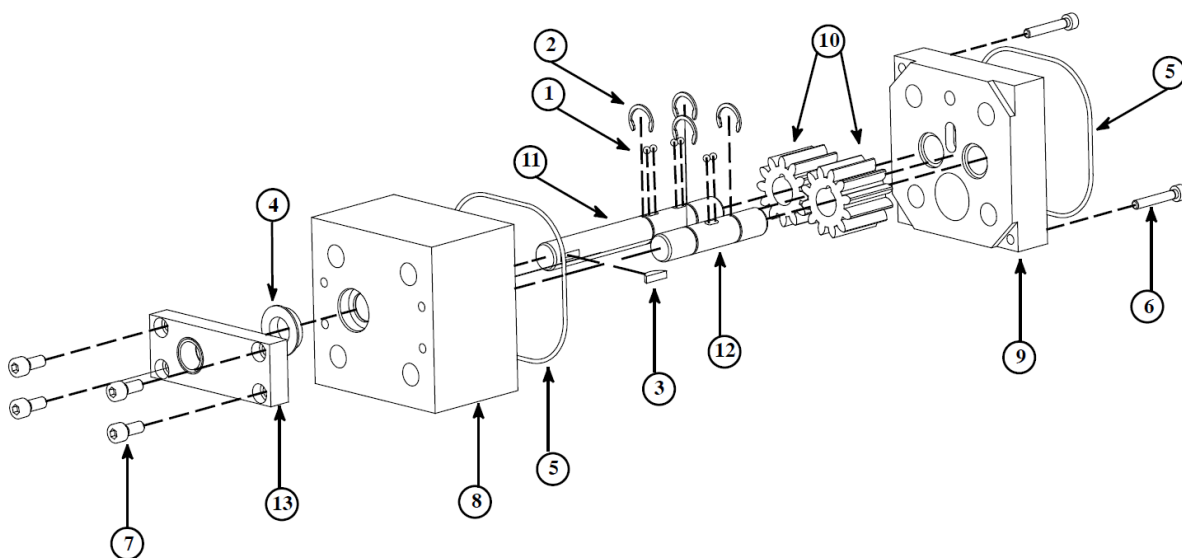
Item No.	Part Number	Description	Quantity
1	012D088	Drive Shaft	1
2	078I001	Key, Woodruff	1
3	101626	Screw M5x12mm	4
4	069X160	Seal Retainer & Bearing Housing	1
5	069X061	Shaft Seal	1
6	018X041	Bearing Sleeve	2
7	100867	Front Plate Assembly	1
8	012D087	Driven Gear Shaft	1
9	018X031	Ball, 1/8" Diameter (see illustration for quantity)	5
10	012C019	Drive Gear	4
11	069X064	O-ring 041, Pump Seal	3
12	078F017	Shaft Retaining Ring	4
13	018X041	Bearing Sleeve, Rear Plate	2
14	100865	Rear Plate Assembly	1
15	101691	Screw M4x40mm	2
16	104158	Flange Nut M10	4
17	100870	Middle Plate	1
18	N00198	O-ring 113	2
19	114890	Threaded stud M10-1.5 x 105mm	4



Single Gear Pump Assembly 10 cc/rev., PN 109690

Item No.	Part Number	Description	Quantity
1	018X031	Ball Bearing, 1/8 Diameter	6
2	078F017	Snap Ring, 1/2"	4
3	078I001	Key Woodruf	1
4	069X061	Shaft Seal	1
5	069X064	O-ring 041, Pump Seal	2
6	108588	Screw M4x25mm	2
7	101626	Screw M5x12mm	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)	A/R*

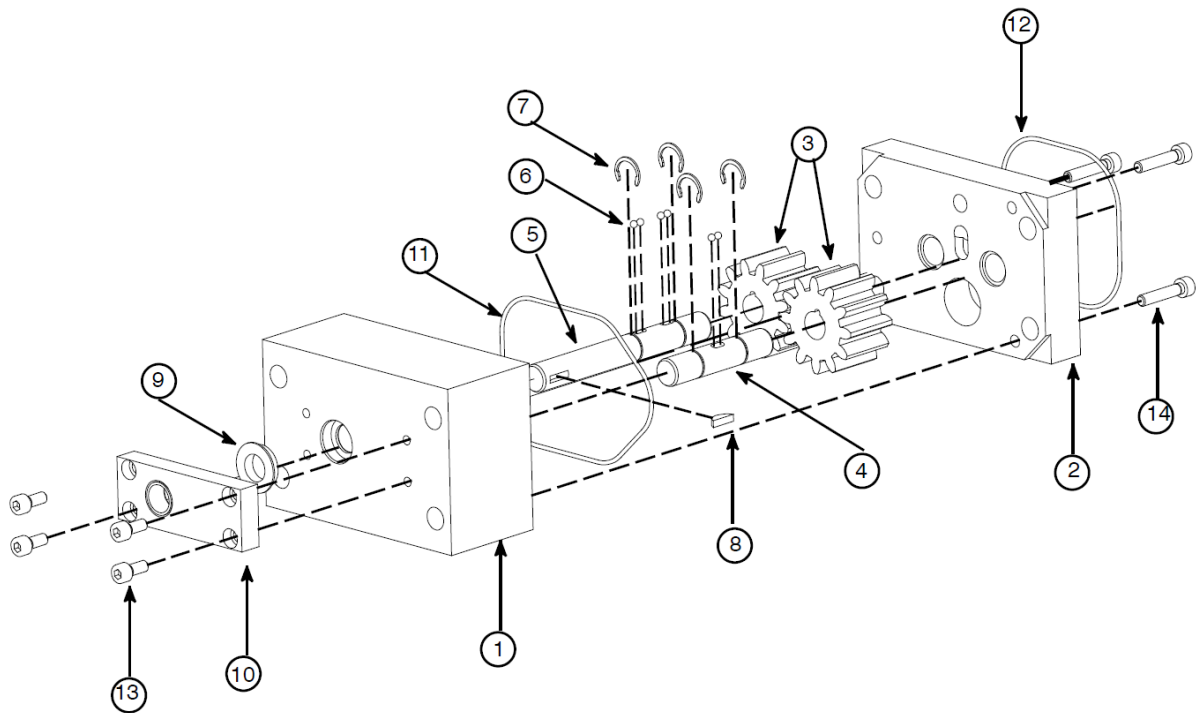
A/R* = As required



Single Gear Pump Assembly 20 cc/rev., PN 109694

Item No.	Part Number	Description	Quantity
1	109691	Pump Body, 20cc/rev	1
2	109692	Rear Bearing Plate, 20cc/rev	1
3	109693	Gear, 20cc/rev	2
4	109688	Driven Shaft 10cc/20cc	1
5	109687	Drive Shaft, 10cc/20cc	1
6	018X031	Ball Bearing, 1/8 Dia.	6
7	078F017	Snap Ring, External, 1/2"	4
8	078I001	Key Woodruff	1
9	069X061	Seal Shaft	1
10	069X160	Shaft Seal Retainer	1
11	069X225	O-ring 042	1
12	069X064	O-ring 041	1
13	101626	Screw M5x12mm	4
14	102447	Screw M5x25mm	3
15	001U002	Dow Corning 112 Lubricant (not shown)	A/R*

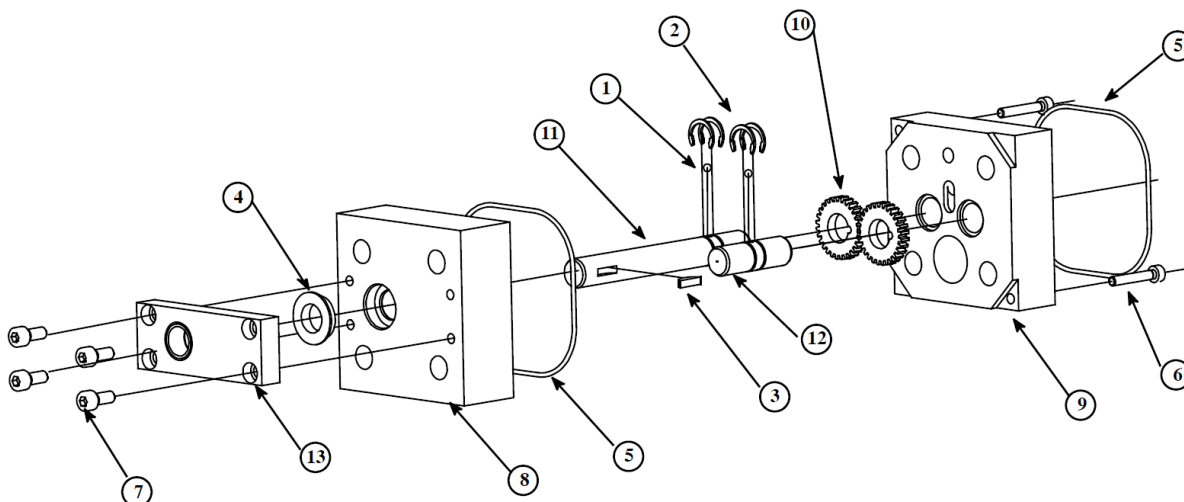
A/R* = As required



Single Gear Pump Assembly 0.55 cc/rev., PN 109908

Item No.	Part Number	Description	Quantity
1	018X031	Ball Bearing, 1/8 Diameter	6
2	078F017	Snap Ring, 1/2"	4
3	078I001	Key Woodruf	1
4	069X061	Shaft Seal	1
5	069X064	O-ring 041, Pump Seal	2
6	100908	Screw M4x25mm	2
7	101626	Screw M5x12mm	4
8	109906	Front Plate	1
9	100865	Rear Bearing Plate	1
10	109907	Gear	2
11	012D079	Drive Shaft	1
12	012D080	Driven Shaft,	1
13	069X160	Shaft Seal Retainer	1
14	001U002	Dow Corning 112 Lubricant (not shown)	A/R*

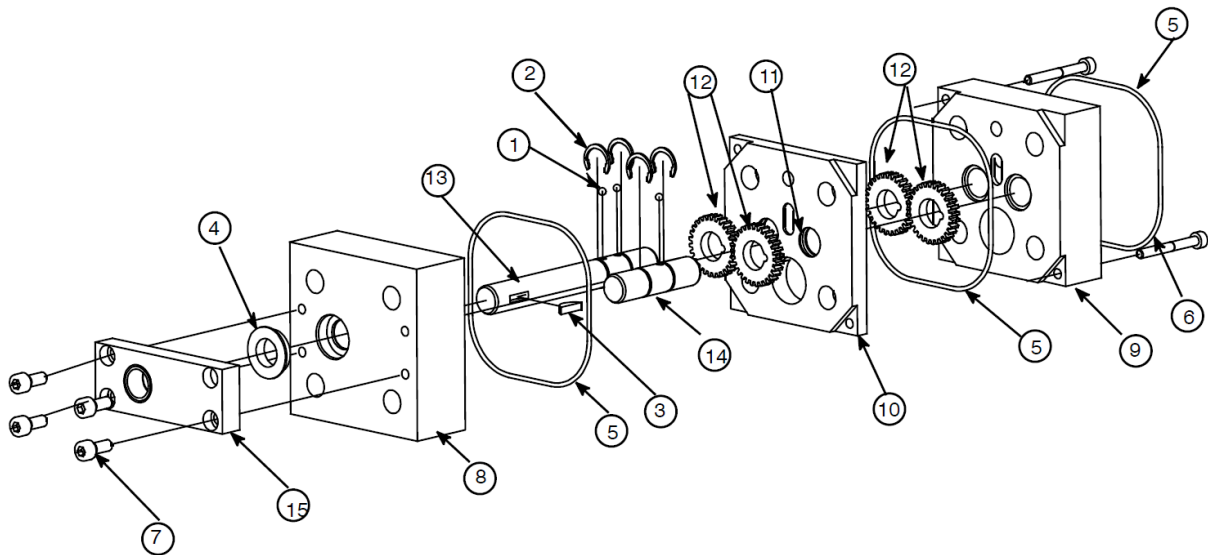
A/R* = As required



Dual Gear Pump Assembly 0.55 cc/rev., PN 109909

Item No.	Part Number	Description	Quantity
1	018X031	Ball Bearing, 1/8 Diameter	6
2	078F017	Snap Ring, 1/2"	4
3	078I001	Key Woodruf	1
4	069X061	Shaft Seal	1
5	069X064	O-ring 041, Pump Seal	2
6	101692	Screw M4x35mm	2
7	101626	Screw M5x12mm	4
8	109906	Front Plate	1
9	100865	Rear Bearing Plate	1
10	109905	Plate, middle gear	1
11	N00198	O-ring 113	2
12	109907	Gear	2
13	012D083	Drive Shaft	1
14	012D082	Driven Shaft,	1
15	069X160	Shaft Seal Retainer	1
16	001U002	Dow Corning 112 Lubricant (not shown)	A/R*

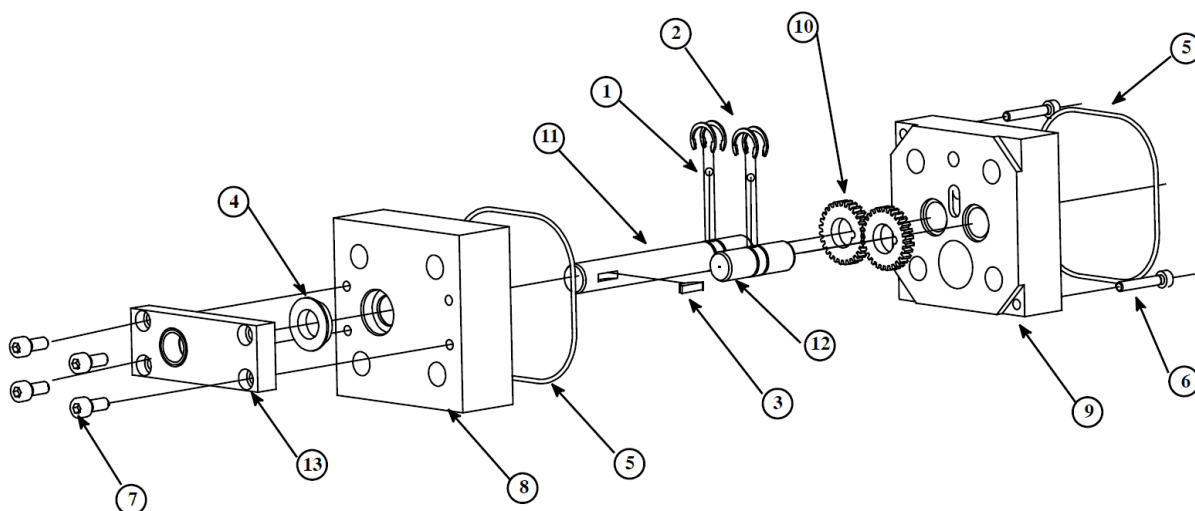
A/R* = As required



Single Gear Pump Assembly 0.15 cc/rev., PN 111253

Item No.	Part Number	Description	Quantity
1	018X031	Ball Bearing, 1/8 Diameter	6
2	078F017	Snap Ring, 1/2"	4
3	078I001	Key Woodruf	1
4	069X061	Shaft Seal	1
5	069X064	O-ring 041, Pump Seal	2
6	100908	Screw M4x25mm	2
7	101626	Screw M5x12mm	4
8	111251	Front Plate	1
9	100865	Rear Bearing Plate	1
10	111250	Gear	2
11	012D079	Drive Shaft	1
12	012D080	Driven Shaft,	1
13	069X160	Shaft Seal Retainer	1
14	001U002	Dow Corning 112 Lubricant (not shown)	A/R*

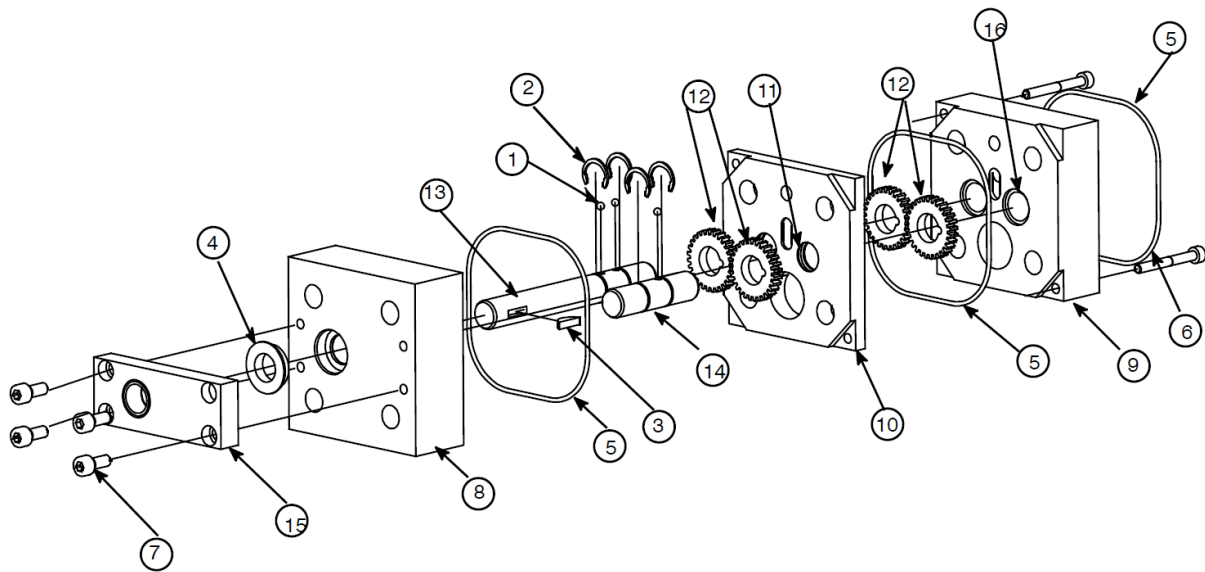
A/R* = As required



Dual Gear Pump Assembly 0.15 cc/rev., PN 111254

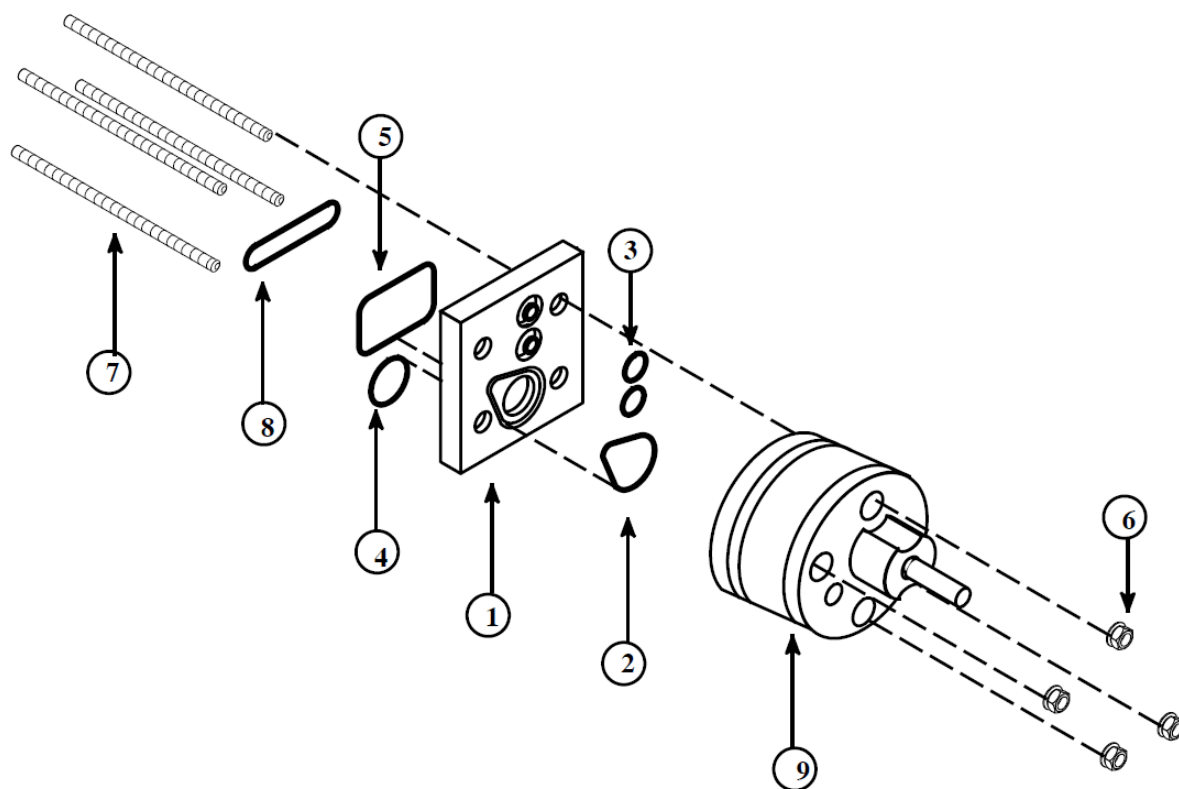
Item No.	Part Number	Description	Quantity
1	018X031	Ball Bearing, 1/8 Diameter	6
2	078F017	Snap Ring, 1/2"	4
3	078I001	Key Woodruf	1
4	069X061	Shaft Seal	1
5	069X064	O-ring 041, Pump Seal	2
6	101692	Screw M4x35mm	2
7	101626	Screw M5x12mm	4
8	111251	Front Plate	1
9	100865	Rear Bearing Plate	1
10	111252	Plate, middle gear	1
11	N00198	O-ring 113	2
12	111250	Gear	4
13	012D083	Drive Shaft	1
14	012D082	Driven Shaft,	1
15	069X160	Shaft Seal Retainer	1
16	N00198	O-ring 113	2
17	001U002	Dow Corning 112 Lubricant (not shown)	A/R*

A/R* = As required



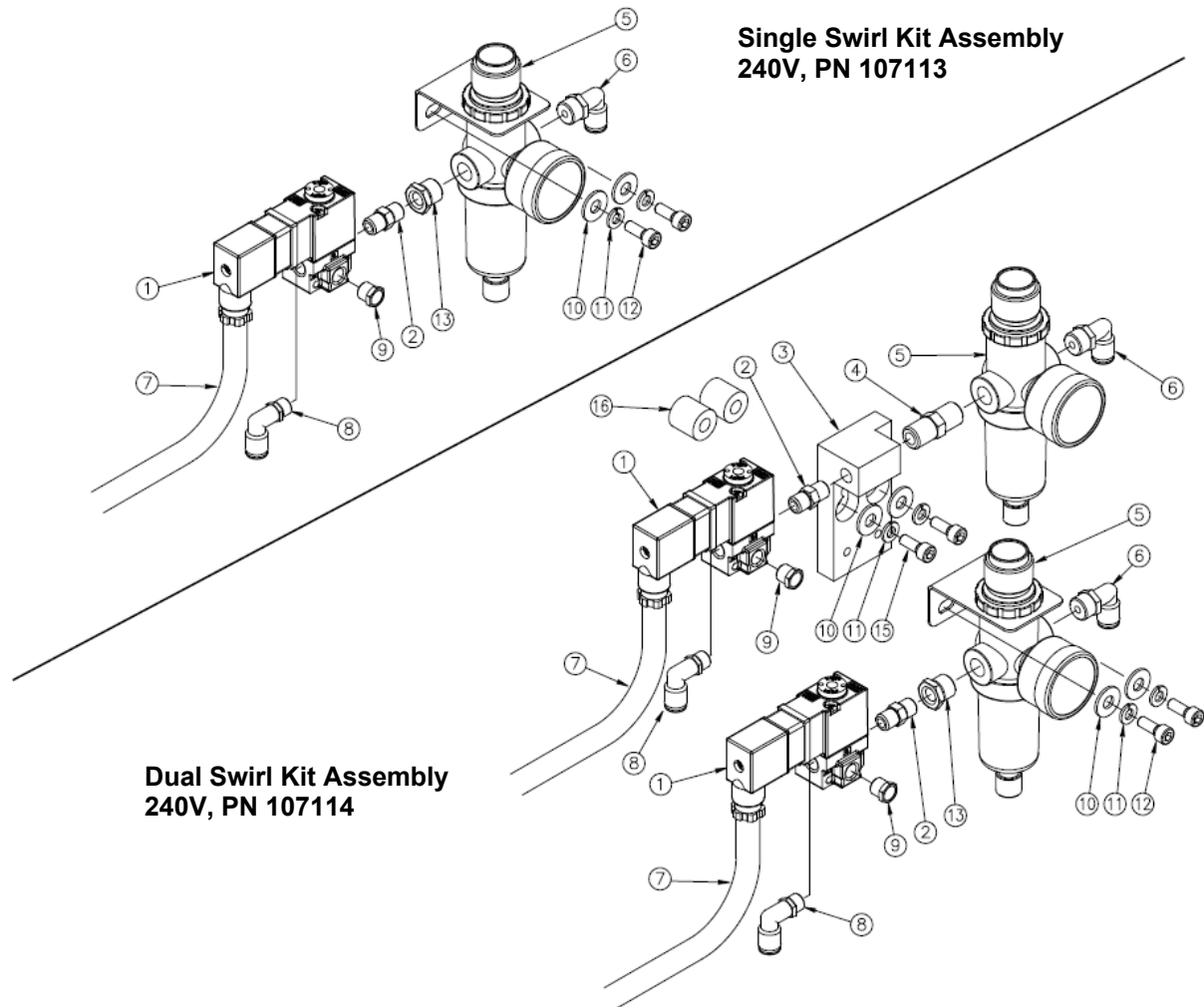
Pump Adapter Assembly, PN 084E405

Item No.	Part Number	Description	Quantity
1	012G023	Pump Adapter	1
2	069X058	O-ring 028	1
3	N00179	O-ring 012	2
4	N00190	O-ring 024	1
5	069X240	O-ring 031	1
6	104158	Flange nut M10	4
7	104072	Threaded stud M10x100mm (shown for reference only)	4
	104073	Threaded stud M10x105mm (shown for reference only)	4
8	N00188	O-ring 221	4
9		Pump:	1
	108865	Single pump 0.297cc	
	108867	Single pump 0.584cc	
	108869	Single pump 1.168cc	
	108872	Single pump 2.920cc	
	108875	Single pump 8.5cc	
	108868	Dual pump 0.584cc	
	108870	Dual pump 1.168	
	108874	Dual pump 2.92cc	



Single Swirl Kit Assembly, 240V, PN 107113

Dual Swirl Kit Assembly, 240V, PN 107114

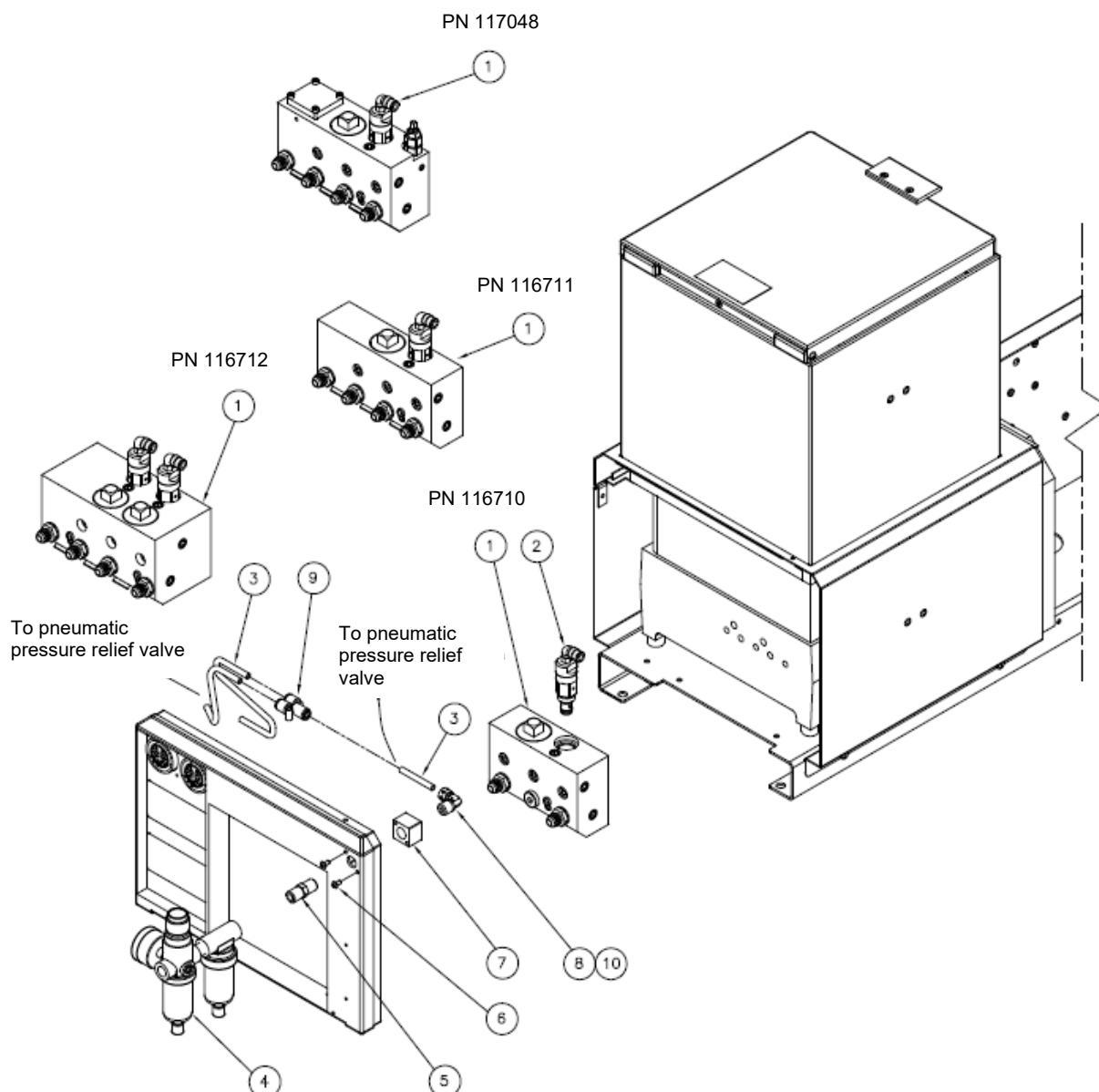


Item No.	Part Number	Description	Quantity 107113	Quantity 107114
1	107201	Solenoid valve 3-way 240V	1	2
2	072X004	Hex nipple 1/8 NPT	1	2
3	113108	Bracket, dual regulator mount	-	1
4	072X228	Hex nipple, 1/4 NPT	-	1
5	N02774	Filter/regulator asy	1	2
6	N06412	Male elbow, 1/4 NPT x 1/4 tube	1	2
7	N08236	Cable 18/3, type SV	6'	12.7'
8	N06436	Male elbow 1/8 NPT x 1/4 tube	1	2
9	030B108	Vent, exhaust, 1/8 NPT	1	2
10	107671	Flat washer	2	4
11	111345	Lock washer	2	4
12	104662	Screw M6x16mm	2	2
13	066X017	Bushing 1/4 NPT x 1/8 NPT	1	1
14	109437	PCB trigger kit, 240V	1	1
15	106512	Screw M6x35mm	-	2
16	105135	Spacer	-	2

Optional Pneumatic Pressure Relief Valve Assemblies

Item No.	Part Number	Description	Quantity
1	116710	Filter manifold asy, 1-2 hose, single gear pump (standard) *	1
	106711	Filter manifold asy, 4-6 hose, single gear pump (optional) *	1
	106712	Filter manifold asy, 4-6 hose, dual gear pump (optional) *	1
	117048	Filter manifold asy with Bypass, 4-6 hose, single gear pump (optional) *	1
2	115540	Pneumatic Pressure Relief Valve	1-2
3	N07677	Teflon Tubing 1/4" O.D.	0.7-3.0 ft
4	100380	Filter/Regulator asy	1
5	072X228	Fitting, Hex nipple, 1/4 NPT	1
6	-	Screw M4x8mm	2
7	101888	Block, Pneumatic Transfer	1
8	N00101	Fitting 90°, 1/4 Tube x 1/4 NPT	1
9	116706	Fitting, Y union, 1/4" tube (used with dual pump only)	1
10	072X383	Airline Support (not shown)	1

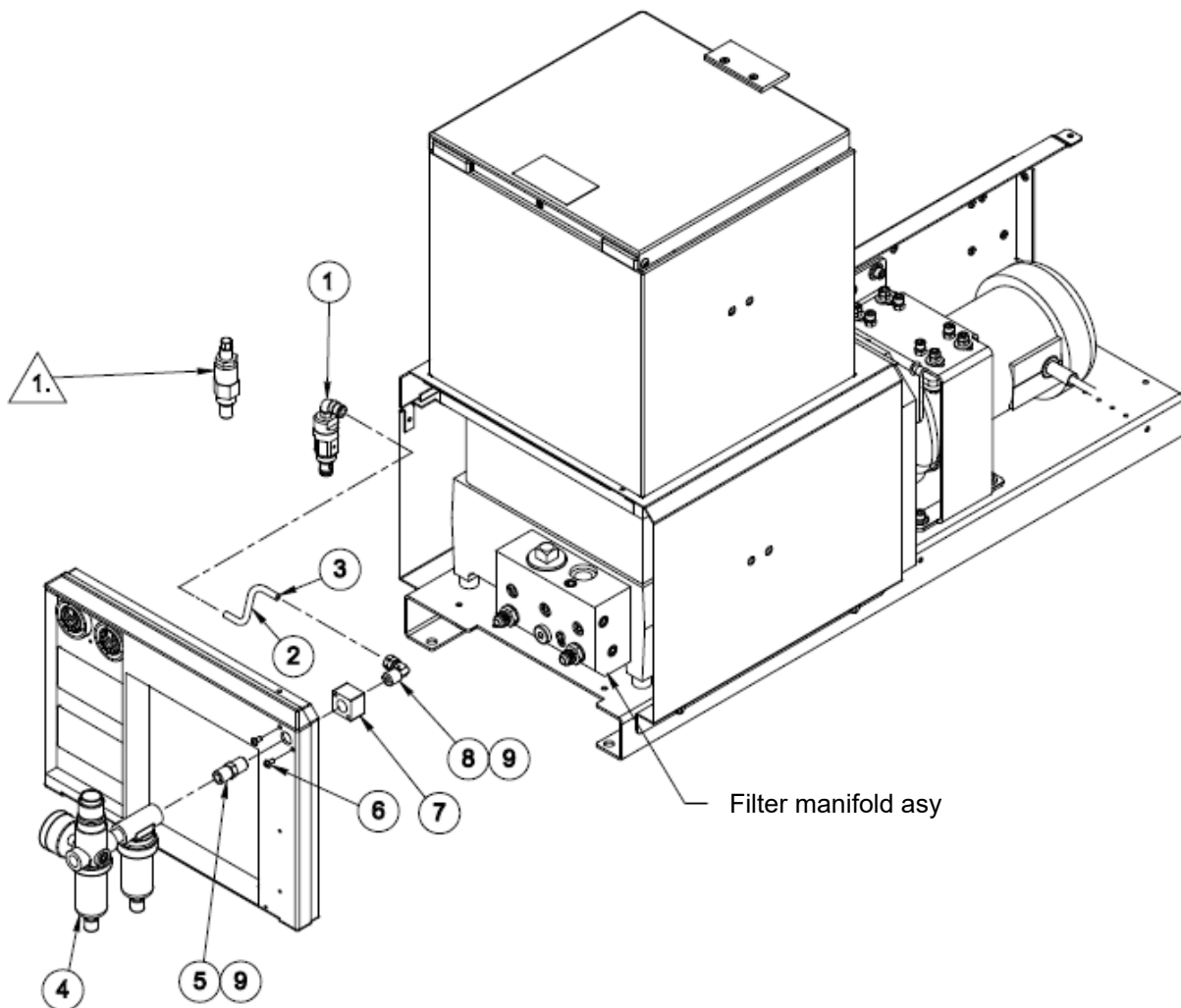
* The assemblies include items 2-10. For all other components see Filter manifold assembly on previous pages.



Pneumatic Pressure Relief Valve Retrofit Kit for Gear Pump Models and Installation, PN 116621

Item No.	Part Number	Description	Quantity
1	115540	Pneumatic pressure relief valve	1
2	N07677	Teflon tubing, 1/4" O.D.	0.7 ft
3	072X383	Support insert, inline	1
4	100380	Filter/regulator asy	1
5	072X228	Fitting, hex nipple, 1/4 NPT	1
6	106424	Screw M4x8mm	2
7	101888	Block, pneumatic transfer	1
8	N00101	Fitting 1/4" tube x 1/4 NPT, 90°	1
9	N02937	Thread sealant	A/R*

A/R* = As required.



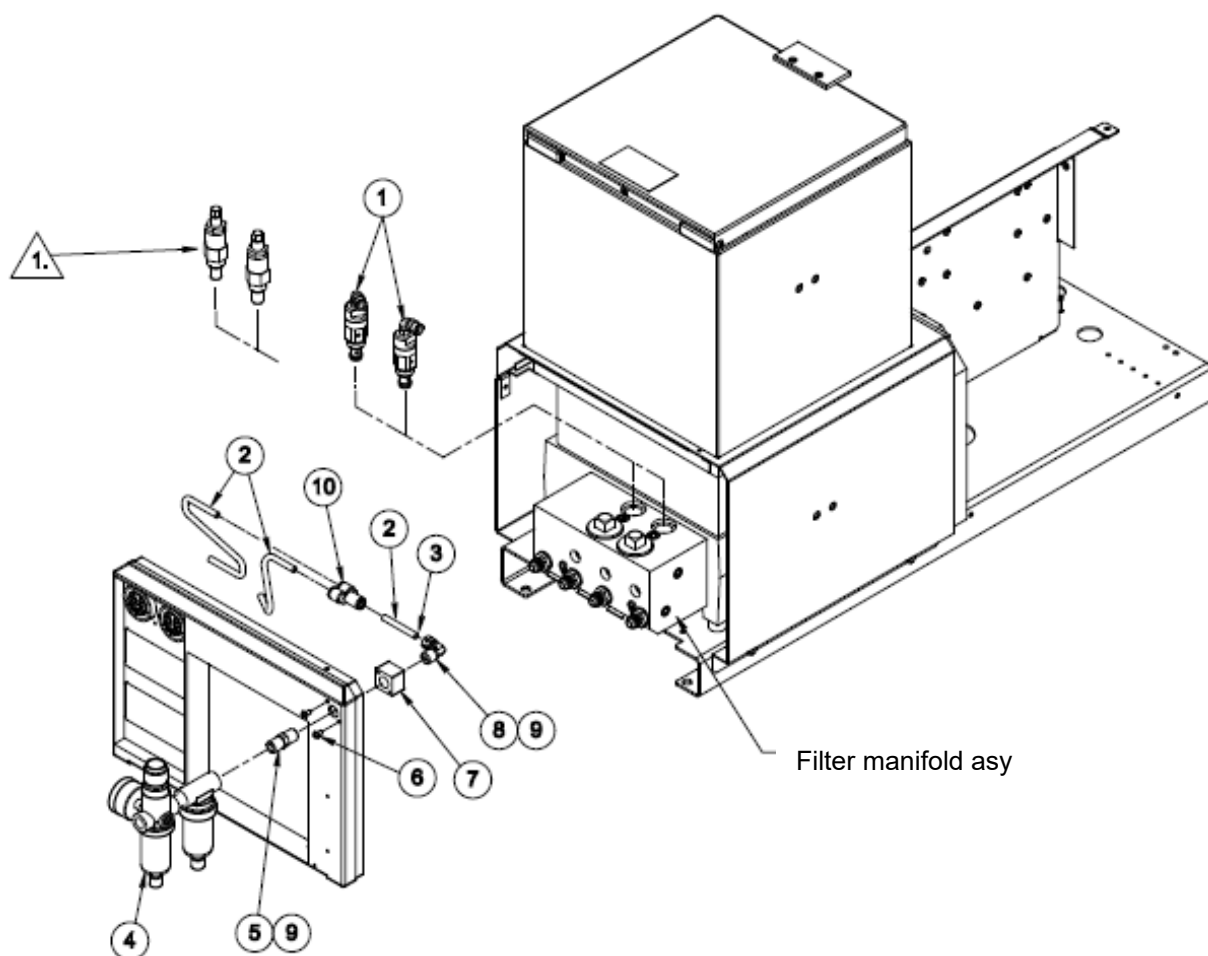
Installation Procedure:

1. Remove pressure relief valve 101840 from the filter manifold asy.
2. Install pneumatic valve asy (item 1) in same location.
3. Coat threads of fittings (items 5 & 8) with thread sealant (item 9 at assembly).
4. Insert tube support (item 3) into one end of Teflon tubing (item 2) and assemble into 90° tube fitting (item 8). Assemble other end of tubing to pneumatic valve (item 1).

Pneumatic Pressure Relief Valve Retrofit Kit for Gear Pump Models with Dual Filter Manifold and Installation, PN 116707

Item No.	Part Number	Description	Quantity
1	115540	Pneumatic pressure relief valve	2
2	N07677	Teflon tubing, 1/4" O.D.	2 ft
3	072X383	Support insert, inline	1
4	100380	Filter/regulator asy	1
5	072X228	Fitting, hex nipple, 1/4 NPT	1
6	106424	Screw M4x8mm	2
7	101888	Block, pneumatic transfer	1
8	N00101	Fitting 1/4" tube x 1/4 NPT, 90°	1
9	N02937	Thread sealant	A/R*
10	116706	Fitting, Y union, 1/4" tube	1

A/R* = As required.

**Installation Procedure:**

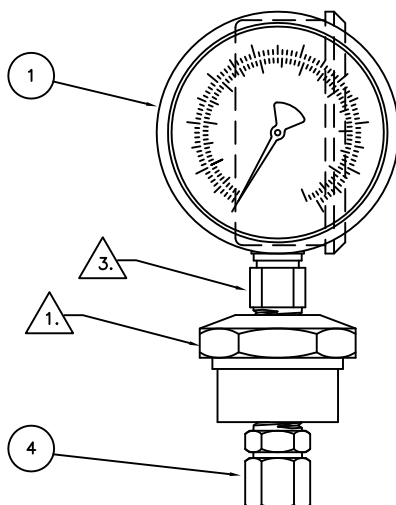
1. Remove pressure relief valve 101840 from the filter manifold asy.
2. Install pneumatic valve asy (item 1) in same location.
3. Coat threads of fittings (items 5 & 8) with thread sealant (item 9 at assembly).
4. Insert tube support (item 3) into one end of Teflon tubing (item 2) and assemble into 90° tube fitting (item 8). Assemble other end of tubing into "Y" union (item 10).
5. Connect both pneumatic valve asy (item 1) to "Y" union (item 10) with Teflon tubing (item 2).

Pressure Gauge Kit, Diaphragm Seal, PN 101175

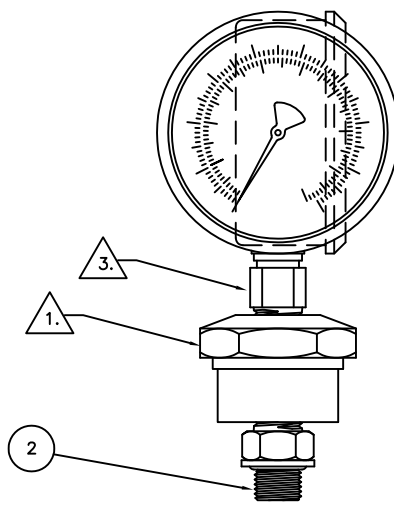
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OTHERS WITHOUT EXPRESS WRITTEN
CONSENT OF ITW/DYNATEC.

DWG. NO. 101175		SHEET 1	REV. N
REVISIONS			
REL.	REV.	DESCRIPTION	DATE BY APPROVED
09141	N	REVISED AND REDRAWN	6.30.09 BB

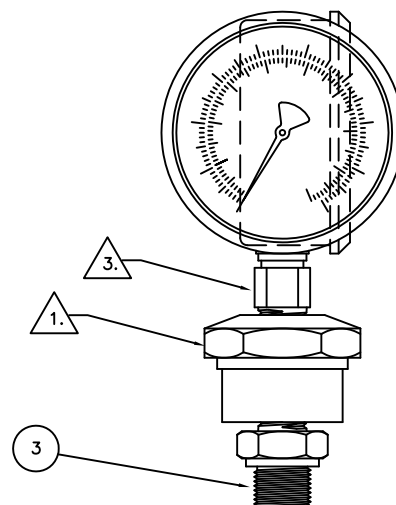
QUICK DISCONNECT TO JIC FITTING CAPABILITY



DYNAMELT-S SERIES



D SERIES/DDS SERIES



NOTES:

1. DIAPHRAGM IS FACTORY FILLED, SEALED AND CALIBRATED. DO NOT ADJUST.
2. MONITOR ADHESIVE TEMPERATURES AFTER INSTALLATION. SOME MINOR ADJUSTMENTS MAY BE NECESSARY.
3. WIRE TIE WARNING LABEL (ITEM 9) TO THIS LOCATION.
4. PLACE ALL FITTINGS (ITEMS 2-7) AND INSULATOR CUFF (ITEM 8) IN A PLASTIC BAG.
5. WRAP GAUGE (ITEM 1) IN BUBBLE WRAP.
6. PLACE GAUGE, BAGGED ITEMS AND ONE COPY OF THIS DRAWING IN SHIPPING BOX (ITEM 10) AND FILL WITH PACKING PEANUTS.

TO FILTER MANIFOLD

90° INSTALLATION

TO FILTER MANIFOLD

TO FILTER MANIFOLD

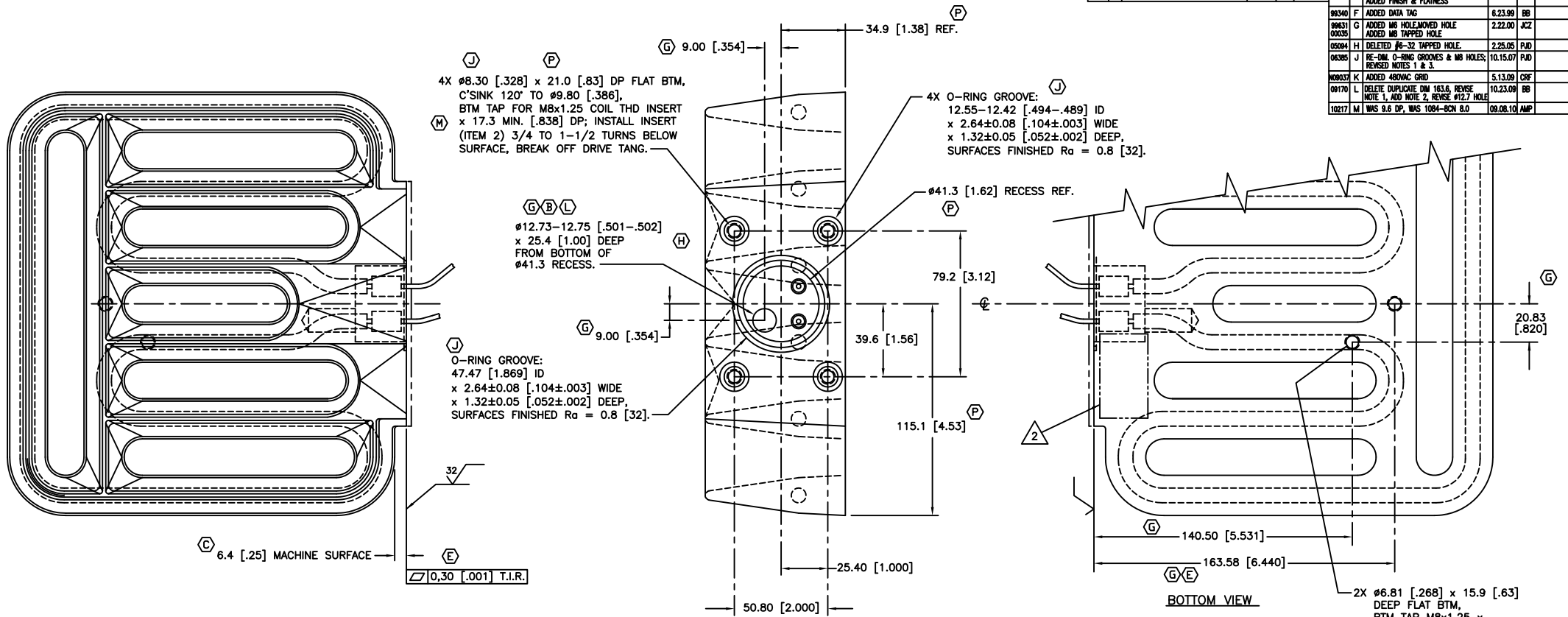
TO FILTER MANIFOLD

10	N07054	1	EA	CORRUGATED BOX, 4X4X8 (NOT SHOWN)
9	101248	1	EA	WARNING LABEL (NOT SHOWN)
8	102987	1	EA	INSULATOR CUFF
7	N07830	1	EA	FITTING, 90°, #6 MALE X #6 FEMALE
6	103623	1	EA	FITTING, ADAPTOR, #6 X 3/8 BSPP
5	101624	1	EA	FITTING, ADAPTOR, #6 X 1/4 BSPP
4	104325	1	EA	FITTING, ADAPTOR, #6 X 1/4 NPT
3	105914	1	EA	FITTING, ADAPTOR, 3/8 BSPP X 1/4 NPT
2	103330	1	EA	FITTING, ADAPTOR, 1/4 BSPP X 1/4 NPT
1	101174	1	EA	PRESSURE GAUGE

ITEM		PART NUMBER		QTY.	U/M	DESCRIPTION			
						PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ARE: X = ±0.25 [.010] ANGLES XX = ±0.10 [.004] ±5°				FOR MACHINING STANDARDS AND SYMBOLS, SEE ITW/DYNATEC SPEC. A05800		 HENDERSONVILLE, TN			
USED ON		APPROVALS		DATE		KIT, PRESSURE GAUGE, DIAPHRAGM SEAL			
DRAWN		PDE		1.12.95					
CHECKED									
NEXT ASSY.		COMPUTER DESCRIPTION(24 CHARACTERS)				SIZE	DWG. NO.	REV.	GR.
DO NOT SCALE DRAWING		KIT,PRSR GAUGE,DIAPH SEAL				C	101175	N	
						SCALE	1:1	CAD DRAWING	SHEET 1 OF 1

Grid asy, PN 104802

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CONSENT OF ITS/DYNACOR.



NOTES:

1. THIS DRAWING MADE IN INCH MEASURE
BUT ALL DIMENSIONS ARE IN MILLIMETERS.
INCH DIMENSIONS ARE IN BRACKETS.
DIMENSIONAL TOLERANCES:
.X = ± 0.25 [± 0.10 INCH]
.XX = ± 0.10 [± 0.04 INCH]
HOLE DEPTHS ARE ± 0.4 [.015]
UNLESS SPECIFIED OTHERWISE.
2. PRIOR TO TFE COATING, MACHINE ENGRAVE OR
PUNCH GRID ASSY PART NUMBER, MANUFACTURER'S
INITIAL, & DATE OF MANUFACTURE IN BOTTOM
LOCATION INDICATED; LETTERS & NUMBERS
5.0mm [.20 INCH] HIGH x 0.5mm [.02 INCH]
MINIMUM DEPTH.
MFR/DATE CODE: MYYWW WHERE M IS THE
MANUFACTURER'S INITIAL, YY IS THE YEAR,
& WW IS THE WEEK NUMBER IN THE YEAR.
3. COATING SPEC: RESIN BONDED PTFE/TFE, COLOR GREY
.001" TO .002" THICK, SERVICE TO 450°.
4. COAT ALL SURFACES EXCEPT MOUNTING SURFACE
AND O-RING GROOVES.
5. TAP DEPTHS ARE TO FULLY FORMED THREADS
AND HOLE DEPTHS ARE TO FULL DIAMETER.

GRID ASSY TABULATION

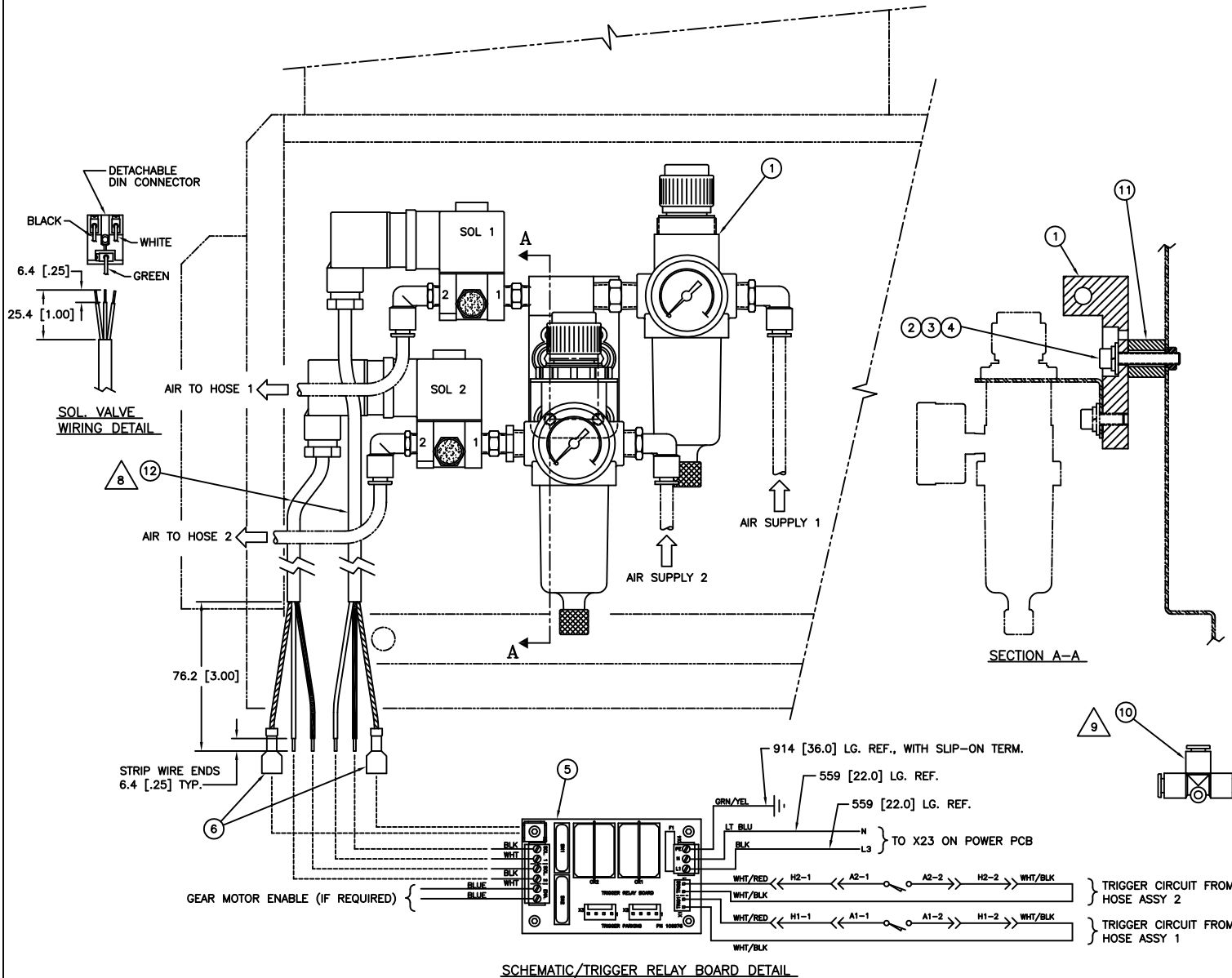
GRID ASSY PART NO.	CASTING PART NO.	VOLTAGE	WATTAGE	HEATER RESISTANCE, OHMS
104802	104801	240VAC	2500W	21.9 - 25.3
115286	115288	480VAC	2500W	87.4 - 101.2

(H) D	2	4	EA	HELICOIL, 1084-8CN 16.0	
	1	SEE TAB	1	GRID CASTING, KNIFE, DM	
REV. NUMBER		QTY.		U/M	
NAME ORIGINATOR DATE JCL = 6A10 [A.000 INCH]		FOR MACHINE DRAWING DATE JCL = 6A10 [A.000 INCH]		PARTS LIST  RESEARCHVILLE, TN	
USED FOR DYNALYT M&S		APPROVALS DESIGN JCZ		GRID ASSEMBLY, KNIFE, DYNALYT	
DATE —		DATE 5.07.97		D. REV. NO. 104802	
(DO NOT SCALE DRAWING)		COMPUTER DESIGNED/GENERATED GRID ASSY.KNIF.DM240V		D. REV. NO. 104802 DATE: 1.1 CAD DRAWING	

Swirl Kit, Dual, DM S, 240VAC, PN 107114

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REV.	NO.	DESCRIPTION	DATE	BY	APPROVED
06236	E	REVISED & REDRAWN.	9.18.06	PJD	
06428	F	ADDED NOTE 10.	10.09.06	PJD	
11029	G	ITEM 2 WMS 104662, ADDED ITEM 11	2.11.11	BB	
12199	H	ADDED ITEM 12 & SOL. WY WIRING DETAIL.	6.18.12	PJD	
15171	J	ITEM 8 WMS 104396	10.29.15	JC	



NOTES:

- DIMENSIONS ARE IN MILLIMETERS. DIMENSIONS IN BRACKETS ARE IN INCHES.
- DIMENSIONAL TOLERANCES, MILLIMETERS:
X = ± 2.5 [± 1]
.X = ± 0.25 [± 0.10]
.XX = ± 0.10 [± 0.04]
- ATTACH AIR SUPPLY ASSY (ITEM 1) TO ASU WITH SCREWS, WASHERS AND SPACERS (ITEMS 2-4 & 11).
- MOUNT TRIGGER RELAY PCB (ITEM 5) INSIDE ASU ENCLOSURE WITH GROUND TERMINAL AND SCREWS INCLUDED.
- TRIM CABLE & WIRES TO LENGTHS SHOWN. SEE NOTE 8 BELOW. ATTACH TERMINALS (ITEM 6) TO GROUND WIRES. ASSEMBLE CABLE & WIRES. TO TRIGGER RELAY PCB AND POWER PCB AS SHOWN.
- USE CABLE TIES, CABLE TIE ANCHORS, AND CABLE CONNECTOR (ITEMS 7-9), NOT SHOWN, TO SECURE SOLENOID VALVE CABLE TO UNDERSIDE OF ASU BASE PANEL.
- WHEN ATTACHING TEFLON AIR TUBING FROM A SWIRL HOSE TO A BARBED FITTING ON A DYNAGUN HAND APPLICATOR OR A BF SWIRL APPLICATOR, FOLLOW THESE STEPS:
A) TRIM TUBING AS APPROPRIATE, LEAVING ENOUGH SLACK TO ROTATE APPLICATOR.
B) WRAP END OF TUBING WITH FIBERGLASS TAPE TO ENSURE A GOOD GRIP.
C) HEAT END OF TUBING WITH A HEAT GUN, SLIDE TUBING ON TO BARBED FITTING, AND LET FITTING COOL.
- CABLE LENGTH TABULATION:

KIT MOUNTING POSITION	CABLE LENGTH
AS SHOWN, ALL DMS MODELS	SOL. 1: 1473 [58.0] SOL. 2: 1651 [65.0]
ON UPPER HOPPER COVER, DMS-10, DMS-22, DMS-45	SOL. 1: 1753 [69.0] SOL. 2: 1930 [76.0]
- ITEMS 2-4 AND 6-11 TO BE BAGGED TOGETHER FOR HANDLING AND SHIPPING.
- ONE COPY OF THIS DRAWING TO BE INCLUDED WITH EACH SWIRL KIT.

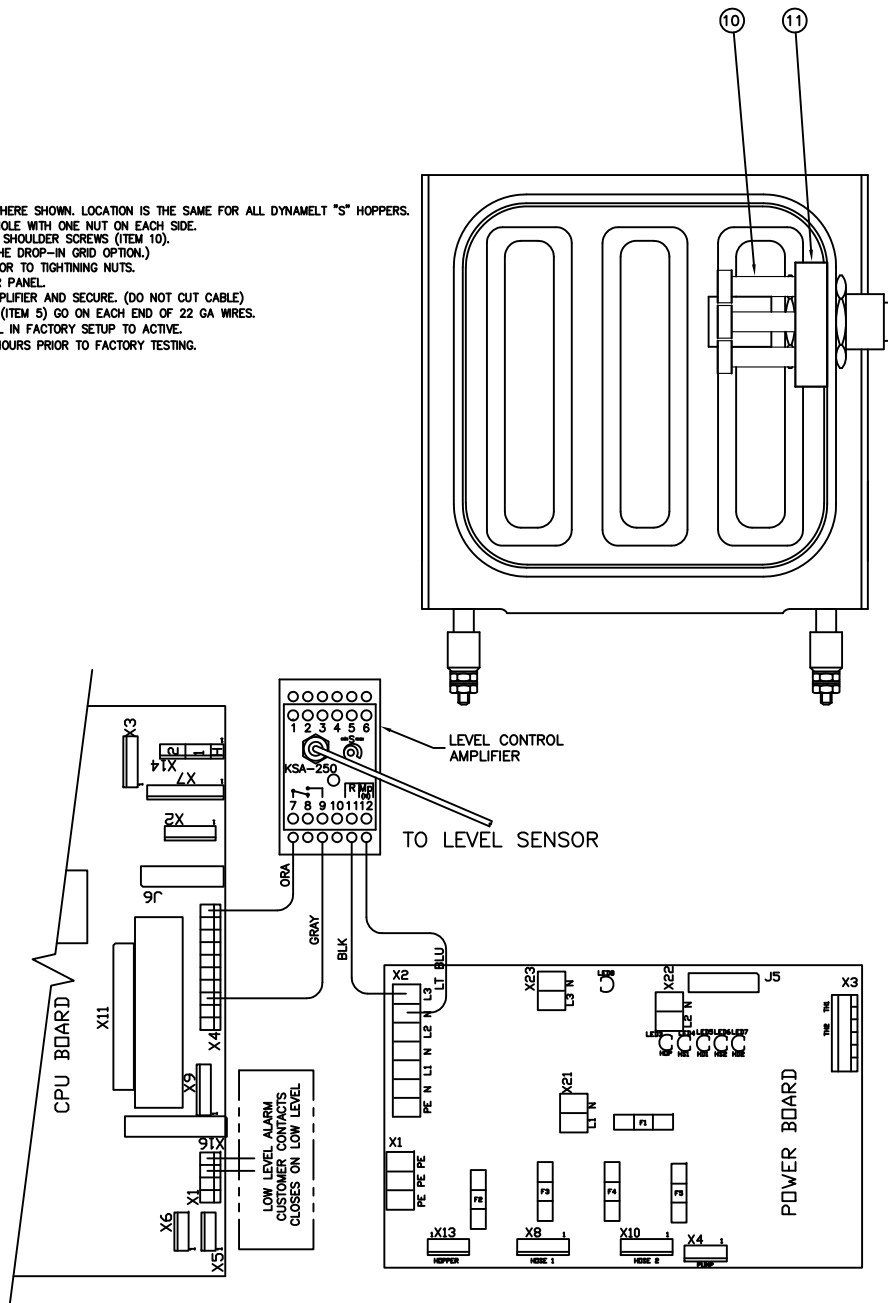
12	N08236	12.7	FT	CABLE, 18/3, TYPE SV				
11	105135	2	EA	SPACER/INSULATOR, .75 LONG				
10	N06504	1	EA	FITTING, TEE, UNION, PUSH-IN				
9	105199	1	EA	CONNECTOR, CABLE, 3/4 NPT				
8	117375	6	EA	CABLE TIE, PINL MT, BLK				
7	N04264	6	EA	CABLE TIE ANCHOR, ADH BACK				
6	N05922	2	EA	TERM, FE, 22-18 GA, 25 SLIP-ON, FULL INSUL				
5	109437	1	EA	KIT, TRIGGER SWITCH RELAY, 240V				
4	111345	2	EA	WASHER, LOCK, M6 SPLIT, ZN PLT				
3	107671	2	EA	WASHER, FLAT, 1/4, ZN PLT				
2	106512	2	EA	SCREW, SHC, M6x1 x .35				
1	113112	1	EA	AIR SUPPLY ASSY, DUAL, 240V				
REV		REV NUMBER		QTY	U/O	DESCRIPTION		
12		N08236		12.7	FT	CABLE, 18/3, TYPE SV		
11		105135		2	EA	SPACER/INSULATOR, .75 LONG		
10		N06504		1	EA	FITTING, TEE, UNION, PUSH-IN		
9		105199		1	EA	CONNECTOR, CABLE, 3/4 NPT		
8		117375		6	EA	CABLE TIE, PINL MT, BLK		
7		N04264		6	EA	CABLE TIE ANCHOR, ADH BACK		
6		N05922		2	EA	TERM, FE, 22-18 GA, 25 SLIP-ON, FULL INSUL		
5		109437		1	EA	KIT, TRIGGER SWITCH RELAY, 240V		
4		111345		2	EA	WASHER, LOCK, M6 SPLIT, ZN PLT		
3		107671		2	EA	WASHER, FLAT, 1/4, ZN PLT		
2		106512		2	EA	SCREW, SHC, M6x1 x .35		
1		113112		1	EA	AIR SUPPLY ASSY, DUAL, 240V		
REV		REV NUMBER		QTY	U/O	DESCRIPTION		
12		N08236		12.7	FT	CABLE, 18/3, TYPE SV		
11		105135		2	EA	SPACER/INSULATOR, .75 LONG		
10		N06504		1	EA	FITTING, TEE, UNION, PUSH-IN		
9		105199		1	EA	CONNECTOR, CABLE, 3/4 NPT		
8		117375		6	EA	CABLE TIE, PINL MT, BLK		
7		N04264		6	EA	CABLE TIE ANCHOR, ADH BACK		
6		N05922		2	EA	TERM, FE, 22-18 GA, 25 SLIP-ON, FULL INSUL		
5		109437		1	EA	KIT, TRIGGER SWITCH RELAY, 240V		
4		111345		2	EA	WASHER, LOCK, M6 SPLIT, ZN PLT		
3		107671		2	EA	WASHER, FLAT, 1/4, ZN PLT		
2		106512		2	EA	SCREW, SHC, M6x1 x .35		
1		113112		1	EA	AIR SUPPLY ASSY, DUAL, 240V		
REV		REV NUMBER		QTY	U/O	DESCRIPTION		
12		N08236		12.7	FT	CABLE, 18/3, TYPE SV		
11		105135		2	EA	SPACER/INSULATOR, .75 LONG		
10		N06504		1	EA	FITTING, TEE, UNION, PUSH-IN		
9		105199		1	EA	CONNECTOR, CABLE, 3/4 NPT		
8		117375		6	EA	CABLE TIE, PINL MT, BLK		
7		N04264		6	EA	CABLE TIE ANCHOR, ADH BACK		
6		N05922		2	EA	TERM, FE, 22-18 GA, 25 SLIP-ON, FULL INSUL		
5		109437		1	EA	KIT, TRIGGER SWITCH RELAY, 240V		
4		111345		2	EA	WASHER, LOCK, M6 SPLIT, ZN PLT		
3		107671		2	EA	WASHER, FLAT, 1/4, ZN PLT		
2		106512		2	EA	SCREW, SHC, M6x1 x .35		
1		113112		1	EA	AIR SUPPLY ASSY, DUAL, 240V		
REV		REV NUMBER		QTY	U/O	DESCRIPTION		
12		N08236		12.7	FT	CABLE, 18/3, TYPE SV		
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3		107671		2	EA	WASHER, FLAT, 1/4, ZN PLT		
2		106512		2	EA			

Capacitive Level Control asy, PN 107193

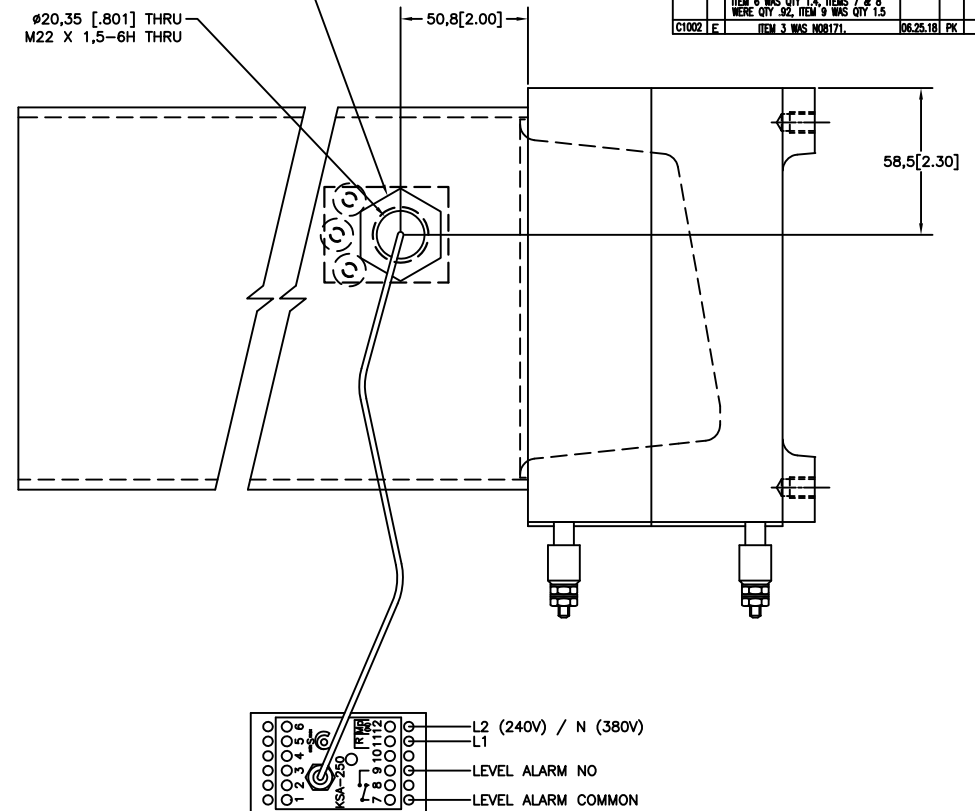
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NOTES:

1. DRILL AND TAP FOR M22 HOLE THRU WHERE SHOWN. LOCATION IS THE SAME FOR ALL DYNALYT "S" HOPPERS.
2. MOUNT CAPACITIVE SENSOR THROUGH HOLE WITH ONE NUT ON EACH SIDE. INSTALL SENSOR GUARD (ITEM 11) AND SHOULDER SCREWS (ITEM 10). (ITEMS 10 & 11 ARE NOT USED WITH THE DROP-IN GRID OPTION.)
3. SEAL SENSOR WITH HIGH TEMP RTV PRIOR TO TIGHTENING NUTS.
4. MOUNT AMPLIFIER TO FRONT OF DIVIDER PANEL.
5. PLUG THE SENSOR CABLE INTO THE AMPLIFIER AND SECURE. (DO NOT CUT CABLE)
6. WIRE INTO ASU AS SHOWN. FERRULES (ITEM 5) GO ON EACH END OF 22 GA WIRES.
7. CHANGE PARAMETER OF LEVEL CONTROL IN FACTORY SETUP TO ACTIVE.
8. MUST ALLOW RTV TO SET UP FOR 24 HOURS PRIOR TO FACTORY TESTING.



Ø20,35 [.801] THRU
M22 X 1,5-6H THRU



CUSTOMER SERVICE INFORMATION FOR HOPPER REPLACEMENT

MODEL	HOPPER, LEVEL CONTROL
DMS05	105727
DMS10	105629
DMS22	105630
DMS45	105631

12	106157	2	EA	LOCKWASHER, M4, INT TOOTH
11	108635	1	EA	GUARD, SENSOR
10	108636	3	EA	SHOULDER SCREW, M6x1.0 X 25
9	103031	2.0	FT	WIRE, 22GA, TFE, GREY
8	103245	1.0	FT	WIRE, 16GA, TFE, LIGHT BLUE
7	042X131	1.0	FT	WIRE, 16GA, TFE, BLACK
6	A42X107	2.0	FT	WIRE, 22GA, TFE, ORANGE
5	104227	4	EA	FERRULE
4	107531	2	EA	SCR, SHC, M4-0.7 x 20
3	N02419	1	EA	RTV ADHESIVE/SEALANT
2	N08122	1	EA	LEVEL CTRL, CAP, SENSOR & AMP
1			REF	EA HOPPER

REV	DATE	DESCRIPTION	BY	CHKD	APP'D
1	12.14.99	ORIGINAL RELEASE	JCZ		
2	12.14.99	M22 TAPPED HOLE WAS M22 HOLE REVISED NOTE 1 & HOPPER P/N TABLE	JCZ		
3	11.10.04	ADDED ITEMS 10, 11; REVISED NOTE 2	JCZ		
4	12.18.07	ITEM 4 WAS 106328, ADDED ITEM 12, ITEM 3 WAS N02419, ITEM 6 WAS QTY 1.4, ITEMS 7 & 8 WERE QTY 92, ITEM 9 WAS QTY 1.5	JCZ		
5	06.25.18	ITEM 3 WAS N08171	JCZ		



REV	DATE	DESCRIPTION	BY	CHKD	APP'D
1	12.14.99	ORIGINAL RELEASE	JCZ		
2	12.14.99	M22 TAPPED HOLE WAS M22 HOLE REVISED NOTE 1 & HOPPER P/N TABLE	JCZ		
3	11.10.04	ADDED ITEMS 10, 11; REVISED NOTE 2	JCZ		
4	12.18.07	ITEM 4 WAS 106328, ADDED ITEM 12, ITEM 3 WAS N02419, ITEM 6 WAS QTY 1.4, ITEMS 7 & 8 WERE QTY 92, ITEM 9 WAS QTY 1.5	JCZ		
5	06.25.18	ITEM 3 WAS N08171	JCZ		

DO NOT SCALE DRAWING

SCALE 1:1

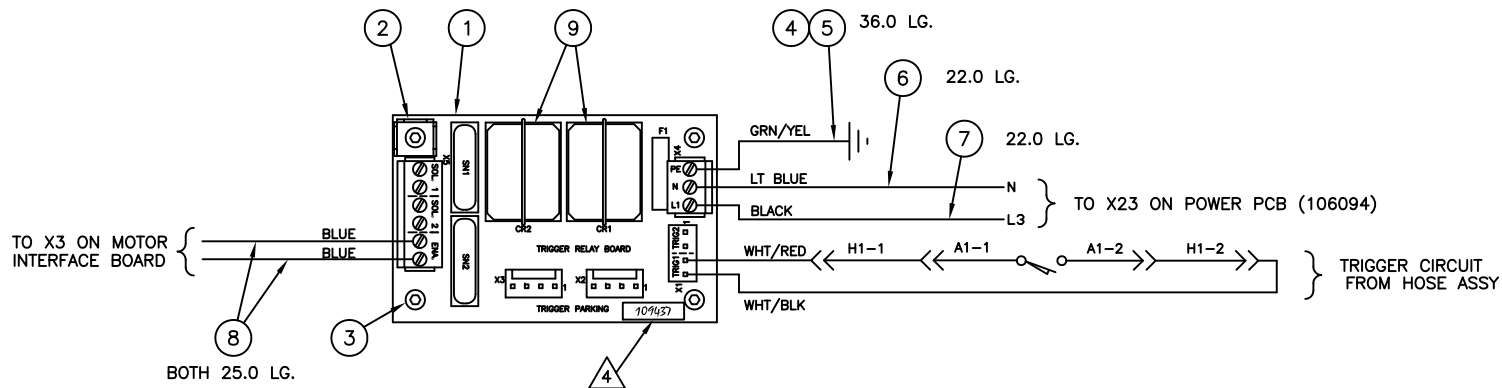
CAD DRAWING

SHEET 1 OF 1

Trigger Switch Relay Kit, PN 109437

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DWG. NO.	109437	SHT.	1	REV.	D
REVISIONS					
REL.	REV.	DESCRIPTION	DATE	BY	APPROVED
06236	C	REVISED & REDRAWN WITH TABULATION.	9.18.06	PJD	
06426	D	DESCRIPTION REVISED, ITEM 8.	10.09.06	PJD	



BILL-OF-MATERIAL TABULATION

KIT PART NO.	NOMINAL VOLTAGE	RELAY ITEM 9 QTY.
109437	240 VAC	0
110022	120 VAC	2

NOTES:

1. TRIGGER RELAY PCB (ITEM 1) IS SUPPLIED WITH TWO 240 VAC DPDT RELAYS INSTALLED. THESE RELAYS ARE REPLACED FOR THE 120 VAC VERSION ONLY.
2. MOUNT TRIGGER RELAY PCB INSIDE ASU ENCLOSURE WITH GROUND TERMINAL (ITEM 2) AND SCREWS (ITEM 3).
3. WIRES TERMINATED AT SCREW TERMINAL BLOCKS ON PCB TO HAVE ENDS STRIPPED .16 INCH.

4 COVER PCB PART NO. WITH LABEL SHOWING THE APPROPRIATE RELAY KIT PART NUMBER. LABEL BE HAND-PRINTED.

9	048H365	SEE TAB	EA	RELAY, DPDT, 120V
8	042X055	4.2	FT	WIRE, TFE, 20 GA, BLUE
7	042X021	2.0	FT	WIRE, TFE, 18 GA, BLACK
6	103246	2.0	FT	WIRE, TFE, 18 GA, LT BLUE
5	N05922	1	EA	TERM, .25 TAB PUSH-ON, 22-18 GA, FULL INSUL
4	N06989	3.0	FT	WIRE, TFE, 18 GA, GRN/YEL
3	103404	4	EA	SCREW, SHC, M3x0.5 x 10
2	106812	1	EA	TERMINAL, FASTON TAB, .250 x .032
1	106976	1	EA	PCB ASSY, TRIGGER RELAY
ITEM	PART NUMBER	QTY.	U/M	DESCRIPTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS. TOLERANCES ARE: X = ±0.51 [±.020 INCH] 10.9 XX = ±0.25 [±.010 INCH]		FOR MACHINING STANDARDS AND SYMBOLS, SEE ITW/DYNATEC SPEC. A05800		PARTS LIST	
USED ON	DM-S & N22 ASU	APPROVALS	DATE	4.11.02	
CHECKED		COMPUTER DESCRIPTION(25 CHARACTERS)	SIZE	DWG. NO.	REV.
DO NOT SCALE DRAWING		KIT,TRIG SW RLY,240V,DMS	C	109437	D
		SCALE 1:1		SHEET 1 of 1	

ITW Dynatrac
HENDERSONVILLE, TN

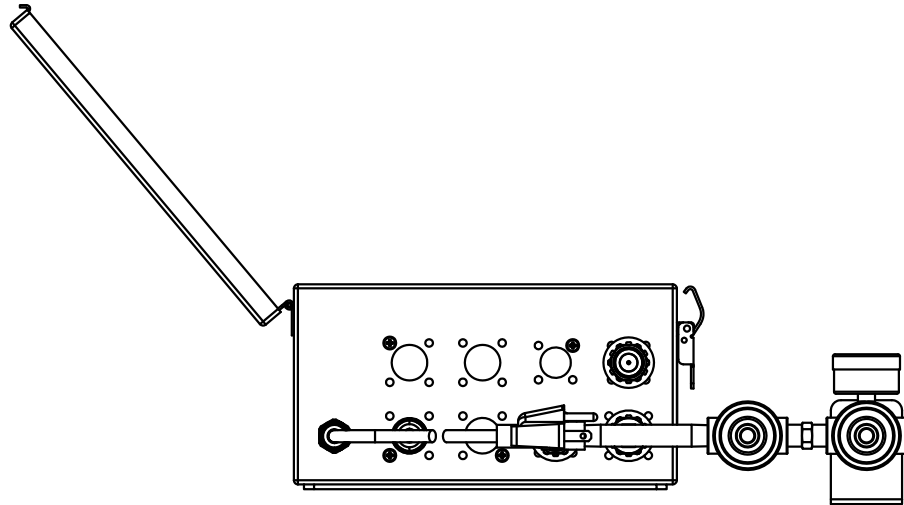
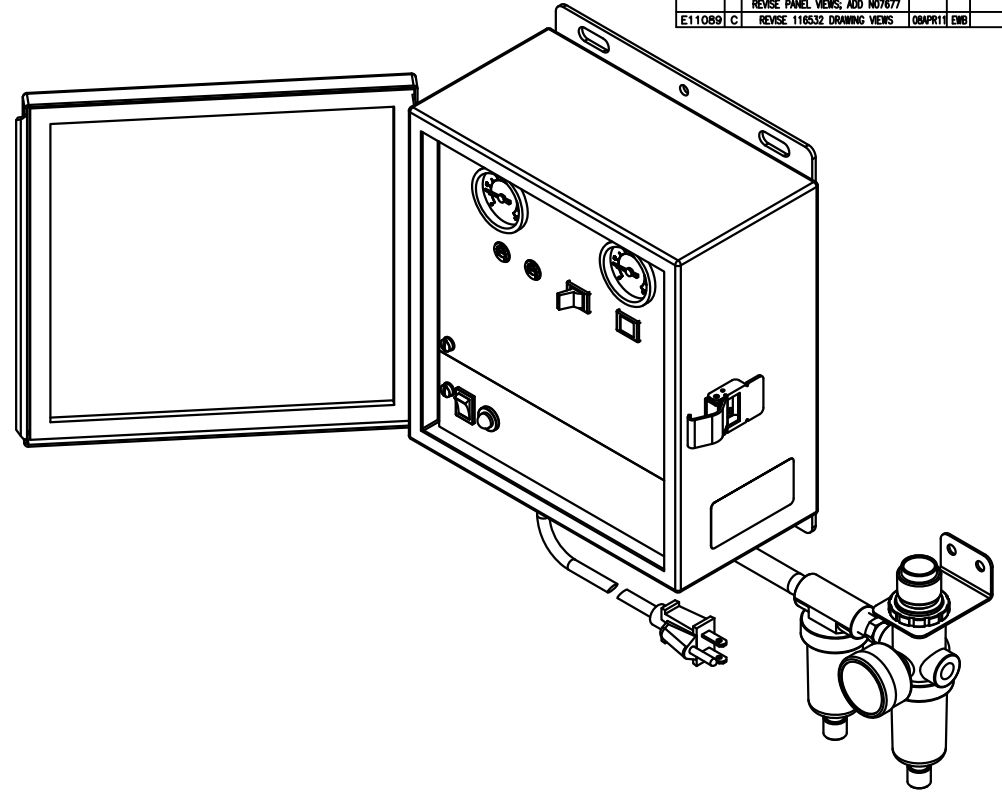
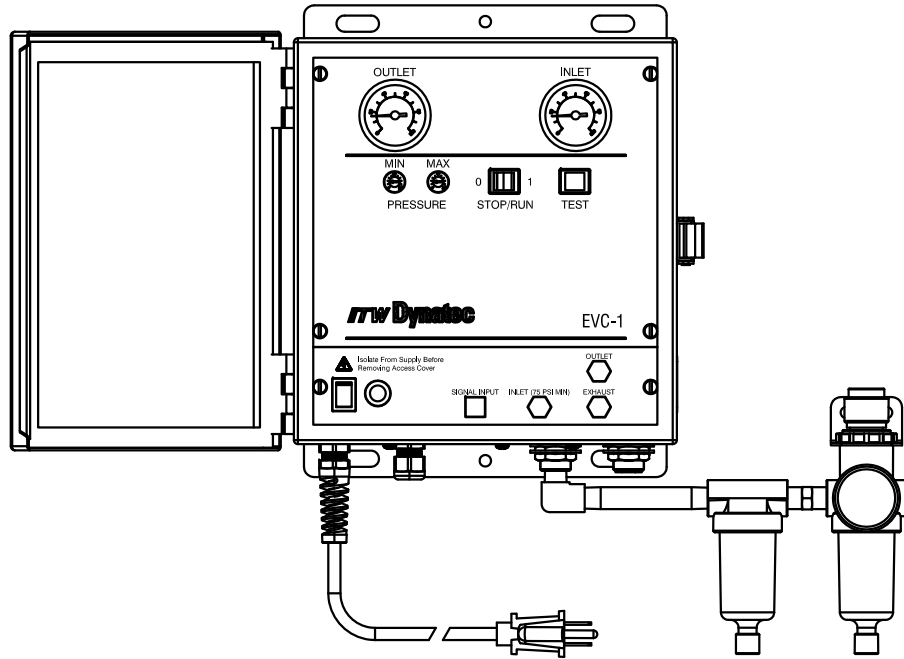
KIT, TRIGGER SWITCH
RELAY, DYNAMELT-S

U/M
EA
STATUS
M
SOURCE

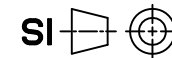
EVC-1 Pneumatic Control Asy, PN 116480

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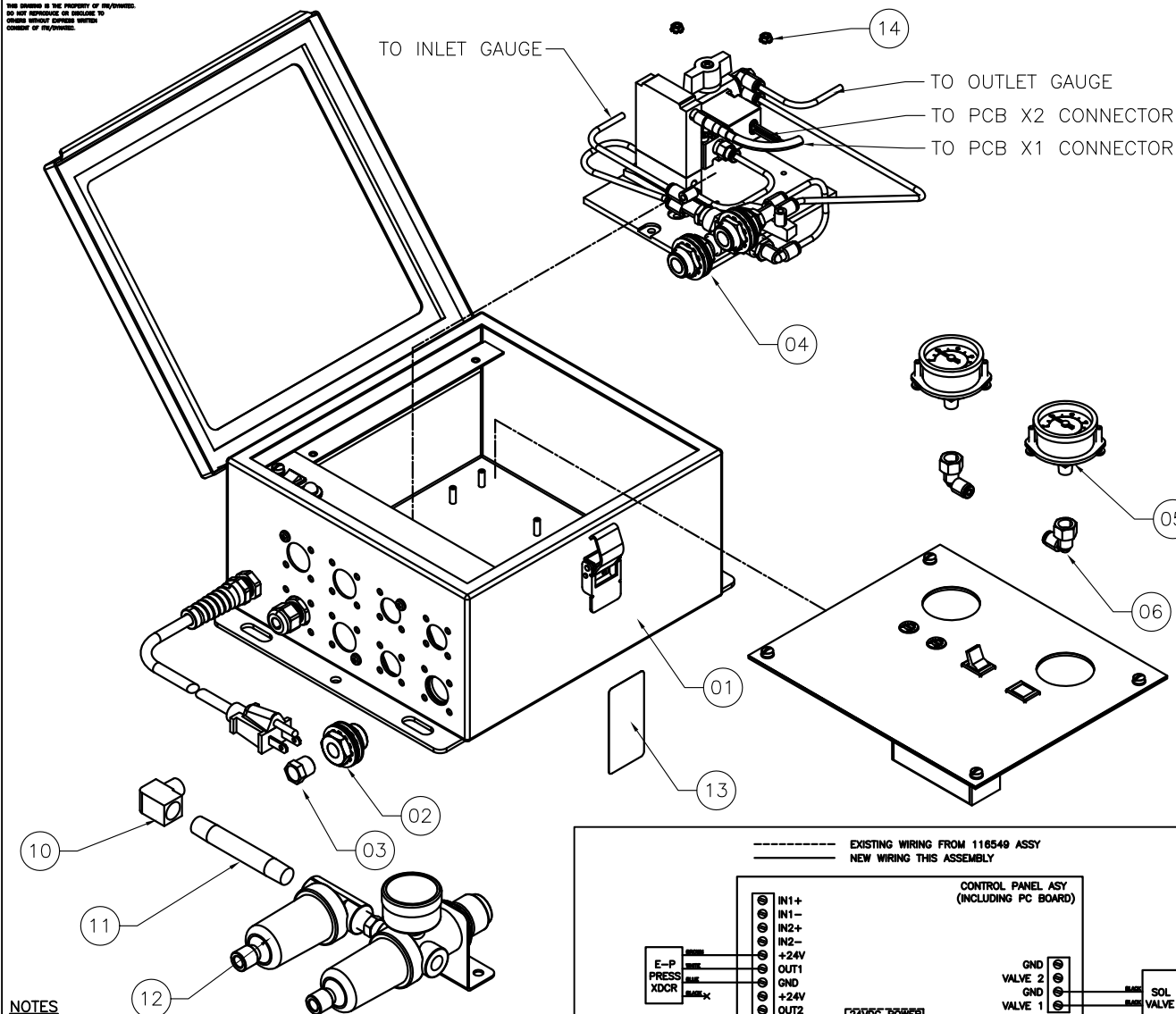
DWG. NO.		116480		REV.	1	C
REVISIONS						
REV.	REV.	DESCRIPTION	DATE	BY	APPROVED	
N10030	A	ORIGINAL RELEASE	14OCT10	EWB		
E10316	B	ADD 107391; REVISE WIRING SCHEM; REVISE PANEL VIEWS; ADD N07677	17DEC10	EWB		
E11089	C	REVISE 116532 DRAWING VIEWS	08APR11	EWB		



SEE SHEET 2 FOR BOM AND ASSEMBLY DETAILS

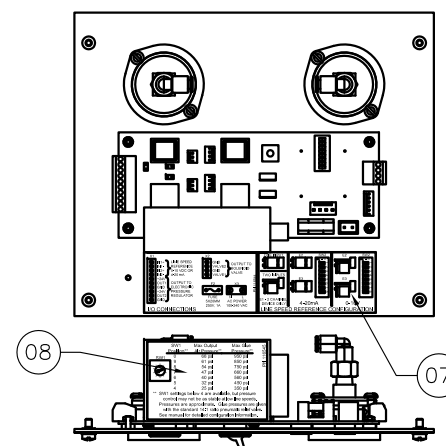
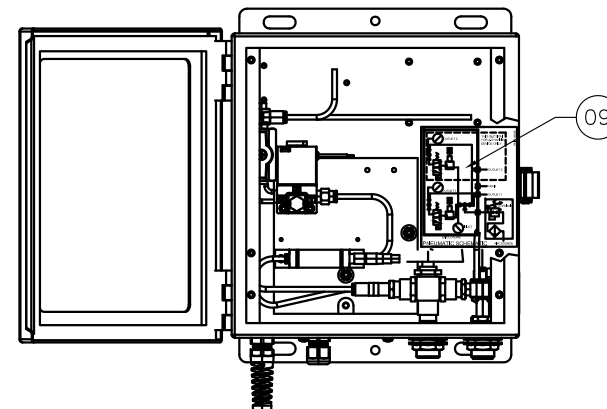
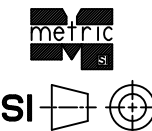
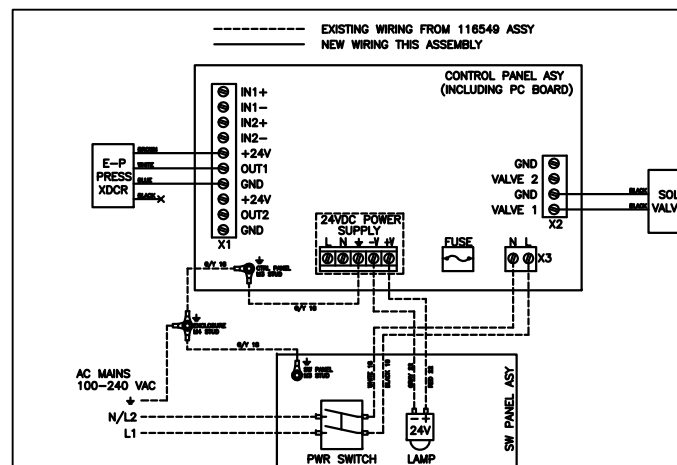


REV.		REV. NUMBER	QTY.	U/A	DESCRIPTION
SEE SHEET 2					
FOR MACHINING STANDARDS AND DIMENSIONS SEE: 107391		PARTS LIST			
USED ON		APPROVALS	DATE	EVC-1 PNEUMATIC CONTROL ASSY	
TEST PART:		EWB	14OCT10	116480	
DO NOT SCALE DRAWING		COMPUTER GENERATED DRAWING		SCALE 1:1.5	CAD DRAWING



NOTES

1. CONNECTION TO GAUGES IS FROM PNEUMATIC SUBASSY AS NOTED ABOVE.
2. BULKHEAD FITTING (ITEM 02) IS INSTALLED FROM OUTSIDE. THE TWO BULKHEAD FITTINGS INCLUDED WITH THE PNEUMATIC SUBASSY ARE INSTALLED FROM THE INSIDE.
3. CONFIGURE PC BOARD FOR 0-10V OPERATION AND FOR ONE INPUT SIGNAL. SET SWITCH SW1 TO THE '0' POSITION. REFER TO LABELS 116544 AND 116545, OR REFER TO WORK INSTRUCTIONS.
4. BAG ITEMS 10, 11, 12, 15, 17 AND 18 FOR SHIPMENT.



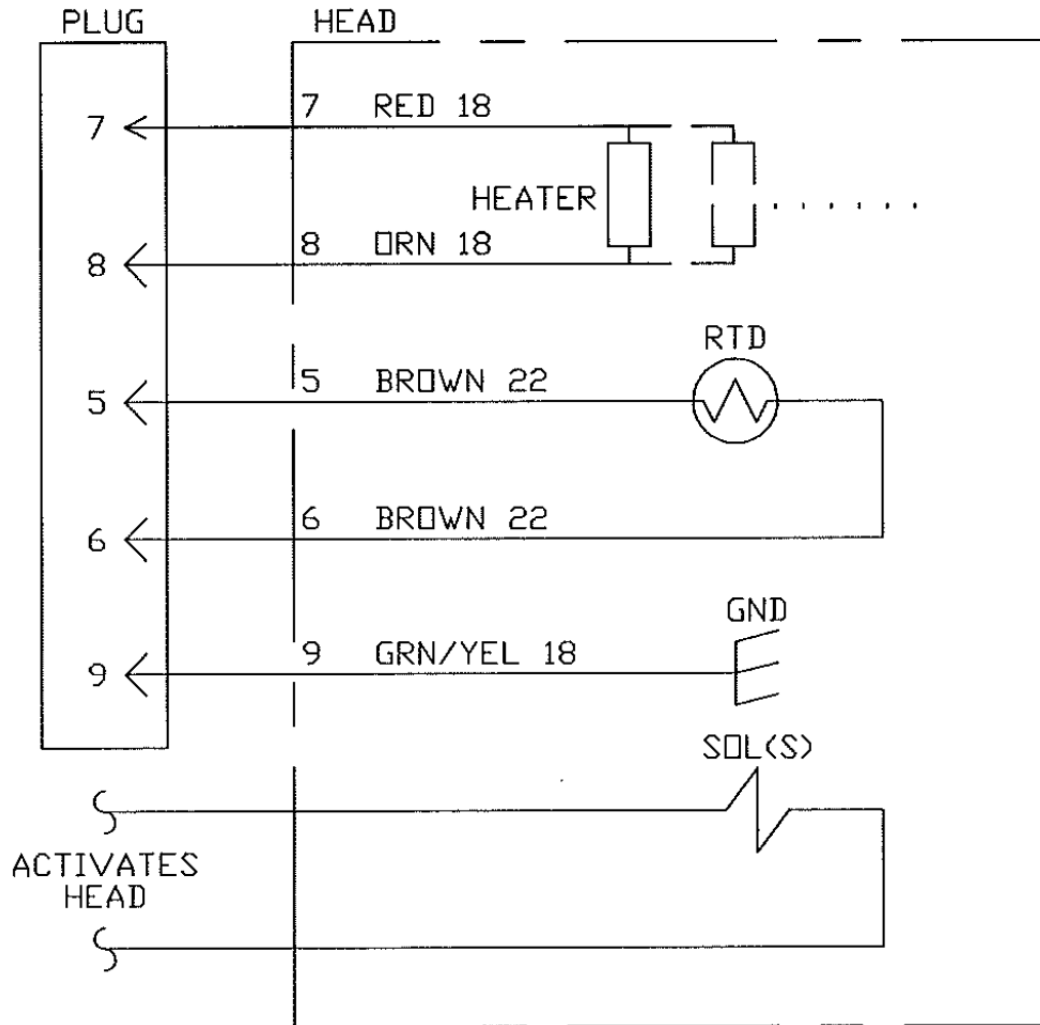
ABEL LOCATIONS (ITEMS 07-09)

NOT SHOWN	18	N06412	1	EA	FTG, 90° ELBOW, 1/4 TUBE X 1/4NPT	
NOT SHOWN	17	N06430	1	EA	FTG, STR, 1/4 TUBE X 1/4NPT	
	16	50-21	1	EA	MANUAL, EVC-1	
NOT SHOWN	15	N07677	6	FT	TUBING, TFE, 1/4" OD X 1/8" ID	
	14	107391	2	EA	NUT, M4-0.7, KEPS	
	13	116550	1	EA	LBL, PRODUCT ID, EVC-1	
	12	100380	1	EA	F/R KIT, 1/4NPT	
	11	N03740	1	EA	NIPPLE, 1/4NPT, 3.5", BRASS	
	10	072X040	1	EA	FTG, 90° STREET ELBOW	
	09	116546	1	EA	LBL, PNEU SCHEM, EVC-1	
	08	116545	1	EA	LBL, OUTPUT SETUP, EVC-1	
	07	116544	1	EA	LBL, INPUT SETUP, EVC-1	
	06	116397	2	EA	FTG, 90° ELB, 1/8NPT FEM X 5/32 T	
	05	115846	2	EA	GAUGE, PANEL MOUNT, 0-100 PS	
	04	116532	1	EA	PNEUMATIC SUBPLATE ASY, EVC-1	
	03	0308208	1	EA	FTG, VENT, 1/4 NPT	
	02	116389	1	EA	FTG, BLKHD, 1/4 NPT, BRASS	
	01	116549	1	EA	CTRL SUBASY, EVC-1	

Chapter 11

System Schematics & Engineering Drawings

Head Schematic, PN 103117, Rev.B, DynaControl

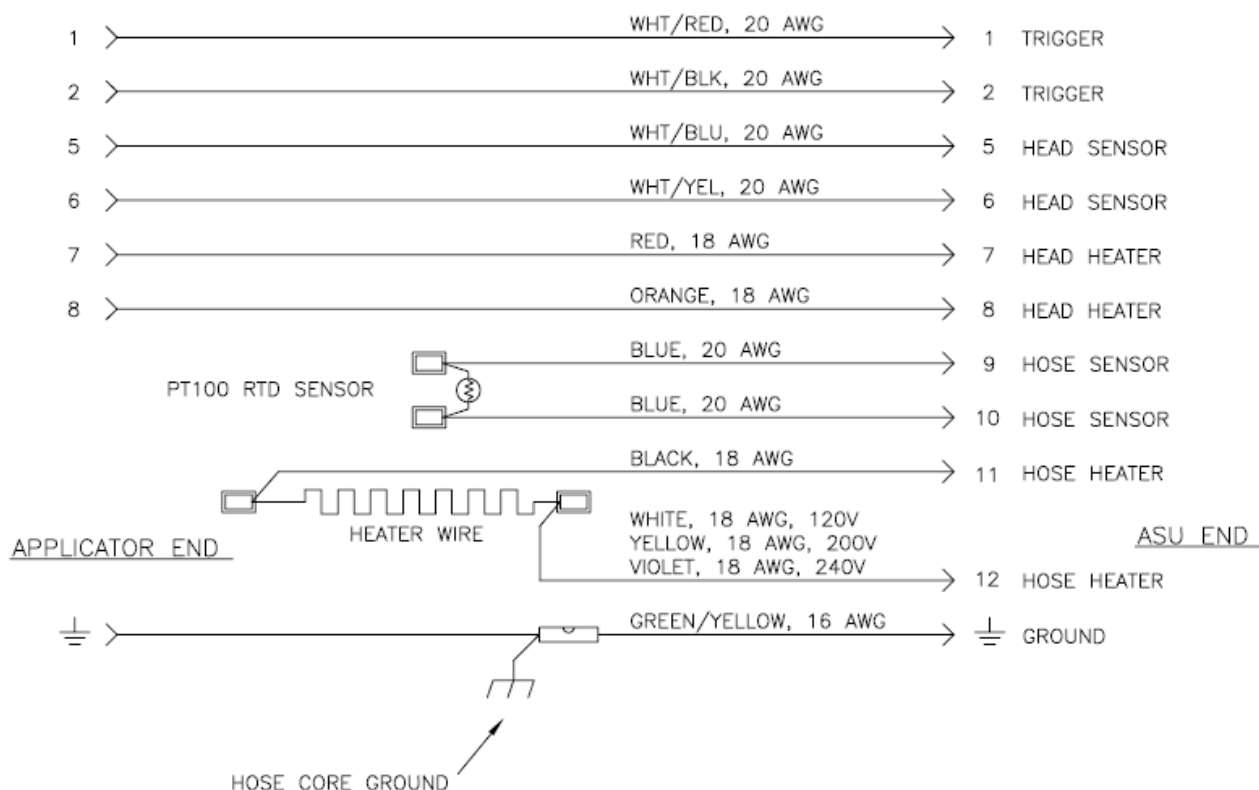


NOTES:

1. All wire MIL-W-22759/10 or 12, minimum 600 Volts, 260 °C.
2. Solenoid(s) voltage and timing method depends on application.
3. RTD will be platinum 100 Ohm.

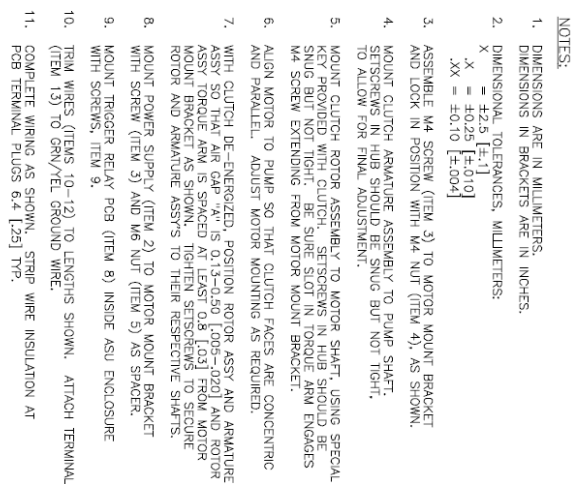
Hose Schematic, PN 101082, Rev.G, DynaControl

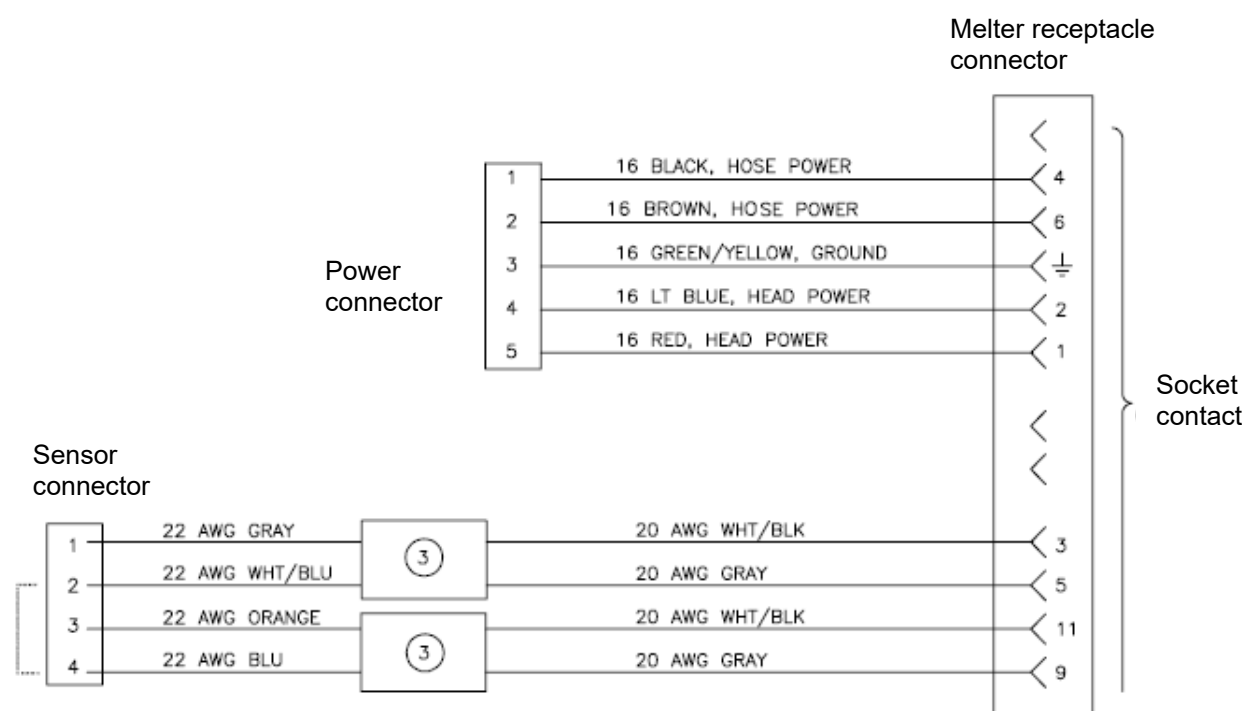
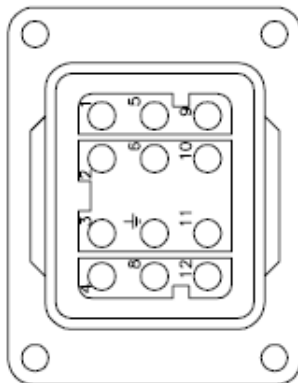
Melter to Applicator

**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.

Installation, BOM and Schematic

[illegible]

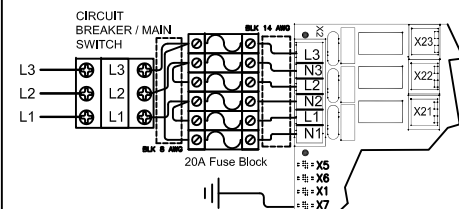
PIN connector and wiring diagram for optional DMS w. NORD connectors, Hose harness asy, PN 11033112-position NORD
receptacle

Wiring diagram, DM S, 2-hose 2-head, PN 107156, rev. W

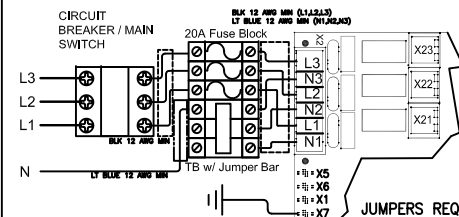
THIS DRAWING IS THE PROPERTY OF ITS/DYNATEC.
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CONSENT OF ITS/DYNATEC.

POWER PCB CONNECTIONS

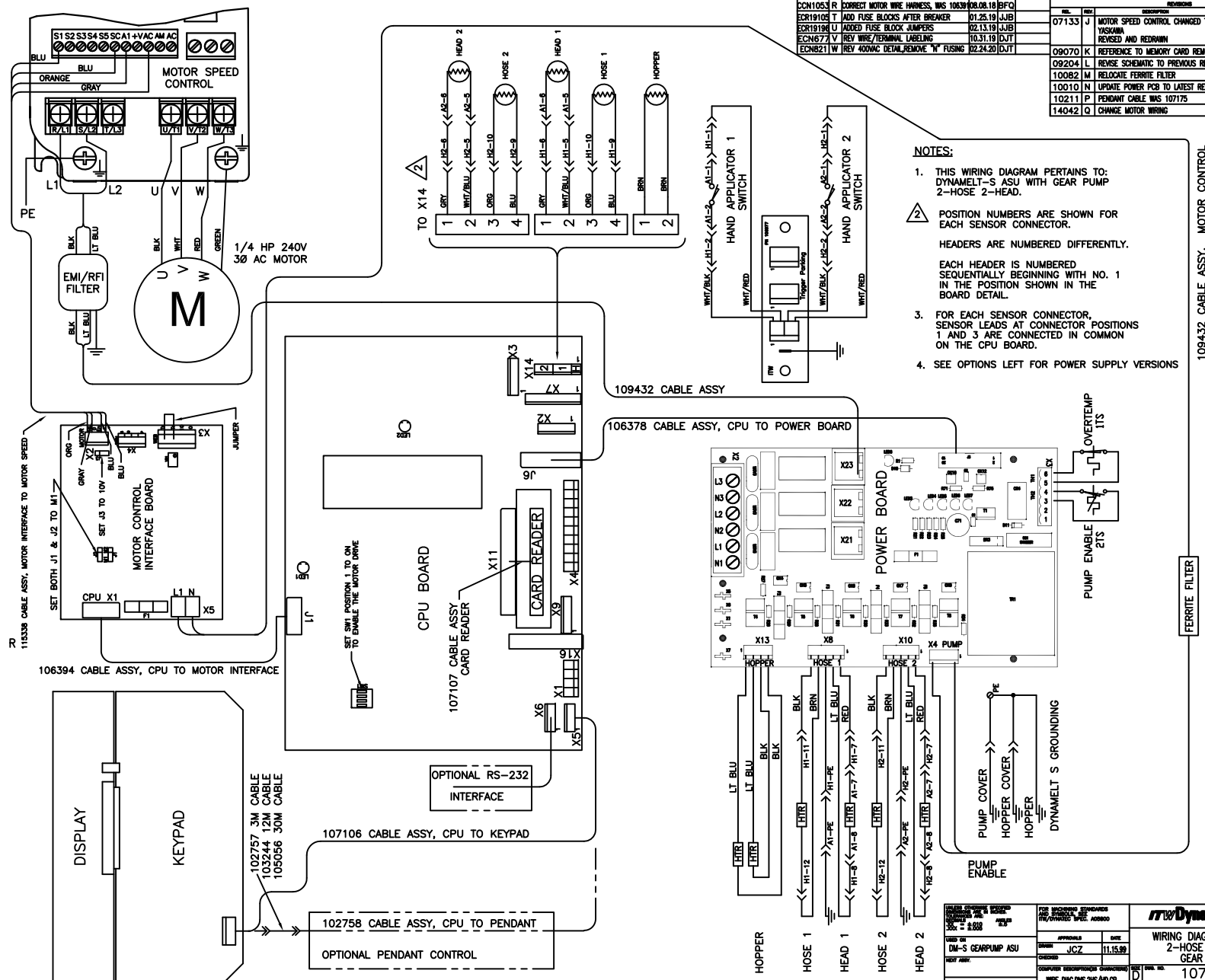
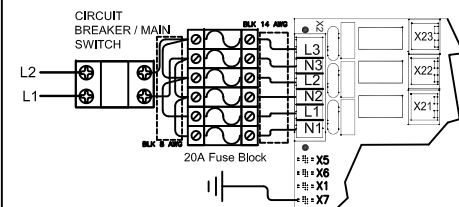
240VAC - THREE PHASE ("DELTA")



400VAC - THREE PHASE ("WYE")



240VAC - SINGLE PHASE



				REVISIONS					
				REL	REV	DESCRIPTION	DATE	BY	APPROVED
CCN1053	R	CORRECT MOTOR WIRE HARNESS, WMS 10639	08.08.18	BFQ					
ECR19105	T	ADD FUSE BLOCKS AFTER BREAKER	01.25.19	JJB	07133	J	MOTOR SPEED CONTROL CHANGED TO YASUKAWA	4.24.09	BB
ECR19196	U	ADDED FUSE BLOCK JUMPS	02.13.19	JJB			REVISID AND REDRAWN		
ECN6677	V	RE WIRE/TERMINAL LABELING	10.31.19	DJT					
ECN821	W	RE 400VAC DETAIL REMOVE "N" FUSING	02.24.20	DJT	09070	K	REFERENCE TO MEMORY CARD REMOVED	7.19.08	BB

NOTES:

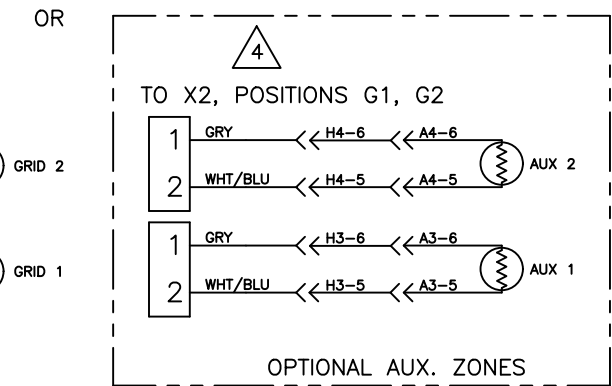
1. THIS WIRING DIAGRAM PERTAINS TO:
DYNAMELT-S ASU WITH GEAR PUMP
2-HOSE 2-HEAD.
2. POSITION NUMBERS ARE SHOWN FOR
EACH SENSOR CONNECTOR.

HEADERS ARE NUMBERED DIFFERENTLY.

EACH HEADER IS NUMBERED
SEQUENTIALLY BEGINNING WITH NO. 1
IN THE POSITION SHOWN IN THE
BOARD DETAIL.
3. FOR EACH SENSOR CONNECTOR,
SENSOR LEADS AT CONNECTOR POSITIONS
1 AND 3 ARE CONNECTED IN COMMON
ON THE CPU BOARD.
4. SEE OPTIONS LEFT FOR POWER SUPPLY VERSIONS

RELEASE OF THIS DRAWING IS AUTHORIZED BY THE SIGNATURE OF THE DESIGNED BY: WJ DATE: 3-2-83	FOR RECORDING PURPOSES NO CHANGES TO BE MADE WITHOUT THE APPROVAL OF THE DESIGNER			WJ EAC
	APPROVALS: DATE DESIGNED: JCZ 11.15.89 CHECKED: _____ COMPUTER ENGINTEERING CORPORATION WIRE: DWG.DIMS/NO.DWG			MEMPHIS, TENN. WIRING DIAGRAM, DM-S, 2-HOSE 2-HEAD, GEAR PUMP 107156 MYSI CAL/PANING
USED ON DM-S GEARPUMP ASU NOT USED: DO NOT SCALE DRAWING	SIZE: D		107156 WJ WJ	1

Wiring diagram, DM S, Grids & AUX zones, PN 107157, rev. L



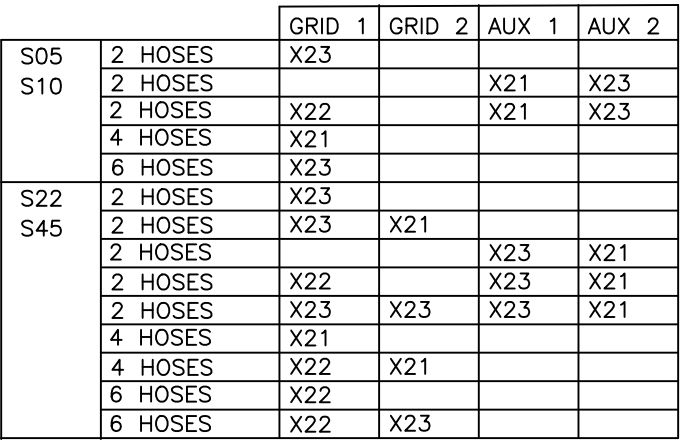
1. THE WIRING DIAGRAM ON THIS SHEET PERTAINS TO:
DYNAMELT-S ASU, 240 VAC, 1ø, 50/60 HZ;
2-HOSE 2-HEAD; WITH ONE AUXILIARY BOARD,
1 OR 2 GRIDS, OR 2 AUXILIARY CONTROL ZONES.
2. FOR HOSE/HEAD 1 AND HOSE/HEAD 2 WIRING,
AND DWG. 107156 FOR GEAR PUMP ASU.

- | DWG. SHT. | NO. OF HOSE/HEADS | NO. OF AUX. BOARDS | ACCESSORIES |
|-----------|-------------------|--------------------|----------------------------------|
| 1 | 2 | 1 | 1 OR 2 GRIDS
OR 2 AUX. ZONES |
| 2 | 4 | 1 OR 2 | 1 OR 2 GRIDS |
| 3 | 6 | 2 OR 3 | 1 OR 2 GRIDS |
| 4 | 2 | 1 | 1 OR 2 GRIDS
AND 2 AUX. ZONES |

EACH HEADER IS NUMBERED SEQUENTIALLY
BEGINNING WITH NO. 1 IN THE POSITION
SHOWN IN THE BOARD DETAIL.

- * BLK -> TERMINAL L1,2,3
BLU -> TERMINAL N

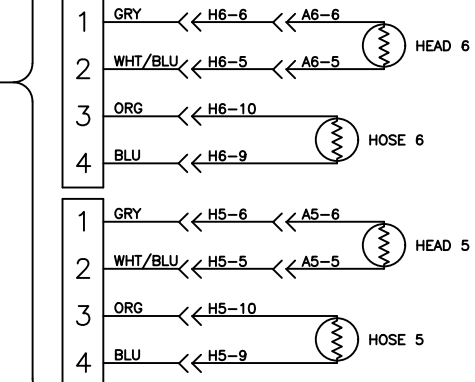
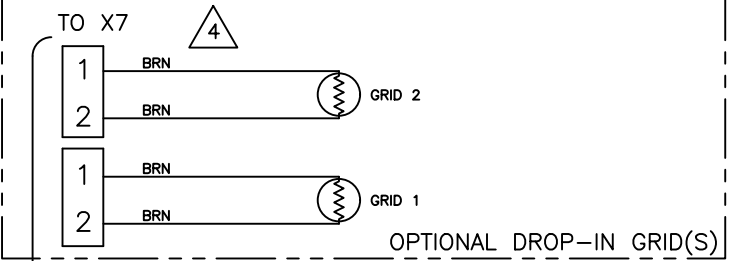
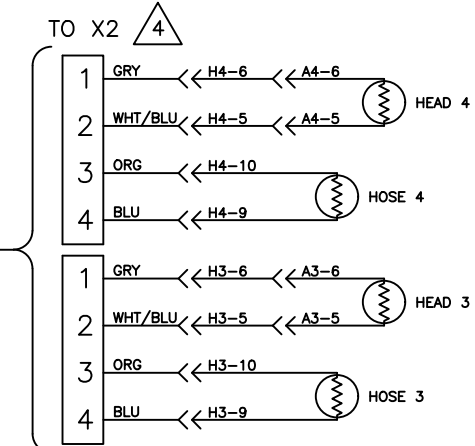
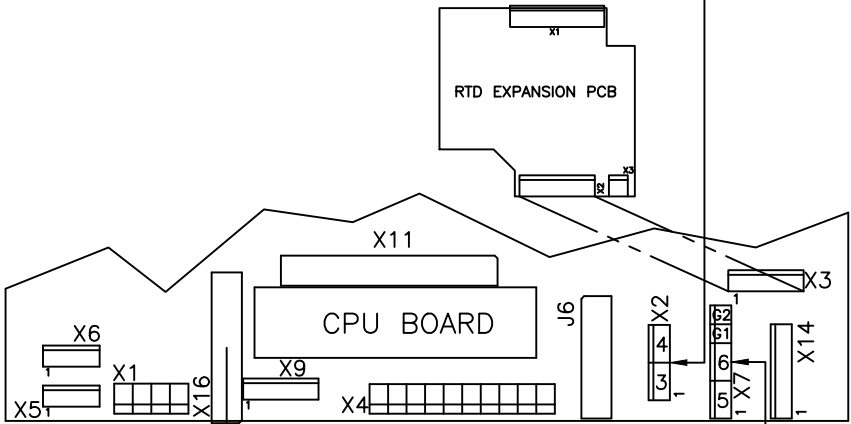
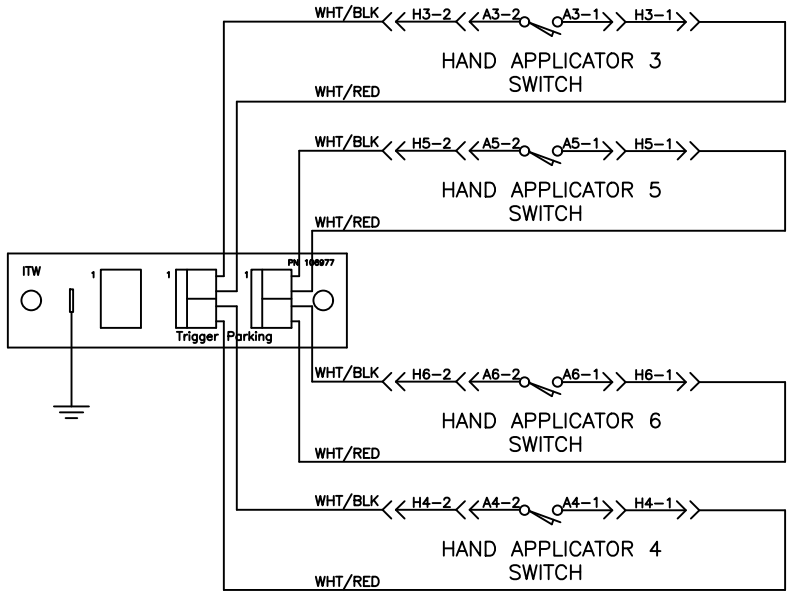
		GRID 1	GRID 2	AUX 1	AUX 2
S05 S10	2 HOSES	X23			
	2 HOSES			X21	X23
	2 HOSES	X22		X21	X23
	4 HOSES	X21			
	6 HOSES	X23			
S22 S45	2 HOSES	X23			
	2 HOSES	X23	X21		
	2 HOSES			X23	X21
	2 HOSES	X22		X23	X21
	2 HOSES	X23	X23	X23	X21
	4 HOSES	X21			
	4 HOSES	X22	X21		
	6 HOSES	X22			
	6 HOSES	X22	X23		



DWG. SHT.	NO. OF HOSE/HEADS	NO. OF AUX. BOARDS	ACCESSORIES
1	2	1	1 OR 2 GRIDS OR 2 AUX. ZONES
2	4	1 OR 2	1 OR 2 GRIDS
3	6	2 OR 3	1 OR 2 GRIDS
4	2	1	1 OR 2 GRIDS AND 2 AUX. ZONES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FINISHES ANGLES .00X = ±.010 ±.5 .00X = ±.005 ±.5		FOR MACHINING STANDARDS AND SYMBOLS, SEE ITW/DYNATEC SPEC. A05800				HENDERSONVILLE, TN		U/M EA	
USED ON DYNALMET-S ASU		APPROVALS DATE DRAWN JCZ 11.15.99 CHECKED		WIRING DIAGRAM, DM-S, GRIDS & AUX ZONES				STATUS R SOURCE	
NEXT ASSY.		COMPUTER DESCRIPTION(25 CHARACTERS) WIRE DIAG, DMS, GRIDS/AUX		SIZE DWG. NO. 107157 D N.T.S. CAD DRAWING		REV. 1 SHEET 2 OF 4		GROUP	
DO NOT SCALE DRAWING									

REVISIONS					
REL.	REV.	DESCRIPTION	DATE	BY	APPROVED



NOTES:

1. THE WIRING DIAGRAM ON THIS SHEET PERTAINS TO: DYNAMELT-S ASU, 240 VAC, 1Ø, 50/60 HZ; 6-HOSE 6-HEAD; WITH 2 OR 3 AUXILIARY BOARDS AND 1 OR 2 GRIDS.
2. FOR HOSE/HEAD 1 AND HOSE/HEAD 2 WIRING, SEE DWG 107156 FOR GEAR PUMP ASU.

FOR HOSE/HEAD 3 AND HOSE/HEAD 4 WIRING, SEE SHT. 2 OF THIS DRAWING.

3. DRAWING 107157 DIAGRAM MENU:

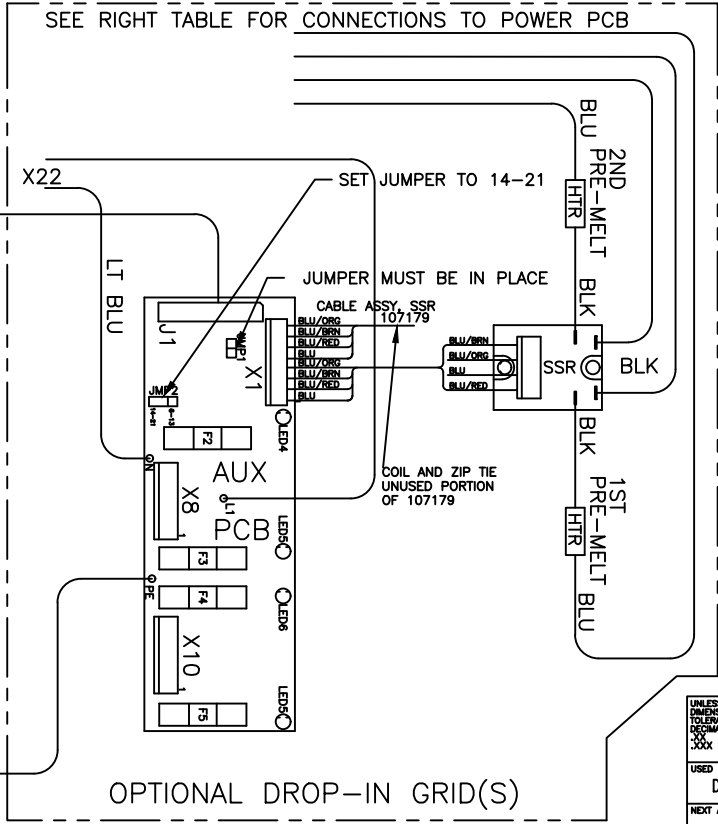
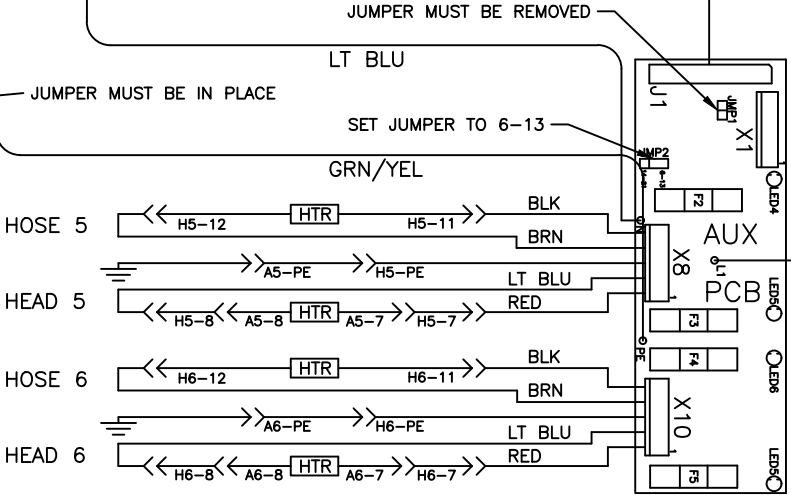
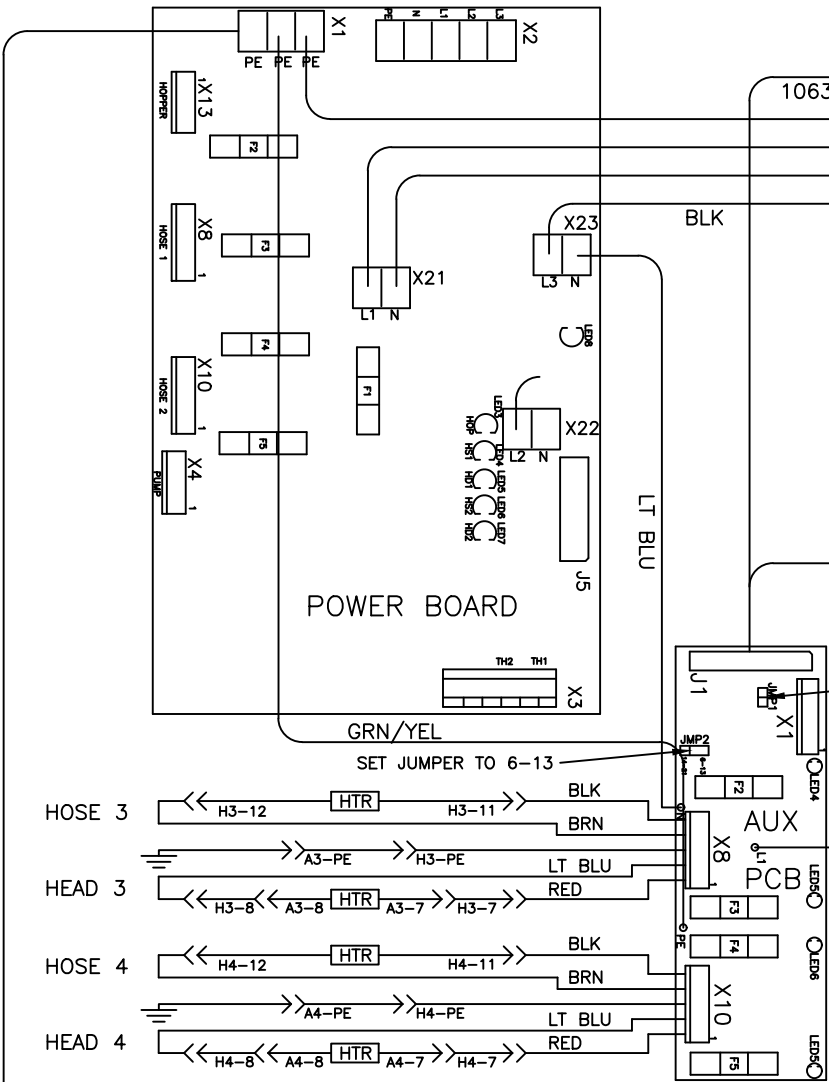
DWG. SHT.	NO. OF HOSE/HEADS	NO. OF AUX. BOARDS	ACCESSORIES
1	2	1	1 OR 2 GRIDS OR 2 AUX. ZONES
2	4	1 OR 2	1 OR 2 GRIDS
3	6	2 OR 3	1 OR 2 GRIDS
4	2	1	1 OR 2 GRIDS AND 2 AUX. ZONES

4. POSITION NUMBERS ARE SHOWN FOR EACH SENSOR CONNECTOR.

HEADERS ARE NUMBERED DIFFERENTLY.

EACH HEADER IS NUMBERED SEQUENTIALLY BEGINNING WITH NO. 1 IN THE POSITION SHOWN IN THE BOARD DETAIL.

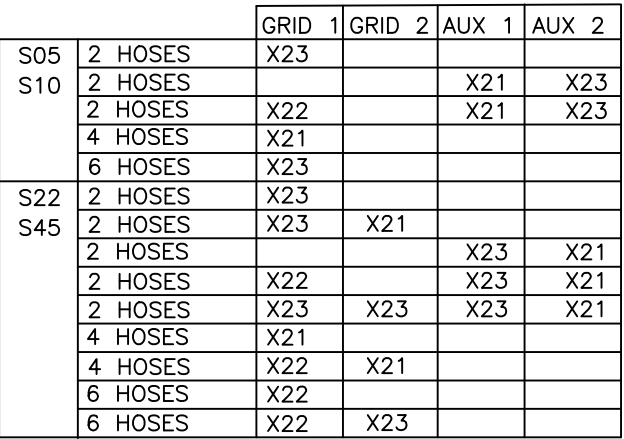
5. FOR EACH SENSOR CONNECTOR, SENSOR LEADS AT CONNECTOR POSITIONS 1 AND 3 ARE CONNECTED IN COMMON ON THE CPU BOARD.



		GRID 1	GRID 2	AUX 1	AUX 2
S05	2 HOSES	X23			
S10	2 HOSES			X21	X23
	2 HOSES	X22		X21	X23
	4 HOSES	X21			
	6 HOSES	X23			
S22	2 HOSES	X23			
S45	2 HOSES	X23	X21		
	2 HOSES			X23	X21
	2 HOSES	X22		X23	X21
	2 HOSES	X23	X23	X23	X21
	4 HOSES	X21			
	4 HOSES	X22	X21		
	6 HOSES	X22	X23		
	6 HOSES	X22	X23		

* BLK -> TERMINAL L1,2,3
BLU -> TERMINAL N

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FRACTIONS DECIMALS ANGLES XXX = ±0.10 ±0.005 ±.5		FOR MACHINING STANDARDS AND SYMBOLS, SEE ITW/DYNATEC SPEC. A05800		ITW Dynatrac HENDERSONVILLE, TN		U/M EA
USED ON DYNAMELT-S ASU		APPROVALS DRAWN JCZ CHECKED		DATE 11.15.99		STATUS R
NEXT ASSY.		COMPUTER DESCRIPTION(25 CHARACTERS) WIRE DIAG,DMS,GRIDS/AUX		SIZE DWG. NO. SCALE N.T.S. CAD DRAWING		GROUP L
DO NOT SCALE DRAWING				107157		SHEET 3 of 4



NOTES:

1. THE WIRING DIAGRAM ON THIS SHEET PERTAINS TO:
DYNAMELT-S ASU, 240 VAC, 1Ø, 50/60 HZ;
2-HOSE 2-HEAD; WITH ONE AUXILIARY BOARD,
1 OR 2 GRIDS, AND 2 AUXILIARY CONTROL ZONES.
2. FOR HOSE/HEAD 1 AND HOSE/HEAD 2 WIRING,
AND DWG. 107156 FOR GEAR PUMP ASU.

3. DRAWING 107157 DIAGRAM MENU:

DWG. SHT.	NO. OF HOSE/HEADS	NO. OF AUX. BOARDS	ACCESSORIES
1	2	1	1 OR 2 GRIDS OR 2 AUX. ZONES
2	4	1 OR 2	1 OR 2 GRIDS
3	6	2 OR 3	1 OR 2 GRIDS
4	2	1	1 OR 2 GRIDS AND 2 AUX. ZONES

 POSITION NUMBERS ARE SHOWN FOR EACH SENSOR CONNECTOR.

HEADERS ARE NUMBERED DIFFERENTLY.

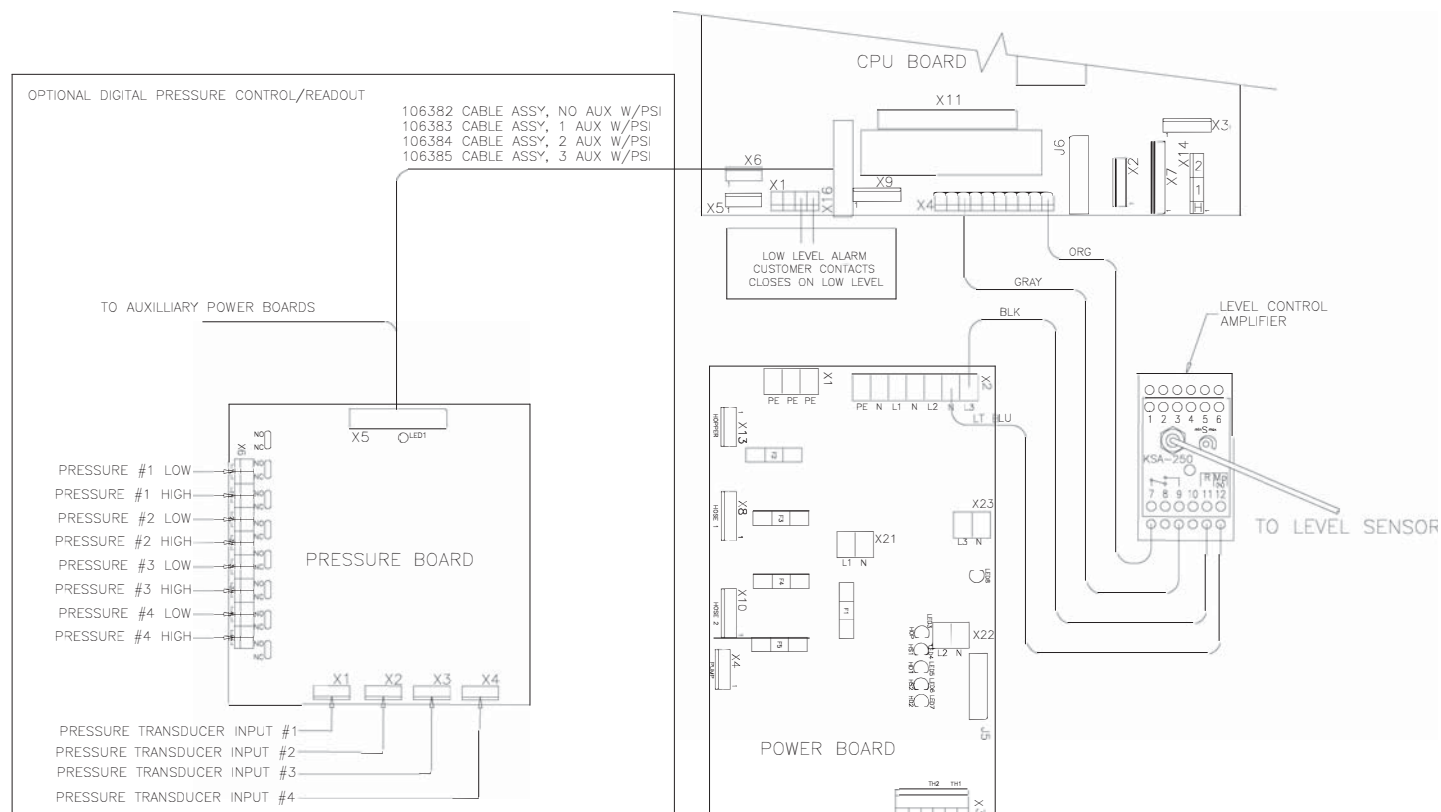
EACH HEADER IS NUMBERED SEQUENTIALLY
BEGINNING WITH NO. 1 IN THE POSITION
SHOWN IN THE BOARD DETAIL.

5. FOR EACH SENSOR CONNECTOR, SENSOR LEADS AT CONNECTOR POSITIONS 1 ARE CONNECTED IN COMMON ON THE CPU BOARD.

Wiring diagram, DM S, Level Control, PN 107158, rev. C

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CONSENT OF ITW/DYNATEC.

DATE REC.	107158	BY	C
REVIEWS			
REV.	REV.	DESCRIPTION	DATE BY APPROV
02320	C	REVISED & REDRAWN W/ TITEL BLOCK	7.26.02 PJD



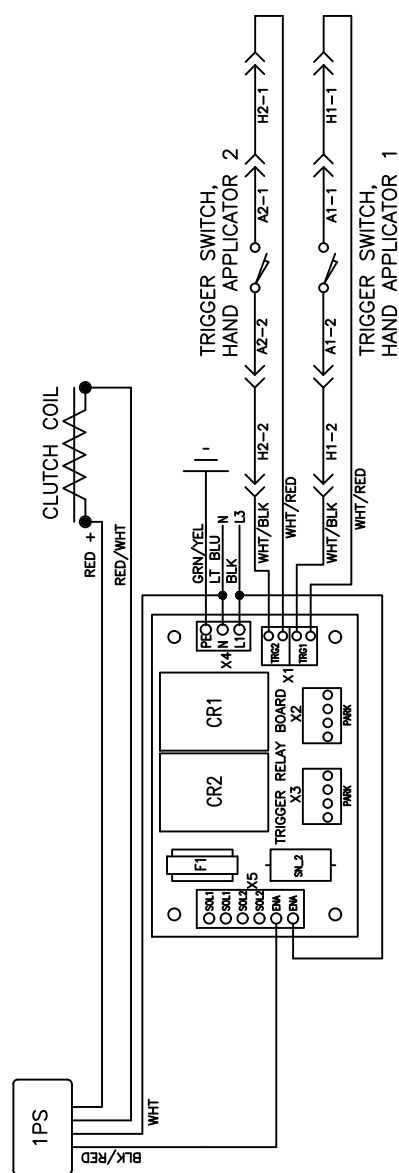
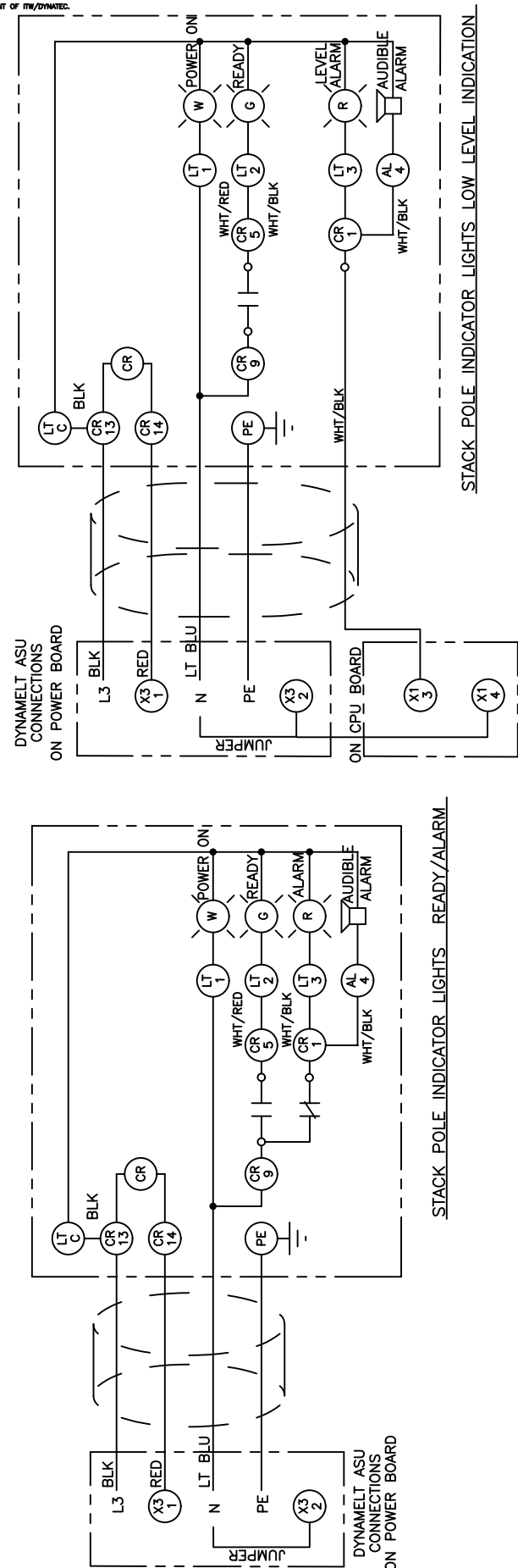
NOTE:

THIS WIRING DIAGRAM PERTAINS TO
DYNAMELT-S ASU, ALL VOLTAGES.

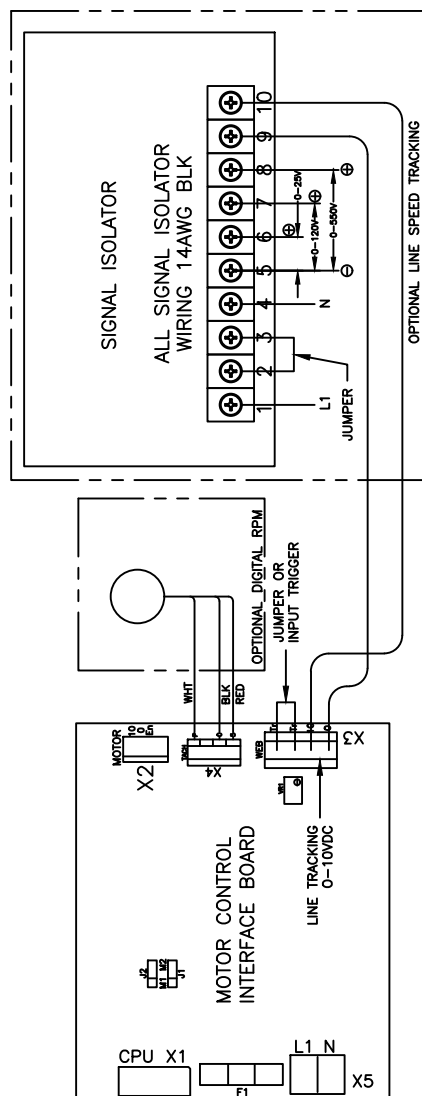
DATE: 11-15-99 DRAWN BY: J.C.Z. CHECKED BY: J.C.Z. APPROVED BY: J.C.Z. DATE: 11-15-99	FOR MACHINING STANDARDS AND SYMBOLS, SEE TYPED/STAMPED SPEC. APPENDIX		WIRING DIAGRAM, DM-S LEVEL CONTROL
DYNAMELT-S ASU	APPROVALS: J.C.Z. 11-15-99	SIZE: 107158	SHEET: 1
DO NOT SCALE DRAWING	COMPUTER DISPOSITIONS CHARACTER WIRE DIAGRAMS, LV. CIRCUITS	SIZE: 107158	SHEET: 1

Wiring diagram, DM S Accessories, PN 107159, rev. L

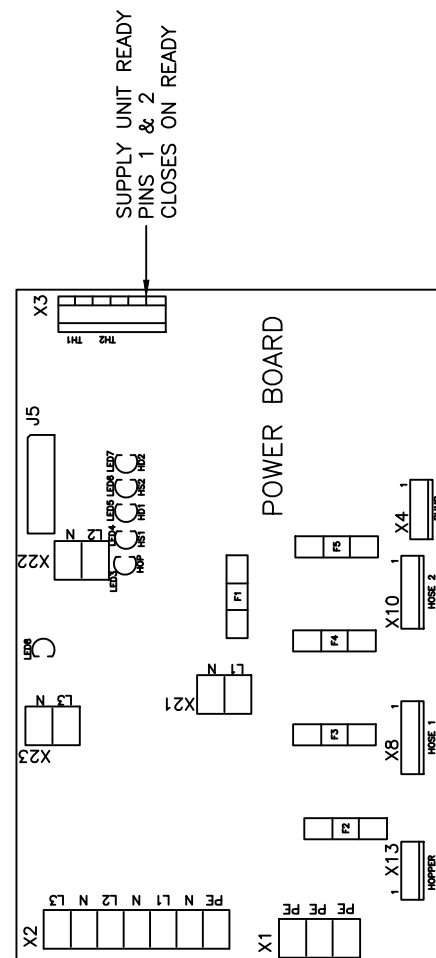
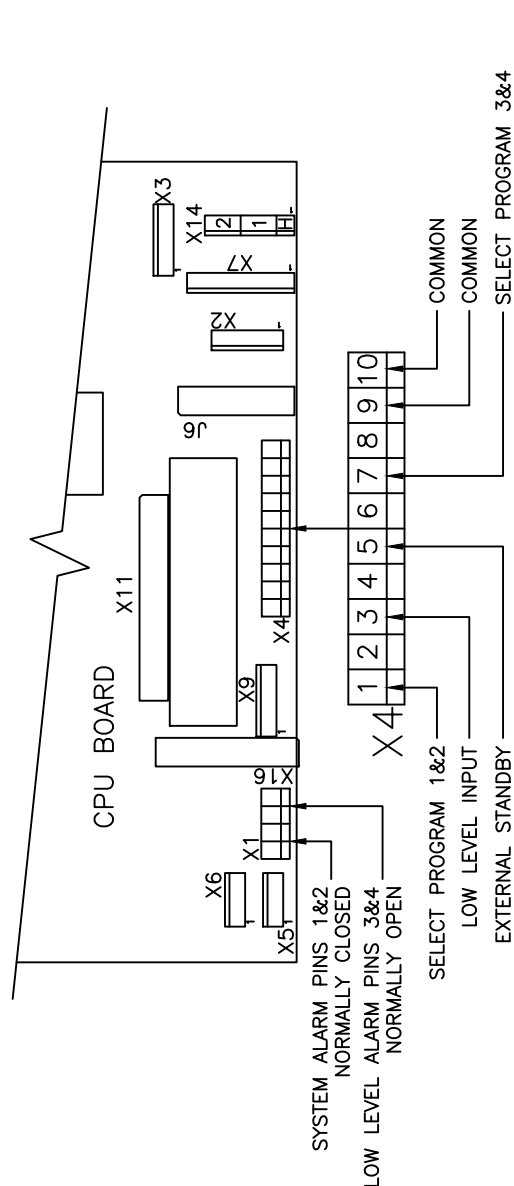
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CONSENT OF ITW/DYNATEC.



ELECTRIC CLUTCH SCHEMATIC



MOTOR SPEED CONTROL SIGNAL ISOLATOR



CUSTOMER TIE-INS

REVISIONS					
REL.	REV.	DESCRIPTION	DATE	BY	APPROVED
023220	G	REVISED & REDRAWN W/ TITLE BLOCK.	7.26.02	PJD	
03160	H	ADDED LOW LEVEL STACK POLE LIGHT	3.18.03	DH	
03560	J	REVISED LOW LEVEL CIRCUITRY	9.25.03	DH	
07386	K	REVISED DIGITAL RPM WIRE COLORS AND LOCATIONS ON MOTOR SPEED CONTROL	1.4.08	BB	
ECN142	L	ADDED WIRE GAUGE TO SIG. ISOLATOR	02.04.19	BFQ	

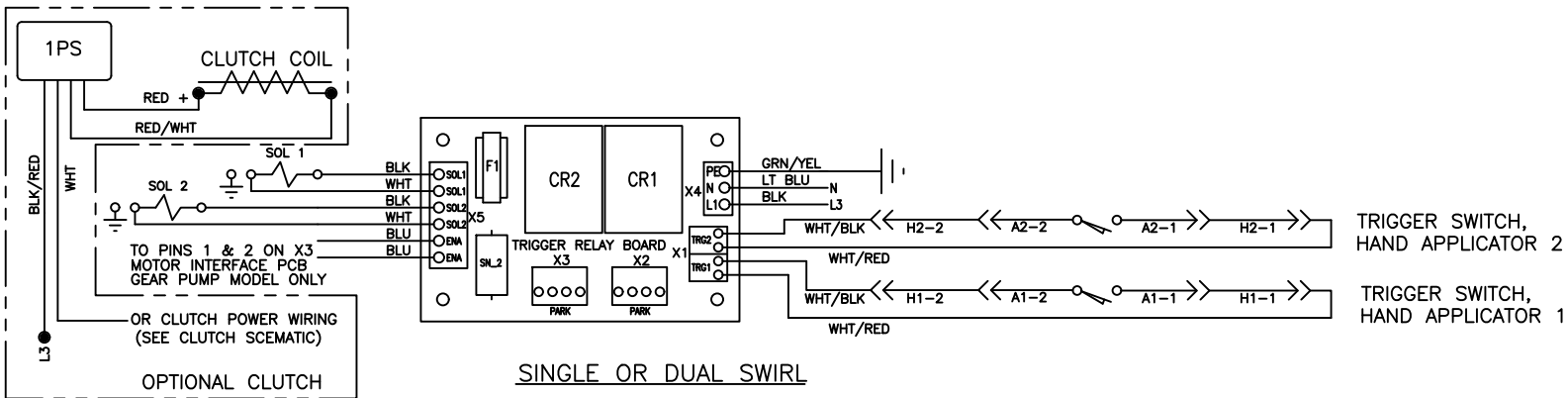
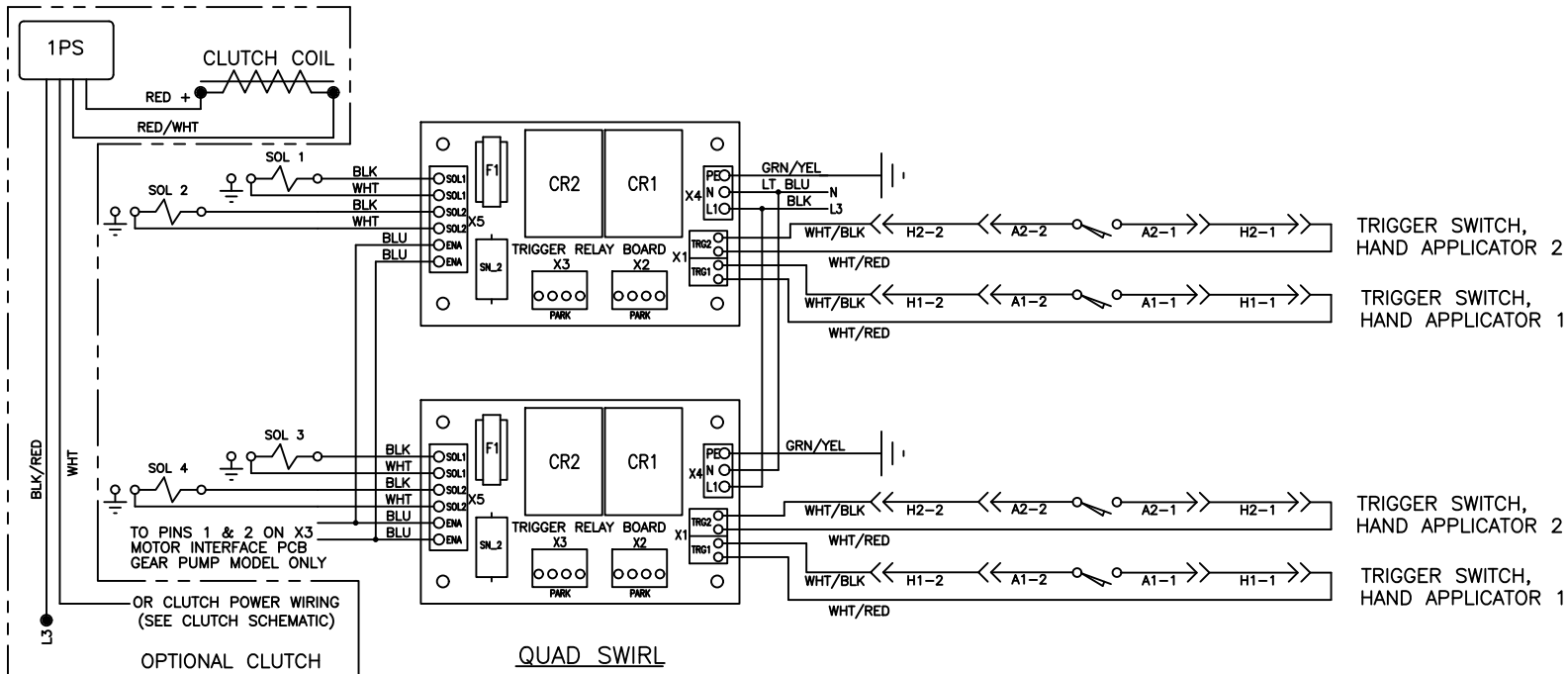
NOTES:

1. THE WIRING DIAGRAMS ON THESE SHEETS PERTAIN TO DYNAMELT-S ASU, ALL VOLTAGES.
3. DRAWING 107159 DIAGRAM MENU:

DWG. SHT.	ACCESSORIES
1	STACK—POLE INDICATOR LIGHTS ELECTRIC CLUTCH SIGNAL ISOLATOR CUSTOMER CONNECTIONS FOR: SYSTEM ALARMS STANDBY LOW LEVEL INDICATION READY INDICATION PROGRAM SELECTION
2	SWIRL KITS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: DECIMALS = ±.010 .XXX = ±.010 ANGLES ±.5	FOR MACHINING STANDARDS AND SYMBOLS, SEE ITW/DYNATEC SPEC. A05800	 HENDERSONVILLE, TN	U/M EA
USED ON DYNAMELT-S ASU	APPROVALS DRAWN JCZ DATE 11.59.99 CHECKED	WIRING DIAGRAM, DM-S ACCESSORIES	STATUS R SOURCE
NEXT ASSY.	COMPUTER DESCRIPTION(25 CHARACTERS) WIRE DIAG,DMS,ACCESSORY	SIZE DWG. NO. 107159	REV. GROUP
DO NOT SCALE DRAWING		SCALE N.T.S. CAD DRAWING	SHEET 1 of 2

REVISIONS				
REL.	REV.	DESCRIPTION	DATE	BY



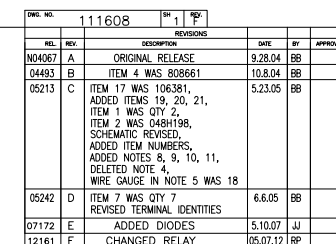
NOTES:

- THE WIRING DIAGRAMS ON THESE SHEETS PERTAIN TO DYNAMELT-S ASU, ALL VOLTAGES.
- DRAWING 107159 DIAGRAM MENU:

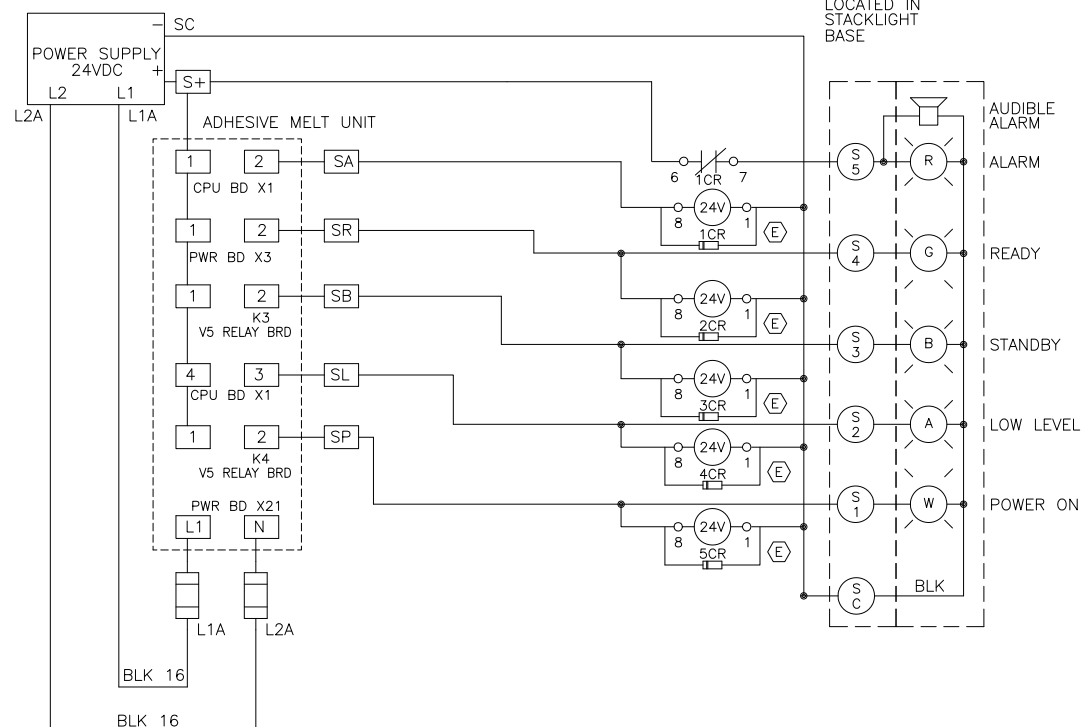
DWG. SHT.	ACCESSORIES
1	STACK-POLE INDICATOR LIGHTS ELECTRIC CLUTCH SIGNAL ISOLATOR CUSTOMER CONNECTIONS FOR: SYSTEM ALARMS STANDBY LOW LEVEL INDICATION READY INDICATION PROGRAM SELECTION
2	SWIRL KITS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: DECIMALS ANGLES XXX = ±.010 XXX = ±.005	FOR MACHINING STANDARDS AND SYMBOLS, SEE ITW/DYNATEC SPEC. A05800		ITW Dynatoc HENDERSONVILLE, TN		U/M EA
	USED ON DYNAMELT-S ASU	APPROVALS DRAWN JCZ	DATE 11.15.99	STATUS R	
NEXT ASSY.	COMPUTER DESCRIPTION(25 CHARACTERS) WIRE DIAG,DM5,ACCESSORY	SIZE D	DWG. NO. 107159	REV. L	GROUP
DO NOT SCALE DRAWING	SCALE N.T.S.	CAD DRAWING	SHEET 2 of 2		

Light asy, Status, DCL, PN 111608, rev. F



-
- Figure 1: PLC Ladder Logic Diagram
- The diagram illustrates a PLC ladder logic circuit. A single vertical power rail on the left is connected to the PLC COM terminal. Five horizontal rungs branch off this rail, each containing a normally open contact labeled '3' and a normally closed contact labeled with a relay (1CR, 2CR, 3CR, 4CR, 5CR) and '4'. The rungs are labeled on the right as PA (NO ALARM TO PLC), PR (READY TO PLC), PS (STANDBY TO PLC), PL (LOW LEVEL TO PLC), and PO (POWER ON TO PLC).



E	22	812991	5	EA	DIODE, 1N4004	
	21	078A164	4	EA	SCREW, HEX WSHR HD, #10 X 1/2	
	20	102056	1	EA	LABEL, PRODUCT INFO	
	19	112079	1	EA	PLATE, MOUNTING, RELAY PCB	
	18	106385	1	EA	CABLE ASSY, EXP PT, 3A, W/PSI	
	17	112080	1	EA	CABLE ASSY, 3 AUX & STACKLIG	
	16	111458	1	EA	RELAY PCB	
	15	103183	2	EA	FUSE HOLDER	
	14	103184	2	EA	FUSE	
	13	105252	1	EA	TERMINAL DIVIDER DUAL	
12	105254	1	EA	TERMINAL DIVIDER		
11	808737	1	EA	PANEL INSERT		
10	808736	1	EA	ENCLOSURE BOX		
9	806762	1	EA	POWER SUPPLY 24VDC		
8	821247	5	EA	RELAY,DPDT,24VDC		
7	105253	6	EA	TERMINAL		
6	105251	3	EA	DUAL TERMINAL		
5	104193	1	EA	GND TERMINAL		
4	810246	1	EA	STACKLITE		
3	048F104	1	FT	RAIL		
2						
1	105256	4	EA	END STOPS		
ITEM		PART NUMBER	QTY	U/W	DESCRIPTION	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ARE .254 FRACTIONS ARE 16ths FOR MACHINING STANDARDS AND TOLERANCES FIN/DYNAMIC SPEC. A80B80 DRAWN CHECKED BY DATE APPROVALS DATE USE ON NEXT ASSEMBLY — DYNAMALT — COMPUTER DESCRIPTIONS (CHARACTERS) LT ASY,STOPS,DCL,A/B SIZE Dwg. NO. 111608 LIGHT ASSY, STATUS, DCL, A/B DYNALITE NEOSOURCE, TN						

Chapter 12

Appendix

Ethernet/IP Kit, PN 110772

PN 110772 DMS/ PN 112530 DDS/ PN 680079 D25/45 DynaControl EtherNet/IP Adapter Option, V1.10

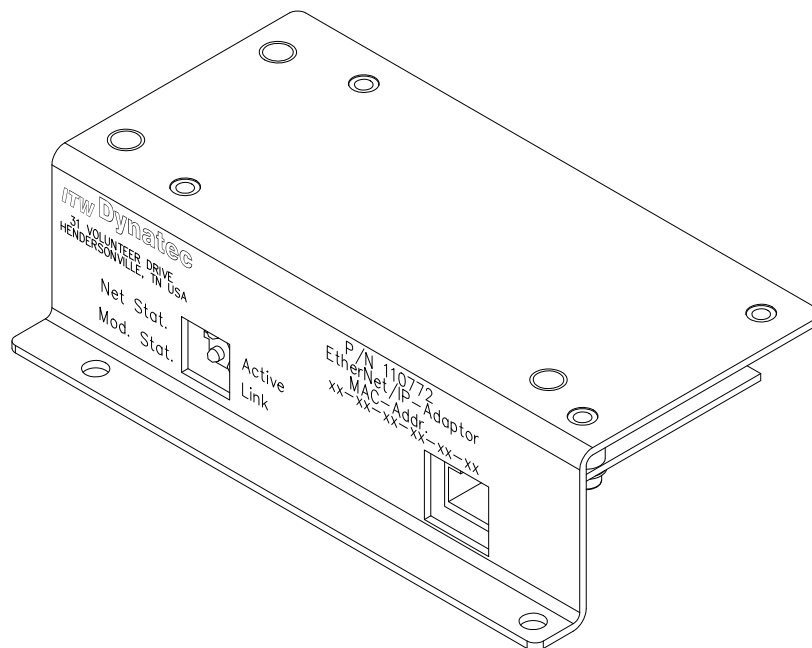
General

This optional adapter provides an EtherNet/IP connection for either the Dynamelt S, the DDS or the D24/45 hot melt ASUs. With this connection it is possible to monitor and control the basic functions of the hot melt unit from a remote PLC or PC. Instructions for Dynamelt S, DDS and D25/45 ASUs are identical.

This adapter uses an ODVA approved module. In order to fully operate, the ASU must be equipped with firmware rev. V5.11S or later.

Basic Features:

- 10/100 Mbit/s
- DHCP/BootP
- Access to basic process parameters
- Local and remote access
- Watchdog signal



Installing the EtherNet/IP-Adapter Hardware

(See the following page for Figure A and B illustrations.)

Installation Procedure

REFER TO FIGURE A

1. DISASSEMBLE FRONT PANEL ASSEMBLY FROM ASU BASE.
2. REMOVE CPU PCB AND BRACKET ASSEMBLY, DISPLAY PCB, CIRCUIT BREAKER, AND CIRCUIT BREAKER INSULATION.
KEEP ALL SPACERS, STANDOFFS AND SCREWS FOR RE-ASSEMBLY TO NEW FRONT PANEL.
3. INSTALL PANEL INSERT (P/N 104850) INTO FRONT PANEL.
4. ASSEMBLE ALL COMPONENTS TO NEW FRONT PANEL (P/N 110893) USING EXISTING SPACERS AND STANDOFFS AND NEW FLAT HEAD SCREWS (P/N 109613) SUPPLIED WITH THE KIT.
5. ATTACH NEW KEYPAD OVERLAY (P/N 102079) SUPPLIED WITH THE KIT.
6. INSTALL NEW PANEL HINGES AND RE-ASSEMBLE FRONT PANEL TO ASU BASE.
7. ASSEMBLE THE RJ-45 ETHERNET CONNECTOR (P/N 110867) TO THE FRONT PANEL.

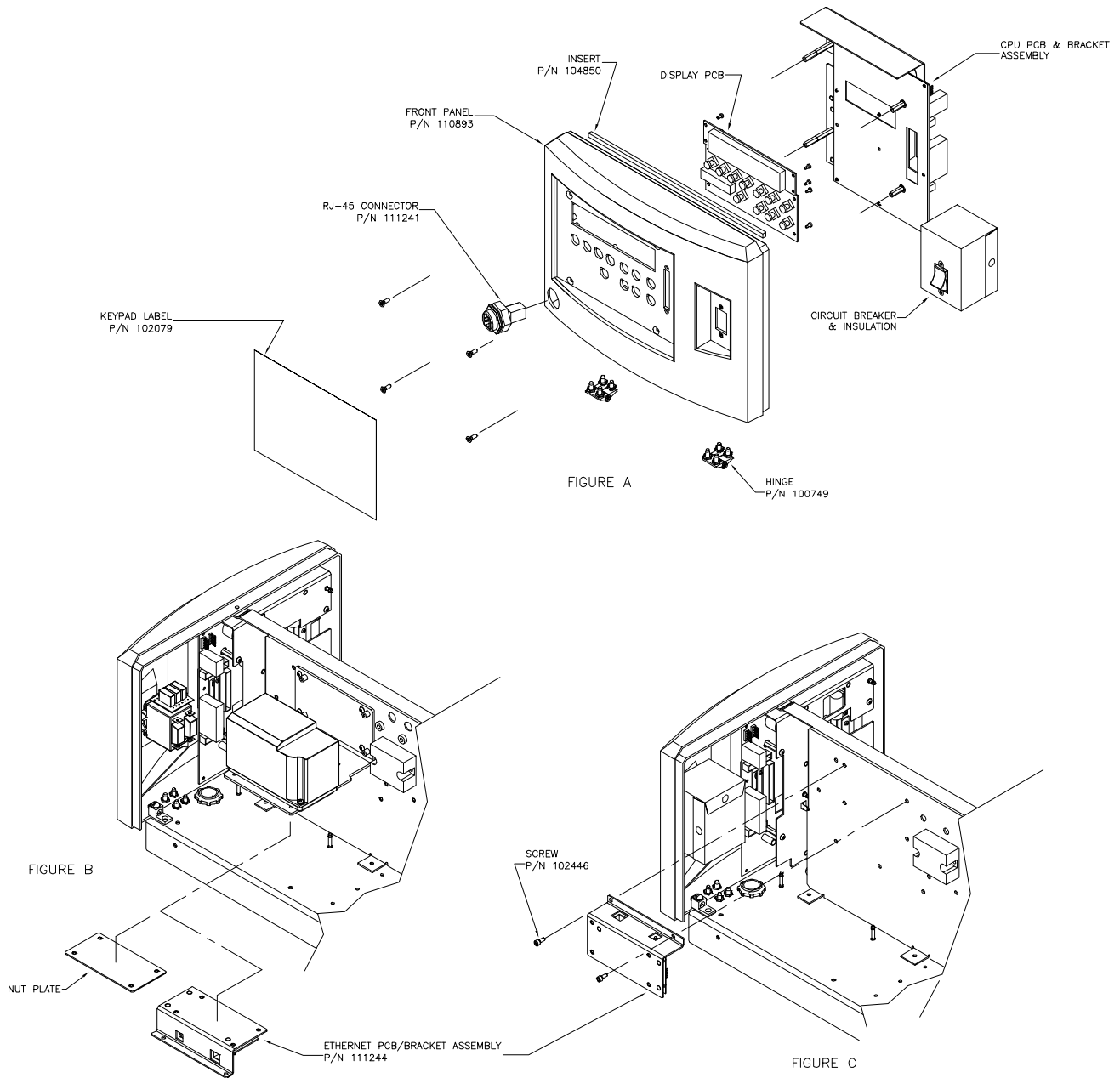
IF THE ASU IS EQUIPPED WITH A GEAR PUMP AND MOTOR REFER TO FIGURE B

8. REMOVE THE SCREWS ATTACHING THE MOTOR SPEED CONTROL TO THE NUT PLATE.
DISCARD THE NUT PLATE AND REPLACE WITH THE ETHERNET PCB/BRACKET ASSEMBLY (P/N 111244).
RE-ATTACH THE MOTOR SPEED CONTROL.

IF THE ASU IS EQUIPPED WITH A PISTON PUMP REFER TO FIGURE C

8. ASSEMBLE THE ETHERNET PCB/BRACKET ASSEMBLY (P/N 111244) TO THE VERTICAL PANEL IN LOCATION SHOWN USING THE SOCKET HEAD SCREWS (P/N 102446) SUPPLIED WITH THE KIT.

9. USING CABLE ASSEMBLY P/N 110866 CONNECT THE ETHERNET PCB TO THE RJ-45 CONNECTOR INTERNALLY.
10. USING CABLE ASSEMBLY P/N 110779 CONNECT THE ETHERNET PCB TO X6 ON THE CPU PCB.



Dynamelt S ASU Installation Diagram PN 112929
(see page 15 for Installation Diagram for D25/45 ASU)

Installing the EtherNet/IP-Adapter Software in a ControlLogix5000 System

These installation steps assume that RSLogix5000 and ControlLogix5000 with an EtherNet/IP module/bridge (1756 ENBT or similar) are set up and working properly.

1. Connect the Dynatec Hot melt unit (ASU) to the Ethernet network using a standard RJ45-cable.
2. Start RsLogix5000 with a new or existing project. Set to “Offline” mode.
3. **Add the EtherNet/IP-Adapter to the PLC Configuration:**
 - Start by right clicking the EtherNet/IP module/bridge in the configuration
 - Select “New Module”
 - Select “Generic Ethernet Module”
 - Press *OK*
4. **Configure the EtherNet/IP-Adapter:**
 - Enter the name of the module. (for example “Dynatec Melter”. If you desire to import the controller tags provided on the CD-ROM, the module name must be exactly “Dynatec Melter”. See step #6 following).
 - Set *Comm Format* to “Data-INT”, since all data are 16-bit words
 - Set *Connection Parameter Assembly Instance* to 100 for Input and 150 for Output
 - Set *Size* for both to 64 (16-bit)
 - Set the *Configuration Instance* to 1 but the size to 0 since this instance is not supported
 - Set the IP-Address to 192.168.23.180. For more details about IP-Address see the following section, “Changing the IP-Address”
 - Press *Next* >
 - On next dialog, select *Requested Packet Interval: 100ms*
 - Do not Inhibit Module
 - Press *Finish* >>. On the main screen you should see the ETHERNET-MODULE under the I/O Configuration
 - Select “Go Online” from the “Communications” menu
 - Select “Download” in the next window
 - Confirm the Download

5. Checking the I/O Tags

After successful configuration of the EtherNet/IP-Adapter, it is possible to access the input/output data. There are three Controller Tags: “Dynatec Melter: C”, “Dynatec Melter: I” and “Dynatec Melter: O”. The input/output tags consist of 64 words each.

“Dynatec Melter: C” is the configuration tag (not used).

“Dynatec Melter: I” is the data coming from the Dynatec hot melt unit

“Dynatec Melter: O” holds the data going to the hot melt unit.

The definitions of the data tags are explained in the last two pages of this section.

6. Importing Controller Tags

The CD-ROM that is provided with the EtherNet/IP option contains a pre-defined controller tag table. In order to save time, this table may be imported.

- In the RSLogix5000 go offline

- Select Tools -> Import Tags
- Select the "Dynatec-Controller-Tags. CSV" from the CD-ROM
- Click Import
- If the import was successful, the Report Window in the lower part of the screen should indicate 81 imported tags.
- Go back to the controller tag screen and verify the tags.

Details on the Communication

Local Access

As soon as a valid communication is established, the PLC gains control over the hot melt unit. The PLC has priority over the local keypad on the hot melt unit. Nevertheless, it is possible to enter the new setpoints locally. In order to coordinate this, the OUT-word 22 and 23 are used.

The access control is separate for temperature and motor setting.

- Setting LocalAccessTemps to 1 allows the user to make changes to the temperature setpoints on the hotmelt unit. The PLC can read the changes from the corresponding IN-words but the temperatures in the OUT area will not be effective on the hot melt unit.
- Setting LocalAccessTemps to 0 switches the control back to PLC control. All temperature OUT-words will be transferred to the hot melt unit. A local change of temperature setpoints is not possible since the PLC will instantly overwrite the entry.
- LocalAccessMotors controls the access to pump settings analog to the description above.
- After a local change of setpoints, the PLC first must read the new setpoints before switching back to PLC control.
- It is not possible to deactivate a temperature zone locally on the hot melt unit since the PLC always sends the ZoneEnable/Disable information.

Zones Enabling/Disabling

Temperature zones that are temporarily not used can be remotely deactivated by setting a corresponding value to OUT-word 24. Each bit of this word represents one temperature zone. Bit0 = zone1, Bit1 = zone2 etc. Setting the bit will activate the zone. Resetting will deactivate the zone.

Motor Controller

It is possible to change the mode and the manual speed of the pump(s) of Dynamelt S units equipped with gear pumps. When the PLC must control the pump speed, Local Access Motors must be set to 0.

The pump mode (Word 18 & 19) must be set to the ASCII equivalent value for 'M' –Manual (PLC control), 'A' –Automatic (line following, 0 to 10V), or 'S' –Stop.

If set to manual, the manual speed (Word 20 & 21) will be active. This speed setting must be transmitted in increments of 0.1% (0 to 1000 = 0.0 to 100.0%).

If the hot melt machine is equipped with a pump rpm readout, the actual pump speed can be read in word 48 (word 49 for pump #2). This value represents the actual pump speed X 10 (0.0 to 100.0 rpm).

If the pump is running in automatic mode, the pump speed setpoint, which follows the line speed using the 0-10V input, can be read in word 50 (word 51 for pump #2). This value shows 0.1% resolution (0 to 1000).

Note: If the hotmelt machine has a minimum pump speed programmed, this speed will be active and indicated here in case the parent machine is in standby.

Adhesive Level Indication

Word 54 shows the state of the optional adhesive level control. A 0 indicates the level is O.K. and a 1 indicates a low-level situation. This signal is an instantaneous non-latched indication.

In order to avoid local low-level indications, which have to be reset on the keypad, the low-level detection should be disabled in the customer set-up menu of the Dynamelt S hot melt unit.

Zone Status Indication

IN-words 56 to 60 indicate the status of all zones. This information is bit-wise coded.

Example: Dec. Hex. Binary 15~0 = Zone 16 to 1 .

IN-word 56: 127 007Fh 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1

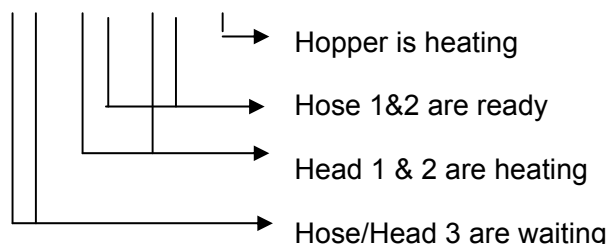
IN-word 57: 96 0060h 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0

IN-word 58: 21 0015h 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0

IN-word 59: 10 000Ah 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1

IN-word 60: 0 0000h 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0 W W H R H R H



Note: If IN-word 60 is not 0, at least one temperature zone is in Alarm mode.

Temperature Unit

The temperature units used for the communication can be changed between Fahrenheit and Celsius. The OUT-word 26 decides between the units. A value of “0” selects °F, a value of “1” selects °C.

Identification Word

OUT-word 63 is used as an identification word. This word must be set to a certain value to validate the communication. If this word is set differently, the hot melt unit will not accept the OUT area although the IN-area will show proper values. Dynamelt S hot melt units require ID-word set to 34 for unmonitored communication or a toggling word of 0/1 for monitored communication. If toggle mode is used, the word should toggle once per second to validate communication. Once toggle mode is used, the unmonitored communication can't be used again. In monitored communication, the Dynamelt unit switches off pumps after 4 seconds if communication seems to be broken. Dynatec recommends use of the monitored communication for security reasons.

Examples for a typical communication

- Initializing: Set OUT 52 to 1: Switches the controller on
- Set OUT 63 to 34: Identifies the communication
- Set OUT 22 to 1: User can change setpoints locally
- Set OUT 26 to 0: Set temperature units to Fahrenheit (or use 1 for Celsius)
- Set OUT 23 to 0: PLC controls pump speed, no local access
- Set OUT 18 to 77: Motor mode must be in Manual to allow PLC control
- 3-Hose Operation: Set OUT 24 to 127: Zones 1 to 7 are enabled
- 2-Hose Operation: Set OUT 24 to 31: Zones 1 to 5 are enabled
- Ready Condition: Compare OUT 56 with OUT 59: If both words are equal, then the system is ready

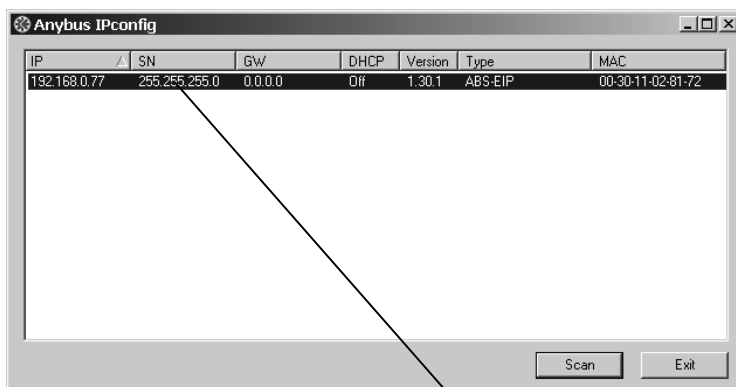
Changing the IP-Address

The EtherNet/IP-Adapter will be factory set to 192.168.23.180 but the DHCP/BOOTP function is enabled. That means the module will request a new IP-address after power up. If this request is not serviced, the old IP-address will be valid.

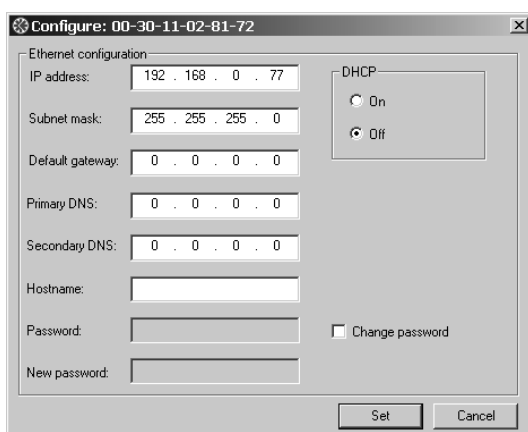
There are several ways to change the IP-address. In any case, a PC must be connected to the module, either directly via crossover cable or via hub/switch to the network with the module.

Using the Ethernet IP Changing Utility (recommended)

Provided with the module a Microsoft Windows® application called IPConfig is included. The program checks the network and shows all found Dynatec units equipped with Ethernet/IP. You can double-click onto the unit to see an additional menu that allows you to change the network settings.



Double-click onto the found Dynamelt unit.



You can now enter a new IP address and the other necessary parameters for your network configuration. Press “Set” to confirm your changes.

Using the ARP Command

The MS-DOS™ command ARP can be used to change the IP-address. Please consult your network administrator if you are not familiar with this matter.

In order to process this command, you need the MAC address of the module. This can be found on the holding bracket.

- Connect the EtherNet-cable to a PC network
- Open a MS-DOS™ window
- Type: `arp -s <IP-address> <MAC-address>`
- Type: `ping <IP address>`
- Type: `arp -d <IP-address>`

Notes: The first three bytes of the IP-address must be the same as the PC executing the arp command. It is normal that after changing the IP-address via arp command, the first ping command shows one lost data package.

Using the Configuration File

The file ethcfg.cfg can be used to change the IP-address. This method is possible only if the actual IP-address is known (e.g. the factory set 192.168.23.180), See also section “Configuration File”.

- Open a FTP connection to the module (e.g. Windows Explorer™ [FTP://192.168.23.180](ftp://192.168.23.180))
- Locate the ethcfg.cfg
- Copy this file to a folder on your PC
- Open the file with any text editor
- Change the IP-address
- Save the file using the same name
- Copy the file back to the module
- Re-cycle power on the module (hot melt unit)

Note: If the configuration file ethcfg.cfg is not found, the module will automatically activate a DHCP/BOOTP request.

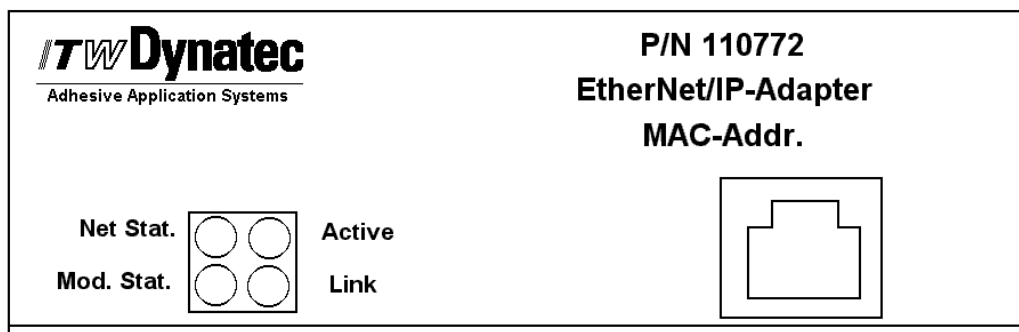
Using the BootP-Server Function

The BOOTP-Server comes with the RSLinx Tools of the Rockwell Automation™ Software or can be downloaded as a stand-alone application. Version V2.3.2 or newer allows to change the IP-address of the EtherNet/IP module.

Note: The EtherNet/IP module only requests an IP-address assignment for approx. 30 sec.

If this request is not serviced within this time (by entering the desired IP-address in the relation list) the module's power (hot melt machine) must be re-cycled.

Diagnostic LED's



1. Net Stat. = Network Status

State	Summary	Description
Steady Off	No power or no IP address	The module has no power or no IP address has been assigned.
Steady Green	Connected	The module has at least one established EtherNet/IP connection.
Flashing Green	No connections	There are no EtherNet/IP connections established to the module.
Flashing Red	Connection Timeout	One or more of the connections in which this module is the target has timed out. This state is only left if all timed out connections are re-established or if the module is reset.
Steady Red	Duplicate IP Address	The module has detected that its IP address is already in use
Flashing Green/Red	Self-Test	The module is performing a power on self test

2. Active = This led flashes green each time a packet is received or transmitted.

3. Mod. Stat. = Module Status

State	Summary	Description
Steady Off	No power	The module has no power.
Steady Green	Device operational	The module is operating correctly.
Flashing Green	Standby	The module has not been configured.
Flashing Red	Minor Fault	A minor recoverable fault has been detected
Steady Red	Major Fault	A major internal fault has been detected
Flashing Green/Red	Self-Test	The module is performing a power on self test

4. Link = Link Activity

Color	State	Description
Green	On	The module has a link
	Off	The module does not sense a link

Configuration File

The EtherNet/IP module contains a file (ethcfg.cfg) that is read by the module at start up. This file defines the network properties of the module. Any text editor can be used to edit the parameters.

Note: It is very important to follow the exact syntax specification, otherwise the module might have problems interpreting it, which can result in a faulty or non-expected behavior.

The file can be uploaded and after modification, downloaded using the FTP function. (e.g. open a Windows Explorer window. Type 'FTP://192.168.23.200')

The format of the file is shown as follows:

FORMAT	EXPLANATION
[IP address] 192.168.23.180	IP Address
[Subnet mask] 255.255.255.0	Subnet mask
[Gateway address] 0.0.0.	Gateway address
[DHCP/BOOTP] ON	DHCP/BootP ON - Enabled OFF – Disabled
[SPEED] Auto	Speed Auto – Default. Auto Negotiation will be used. 100 – Forces the module to operate at 100Mbit/s only 10 – Forces the module to operate at 10Mbit/s only

FORMAT	EXPLANATION
[Duplex]	Duplex
Auto	Auto – Default. Auto negotiation will be used. Full – Forces the module to operate at full duplex only Half - Forces the module to operate at half duplex only
[SMTP address] 0.0.0.0	SMTP server/ login settings
[SMTP username] username	SMTP server/ login settings
[SMTP password] password	SMTP server/ login settings
[DNS1 address] 0.0.0.0	Primary and Secondary DNS
[DNS2 address] 0.0.0.0	Primary and Secondary DNS
[Domain name] hms.se	Domain Name (Optional)
[Host name]	Host Name (Optional)



**Dynacontrol - EtherNet/IP
Data Table**

Date: 01/21/11
Page 1 of 2

IN-Area (Dynacontrol to PLC)

Version: V1.10 (V5.36S)

Word Address	Function	Zone Name	Valid Range
0	Reserved		
1	Reserved		
2	Setpoint Zone 1	Hopper	
3	Setpoint Zone 2	Hose 1	
4	Setpoint Zone 3	Head 1	
5	Setpoint Zone 4	Hose 2	
6	Setpoint Zone 5	Head 2	
7	Setpoint Zone 6	Hose 3	
8	Setpoint Zone 7	Head 3	
9	Setpoint Zone 8	Hose 4	
10	Setpoint Zone 9	Head 4	
11	Setpoint Zone 10	Hose 5	
12	Setpoint Zone 11	Head 5	
13	Setpoint Zone 12	Hose 6	
14	Setpoint Zone 13	Head 6	
15	Setpoint Zone 14	Premelt Zone	
16	Setpoint Zone 15	-	
17	Setpoint Zone 16	-	
18	Motor Mode Pump 1	Pump	'S' (83) = Stop / 'M' (77) = Manual / 'A' (65) = Auto
19	Motor Mode Pump 2	-	
20	Manual Speed Pump 1	Pump	0 to 1000 = 0.0 to 100.0% [500 = 50.0%]
21	Manual Speed Pump 2	-	
22	Pressure Channel 1	-	
23	Pressure Channel 2	-	
24	Pressure Channel 3	-	
25	Pressure Channel 4	-	
26			
27			
28			
29			
30			
31			
32	Actual Temp. Zone 1	Hopper	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
33	Actual Temp. Zone 2	Hose 1	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
34	Actual Temp. Zone 3	Head 1	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
35	Actual Temp. Zone 4	Hose 2	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
36	Actual Temp. Zone 5	Head 2	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
37	Actual Temp. Zone 6	Hose 3	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
38	Actual Temp. Zone 7	Head 3	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
39	Actual Temp. Zone 8	Hose 4	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
40	Actual Temp. Zone 9	Head 4	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
41	Actual Temp. Zone 10	Hose 5	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
42	Actual Temp. Zone 11	Head 5	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
43	Actual Temp. Zone 12	Hose 6	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
44	Actual Temp. Zone 13	Head 6	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
45	Actual Temp. Zone 14	Premelt Zone	0 to 500°F (1999 = open sensor / 999 = shorted sensor)
46	Actual Temp. Zone 15	-	
47	Actual Temp. Zone 16	-	
48	Actual Speed Pump 1	Pump 1	0 to 1500 = 0.0 to 150.0 RPM
49	Actual Speed Pump 2		
50	Line Speed Pump 1	Pump 1	0 to 1000 = 0.0 to 100.0%
51	Line Speed Pump 2		
52	Controller ON/OFF		0 = controller is OFF / 1 = controller is ON
53	Standby ON/OFF		0 = Normal Mode / 1 = Standby is active
54	Adhesive Level Status		0 = Level is OK / 1 = Level is low
55	Zone RTD Fault *3	Each zone is	0 = RTD on this Zone is o.k. / 1 = RTD Fault on this Zone
56	Zone On/Off 'O' *3	represented by	0 = Zone deactivated / 1 = Zone activated
57	Zone Waiting 'W' *3	the corresponding	0 = Zone is not waiting / 1 = Zone is waiting
58	Zone Heating 'H' *3	bit in these 16 bit	0 = Zone is not heating / 1 = Zone is heating

59	Zone Ready 'R' *3	words	0 = Zone is not ready/ 1 = Zone is ready
60	Zone Alarm 'A' *3		0 = Zone has no alarm / 1 = Zone has alarm
61	System Status		Bit0: Motor in Run mode, Bit1: Temperatures ready,
62			Bit2: Pump enable temp. reached, Bit3: Low temp. thermostat closed
63	Watchdog		Signal toggles every 0.5sec. (0/1)



**Dynacontrol - EtherNet/IP
Data Table**

Date: 01/21/11

Page 2 of 2

**OUT-Area (PLC to
DynaControl)**

Version: V1.10 (V5.36S)

Word Address	Function	Zone Name	
0	Reserved		
1	Reserved		
2	Setpoint Zone 1	Hopper	100°F - 425°F / 50°C - 218°C
3	Setpoint Zone 2	Hose 1	100°F - 425°F / 50°C - 218°C
4	Setpoint Zone 3	Head 1	100°F - 425°F / 50°C - 218°C
5	Setpoint Zone 4	Hose 2	100°F - 425°F / 50°C - 218°C
6	Setpoint Zone 5	Head 2	100°F - 425°F / 50°C - 218°C
7	Setpoint Zone 6	Hose 3	100°F - 425°F / 50°C - 218°C
8	Setpoint Zone 7	Head 3	100°F - 425°F / 50°C - 218°C
9	Setpoint Zone 8	Hose 4	100°F - 425°F / 50°C - 218°C
10	Setpoint Zone 9	Head 4	100°F - 425°F / 50°C - 218°C
11	Setpoint Zone 10	Hose 5	100°F - 425°F / 50°C - 218°C
12	Setpoint Zone 11	Head 5	100°F - 425°F / 50°C - 218°C
13	Setpoint Zone 12	Hose 6	100°F - 425°F / 50°C - 218°C
14	Setpoint Zone 13	Head 6	100°F - 425°F / 50°C - 218°C
15	Setpoint Zone 14	Premelt Zone	100°F - 425°F / 50°C - 218°C
16	Setpoint Zone 15	-	
17	Setpoint Zone 16	-	
18	Motor Mode Pump 1	Pump	'S' (83) = Stop / 'M' (77) = Manual / 'A' (65) = Auto
19	Motor Mode Pump 2	-	
20	Manual Speed Pump 1	Pump	0 to 1000 = 0.0 to 100.0% [500 = 50.0%]
21	Manual Speed Pump 2	-	
22	Local Access Temps.	all Temps.	1 = Local Access Enable
23	Local Access Motors	all Pumps	1 = Local Access Enable
24	Zones Enable	Zone 1 to 16	each bit: 1 = zone enabled
25	Error Reset	-	0 to 1 transition will reset RTD fault
26	Temp. Unit Selection	-	0 = Fahrenheit / 1 = Celsius
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			

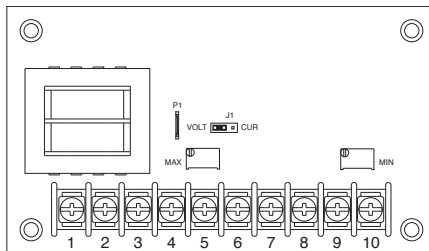
49		
50		
51		
52	Controller ON/OFF	0 will switch off / 1 will switch on
53	Standby ON/OFF	0 selects normal / 1 activates Standby Mode
54		
55		
56		
57		
58		
59		
60		
61		
62		
63	Identification Word	Set to 34 or toggle between 0/1 to validate communication

Signal Isolator KBSI-240D, PN N06642

INSTALLATION AND OPERATING INSTRUCTIONS

MODEL KBSI-240D

Signal Isolator KB Part No. 9431



See Safety Warning on Page 1

The information contained in this manual is intended to be accurate. However, the Manufacturer retains the right to make changes in design which may not be included herein.

PENTA KB POWER™

A COMPLETE LINE OF MOTOR DRIVES

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i. **SAFETY WARNING! Please read carefully:**

This product should be installed and serviced by a qualified technician, electrician, or electrical maintenance person familiar with its operation and the hazards involved. Proper installation, which includes electrical connections, mounting and adequate enclosure, fusing or other current protection, and grounding can reduce the chance of electrical shocks, and/or fires in this product or products used with this product, such as electric motors, switches, coils, solenoids, and/or relays. Do not use this drive in an explosion-proof application. Eye protection must be worn and insulated adjustment tools must be used when working with drive under power. This product is constructed of materials (plastics, metals, carbon, silicon, etc.) which may be a potential hazard. Proper shielding, grounding, and filtering of this product can reduce the emission of radio frequency interference (RFI) which may adversely affect sensitive electronic equipment. The input circuits of this drive may not be isolated from the AC line. Be sure to read and follow all instructions carefully. Fire and/or electrocution can result due to improper use of this product. The drive may contain electronic start/stop circuits, which are used for "Start" and "Stop" functions. However, these circuits are never to be used as safety disconnects since they are not fail-safe. Use only the AC line for this purpose. It is the responsibility of the equipment manufacturer and individual installer to supply this Safety Warning to the ultimate end user of this product. (SW 7/2009)



This product complies with all CE directives pertinent at the time of manufacture. Contact factory for detailed installation instructions and Declaration of Conformity.

I. INTRODUCTION

The KBSI-240D Signal Isolator is used to isolate, amplify and condition DC voltage and current signals from any source (motors, tachs and transducers) which will drive most variable speed motor controls with a voltage following input. The maximum output voltage of the isolator is 10 volts, which is a linear function of the input signal.

The KBSI-240D is versatile since it can accommodate a wide range of input voltages (0 - 25*, 0 - 120 and 0 - 550V DC) and, in addition, a wide range of input current signals (4 - 20 mA, 10 - 50 mA and 1 - 5 mA). The Voltage/Current ("VLT/CUR") jumper is used to change the KBSI-240D from a voltage to current input.

A built-in power supply enables the KBSI-240D to be controlled with a 5K Ω remote potentiometer (connect potentiometer to terminals "P1," "5" and "6" – see page 9). The potentiometer can also be wired for Auto/Manual Operation.

**The input range of 0 - 25V is the maximum voltage that can be applied to terminals "5" and "6". The minimum input voltage is 0 - 5 volts, which can achieve an output voltage of 0 - 10 volts. The unit is factory calibrated so that a 0 - 10V DC input yields a 0 - 10V DC output.*

II. MOUNTING

Mount the Signal Isolator using (4) 6-32 screws (not included). Use the Control Layout and Mechanical Specifications drawing on page 3 to locate the mounting holes. The unit is designed to be mounted in any position providing its components do not come in contact with grounded or live wiring.

FIGURE 1 – CONTROL LAYOUT & MECHANICAL SPECIFICATIONS (INCHES / [mm])
 (Illustrates Factory Setting of Jumpers and Approximate Trimpot Settings)

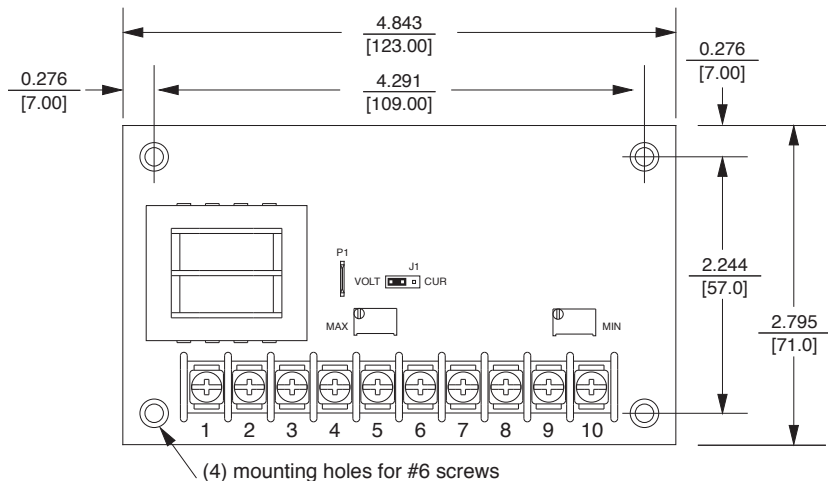


TABLE 1 – GENERAL PERFORMANCE SPECIFICATIONS

AC Power Requirements	115 or 208 - 230V AC, 50/60 Hz ⁽¹⁾
Signal Input Voltage ⁽²⁾	0 - 25, 0 - 120, 0 - 550V DC
Signal Input Current ⁽²⁾	1 - 5, 4 - 20, 10 - 50mA ⁽³⁾
Maximum Output Voltage	10 Volts
Maximum Output Current	10mA
Range of “MIN” Trimpot	± 3 Volts
Range of “MAX” Trimpot	0 to 2 times the input voltage with maximum of 10 Volts
Linearity ⁽⁴⁾	± 0.1%
Temperature Drift ⁽⁴⁾	4 mV per °C
Operating Temperature Range	0 - 40 °C / 32 - 104 °F

Notes:

1. To achieve full specifications input voltage must be within ± 10% of nominal.
2. Floating (non-grounded) or grounded input signal may be used.
3. See Section III-B-i, on page 6.
4. Specifications are based on an output of 10 volts.

III. WIRING.



Warning! Read Safety Warning on page 1 before attempting to use this control.

Warning! To avoid erratic operation do not bundle AC Line and motor wires with potentiometer, voltage following, enable, inhibit or other signal wiring. Use shielded cables on all signal wiring over 12" (30 cm) – Earth ground the shield on the drive side only.

- A.** AC Power – The KBSI-240D is powered with either 115 or 230V AC, 50/60 Hz by arranging the jumpers between terminals “1” to “4” properly. See figures 2A and 2B. Be sure unit is wired in accordance with the National Electric Code and other codes that may apply. It is recommended that a 1 amp fuse be installed in series with the AC line.
- B.** Input Terminals – A voltage or current signal from a microprocessor, tachometer, transducer, etc. is to be connected to terminals “5” through “8.” The selection of the proper terminal is based on the maximum level of the input signal. See figures 3 and 4.

FIGURE 2A – 115V CONNECTION

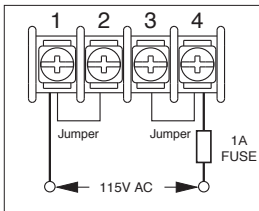
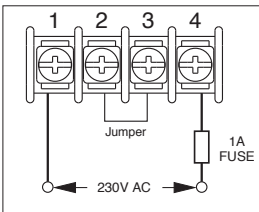


FIGURE 2B – 230V CONNECTION



i. Current Signal Input



Warning! Read Safety Warning on Page 1 before attempting to use this control.

The Signal Isolator accepts 4 – 20 mA DC input to provide 0 – 9 Volts DC output. Connect the current signal input common (–) to Terminal “5” and the positive (+) to Terminal “6”, as shown in Figure 3. Other current signal input ranges can also be used, as described below. Calibrate the Signal Isolator, as described below.

Note: Two resistors, for 10 – 50 mA and 1 – 5 mA inputs, are supplied in the hardware bag included with this kit.

4 – 20 DC Signal Input: No resistor required. Set Jumper J1 in “CUR” position.

10 – 50 mA DC Signal Input (Use Large Resistor with Color Code

“Brown–Green–Brown”): Install the 150Ω – 1W resistor across Terminals.

“5” and “6”. Set Jumper J1 in “CUR” position.

1 – 5 mA DC Signal Input (Use Small Resistor with Color Code

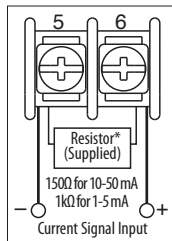
“Brown–Black–Red”): Install the 1kΩ – 1/4W resistor across Terminals “5” and “6”. Set Jumper J1 in “VOLT” position.

Procedure to Calibrate the Signal Isolator When Using Current Signal Input:

1. Connect a DC voltmeter (a digital voltmeter is suggested) to Terminals “9” (–) and “10” (+).
2. Apply the minimum signal input current to Terminals “5” (–) and “6” (+).
3. Adjust the MIN Trimpot on the Signal Isolator to obtain an output voltage of 0 Volts DC.
4. Apply the maximum signal input current to Terminals “5” (–) and “6” (+).
5. Adjust the MAX Trimpot on the Signal Isolator to obtain an output voltage of 9 Volts DC.

Notes: 1. To achieve better accuracy, repeat steps 2 – 5. 2. If other than 0 Volts DC (minimum) and 9 Volts DC (maximum) is desired, use the MIN and MAX Trimpots on the Signal Isolator to adjust the output to the desired voltages in steps 3 and 5.

**FIGURE 3
CURRENT SIGNAL
INPUT CONNECTION**



*No resistor required for
4-20 mA.

ii. Voltage Input Signal



Warning! Read Safety Warning on Page 1 before attempting to use this control.

Note: The Voltage/Current (VLT/CUR) jumper must be in the VLT position (factory setting). The KBSI-240D is designed to accept a wide range of input voltage signals as follows:

TABLE 2 – VOLTAGE INPUT SIGNAL

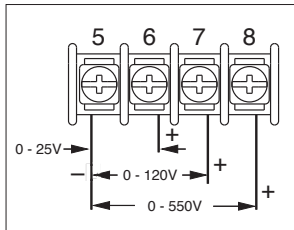
Input Terminals	Minimum Input Voltage Range	Maximum Input Voltage Range
5, 6	0 - 5	0 - 25
5, 7	0 - 25	0 - 120
5, 8	0 - 120	0 - 550

Connect input voltage signal to proper input terminals as indicated in figure 4.

1. Connect a 10V DC meter (digital meter is suggested) to terminals “9” (-) and “10” (+).
2. Apply the maximum input voltage that would be supplied from tach, transducer, etc.
3. Adjust the “MAX” trimpot to the desired output voltage.

Example: A follower motor is to follow the output of a main motor with an armature voltage range of 0 - 90V.

FIGURE 4 – VOLTAGE INPUT SIGNAL CONNECTIONS



- a) Connect the armature of the main motor to the SI input terminals “5” (-) and “7” (+).
- b) Set the armature voltage of the main motor to zero (0). Adjust the “MIN” trimpot so that the output at terminals “9” and “10” reads zero (0) volts.
- c) Reset the armature voltage of the main motor to 90V. Adjust the “MAX” trimpot so that the output voltage is 9V DC.

Notes:

1. When setting the output voltage using the “MIN” and “MAX” trimpots the voltage or speed of the driven motor can be read directly instead of using the output of the KBSI.
2. When readjusting the “MIN” and “MAX” trimpots, always set the minimum voltage first and then the maximum voltage.
3. Trimpots allow approximately 20 turns for the full range of adjustment. If during the adjustment procedure the output stops changing, try reversing the direction of rotation of trimpot.

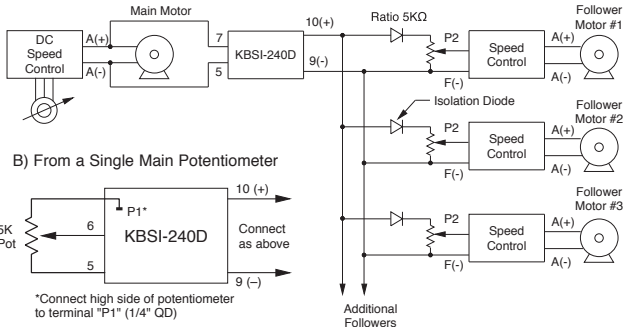
IV. OUTPUT SIGNAL

The output signal from the SI is obtained from terminals “9” (-) and “10” (+). Connect the output directly to the signal following input terminal of the speed control. For multiple follower motors, several controls can be driven from a single KBSI-240D. Be sure the AC line connections to the follower control are to the same phase (eg, L1 to L1 and L2 to L2 of all controls.)

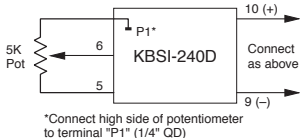
The output from the KBSI-240D can be scaled to control the speed control over any desired speed range. Adjust the “MIN” trimpot to provide the desired minimum speed and the “MAX” trimpot to provide the desired maximum speed.

FIGURE 5 – LEADER/MULTIPLE FOLLOWER VOLTAGE FOLLOWING SYSTEM

A) From a Single Main Motor



B) From a Single Main Potentiometer



A 10K ratio potentiometer is used to control up to ten (10) follower motors.

If a 5K ratio potentiometer is used, up to five (5) follower motors can be controlled.

WARNING! If Signal Isolator is connected to multiple speed controls;

- 1) Multiple controls must be powered from the same phase of AC line.
- 2) The positive input terminal to each speed control must be installed with a 1 amp, 600V (1N4005) isolation diode as shown.
- 3) Multiple speed controls can not be used with PWM, Regenerative or Variable Frequency Drives (Inverters).

FIGURE 6A – LEADER/FOLLOWER VOLTAGE FOLLOWING SYSTEM

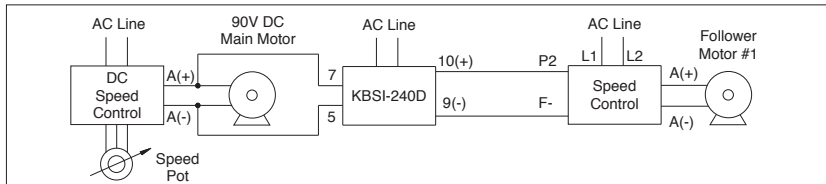


FIGURE 6B – PROCESS CONTROL WITH AUTO/MANUAL SWITCH

The KBSI-240D can be wired in an Auto/Manual mode which will allow manual override of an automatic process. See figure 6B.

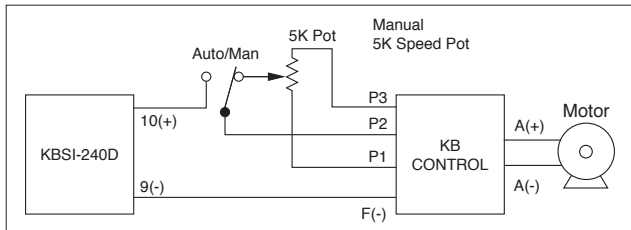


FIGURE 6C – PROCESS CONTROL WITH AUTO (RATIO POT)/MANUAL SWITCH

The following circuit provides for dual purpose usage of the speed pot. In the “AUTO” mode it is used for ratio control and in the “MAN” mode it is used for manual speed adjustment.

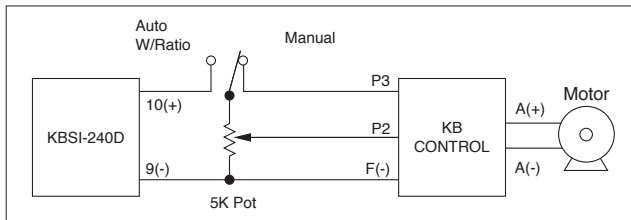
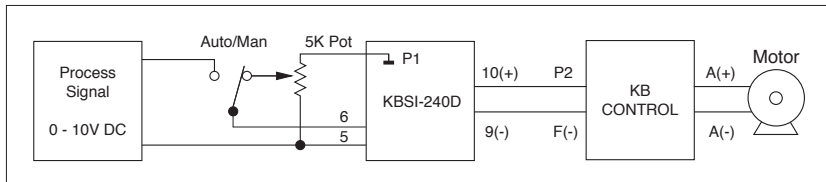


FIGURE 6D – AUTO/MANUAL OPERATION WITH POTENTIOMETER ON KBSI INPUT



Note: The preceding circuit provides for the speed pot to be used in “MAN” mode only. In “AUTO” mode, the process control signal is supplied directly to the signal isolator.

- NOTES -

- NOTES -

V. LIMITED WARRANTY

For a period of 18 months from the date of original purchase, KB Electronics, Inc. will repair or replace, without charge, devices which our examination proves to be defective in material or workmanship. This warranty is valid if the unit has not been tampered with by unauthorized persons, misused, abused, or improperly installed and has been used in accordance with the instructions and/or ratings supplied. The foregoing is in lieu of any other warranty or guarantee, expressed or implied. KB Electronics, Inc. is not responsible for any expense, including installation and removal, inconvenience, or consequential damage, including injury to any person, caused by items of our manufacture or sale. Some states do not allow certain exclusions or limitations found in this warranty and therefore they may not apply to you. In any event, the total liability of KB Electronics, Inc., under any circumstance, shall not exceed the full purchase price of this product.

(Rev 2/2000)



KB Electronics, Inc.

12095 NW 39th Street, Coral Springs, FL 33065-2516 • (954) 346-4900 • Fax (954) 346-3377
Outside Florida Call TOLL FREE (800) 221-6570 • email – info@kbelectronics.com
www.kbelectronics.com

(A40255) – Rev. E – 9/7/2010

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

Code	PN	Delivery rate cc/rev	Pump Type	Shaft seal PN
GAS	100860	1.54	Single	069X061
GBS	100861	3.18	Single	069X061
GCS	100862	4.5	Single	069X061
GAD	100863	1.54	Dual	069X061
GBD	100864	3.18	Dual	069X061
SGD	108874 *	2.92	Dual	807729
SHS	108875 *	8.5	Single	807729
GES	109690	10.0	Single	069X061
GFS	109694	20.0	Single high-flow	069X061
GDS	109908	0.55	Single	069X061
GDD	109909	0.55	Dual	069X061
SIS	110289 *	20.0	Single high-flow	808680
SJS	110290 *	30.0	Single high-flow	808680
SKS	110291 *	45.0	Single high-flow	808680
GGs	111253	0.15	Single	069X061
GGD	111254	0.15	Dual	069X061
ZLS	084E372 *	0.16	Single	807729
ZES	084E374 *	0.584	Single	807729
ZLD	084E387 *	0.16	Dual	807729
ZDD	084E388 *	0.297	Dual	807729
ZED	084E389 *	0.584	Dual	807729
ZDS	084E428 *	0.297	Single	807729
ZFS	084E430 *	1.168	Single	807729
ZFD	084E432 *	1.168	Dual	807729
ZGS	084E434 *	2.92	Single	807729

* TSHA = Tool Steel, High Accuracy

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: • 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.



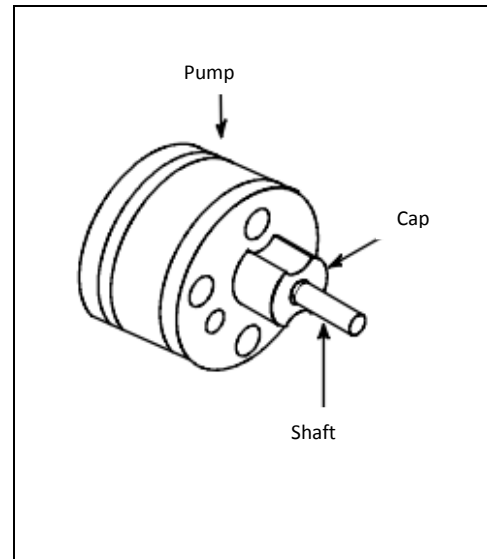
DANGER HOT SURFACE & HIGH VOLTAGE

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.

Revisions

Revision	Page/Chapter	Update description
Rev.3.18		Piston pump option completely removed.
	P.2-2	Specifications – pumps, filters, accessories updated.
Rev.8.18	P.2-10	Model Designation Matrix updated according to PLS2018.
	Ch.10+11	New drawings added.
Rev.1.19	Ch.10	Front Panel Assembly drawing and BOM updated. PCB Filter Kit 108116 drawing added. DM S22 & DM S45 Grid, Melt, Filter and Pressure Relief Section BOM updated. Grid 106972 + grid 122666 added.
	Ch.11	Schematics 107157 Rev.J updated.
Rev.2.19	P.2-10	Gear pumps 0.55cc dual and 0.55cc sngl added to Model Designation Matrix.
	Ch.10	107084N1 Drive asy and 819235C1 Drive kit gear pump updated.
	Ch.11	Schematics 107156 Rev.U and 107159 Rev.L updated.
Rev.1.20	P.2-6	Wattage Chart updated.
Rev.3.20	Ch.11	Schematics 107156W updated.
	9-1	Note added to buy the Aux power board kit 122667 for the grid 106972.
Rev.6.20	-	Manual layout updated.
Rev.5.21	Ch.10	Drive Assembly, Gear Pump, PN 123811 added.
	Ch.11	Schematic 107157L updated.
Rev.10.22	Ch.10	In Typical Front Panel Assembly, standoff 112381 removed and the quantity of the standoff 112382 changed to 3.

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 No. 2 Anzhi Street, SIP, Suzhou, 215122 China Tel. +86.512.6289.0620 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