

Low Profile ModPlus Marathon Applicator

Technical Documentation, No.40-04, Rev.11.18



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.

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SAFETY INSTRUCTIONS

GENERAL CONSIDERATIONS

- Read and follow these instructions. Failure to do this could result in severe personal injury or death.
- Additional safety instructions and/ or symbols are located throughout this manual. They serve to warn maintenance personnel and operators about potentially hazardous situations.
- Inspect the machine for unsafe conditions daily and replace all worn or defective parts.
- Keep work area uncluttered and well lit.
- All covers and guards must be in place before operating this equipment.

For precautions and definitions of safety symbols, refer to the Safety Chapter of the service manual.

SERVICING EQUIPMENT

1. Only trained personnel are to operate and service this equipment.
2. 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.
3. Follow the maintenance and service instructions in the manual.

SIGNS

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.

ADDITIONAL CONSIDERATIONS

1. To ensure proper operation of the equipment, use specified electrical and/ or air supply sources.
2. Do not attempt to alter the design of the equipment unless written approval is received from ITW Dynatec.
3. Keep all manuals readily accessible at all times and refer to it often for the best performance from your equipment.

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Section 1 Description and Specifications

Description

ITW Dynatec's patented Mod-Plus™ head is an air operated, single or multi nozzle hot melt adhesive applicator assembly. It is supplied as a standard component for use with intermittent pressure and constant pressure hot melt adhesive supply units, (ASU's).

Each Mod-Plus head features one or more adhesive valve modules mounted to a single service block. Each nozzle is opened and closed by air pressure. Springs are used to keep needles closed when no air pressure is supplied to the head. The rate of adhesive flow from the Mod-Plus head is determined by the adhesive pressure applied by the ASU pump, the size of the nozzle orifice, and the needle stroke adjustment.

The Mod-Plus head is heated by replaceable cartridge heating elements which are controlled by a RTD sensor and microprocessor control in the Dynamelt/Dynamini and Dynaplug/Dynapro versions, or a fixed temperature thermostat or adjustable cartridge controller in the Dynapply version. An inline filter cartridge is connected to the adhesive inlet to prevent particulate matter from contaminating the head.

Specifications

Performance

Temperature Range

Dynaplug/Dynapro or Dynamelt/Dynamini	ambient to 425°F (218°C)
Dynapply Low Profile, 2 and 4 module	ambient to 425°F (218°C)
Dynapply, 4 module	ambient to 425°F (218°C)
Dynapply, 1 or 2 module	350°F (177°C) fixed

Warm-up Time 15 minutes - cold start, 1 minute - module change only

Cycle Rate 5000 cycles/minute max

Adhesive Viscosity Up to 50,000 cps

Adhesive Pressure Range..... 1,000 psi max, (68 bar max)

Physical Specifications

Weight 1.5 to 4.5 lb, (.68 to 2.05 kg)

Mounting 1/4-20 UNC screws with insulators or 1/2" rod mount

Electrical Specifications

Voltage.....120, or 240 VAC, 50/60 Hz

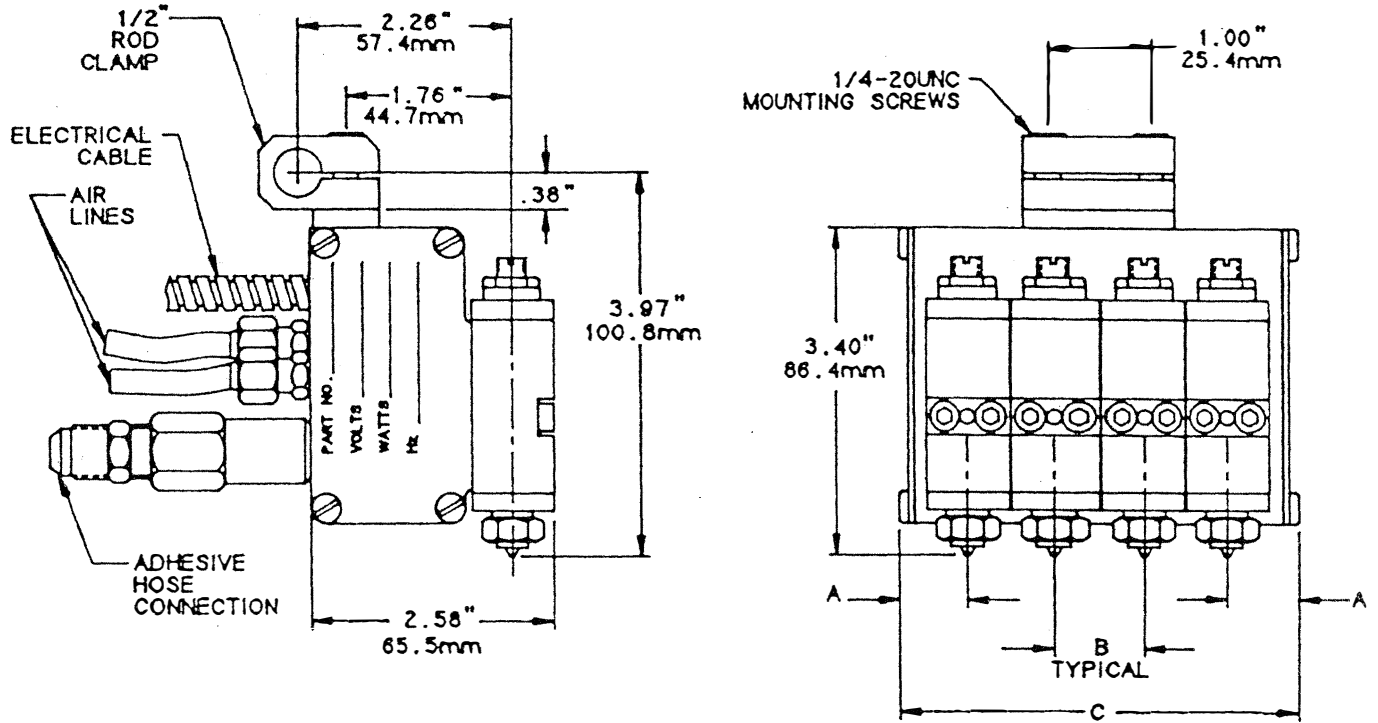
Power Requirements

- One module 200 watts
- Two module 300 watts
- Four module 350 watts
- Two module, low profile 300 watts
- Four module, low profile 400 watts

Air Requirements

Air Pressure Range70 to 140 psi, (4.8 to 9.5 bar)

Air Consumption01 SCFM per module @ 100 cycles/minute



NUMBER OF NOZZLES	DIMENSIONS		
	A	B	C
1	.88" 22.4mm	—	1.75" 44.5mm
2	.72" 18.3mm	.88" 22.4mm	2.31" 58.7mm
4	.72" 18.3mm	.88" 22.4mm	4.06" 103.1mm

Figure 1. Installation Dimensions, Mod-Plus™ Head Assembly

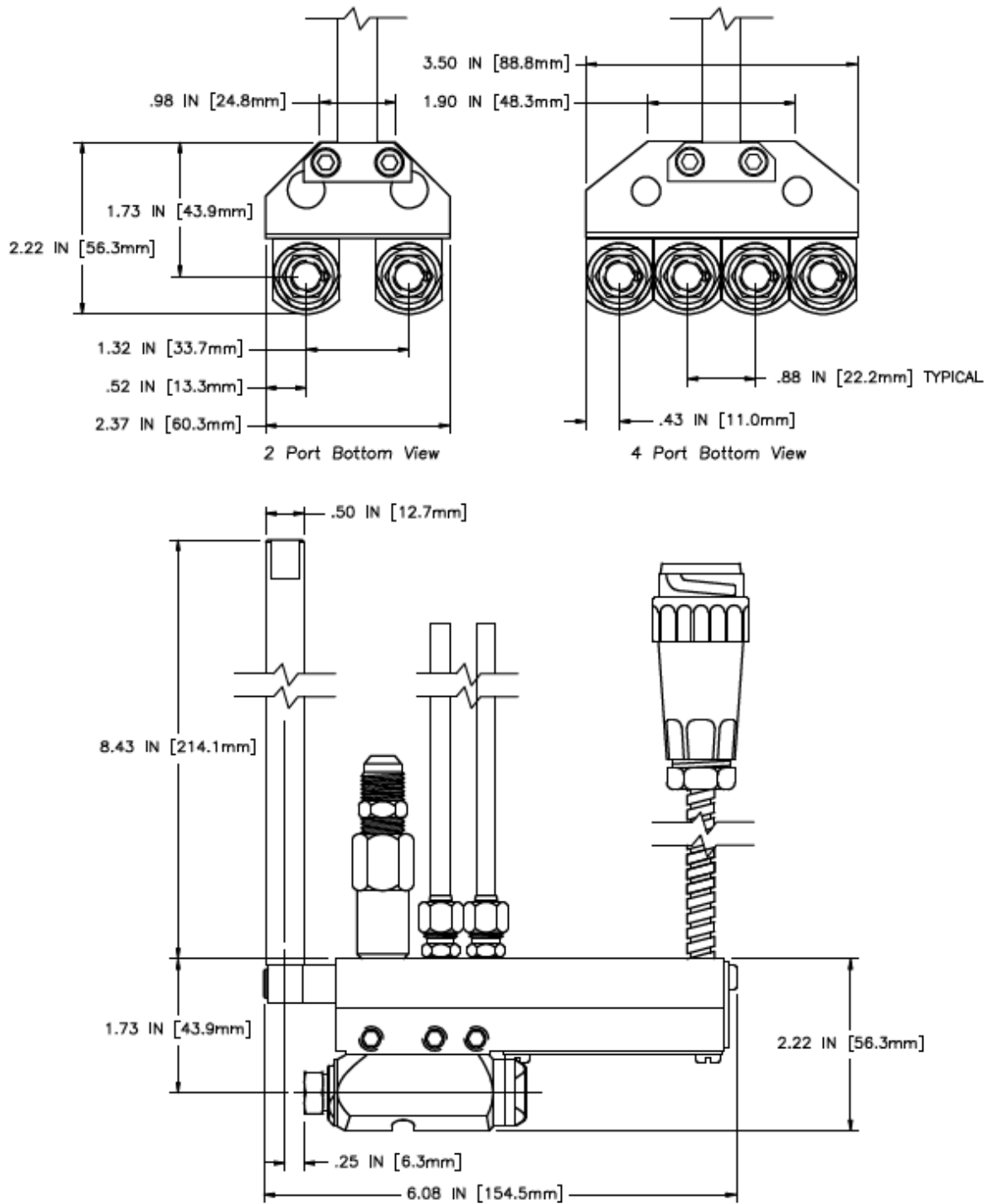


Figure 2. Installation dimensions, Mod-Plus™ Low Profile Head Assembly

Section 2 Safe Operation of Mod-Plus™ Modular Heads

WARNING

Warnings mean that failure to observe the specific instructions may cause injury to persons.

CAUTION

Cautions mean that failure to observe the specific instructions may damage the equipment.

This service manual contains important warnings and cautions. Be sure to read and understand the instructions in this manual before operating the equipment.

Safe Installation

CAUTION

To avoid possible failure of hoses, make sure all hoses are routed to avoid kinking, tight radius turns 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.

CAUTION

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

WARNING

If harsh or unusual ambient conditions are present, such as extreme temperature, humidity, vibration, dust, etc., contact your Dynatec representative before operating the equipment. The Mod-Plus™ adhesive head includes general purpose electrical equipment and should not be used in a wet or hazardous environment.

Personal Safety Equipment

WARNING

Always wear appropriate clothing, gloves and protective eye wear to avoid injury from hot parts or molten adhesive.

Safe Operation

WARNING

Make sure all safety equipment, such as covers, protective panels and safety cut-out switches, are in place and operating correctly.

CAUTION

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

Safe Operation, continued

WARNING

Never step on adhesive hoses or electrical wires

WARNING

Where adhesive hand-held applicators or other movable applicators are used, never point them at yourself or at any other person. Where hand-held applicators are used, never leave the trigger unlocked when not actually in use.

WARNING

Do not operate leaking equipment even if the leak is minor

CAUTION

Do not operate the hopper (tank) or other system components without adhesive for more than 15 minutes if the temperature is 300°F (149°C) or more. To do so will cause charring of the residual adhesive.

Safe Servicing

WARNING

Before servicing the Mod-Plus™ modular head service block, disconnect incoming electrical current by disconnecting electrical supply cord connected from the service block to the hot melt hose.

WARNING

When disassembling a pressurized system always verify that the pressure has been relieved in each component you are servicing (for example, by firing applicators until pressure has dropped).

Preventing Explosions and Fire

WARNING

DO NOT USE ANY HALOGENATED HYDROCARBON CLEANING SOLVENTS WITH THE MOD-PLUS™ MODULAR HEADS. The chemical reaction between aluminum or galvanized parts and halogenated hydrocarbon cleaning solvents is unpredictable and may result in anything from corrosion to a dangerous explosion. Contact your supplier to make sure you are not using this type of solvent for cleaning and flushing. The common halogenated hydrocarbon solvents are listed below.

- Carbon tetrachloride
- Chloroform
- Dichlorofluoromethane
- Dichloromethane
- Ethylene dibromide
- Ethylene dichloride
- Ethyl iodine
- Methyl bromide
- Methylene chloride
- Methylene chloridebromide
- Methyl iodide
- Monochlorobenzene
- Monochlorotoluene
- N-butyl iodide
- Orthodichlorobenzene
- Perchloroethylene
- Propyl iodide
- Trichloroethylene
- Trichlorofluoromethane
- 1,1,1-trichloroethane

WARNING

An extreme fire hazard exists when heating solvents in a heating device that is not thermostatically controlled. When heating a solvent always use a controlled heat source.

Treatment for Burns

WARNING

Hot-melt adhesives are a burn hazard both in the molten state and when they are solidified and still hot. Be sure that first-aid information and supplies are always available where hot-melt adhesives systems are operating.

Section 3 **Mod-Plus™ Installation Instructions**

Handling and Shipping Information

The Mod-Plus modular head assemblies are packaged within protective cushioning material in a fiber packing carton. This package may be shipped in an outer carton along with other individual boxes containing components of the system.

Service Requirements

The Mod-Plus head assembly consists of a service block and one to 4 modules. These applicator heads are available in a standard or a "low profile" configuration. Single, double and four-module versions are available off-the-shelf for use with Dynamelt, Dynamini, or Dynapply hot melt systems.

Incoming power is supplied through the flexible cable exiting the adhesive supply hose cuff. The applicator has a circular plastic connector that mates with the connector attached to the flexible cable on the supply hose.

Incoming air must be clean and unlubricated. It is controlled by the head air control valve and should be separately regulated and maintained at a pressure between 80 and 125 psi (5.4 to 8.5 bar). Air lines from the air control valve should be 1/4 inch (6.4mm). Head air inlet ports are 1/8 inch NPT. The air inlet ports are marked ON and OFF for adhesive ON and adhesive OFF control.

Adhesive is supplied to the head through a filter attached to the head at the adhesive inlet port.

Installation Instructions

The applicator has been tested at the factory and is ready for installation and operation. Mod-Plus heads require a separate 4-way solenoid valve for each application program. The 4-way valves should be mounted so that the air lines to each head are as close to the same length as practical. The modular head has an ultra-high speed capability--5000+cpm. To take advantage of this, the solenoid valves should be located as close to the heads as possible to keep air line tubing to heads short. (Note: Air line and fittings must be capable of withstanding temperatures up to 425°F [218°C].) Dynatec supplies Air Control Kits to be used with air operated heads. (See the Air Control Filter Coalescing Kit manual #100055 in the appendix of this manual.)

Head control solenoid valves may be controlled by timers or limit switches which sense position of the package or object to which adhesive is to be applied. Switches should be mounted on moveable brackets to provide adjustment for proper location of adhesive application.

Installation Instructions, continued

1. Mod-Plus™ heads should be supported from brackets that permit lateral and vertical adjustment in the machine. Be sure that the stroke limit adjustment screws are accessible and that the "weep" holes are visible for periodic inspection. To provide for inspection or temperature adjustment, orient the head to allow for removal of the electrical cover on the service block. For proper application the maximum distance from the nozzle tip to the surface that the adhesive is to be applied should not exceed 1/4 inch (6.4mm).
2. Prior to making the adhesive connection to the head, locate the adhesive supply hose with the electrical connector orientated in relation to the electrical connector on the head. Connect the swivel fitting of the hot melt hose to the adapter on the head filter fitting. When tightening the hose fitting, hold the hose cuff to prevent the hose core from rotating.
3. Connect the head to the hose electrically.
4. It is advisable to check the temperature of the head. This can be done with a separate pyrometer and surface probe, or a dial thermometer. Turn the system power switch to ON. Permit the head to warm up at least 15 minutes (1 minute for module change), before reading average temperature. The Dynamelt/Dynamini and Dynaplug/Dynapro versions of the Mod-Plus heads are controlled through the ASU, utilizing a sensor probe. Please consult the ASU manual for further details. Some Dynapply versions of the Mod-Plus head use an adjustable temperature controller, which is preset at the factory for 350°F (177°C) which is within the application range for most adhesives. Should adjustment be required, more detailed instructions are given on page 4-1. The one and two module standard Dynapply versions of the Mod-Plus head use a fixed 350°F (177°C) temperature controller.
5. When connecting the air lines to the Mod-Plus head, the air line which has air pressure to the module when the 4-way solenoid is OFF is the closing air line. This line connects to the air fitting of the air port marked OFF on the head. The other air line is connected to the air port marked ON. This line can be checked by loosening the air line after the system has been pressurized.

CAUTION

Do not use lubricating oil with the air supply for Mod-Plus heads as they are lubricated at the factory and do not require lubrication when used in production. Where oil is present in the air supply, it is recommended that for maximum applicator head seal life, a coalescing filter be installed between the standard air regulator/filter and the Mod-Plus head.

Section 4 Maintenance and Troubleshooting

The Mod-Plus™ modular head requires no regular maintenance. However, it is desirable to wipe the head clean of adhesive, with a clean cloth, while still hot at the end of each shift. Inspect the head periodically as outlined in the following table.

ITEM	INSPECTION	FREQUENCY	ACTION
Adhesive supply hose fitting connection	Inspect for leaks	As required	Tighten loose
Air supply connections	Inspect for leaks	As required	Tighten loose fitting
Weep holes	Inspect for adhesive	As required	Replace seal cartridge, if applicable
Nozzle performance	Inspect for all nozzles operating properly	As required	Clean nozzle or re-adjust stroke limiter, if applicable
Applicator filter	Inspect for cleanliness	Monthly or as required by use	Clean or replace filter element

Table 1. Maintenance Schedule

Temperature Controls

Before operating the Mod-Plus head, check it for temperature. This can be done with a separate pyrometer and surface probe, or a dial thermometer. Turn the system power switch to ON. Permit the head to warm-up 15 minutes before reading average temperature. (Note: On systems with staged heating, the heads do not get power to heat until the tank warms up to a set temperature.) Insert a dial thermometer stem full depth in the 0.144 inch (3.7mm) diameter hole in the service block, or use a surface pyrometer on the side of the service block to read temperatures. The Mod-Plus modular head is factory adjusted to 350°F (177°C) for the Dynapply versions, controlled by either a snap switch controller, or an adjustable cartridge-type temperature controller. Should readjustment to the temperature controller be necessary, a quarter turn of the controller adjustment screw will change the temperature about 25°F (14°C). To increase temperature turn counterclockwise; to decrease turn clockwise. Allow 10 minutes after resetting the controller for the head temperature to stabilize. Check all heads separately. All heads should be matched in temperature within 10°F (6°C).

The Dynamelt/Dynamini version of Mod-Plus heads are controlled by an RTD sensor, and temperature is controlled directly by the ASU. Consult your ASU manual for further information.

Stroke Limit Adjustment for PN L18047 Module

Old Mod-Plus heads are equipped with a stroke limit adjustment. Whenever maintenance work is performed on the module, the stroke limit will have to be adjusted using the following procedure.

1. Bring head up to operating temperature.
2. Loosen lock nut.
3. Bottom adjusting screw lightly.

CAUTION

Tightening stroke adjustment to shut OFF nozzle will cause damage to head.

4. Back off screw one quarter to one half turn.
5. While holding screw in position, tighten lock nut. Note: Use a 6 pt. box wrench or open wrench to tighten the lock nut. A 12 pt. socket will slip.

Nozzle Cleaning

Occasionally nozzles can become clogged with char, residue or other foreign matter. This usually results in the decrease or even stoppage of glue flow from the nozzle. Dynatec has three nozzle cleaning kits available, designed to be orifice specific:

PN 101877	Nozzle Cleaning Kit: .010 to .017 orifice
PN 101878	Nozzle Cleaning Kit: .018 to .027 orifice
PN 101879	Nozzle Cleaning Kit: .028 to .040 orifice

WARNING

Before using nozzle cleaning kit: Turn OFF air supply to the ASU, actuate applicator to relieve adhesive pressure, then turn OFF air supply to applicator.

The nozzle should be at operating temperature when cleaned. Turn the ASU OFF and make sure that the air pressure to the pump is turned OFF. Remove the nozzle retaining nut and nozzle with a 9/16 open wrench.

The reamers in the kit are used to clear the orifice. Since there are several orifice sizes available, first make sure that the reamer is compatible with the orifice size you are about to clean. Then carefully insert the reamer into the tip of the nozzle.

CAUTION

If a reamer of too large a diameter is used to clean the orifice it could result in a broken reamer jammed in the nozzle, or damage to the nozzle orifice itself.

Shim Replacement on Slot Die (Ribboncoater) Models

All Mod-Plus slot die heads (Ribboncoater heads) are equipped with shims, located between the clamp and the body of the extruder sub-assembly. For examples see Figure 3 (below) and Ribboncoater Assembly J21077 in Section 7 of this manual. To replace a shim, follow the procedure outlined below.

WARNING

The head will be at operating temperature. Always wear appropriate clothing, gloves and protective eye wear to avoid injury from hot parts or molten adhesive.

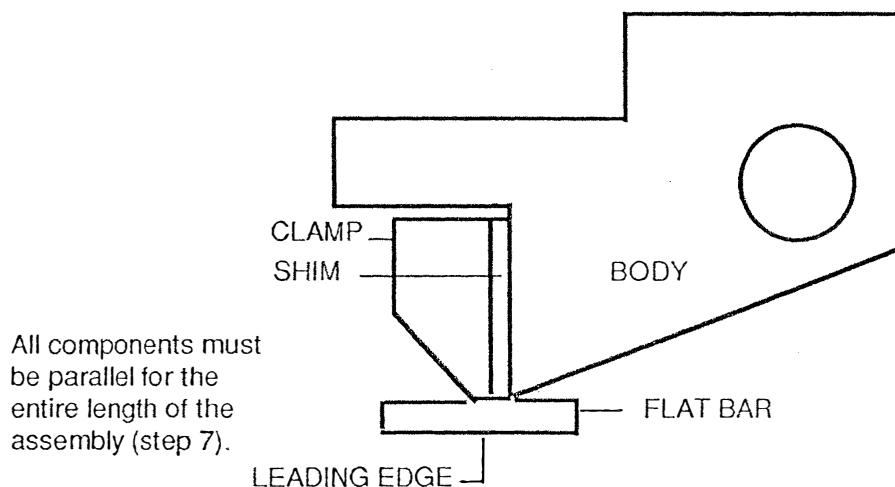


Figure 3: Extruder Sub-Assembly

1. Bring head up to operating temperature.
2. Remove all of the 4-40 screws which attach the extruder sub-assembly to the module.
3. With the extruder on a flat surface, remove all of the screws which attach the clamp and shim to the body.
4. Wipe the body and clamp clean of all adhesive and char using a liquid cleaning solvent and paying special attention to the surfaces that clamp the shim.
5. Inspect the new shim for any burrs or rough edges. Sand, using 400 grit paper on a flat surface, as required to insure flatness.
6. Re-attach shim and clamp to the body keeping the screws loose.
7. Hold a flat bar (steel or aluminum) against the leading edge of the extruder sub-assembly. This will align the shim to the clamp and the body. Tighten two or three screws to

cont.

hold the components together. Remove the flat bar and finish tightening the remaining screws.

8. If required, wrap a piece of 400 grit sandpaper around a flat file and, going from end to end, sand the entire leading edge surface to remove any shim edges that are not in parallel with the clamp and body.
9. Re-assemble the extruder sub-assembly to the modules.
10. Test the head for proper performance. Adjust as required.

Section 5

Part Reference Drawings

The following pages provide reference drawings to assist users of Mod-Plus™ modular heads to identify parts and aid in servicing the equipment.

Mod-Plus Head Selection Guide

	Dynapply® (Discontinued)	Dynamelt/Dynamini
1 Module		
120 V	L18800	104340
240 V	L18801	101590
2 Module		
120 V	L18806	104341
240 V	L18807	101591
4 Module		
120 V	L18812	104342
240 V	L18813	101592

Mod-Plus Low Profile Head Selection Guide

	Dynapply® (Discontinued)	Dynamelt/Dynamini
2 Module		
120 V	L18818	104343
240 V	L18819	101593
4 Module		
120 V	L18824	104344
240 V	L18825	101594

Item Reference for Figure 4, Mod-Plus™ Head Assembly, Dynapply

<i>Item</i>	<i>Part No.</i>	<i>No. of Modules</i>	<i>Description</i>	<i>Quantity</i>
* 1	110639	--	Module assembly, high performance	--
* 1	L18047	--	Module assembly, Obsolete	--
--	L18520	1	Service block assembly	1
--	L18522	2		1
--	L18524	4		1
2	L18041	1	Service block	1
2	L18042	2		1
2	L18044	4		1
3	L09146	--	Cable assembly	1
4	N00767	--	Screw, #8-32 x .25 set	1
5	104129	--	Clamp, 1/2" rod mount	1
6	L14899	--	Insulator	1
7	N00816	--	Screw, 1/4-20 x 1.00 socket head	2
8	N04438	--	Filter assembly, 50 mesh (standard)	1
8	N04439	--	Filter assembly, 100 mesh (optional)	--
9	N00104	--	Fitting, No. 6 hose	1
10	N00093	--	Fitting, 1/4 tube x 1/8 NPT	2
11	L13533	--	Tube, 1/4 x 8.00	2
12	N01316	--	Fitting, 1/4 tube union	2
13	N01124	--	Plug, 1/16 NPT	3
* 14	N07001	1, 2	Temperature control, 350°F (177°C)	1
* 14	N01604	4	Temperature control, adjustable	1
15	N04268	--	Terminal, ring tongue	1
16	N00859	1, 2	Screw, #8-32 x .25 fillister head	3
16	N00859	4	Screw, #8-32 x .25 fillister head	1
17	N00703	--	Lockwasher, #8	1
18	N07541	1	Terminal block, 1 station	3
18	N07540	2, 4	Terminal block, 4 station	1
19	L18046	--	Cover	2
20	N02312	--	Screw, #8-32 x .375 pan head	8
* --	N02892	--	Sealant, thread, .25 oz.	1
* 21	N00438	1	Heater, cartridge, 100 Watt, 120 V	2
	101294		Heater, cartridge, 100 Watt, 240 V	2
	N00126	2	Heater, cartridge, 100 Watt, 120 V	2
	N07732		240 V	2
	N07673	4	Heater, cartridge, 175 Watt, 120 V	2
	N07674		240 V	2
* --	N07588	--	Lube, high temperature seal, .25 oz tube	--

* Recommended spare parts

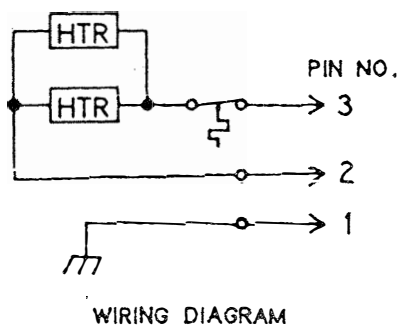
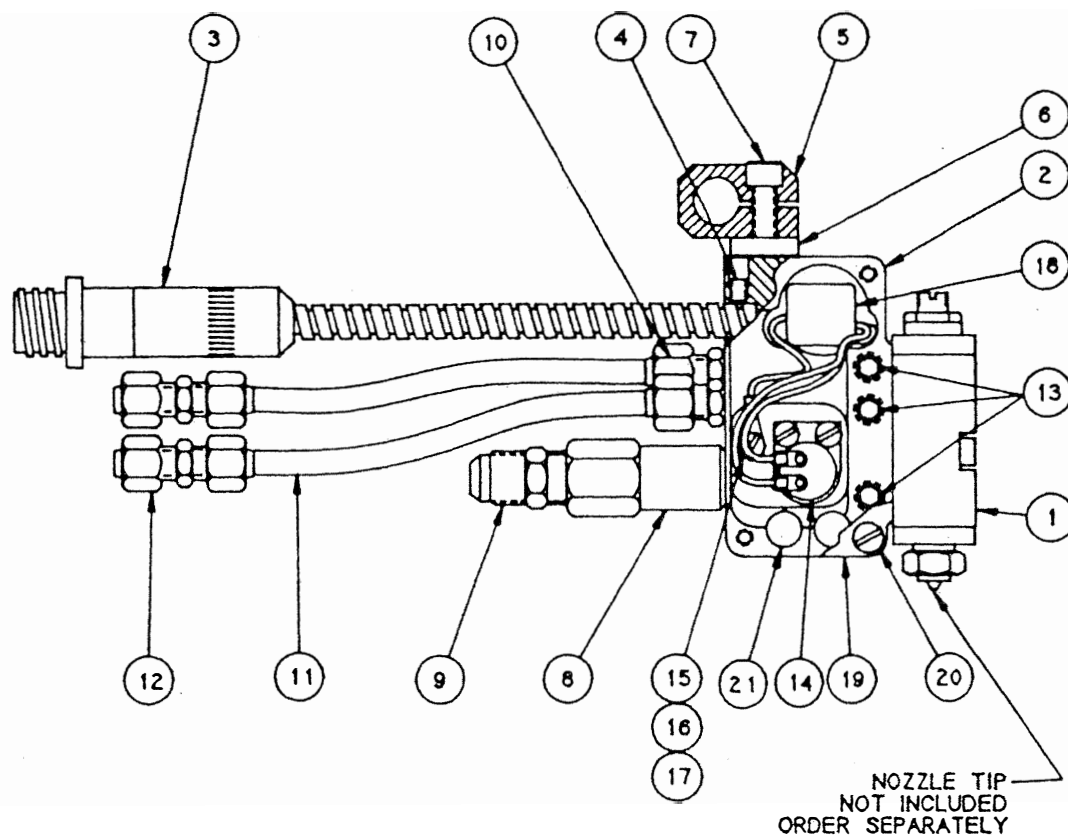


Figure 4. Mod-Plus™ Head Assembly, Dynapply

Item Reference for Figure 8, Mod-Plus™ Head Assembly, Dynamelt/Dynamini

<i>Item</i>	<i>Part No.</i>	<i>No. of Modules</i>	<i>Description</i>	<i>Quantity</i>
1	L18041	1	Service block	1
1	L18042	2	Service block	1
1	L18044	4	Service block	1
2	104393	--	Cable assembly, 120V	1
2	101610	--	Cable assembly, 240V	1
3	104129	--	Clamp, 1/2" rod mounting	1
* 4	N04438	--	Filter assembly, 50 mesh (standard)	1
* 4	N04439	--	Filter assembly, 100 mesh (optional)	--
5	N00104	--	Fitting, No. 6 hose	1
* 6	L18047	--	Module assembly , Obsolete	-
	110639	--	Module assembly, high performance	--
7	L13533	--	Tube, 1/4 x 8.00	2
8	N00185	--	Screw, socket head, 0.250-20x1.00	2
9	N00093	--	Fitting, 1/4 tube x 1/8 NPT	2
10	N01124	--	Plug, 1/16 NPT	3
11	N00859	--	Screw, #8-32 x .25 fillister head	1
12	L14899	--	Insulator	1
13	L18046	--	Cover	2
14	N02312	--	Screw, #8-32 x .375 pan head	8
15	N00767	--	Screw, #8-32 x .25 set	1
* 16	N02892	--	Sealant, thread, .25 oz. (not shown)	1
17	N00703	--	Lockwasher, #8	1
18	N04268	--	Terminal, ring tongue	1
19	048G024	--	Parallel conn, 22-16 ga.	2
20	048J271	--	Shrink tubing, 0.150 ID	0.1'
* 21	N00438	1	Heater, cartridge, 100 Watt, 120 V	2
* 21	101294	1	Heater, cartridge, 100 Watt, 240 V	2
* 21	N00126	2	Heater, cartridge, 100 Watt, 120 V	2
* 21	N02048	2	Heater, cartridge, 100 Watt, 240 V	2
* 21	N07673	4	Heater, cartridge, 175 Watt, 120 V	2
* 21	N07674	4	Heater, cartridge, 175 Watt, 240 V	2
22	102987	--	Cuff, filter insulating (location only shown)	1
* --	N07958	--	Sensor, RTD, PT100 (not shown)	1
* --	N07588	--	Lube, high temperature seal, tube (not shown)	1

* Recommended spare parts

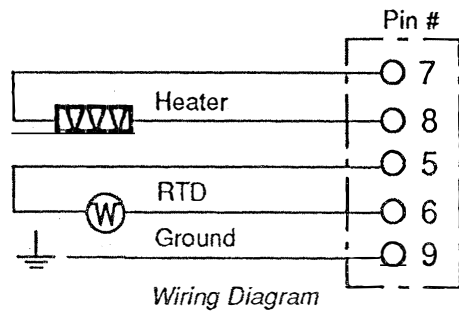
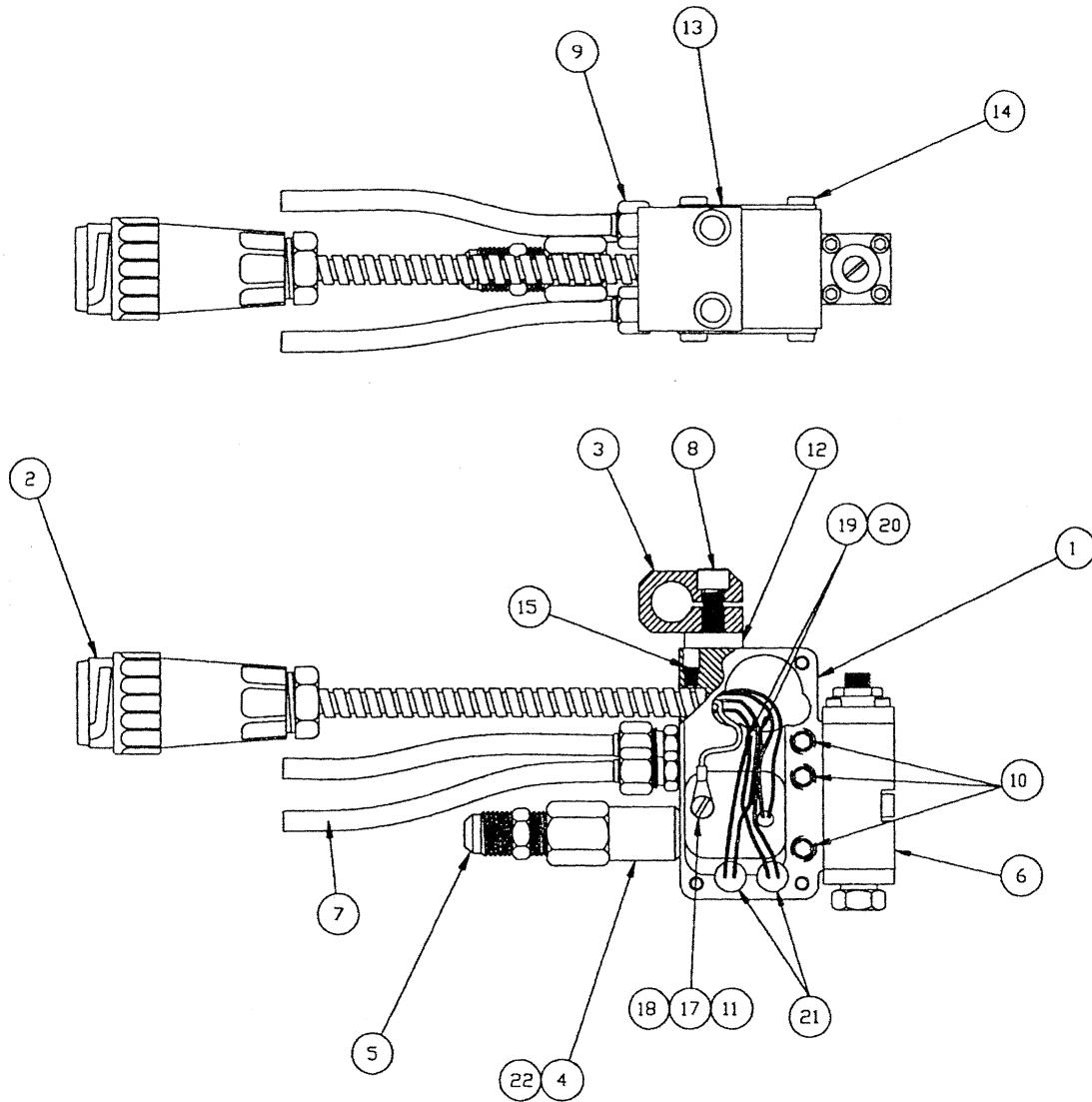


Figure 8. Mod-Plus™ Head Assembly, Dynamelt/Dynamini

Item Reference for Figure 9, Mod-Plus™ Low Profile Head Assembly

Item	Part No.	No. of Modules	Description	Quantity
1.	L18730	2	Service Block	1
	L18731	4	Service Block	1
* 2.	N07835	2	Heater, 300W, 120V	1
	N07836	2	Heater, 300W, 240V	1
	N07838	4	Heater, 400W, 120V	1
	N07839	4	Heater, 400W, 240V	1
3.	N01756	—	Connector, parallel	2
4.	048J271	—	Heat shrink tubing	0.1'
5.	N00766	—	Setscrew, 8-32 x 1/8	1
6.	L19733	2	Cover, end	1
	L19734	4	Cover, end	1
7.	N02312	—	Screw, 8-32 x 3/8, Pan hd	6
* 8.	N01604	—	Temperature control (Dynapply)	1
	N06703	—	Temperature sensor (Plus, Pro)	1
	N07958	—	Temperature sensor (Dynacontrol)	1
9.	L16633	—	Body, temperature sensor	1
10.	N00093	—	Fitting, 1/4 tube x 1/8 NPT	2
11.	L09146	—	Cable assy (Dynapply)	1
	L16667	—	Cable assy, 120V (Plus, Pro)	1
	L16668	—	Cable assy, 240V (Plus, Pro)	1
	104393	—	Cable assy, 120V (Dynacontrol)	1
	101610	—	Cable assy, 240V (Dynacontrol)	1
12.	L13533	—	Tube, 1/4 x 8" long	2
13.	102987	—	Cuff, filter insulating	1
14.	L12213	—	Post, mounting	1
* 15.	N04438	—	Filter, 50 mesh (standard)	1
	N00439	—	Filter, 100 mesh (option)	1
16.	N00104	—	Fitting, No. 6 hose	1
17.	L17844	—	Insulator, mounting	1
18.	L17845	—	Support, mounting post	1
19.	N00817	—	Screw, SHC, 1/4-20 x 1-1/4	2
20.	N02029	—	Setscrew, 5/16-18 x 1-1/4	1
21.	110639	—	Module, Marathon	2 or 4
22.	L18742	2	Cover, bottom	1
	L21139	4	Cover, bottom	1
23.	N01124	—	Fitting, flush plug, 1/16-27 NPT	3
24.	N00859	—	Screw, 8-32 x 1/4, Fil hd	1
25.	N00703	—	Lockwasher, #8 internal tooth	1
26.	N04268	—	Ring terminal, 22-16ga	1

* Recommended spare parts

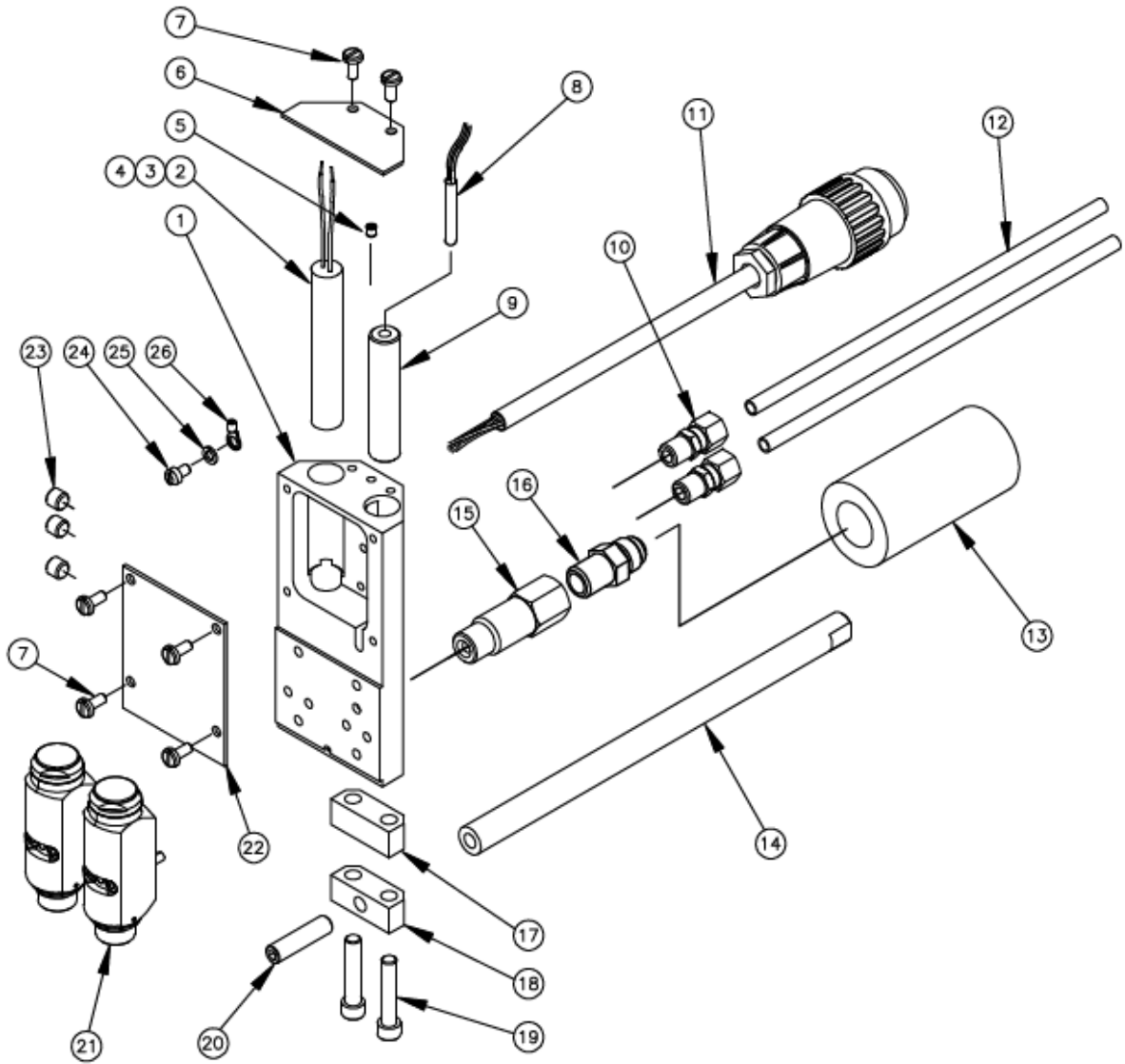


Figure 9. Mod-Plus™ Low Profile Head Assembly

Module Assembly Instructions (for obsolete PN L18047 Module)

Note: High Performance Module PN 110639 requires no disassembly.

This page provides instruction for assembly of Mod-Plus™ modules (L18047). The following page provides a parts list and drawing to aid in the assembly/disassembly of the module. Dynatec has a module seal kit available (L18747). Each kit contains sufficient parts to rebuild one module, including all O-rings, piston/needle, a seal cartridge and high temperature lubricant.

1. Coat O-rings with a liberal amount of High Temp Lube (N07588).

CAUTION

Do Not Substitute: Failure to use High Temp Lube (N07588) may result in premature seal breakdown, and leakage of glue from the applicator.

2. Install O-rings on items 2, 6, & 7, taking care to ensure that O-rings are in good condition, with no visible nicks or cuts.
3. Drop seal cartridge assembly (Item 8) into module body (Item 1).
4. Push seal cartridge down firmly until properly seated. Proper seating of cartridge has occurred when shoulder bolt holes are clear. Reference *location* of Item 13.
5. Thread shoulder bolts (Item 13) into body. Firmly tighten to between 15 and 17 in.-lb. of torque.
6. Coat the needle/piston shaft (Item 7) with High Temp Lube (N07588). Slowly insert needle/piston assembly straight down through body/cartridge assembly, being cautious not to dislodge internal O-rings/seals of cartridge.
7. Attach needle seat (Item 2) with four #4-40 screws (Item 14). Firmly tighten, but do not exceed 11 in.-lb. of torque.
8. Thread stroke adjust screw (Item 3) into cap (Item 6), starting screw through bottom side of cap. Thread stroke adjust screw UP as far as possible before going on to step 9.
9. Place spring (Item 5) in position on top of needle/piston assembly, and attach cap (Item 6) to body, using four #4-40 screws (Item 14). Take care to screw cap on straight, alternating screws in order to prevent spring from being knocked off center of needle assembly.
10. Thread locknut (Item 4) onto Stroke Limit Adjust screw. It will be necessary at this time to reset Stroke Limit Adjustment setting. For detailed directions, see page 4-2.

To disassemble, reverse order.

Note: only Ribboncoater models use all four of the PN N00175 O-rings. Other models use three O-rings.

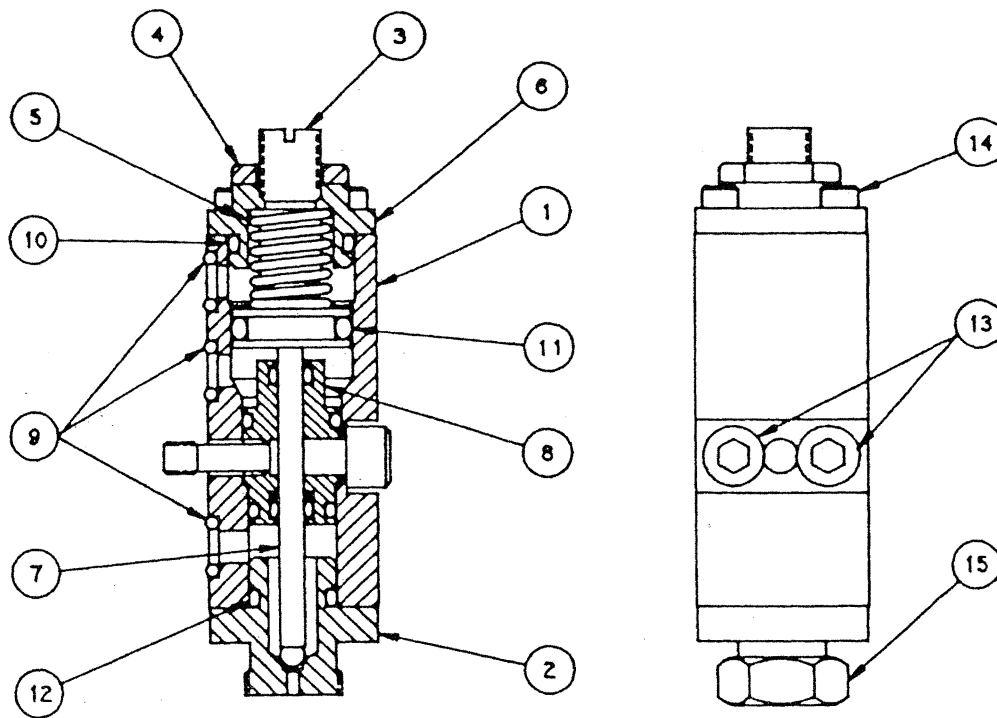


Figure 10. Obsolete PN L18047 Mod-Plus Module

Item	Part No.	Description	Quantity
--	L18047	Module assembly, Obsolete	1
1	L18037	Body	1
2	L18504	Seat, needle	1
3	L18050	Screw, stoke adjust	1
4	N07538	Nut, TFE seal	1
5	N07543	Spring	1
6	L18035	Cap	1
* --	L18747	Kit, module seal	1
7	L18036	Piston/needle assembly	1
8	L18039	Seal cartridge assembly	1
9	N00175	O-ring, -008 Viton (.32 x .18 x .07)	3
10	N00181	O-ring, -014 Viton (.63 x .49 x .07)	1
11	N07544	O-ring, piston seal	1
12	N00178	O-ring, -011 Viton (.44 x .30 x .07)	1
--	N07588	Lube, high temp. seal, .25 oz.	1
13	L18038	Shoulder bolt	2
14	N00787	Screw, #4-40 x .375 socket head	8
15	L09219	Nozzle nut	1

* Recommended spare parts.

Module Assembly Instructions (for Mod-Plus Ribboncoater models only)

This page provides instruction for assembly of Mod-Plus™ Ribboncoater modules (J20808). The following page provides a parts list and drawing to aid in the assembly/disassembly of the module. Dynatec has a module seal kit available (L18747). Each kit contains sufficient parts to rebuild one module, including all O-rings, piston/needle, a seal cartridge and high temperature lubricant.

1. Coat O-rings with a liberal amount of High Temp Lube (N07588).

CAUTION

Do Not Substitute: Failure to use High Temp Lube (N07588) may result in premature seal breakdown, and leakage of glue from the applicator.

2. Install O-rings on items 2, 6, & 8, taking care to ensure that O-rings are in good condition, with no visible nicks or cuts.
3. Drop seal cartridge assembly (Item 7) into module body (Item 1).
4. Push seal cartridge down firmly until properly seated. Proper seating of cartridge has occurred when shoulder bolt holes are clear. Reference *location* of Item 13.
5. Thread shoulder bolts (Item 13) into body.
6. Coat the needle/piston shaft (Item 8) with High Temp Lube (N07588). Slowly insert needle/piston assembly straight down through body/cartridge assembly, being cautious not to dislodge internal O-rings/seals of cartridge.
7. Attach needle seat (Item 2) with four #4-40 screws (Item 15). Firmly tighten, but do not exceed 11 in.-lb. of torque.
8. Thread stroke adjust screw (Item 3) into cap (Item 6), starting screw through bottom side of cap. Thread stroke adjust screw UP as far as possible before going on to step 9.
9. Place spring (Item 5) in position on top of needle/piston assembly, and attach cap (Item 6) to body, using four #4-40 screws (Item 14). Take care to screw cap on straight, alternating screws in order to prevent spring from being knocked off center of needle assembly.
10. Thread locknut (Item 4) onto Stroke Limit Adjust screw. It will be necessary at this time to reset Stroke Limit Adjustment setting. For detailed directions, see page 4-2.

To disassemble, reverse order.

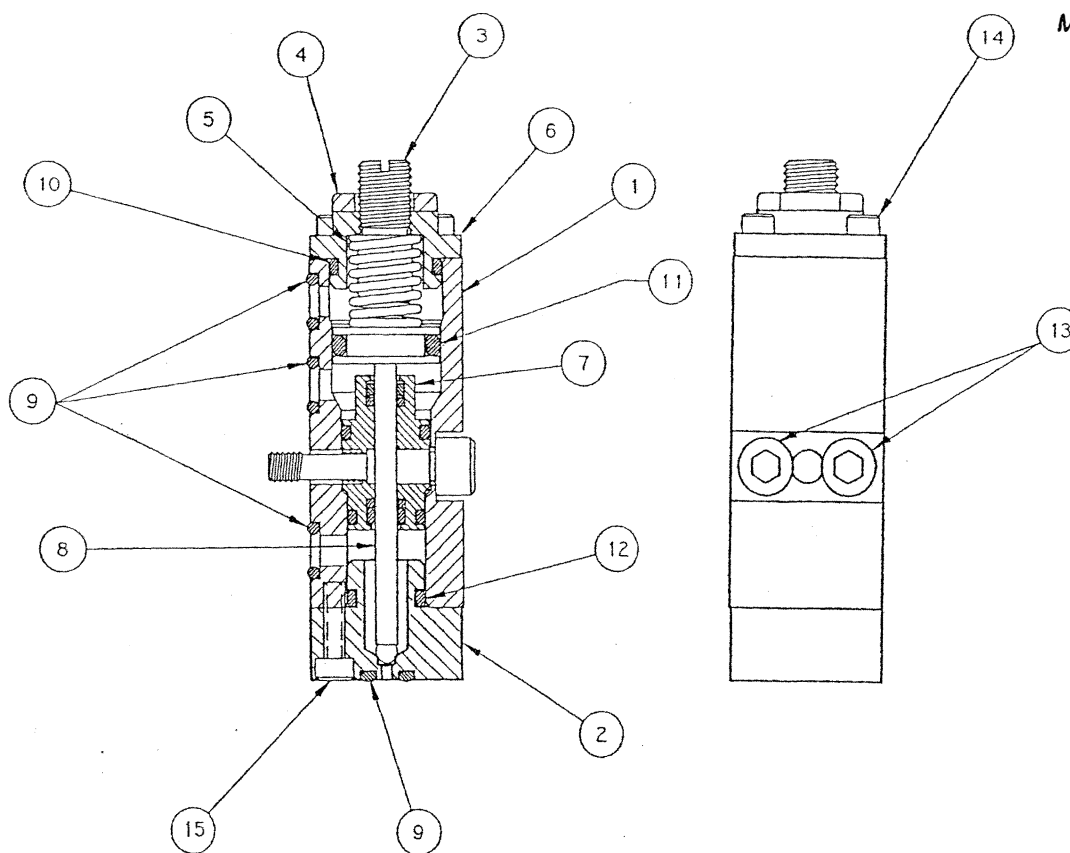


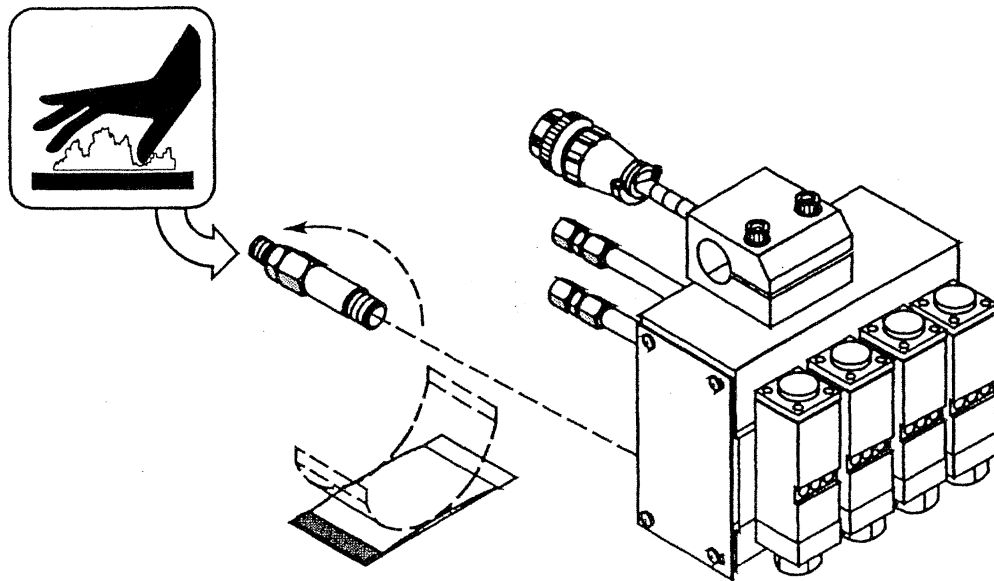
Figure 11. Mod-Plus™ Ribboncoater Module

Item	Part No.	Description	Quantity
--	J20808	Module assembly	1
1	L18037	Body	1
2	L21391	Seat, needle	1
3	L18050	Screw, stoke adjust	1
4	N07538	Nut, TFE seal	1
5	N07543	Spring	1
6	L18035	Cap	1
* --	L18747	Kit, module seal	1
7	L18039	Seal cartridge assembly	1
8	L18036	Piston/needle assembly	1
9	N00175	O-ring, -008 Viton (.32 x .18 x .07)	4
10	N00181	O-ring, -014 Viton (.63 x .49 x .07)	1
11	N07544	O-ring, piston seal	1
12	N00178	O-ring, -011 Viton (.44 x .30 x .07)	2
--	N07588	Lube, high temp. seal, .25 oz.	1
13	L18038	Shoulder bolt	2
14	N00787	Screw, #4-40 x .375 socket head	4
15	N00788	Screw, #4-40 x .50 socket Head	2

* Recommended spare parts.

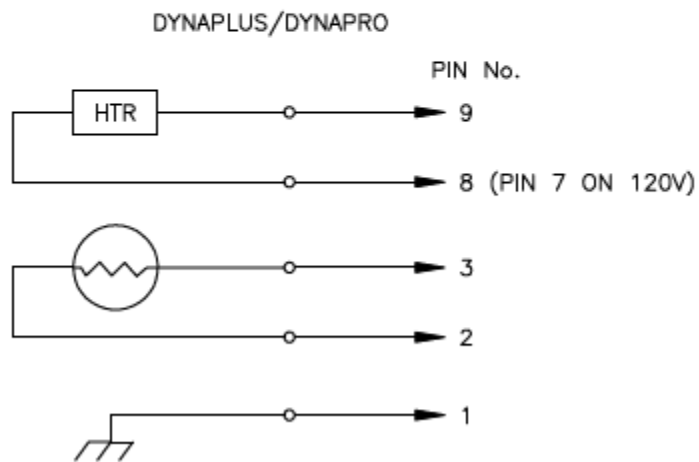
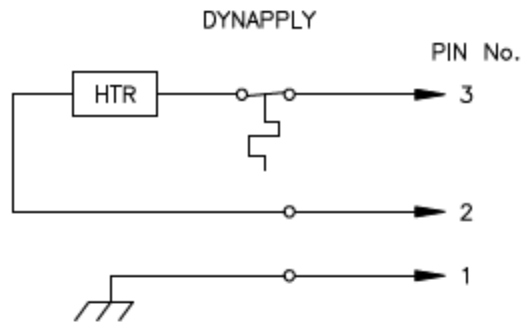
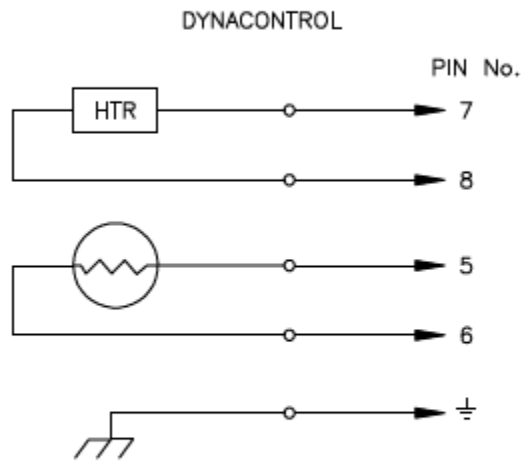
Filter Insulation Cuff

To prevent personnel from coming into direct contact with the hot filter, all Mod Plus heads are equipped with a Filter Insulation Cuff, illustrated below.



Filter Insulation Cuff
Part #102987

Wiring Diagrams for Figure 9, Mod-Plus™ Low Profile Head Assembly



Section 6 Mod-Plus™ Head Nozzle Ordering Guide

Single Orifice Nozzles:

Part Number	Orifice Diameter	Orifice Length
L19944	.016 inch (.41 mm)	.300 inch (7.62 mm)
L19945	.017 inch (.43 mm)	.300 inch (7.62 mm)
L19946	.018 inch (.46 mm)	.300 inch (7.62 mm)
L19947	.021 inch (.53 mm)	.300 inch (7.62 mm)
L19948	.024 inch (.61 mm)	.300 inch (7.62 mm)
L19949	.028 inch (.71mm)	.300 inch (7.62 mm)
L19965	.010 inch (.25 mm)	.050 inch (1.27 mm)
L19966	.012 inch (.30 mm)	.050 inch (1.27 mm)
L19967	.015 inch (.38 mm)	.075 inch (1.91 mm)
L19968	.020 inch (.51 mm)	.075 inch (1.91 mm)
L19969	.025 inch (.64 mm)	.075 inch (1.91 mm)
L19970	.030 inch (.76 mm)	.075 inch (1.91 mm)
L19971	.035 inch (.89 mm)	.075 inch (1.91 mm)
L19972	.040 inch (1.02 mm)	.075 inch (1.91 mm)

Multi-Orifice Nozzles:

Part Number	No. of Orifices	Orifice Diameter	Angle
L09350-1015	2	.010 inch (.25 mm)	15°
L09350-1022	2	.010 inch (.25 mm)	22°
L09350-1030	2	.010 inch (.25 mm)	30°
L09350-1045	2	.010 inch (.25 mm)	45°
L09350-1060	2	.010 inch (.25 mm)	60°
L09350-1090	2	.010 inch (.25 mm)	90°
L09350-1515	2	.015 inch (.38 mm)	15°
L09350-1522	2	.015 inch (.38 mm)	22°
L09350-1530	2	.015 inch (.38 mm)	30°
L09350-1545	2	.015 inch (.38 mm)	45°
L09350-1560	2	.015 inch (.38 mm)	60°
L09350-1590	2	.015 inch (.38 mm)	90°
L09350-2015	2	.020 inch (.51 mm)	15°
L09350-2022	2	.020 inch (.51 mm)	22°
L09350-2030	2	.020 inch (.51 mm)	30°
L09350-2045	2	.020 inch (.51 mm)	45°
L09350-2060	2	.020 inch (.51 mm)	60°
L09350-2090	2	.020 inch (.51 mm)	90°

Multi-Orifice Nozzles, continued

Part Number	No. of Orifices	Orifice Diameter	Angle
L09350-2515	2	.025 inch (.64 mm)	15°
L09350-2522	2	.025 inch (.64 mm)	22°
L09350-2530	2	.025 inch (.64 mm)	30°
L09350-2545	2	.025 inch (.64 mm)	45°
L09350-2560	2	.025 inch (.64 mm)	60°
L09350-2590	2	.025 inch (.64 mm)	90°
L09350-3015	2	.030 inch (.76 mm)	15°
L09350-3022	2	.030 inch (.76 mm)	22°
L09350-3030	2	.030 inch (.76 mm)	30°
L09350-3045	2	.030 inch (.76 mm)	45°
L09350-3060	2	.030 inch (.76 mm)	60°
L09350-3090	2	.030 inch (.76 mm)	90°
L09276-1015	3	.010 inch (.25 mm)	15°
L09276-1022	3	.010 inch (.25 mm)	22°
L09276-1030	3	.010 inch (.25 mm)	30°
L09276-1045	3	.010 inch (.25 mm)	45°
L09276-1515	3	.015 inch (.38 mm)	15°
L09276-1522	3	.015 inch (.38 mm)	22°
L09276-1530	3	.015 inch (.38 mm)	30°
L09276-1545	3	.015 inch (.38 mm)	45°
L09276-2015	3	.020 inch (.51 mm)	15°
L09276-2022	3	.020 inch (.51 mm)	22°
L09276-2030	3	.020 inch (.51 mm)	30°
L09276-2045	3	.020 inch (.51 mm)	45°
L09276-2515	3	.025 inch (.64 mm)	15°
L09276-2522	3	.025 inch (.64 mm)	22°
L09276-2530	3	.025 inch (.64 mm)	30°
L09276-2545	3	.025 inch (.64 mm)	45°
L09276-3015	3	.030 inch (.76 mm)	15°
L09276-3022	3	.030 inch (.76 mm)	22°
L09276-3030	3	.030 inch (.76 mm)	30°
L09276-3045	3	.030 inch (.76 mm)	45°
L10382-10	4	.010 inch (.25 mm)	All Quads are 35° inner angle, 76° outer angle.
L10382-15	4	.015 inch (.38 mm)	
L10382-20	4	.020 inch (.51 mm)	
L10382-25	4	.025 inch (.64 mm)	

Kits & Replacements

Module Seal Kit PN L18747

The module seal kit contains all the parts necessary to rebuild one PN L18047 Mod-Plus module (obsolete), including piston/ needle, seal cartridge, high temp lubricant and all o-rings.

Swirl Module Seal Kit PN L21230

The module seal kit contains all the parts necessary to rebuild one Mod-Plus swirl module, including piston/ needle, seal cartridge, high temp lubricant and all o-rings.

Nozzle Cleaning Kits

Three nozzle cleaning kits are available, sized to be orifice-specific:

PN 101877	Nozzle Cleaning Kit .010 to .017 orifice
PN 101878	Nozzle Cleaning Kit .018 to .027 orifice
PN 101879	Nozzle Cleaning Kit .028 to .040 orifice

High Temp Heater Splice Kit PN 102645

This kit consists of a foot of shrink tube and nine connectors (splices). These parts plus a heater cartridge (order the heater separately from the chart above) will enable you to replace the heater in one module.

Replacement Module for the Standard Mod-Plus Module PN 110639

The standard Mod-Plus module (PN 110639) is a high performance module. ITW Dynatec also offers a more economical, lower performance replacement module from its ITW Challenger line, PN 110638. Cycle life of the high performance module is approximately three times longer than the ITW Challenger module.

Section 7 Typical Mod-Plus Configurations

The following pages contain exploded-view component drawings of typical Mod-Plus™ module assemblies. The drawings and their corresponding "Bills of Material" are identified by their ITW Dynatec assembly numbers.

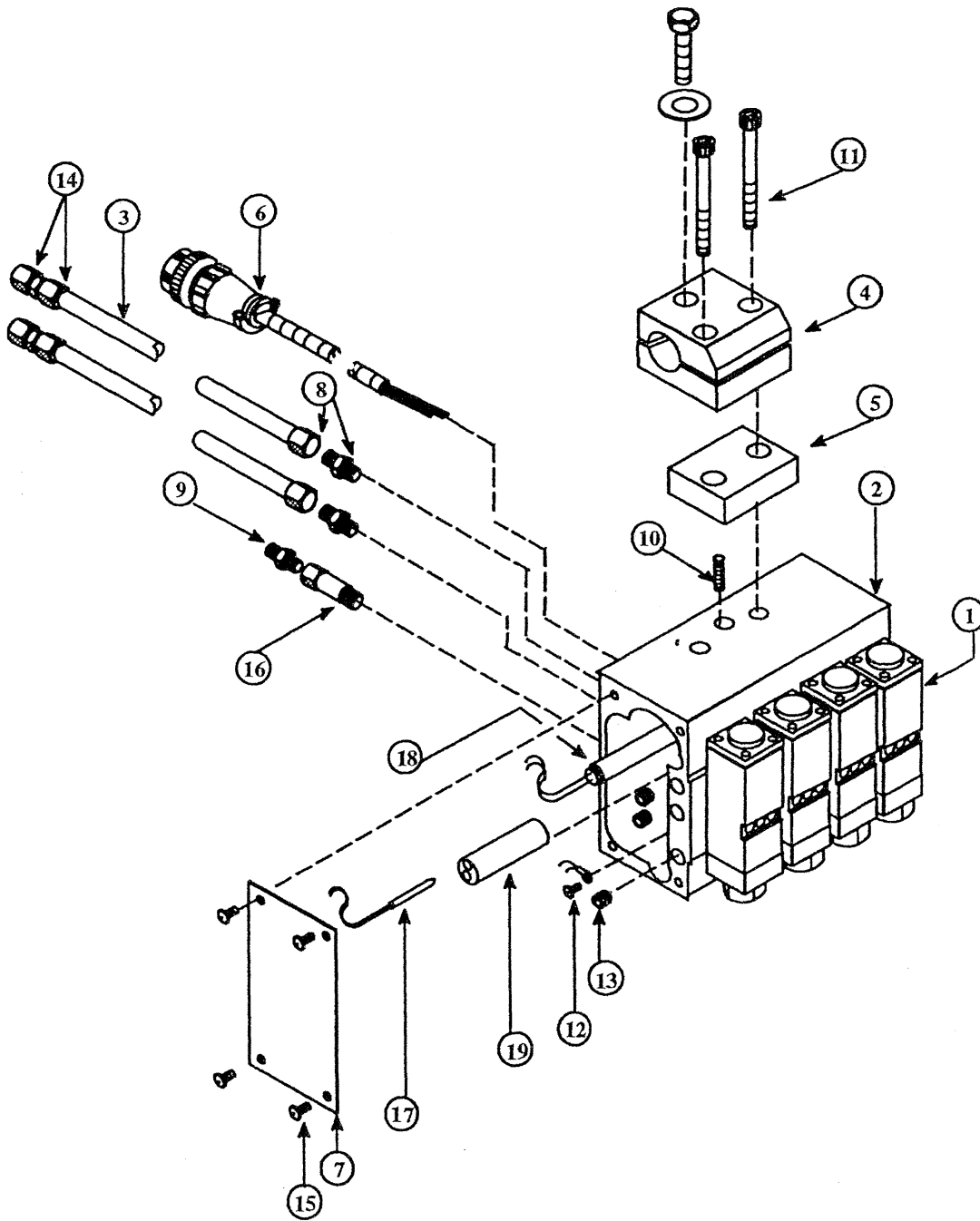
These drawings are intended to be examples of Dynatec's most commonly used Mod-Plus assembly configurations and they will aid the user during assembly/disassembly, maintenance and repair procedures.

Note: The PN 110639 High Performance Mod-Plus Module (standard) is a direct replacement for the Obsolete PNL18047 Mod-Plus Module.

The PN 118101 Mod-Plus Ribboncoater Module (non-rebuildable) is a direct replacement for the Obsolete PN J20808 Mod-Plus Ribboncoater Module.

Bill of Materials for Assembly #J21098 Head Assembly, Mod-Plus 4

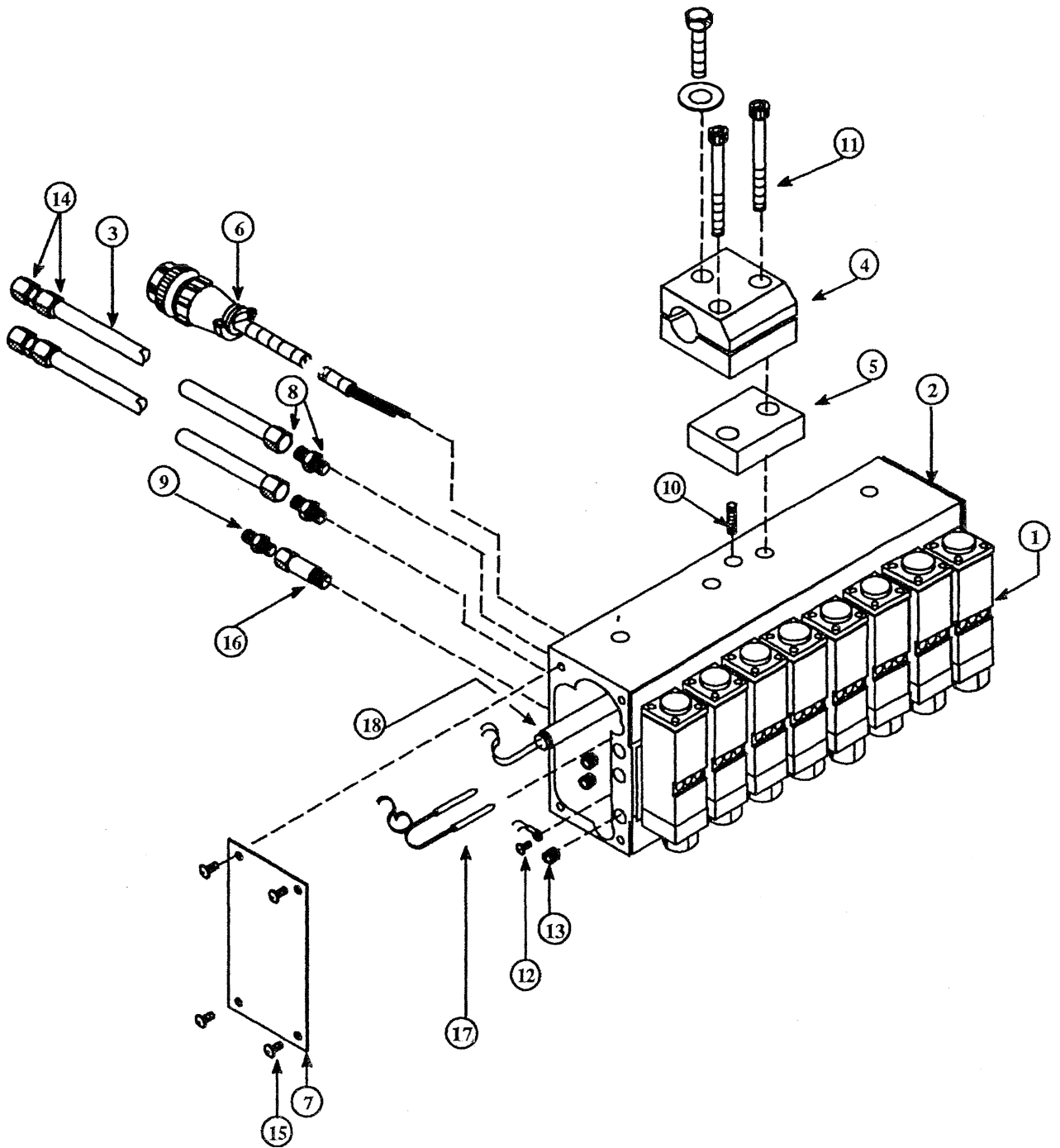
<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	L18047	Module Assembly , Obsolete	15
2	L18044	Service Block	1
3	L13533	Tubing, Aluminum, .25" OD x 8 " Long	2
4	104129	Clamp, Mounting	1
5	L14899	Insulator	1
6	L21490	Cable Assembly	1
7	L18046	Cover, Service Block	2
8	N00093	Fitting	2
9	N00104	Fitting Adapter	1
10	N00767	8-32 x 1/4 SHSS Cup	1
11	N00816	1/4-20 x 1 SHCS	2
12	N00859	8-32 x 1/4 Fil. Head Screw	1
13	N01124	1/16 Level Seal Plug	3
14	N01316	Fitting, Union, Hex	2
15	N02312	8-32 x .375 Pan Head Screw	8
16	N04438	Filter, 50 Mesh	1
17		Temperature Sensor (located in cable assembly)	2
18	N07674	Heater 175W, 240V, 3/8 x 3"	1
19	J20849	Sensor Adapter	1



Component Illustration: Assembly # J21098 Head Assembly, Mod-Plus 4

Bill of Materials for Assembly #J21333 Head Assembly, Mod-Plus 8

<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	L18047	Module Assembly , Obsolete	15
2	J21334	Service Block	1
3	L13533	Tubing, Aluminum, .25" OD x 8 " Long	2
4	104129	Clamp, Mounting	1
5	L14899	Insulator	1
6	L21490	Cable Assembly	1
7	L18046	Cover, Service Block	2
8	N00093	Fitting	2
9	N00104	Fitting Adapter	1
10	N00767	8-32 x 1/4 SHSS Cup	1
11	N00816	1/4-20 x 1 SHCS	2
12	N00859	8-32 x 1/4 Fil. Head Screw	1
13	N01124	1/16 Level Seal Plug	3
14	N01316	Fitting, Union, Hex	2
15	N02312	8-32 x .375 Pan Head Screw	8
16	N04438	Filter, 50 Mesh	1
17		Temperature Sensor (located in cable assembly)	2
18	N07705	Heater 175W, 240V, 3/8 x 3"	1



Component Illustration: Assembly # J21333 Head Assembly, Mod-Plus 8

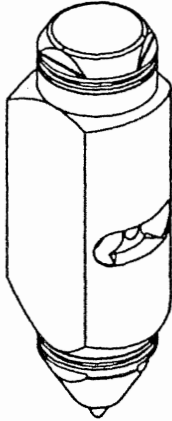
Bill of Materials for Assembly #L18047 Module , Obsolete

<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	L18037	Module Body , Obsolete	1
2	L18504	Brass Needle Seat	1
3	L18050	Stroke Adjustment Screw	1
4	N07538	Nut	1
5	N07543	Compression Spring	1
6	L18035	Module Cap	1
	L18747**	Kit Module Seal	
7	L18039	Seal Cartridge Assembly	1
8	L18036	Needle/ Piston	1
9	N00175	O-Ring, #008	3
10	N00181	O-Ring, #014	1
11	N07544	O-Ring, #111	1
12	N00178	O-Ring, #011	1
	N07588	Lube, High Temp Seal, .15 oz.	
13	L18038	Shoulder Bolt	2
14	N00787	4-40 x 3/8 Socket Head Cap Screw	8
15	L09219	Nozzle Retaining Nut	1

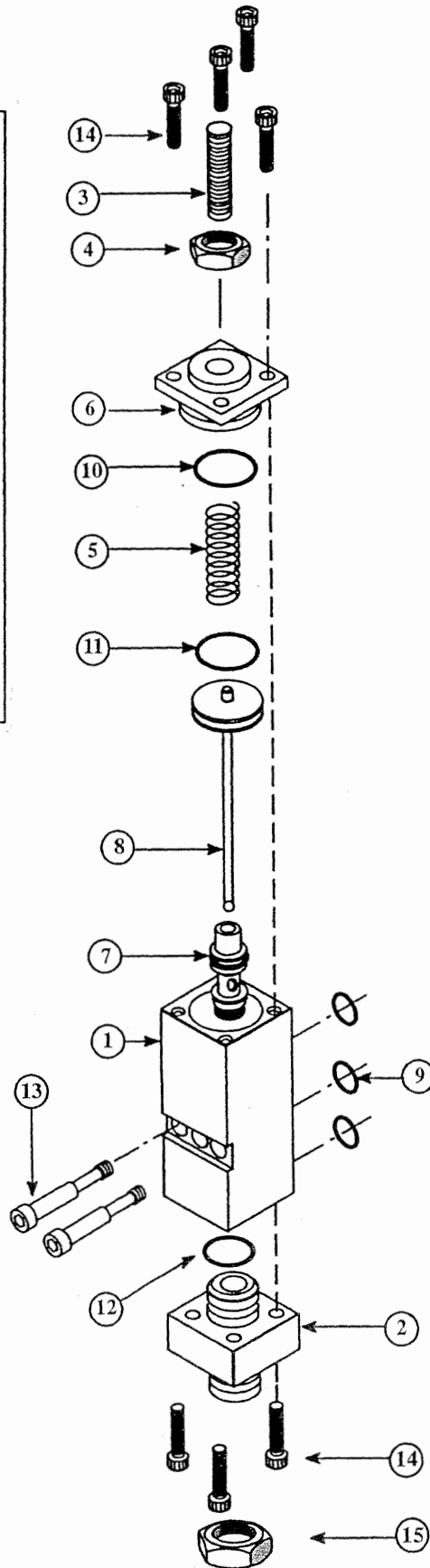
**Recommended Spare Parts

Note: In all applications, the obsolete PN L18047 Mod-Plus Module is replaced by the PN 110639 High Performance Mod-Plus Module.

Note: PN 110639 High Performance Mod Plus Module (pictured below) replaces obsolete PN 18047 Module



The PN 110939 Module requires no disassembly.



Component illustration: Assembly #L18047 Module Assembly, Obsolete

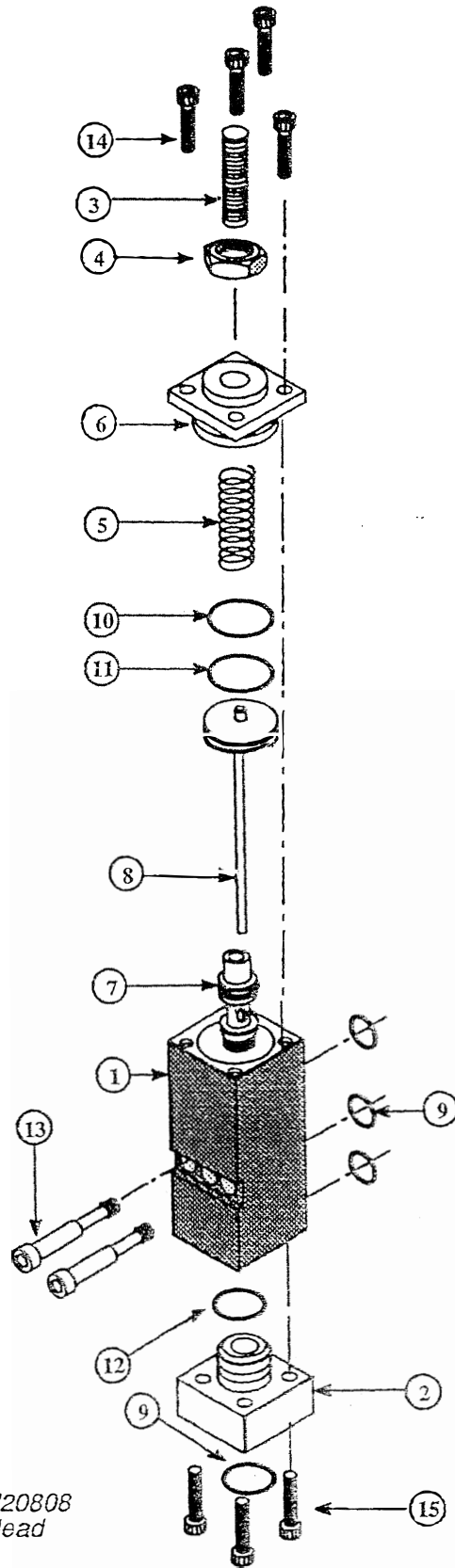
Bill of Materials for Assembly # J21077 Ribboncoater, Mod Plus, Dyna Pro

<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	J20808	Module Assembly	15
2	J21076	Service Block	1
3	J21003	Cap, Cable Ele.	1
4	L13533	Tubing, Aluminum, .25" OD x 8" Long	2
5	104129	Clamp, Mounting,	2
6	L14899	Insulator	2
7	L16668	Cable Assembly	1
8	L18046	Cover, Service Block	2
9	N00093	Fitting	2
10	N00104	Fitting Adapter	1
11	N00767	8-32 x 1/4 SHSS Cup	1
12	N00816	1/4-20 x 1 SHCS	4
13	N00859	8-32 x 1/4 Fil. Head Screw	1
14	N01124	1/16 Level Seal Plug	6
15	N01316	Hex Fitting, Union	2
16	N02312	8-32 x .375 Pan Head Screw	8
17	N04439	Filter, 100 Mesh	1
18	N06703	Temperature Sensor	2
19	N07540	Terminal Block, 4 Pos Ceramic	1
20	N07849	Heater 1000W, 240V, 3/8 x 14"	1
21	N08072	4-40 x 1 SHCS	30
22	N08201	Heater, 1400w, 240v, 3/8 x 14.5"	1
23	N00971	8-32 x 3/16 Socket Head Cup Point Set Screw	2
24	J21075	Extruder Sub Assembly	1
25		Clamp, Extruder	1
26	N00788	4-40 x .5 SHCS	30
27	N00682	Flat Washer, #4	30
28	N01086	Cable, Flex, 1/4	.5'
29	N00315	Tubing	.6'
30	J21086	Connector, Backshell	1
31	N04534	Connector, Plug, 9 Pin	1
32	N05144	Contact, Pin, Ground	1
33	N07432	Contact, Pin, Gold	1

Bill of Materials for Assembly # J20808 Module Assembly, Ribboncoater Head

<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	L18037	Module Body	1
2	L21391	Seat, Needle	1
3	L18050	Stroke Adjustment Screw	1
4	N07538	Nut	1
5	N07543	Compression Spring	1
6	L18035	Cap, Module	1
7	L18039	Seal Cartridge Assembly	1
8	L18036	Needle/ Piston	1
9	N00175	O-Ring, #008	4
10	N00181	O-Ring, #014	1
11	N07544	O-Ring, #111	1
12	N00178	O-Ring, #011	1
13	L18038	Shoulder Bolt	2
14	N00787	4-40 x 3/8 SHCS	4
15	N00788	4-40 x 1/2 SHCS	2

Note: The PN 118101 Mod-Plus Ribboncoater Module (non-rebuildable) is a direct replacement for the Obsolete PN J20808 Mod-Plus Ribboncoater Module.



Component Illustration: Assembly # J20808
Module Assembly Ribboncoater Head

Appendix PN 100055 Air Control Filter Coalescing Kit for Applicator Heads

ITW Dynatec applicator heads require compressed air for needle actuation. Air Control Filter Coalescing Kits (PN 100055) are available to provide filter regulators, tubing and fittings for one or more applicator heads.

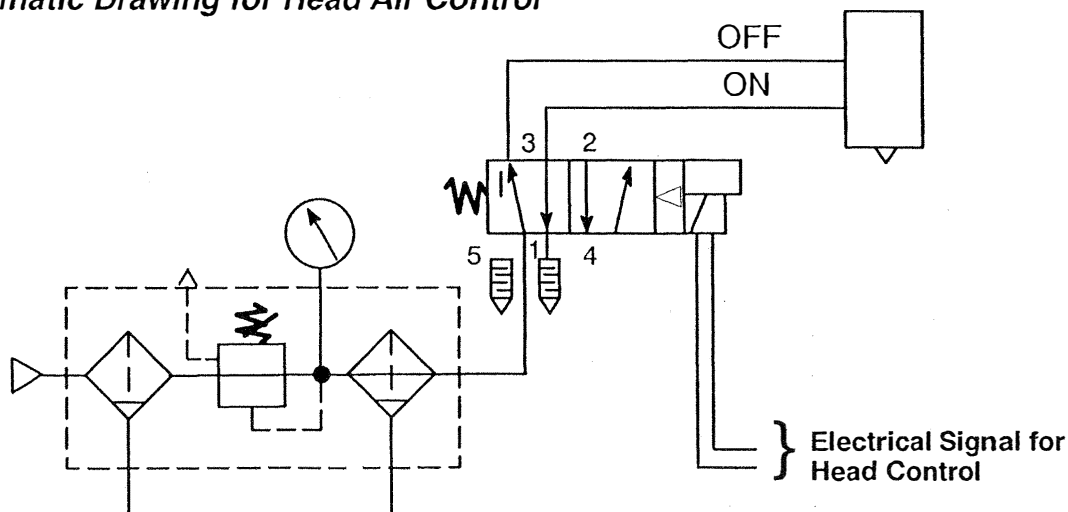
In addition to the kit, a solenoid valve with voltage that matches the output voltage of the electrical control device must be selected for the application. Use the following chart to select an appropriate solenoid valve:

Part No.	Voltage	Application
100054	24 VDC	Single-port head, continuous or intermittent
100383	24 VDC	Multi-port head, continuous
100421	120 VAC	Single or multi-port head, continuous
100422	240 VAC	Single or multi-port head, continuous
108968	24 VDC	Single or multi-port head, intermittent

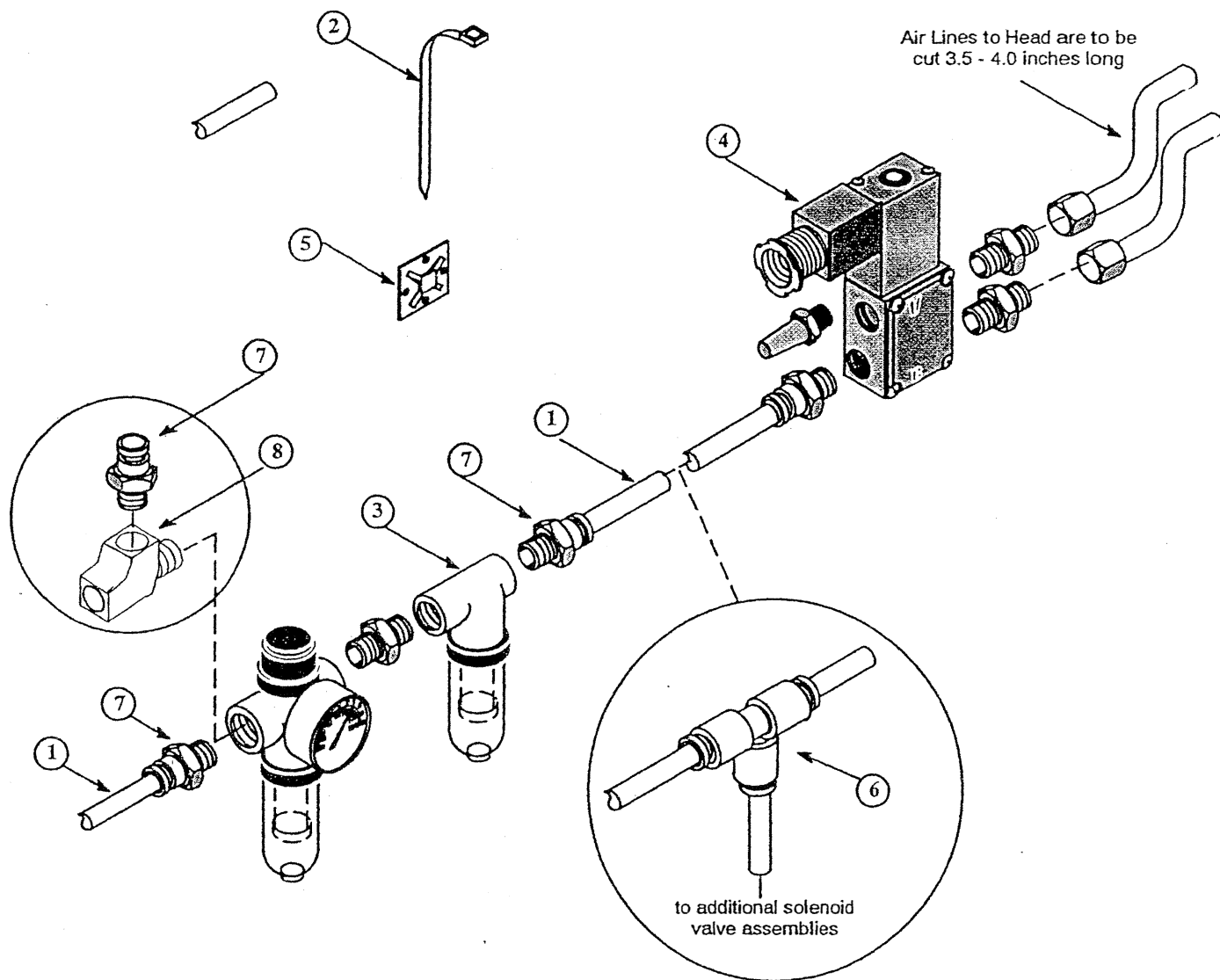
Air Control Filter Coalescing Kit Installation Notes

- 1) Compressed air for applicator head operation should be clean, dry and oil free.
- 2) Operation of more than two applicator heads by one kit may require additional lines, tee-fittings and solenoid valves not supplied in one kit.
- 3) To provide identical operation of more than one head, air line circuits from solenoid valves to heads should be the same length and contain similar fittings.
- 4) To minimize applicator response time, minimize length of the air line circuits from the solenoid valve(s).

Pneumatic Drawing for Head Air Control



Component Illustration: PN 100055 Air Control Filter Coalescing Kit



Item No.	Part Number	Description	Qty.
1	N06438	Nylon Tubing, .250 Dia.	10'
2	N00318	Cable Tie, .09 x 3.62 Lg	10
3	100380	Filter 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	1/4 Treet T, Brass	1