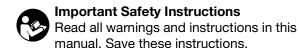


HFR[™] Hydraulic, Fixed-Ratio Proportioner

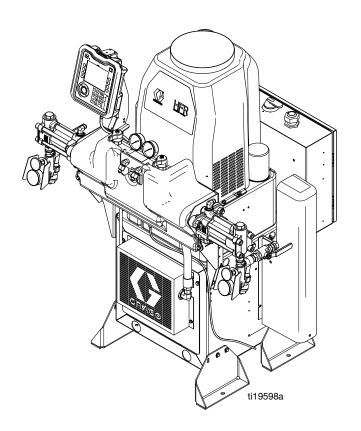
313998ZAD

ΕN

For pouring and dispensing sealants and adhesives and polyurethane foam. For professional use only. Not for use in explosive atmospheres.



See page 4 for model information and maximum working pressure.



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Related Manuals

Manuals are available at www.graco.com.

| Manual in English | Description | | | |
|----------------------|--|--|--|--|
| System Manuals | | | | |
| 313997 | HFR Setup-Operation | | | |
| Power Distribu | tion Box Manual | | | |
| 3A0239 | Power Distribution Boxes Instructions-Parts | | | |
| Pumpline Manu | uals | | | |
| 3A0019 | Z-Series Chemical Pumps Instructions-Parts | | | |
| 3A0020 | HFR Hydraulic Actuator Instructions-Parts | | | |
| Feed System M | lanuals | | | |
| 3A0238 | Dispense Head Hydraulic Power Pack Instructions-Parts | | | |
| 3A0235 | Feed Supply Kits Instructions-Parts | | | |
| 3A0395 | Stainless Steel Tank Feed Systems Instructions-Parts | | | |
| 309572 | Heated Hose, Instructions-Parts | | | |
| 3A0237 | Heated Hoses and Applicator Kits, Instructions-Parts | | | |
| Dispense Valve | Manuals | | | |
| 313872 | EP [™] Gun | | | |
| 313536 | GX-16, Operation | | | |
| 312185 | MD2 Valve, Instructions-Parts | | | |
| 312752 | S-Head Operation-Parts | | | |
| 312753 | L-Head Operation-Parts | | | |
| 309550 | Fusion [®] AP Gun | | | |
| 309856 | Fusion MP Gun | | | |
| 312666 | Fusion CS Gun | | | |
| Accessory Mar | Accessory Manuals | | | |
| 3A1149 | HFR Discrete Gateway Module Kits Manual | | | |

Models

See **Product Configurator** on page 5 for detailed product configuration information.

| System | Full Load Peak Amps Per Phase* | Voltage (phase) | System Watts† | Primary Heater Watts (per heater) | Max Flow Rate◆** lb/min (kg/min) | Approximate Output per Cycle (A+B)** gal. (liter) | Hydraulic Pressure Ratio** | Maximum Fluid Working Pressure ‡ psi (MPa, bar) |
|--------------------|---|--------------------|------------------|--|--|--|----------------------------------|--|
| | 55 A | 230V (1) | 12,650 | | | | | |
| HFR, Non-Heated | 29 A | 230V (3) | 11,340 | | 50 (22.7) | 0.084 | 1.9:1 | 3000 (20.7, 207) |
| | 55 A ★ ¥ | 400V (3) | 12,650 | | | | | (====, ===) |
| | 116 A | 230V (1) | 26,680 | | | | | |
| HFR, Heated | 73 A | 230V (3) | 28,600 | 6,000 | 50 (22.7) | 0.084 | 1.9:1 | 3000 (20.7, 207) |
| lioutou | 63 A ★≭ | 400V (3) | 28,600 | | | | | (2011, 2017) |

^{*} Full load amps with all devices operating at maximum capabilities. Fuse requirements at various flow rates and mix chamber sizes may be less.

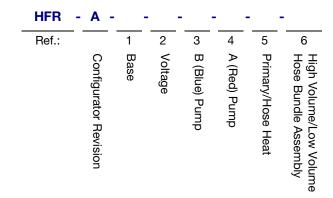
- † 210 ft (64 m) maximum heated hose length, including whip hose.
- ◆ Flow rate is independent of frequency 50/60 Hz.
- ★ **(€** approved.
- ‡ The maximum fluid working pressure for the base machine without hoses is 3000 psi (20.7 MPa, 207 bar). If hoses rated at less than 3000 psi are installed, the system maximum fluid working pressure becomes the rating of the hoses. If 2000 psi hoses were purchased and installed by Graco, the working pressure for the machine is already setup for the lower 2000 psi (13.8 MPa, 138 bar) working pressure by Graco. If the machine was purchased without hoses and aftermarket hoses rated at or above 3000 psi are to be installed, see Adjust Motor Control Module Selector Switch on page 31 for the procedure to setup the machine for higher rated hoses. The change in working pressure is made by changing a rotary switch setting in the Motor Control Module. The minimum pressure rating for hoses is 2000 psi. Do not install hoses with a pressure rating lower than 2000 psi.
- **★** See 400 V Power Requirements.

400 V Power Requirements

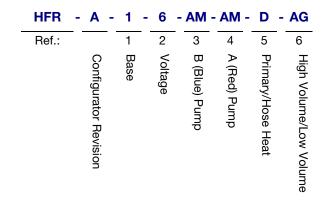
- 400 V systems are intended for International voltage requirements. Not for voltage requirements in North America.
- If a 400 volt configuration is operated in North America, a special transformer rated for 400 V ("Y" configuration (4 wire)) may be required.
- North America mostly employs a 3 wire or Delta configuration. The two configurations are not interchangeable.

^{**} Values are dependent on installed pump size. Values shown are for largest available pump size.

Product Configurator



An example of the product configurator would be the following configurator code.



The following part number fields apply for the HFR part numbering configurator fields.

| Ref. 1 | Part | Base Unit |
|--------|------|---|
| 1 | | HFR Base Unit, Carbon Steel |
| 2 | | HFR Base Unit, Stainless Steel |
| Ref. 2 | Part | Voltage |
| 1 | | 230V, 1 phase; No Heat |
| 2 | | 230V, 1 phase; Maximum of Two 6 kW Primary Heater and One Zone of Hose Heat |
| 3 | | 230V, 3 phase; No Heat |
| 4 | | 230V, 3 phase; Maximum of Two 6 kW Primary Heaters and Two Zones of Hose Heat |
| 5 | | 400V, 3 phase; No heat |
| 6 | | 400V, 3 phase; Maximum of Two 6 kW Primary Heaters and Two Zones of Hose Heat |

| Ref. 3 | Part | B (Blue) Pump † |
|--------|--------|------------------------|
| AA | L010S1 | 10 cc Stainless Steel |
| AB | L015S1 | 15 cc Stainless Steel |
| AC | L020S1 | 20 cc Stainless Steel |
| AD | L025S1 | 25 cc Stainless Steel |
| AE | L030S1 | 30 cc Stainless Steel |
| AF | L040S1 | 40 cc Stainless Steel |
| AG | L050S1 | 50 cc Stainless Steel |
| AH | L060S1 | 60 cc Stainless Steel |
| AJ | L080S1 | 80 cc Stainless Steel |
| AK | L100S1 | 100 cc Stainless Steel |
| AL | L120S1 | 120 cc Stainless Steel |
| AM | L160S1 | 160 cc Stainless Steel |
| AQ | L005S1 | 5 cc Stainless Steel |
| AS | L086S1 | 86 cc Stainless Steel |
| AR | L065S1 | 65 cc Stainless Steel |
| AT | L035S1 | 35 cc Stainless Steel |
| AU | L045S1 | 45 cc Stainless Steel |
| AV | L105S1 | 105 cc Stainless Steel |
| AW | 24M265 | 70 cc Stainless Steel |
| AX | 257894 | 75 cc Stainless Steel |
| AY | 24T095 | 90 cc Stainless Steel |
| AZ | 24T096 | 140 cc Stainless Steel |

| BA | 257898 | 150 cc Stainless Steel |
|--------|-------------|--|
| BB | L005S5 | Blue Side 5cc High Wear Pump |
| BC | L010S5 | Blue Side 10cc High Wear Pump |
| BD | L020S5 | Blue Side 20cc Elite Pump |
| BE | L040S8 | Blue Side 40cc Elite Pump |
| BF | L080S5 | Blue Side 80cc Elite Pump |
| BG | L100S8 | Blue Side 100cc Elite Pump |
| BH | L120S8 | Blue Side 120cc Elite Pump |
| BJ | L160S8 | Blue Side 160cc Elite Pump |
| Ref. 4 | Part | A (Red) Pump † |
| Code F | Part and De | escription for Ref. 4 are the same as Ref. 3 |
| Ref. 5 | Part | Primary/Hose Heat |
| Α | | No Heat |
| В | | A (Red) and B (Blue) Primary Heaters |
| | | |
| С | | A (Red) and B (Blue) Primary Heaters, One Zone of Hose Heat |
| D | | A (Red) and B (Blue) Primary Heaters, A (Red) and B (Blue) Hose Heat |
| E | · | A (Red) and B (Blue) Hose Heat, Carbon Steel |
| F | | A (Red) and B (Blue) Hose Heat, Stainless Steel |
| G | | B (Blue) Primary Heaters, B (Blue) Hose Heat |
| | | B (Blue) Applicator Hose or High Volume/ |
| Ref. 6 | Part | Low Volume Hose Bundle Assembly |
| NN | | No Hose |
| AA | 24D108 | Dual Hose, 2:1, 1/4 x 3/8, 5 ft, Stainless Steel, 3500 psi |
| AB | 24D109 | Dual Hose, 2:1, 1/4 x 3/8, 10 ft, Stainless Steel, 3500 psi |
| AC | 24D110 | Dual Hose, 2:1, 1/4 x 3/8, 25 ft, Stainless Steel, 3500 psi |
| AD | 24D111 | Dual Hose, 2:1, 1/4 x 3/8, 50 ft, Stainless Steel, 3500 psi |
| AE | 24D112 | Dual Hose, 1:1, 3/8 x 3/8, 5 ft, Stainless Steel, 3500 psi |
| AF | 24D113 | Dual Hose, 1:1, 3/8 x 3/8, 10 ft, Stainless Steel, |
| AG | 24D114 | 3500 psi Dual Hose, 1:1, 3/8 x 3/8, 25 ft, Stainless Steel, |
| | | 3500 psi |
| AH | 24D115 | Dual Hose, 1:1, 3/8 x 3/8, 50 ft, Stainless Steel, 3500 psi |
| BA | 24D116 | Dual Hose, 2:1, 1/4 x 3/8, 5 ft, Stainless Steel, 3500 psi |
| BB | 24D117 | Dual Hose, 2:1, 1/4 x 3/8, 10 ft, Carbon Steel, 3500 psi |
| BC | 24D118 | Dual Hose, 2:1, 1/4 x 3/8, 25 ft, Carbon Steel, 3500 psi |
| BD | 24D119 | Dual Hose, 2:1, 1/4 x 3/8, 50 ft, Carbon Steel, 3500 psi |
| BE | 24D120 | Dual Hose, 1:1, 3/8 x 3/8, 5 ft, Carbon Steel, 3500 psi |
| BF | 24D121 | Dual Hose, 1:1, 3/8 x 3/8, 10 ft, Carbon Steel, 3500 psi |
| BG | 24D122 | Dual Hose, 1:1, 3/8 x 3/8, 25 ft, Carbon Steel, 3500 psi |
| ВН | 24D123 | Dual Hose, 1:1, 3/8 x 3/8, 50 ft, Carbon Steel, 3500 psi |
| CA | 24E968 | Single Hose, 1:1, 1/4 x 1/4, 10 ft, Carbon Steel, 2000 psi |

| СВ | 24E963 | Single Hose, 1:1, 1/4 x 1/4, 25 ft, Carbon Steel, 2000 psi |
|----|--------|--|
| CC | 24E964 | Single Hose, 1:1, 1/4 x 1/4, 50 ft, Carbon Steel, 2000 psi |
| CD | 24D124 | Single Hose, 2:1, 1/4 x 3/8, 25 ft, Carbon Steel, 2000 psi |
| CE | 24D125 | Single Hose, 2:1, 1/4 x 3/8, 50 ft, Carbon Steel, 2000 psi |
| CF | 24E969 | Single Hose, 1:1, 3/8 x 3/8, 10 ft, Carbon Steel, 2000 psi |
| CG | 24D126 | Single Hose, 1:1, 3/8 x 3/8, 25 ft, Carbon Steel, 2000 psi |
| CH | 24D127 | Single Hose, 1:1, 3/8 x 3/8, 50 ft, Carbon Steel, 2000 psi |
| CJ | 24E965 | Single Hose, 1:1, 1/2 x 1/2, 50 ft, Carbon Steel, 2000 psi |
| CK | 24E966 | Single Hose, 1:1, 1/4 x 1/4, 50 ft, Carbon Steel, 3500 psi |
| CL | 24D129 | Single Hose, 2:1, 1/4 x 3/8, 50 ft, Carbon Steel, 3500 psi |
| CM | 24D131 | Single Hose, 1:1, 3/8 x 3/8, 50 ft, Carbon Steel, 3500 psi |
| CN | 24E967 | Single Hose, 1:1, 1/2 x 1/2, 50 ft, Carbon Steel, 3500 psi |

† Pump size listed is the combined volume dispensed in one extending stroke and one retracting stroke.

Whip Hose Bundles

| Part | Description |
|--------|--|
| 24H076 | 10 ft (3 m) long, 1/4 in. (6 mm) ID, Carbon Steel, Single Zone |
| 24H077 | 10 ft (3 m) long, 3/8 in. (10 mm) ID, Carbon Steel, Single Zone |
| 24H078 | 10 ft (3 m) long, 1/4 in. (6 mm) ID, Carbon Steel, Dual Zone |
| 24H079 | 10 ft (3 m) long, 3/8 in. (10 mm) ID, Carbon Steel, Dual Zone |
| 24H080 | 10 ft (3 m) long, 1/4 in. (6 mm) ID, Stainless Steel, Single Zone |
| 24H081 | 10 ft (3 m) long, 3/8 in. (10 mm) ID, Stainless Steel, Single Zone |
| 24H082 | 10 ft (3 m) long, 1/4 in. (6 mm) ID, Stainless Steel, Dual Zone |
| 24H083 | 10 ft (3 m) long, 3/8 in. (10 mm) ID, Stainless Steel, Dual Zone |

Individual B (Blue) Heated Whip Hose

Part Description 24E950 10 ft (3 m) long, 1/4 in. (6 mm) ID, Carbon Steel, Single Zone, 3500 psi 24E952 10 ft (3 m) long, 3/8 in. (10 mm) ID, Carbon Steel, Single Zone, 3500 psi 24H086 10 ft (3 m) long, 1/4 in. (6 mm) ID, Carbon Steel, Dual Zone, 3500 psi 24H088 10 ft (3 m) long, 3/8 in. (10 mm) ID, Carbon Steel, Dual Zone, 3500 psi 24H090 10 ft (3 m) long, 1/4 in. (6 mm) ID, Stainless Steel, Single Zone, 3500 psi 24H092 10 ft (3 m) long, 3/8 in. (10 mm) ID, Stainless Steel, Single Zone, 3500 psi 24H094 10 ft (3 m) long, 1/4 in. (6 mm) ID, Stainless Steel, Dual Zone, 3500 psi 24H096 10 ft (3 m) long, 3/8 in. (10 mm) ID, Stainless Steel, Dual Zone, 3500 psi 24H225 5 ft (1.5 m) long, 1/4 in. (6 mm) ID, Carbon Steel, Single Zone, 3500 psi 24H227 5 ft (1.5 m) long, 3/8 in. (10 mm) ID, Carbon Steel, Single Zone, 3500 psi 24H229 5 ft (1.5 m) long, 1/4 in. (6 mm) ID, Carbon Steel, Dual Zone, 3500 psi 24H231 5 ft (1.5 m) long, 3/8 in. (10 mm) ID, Carbon Steel, Dual Zone, 3500 psi 24H233 5 ft (1.5 m) long, 1/4 in. (6 mm) ID, Stainless Steel, Single Zone, 3500 psi 5 ft (1.5 m) long, 3/8 in. (10 mm) ID, Stainless Steel, 24H235 Single Zone, 3500 psi 24H237 5 ft (1.5 m) long, 1/4 in. (6 mm) ID, Stainless Steel, Dual Zone, 3500 psi 24H239 5 ft (1.5 m) long, 3/8 in. (10 mm) ID, Stainless Steel, Dual Zone, 3500 psi

Individual A (Red) Heated Whip Hose

| Part | Description |
|--------|---|
| 24E949 | 10 ft (3 m) long, 1/4 in. (6 mm) ID, Carbon Steel, Single Zone, 3500 psi |
| 24E951 | 10 ft (3 m) long, 3/8 in. (10 mm) ID, Carbon Steel, Single Zone, 3500 psi |
| 24H085 | 10 ft (3 m) long, 1/4 in. (6 mm) ID, Carbon Steel, Dual Zone, 3500 psi |
| 24H087 | 10 ft (3 m) long, 3/8 in. (10 mm) ID, Carbon Steel, Dual Zone, 3500 psi |
| 24H089 | 10 ft (3 m) long, 1/4 in. (6 mm) ID, Stainless Steel, Single Zone, 3500 psi |
| 24H091 | 10 ft (3 m) long, 3/8 in. (10 mm) ID, Stainless Steel, Single Zone, 3500 psi |
| 24H093 | 10 ft (3 m) long, 1/4 in. (6 mm) ID, Stainless Steel, Dual Zone, 3500 psi |
| 24H095 | 10 ft (3 m) long, 3/8 in. (10 mm) ID, Stainless Steel, Dual Zone, 3500 psi |
| 24H224 | 5 ft (1.5 m) long, 1/4 in. (6 mm) ID, Carbon Steel, Single Zone, 3500 psi |
| 24H226 | 5 ft (1.5 m) long, 3/8 in. (10 mm) ID, Carbon Steel, Single Zone, 3500 psi |
| 24H228 | 5 ft (1.5 m) long, 1/4 in. (6 mm) ID, Carbon Steel, Dual Zone, 3500 psi |
| 24H230 | 5 ft (1.5 m) long, 3/8 in. (10 mm) ID, Carbon Steel, Dual Zone, 3500 psi |
| 24H232 | 5 ft (1.5 m) long, 1/4 in. (6 mm) ID, Stainless Steel, Single Zone, 3500 psi |
| 24H234 | 5 ft (1.5 m) long, 3/8 in. (10 mm) ID, Stainless Steel, Single Zone, 3500 psi |
| 24H236 | 5 ft (1.5 m) long, 1/4 in. (6 mm) ID, Stainless Steel, Dual Zone, 3500 psi |
| 24H238 | 5 ft (1.5 m) long, 3/8 in. (10 mm) ID, Stainless Steel, Dual Zone, 3500 psi |

Hoses

| Part | Description |
|--------|---|
| 24D111 | Dual Hose, 2:1, 1/4 x 3/8, 50 ft, Stainless Steel, 3500 psi |
| 24D115 | Dual Hose, 1:1, 3/8 x 3/8, 50 ft, Stainless Steel, 3500 psi |
| 24D119 | Dual Hose, 2:1, 1/4 x 3/8, 50 ft, Carbon Steel, 3500 psi |
| 24D123 | Dual Hose, 1:1, 3/8 x 3/8, 50 ft, Carbon Steel, 3500 psi |
| 24E964 | Single Hose, 1:1, 1/4 x 1/4, 50 ft, Carbon Steel, 2000 psi |
| 24D125 | Single Hose, 2:1, 1/4 x 3/8, 50 ft, Carbon Steel, 2000 psi |
| 24D127 | Single Hose, 1:1, 3/8 x 3/8, 50 ft, Carbon Steel, 2000 psi |
| 24E965 | Single Hose, 1:1, 1/2 x 1/2, 50 ft, Carbon Steel, 2000 psi |
| 24E966 | Single Hose, 1:1, 1/4 x 1/4, 50 ft, Carbon Steel, 3500 psi |
| 24D129 | Single Hose, 2:1, 1/4 x 3/8, 50 ft, Carbon Steel, 3500 psi |
| 24D131 | Single Hose, 1:1, 3/8 x 3/8, 50 ft, Carbon Steel, 3500 psi |
| 24E967 | Single Hose, 1:1, 1/2 x 1/2, 50 ft, Carbon Steel, 3500 psi |

B (Blue) Individual

| Part | Description |
|--------|--|
| 24E902 | Heated Hose, 5 ft, 1/4, Carbon Steel, 3500 psi |
| 24E904 | Heated Hose, 10 ft, 1/4, Carbon Steel, 3500 psi |
| 24E906 | Heated Hose, 25 ft, 1/4, Carbon Steel, 3500 psi |
| 24E908 | Heated Hose, 50 ft, 1/4, Carbon Steel, 3500 psi |
| 24E910 | Heated Hose, 5 ft, 3/8, Carbon Steel, 3500 psi |
| 24E912 | Heated Hose, 10 ft, 3/8, Carbon Steel, 3500 psi |
| 24E914 | Heated Hose, 25 ft, 3/8, Carbon Steel, 3500 psi |
| 24E916 | Heated Hose, 50 ft, 3/8, Carbon Steel, 3500 psi |
| 24E918 | Heated Hose, 5 ft, 1/2, Carbon Steel, 3500 psi |
| 24E920 | Heated Hose, 10 ft, 1/2, Carbon Steel, 3500 psi |
| 24E922 | Heated Hose, 25 ft, 1/2, Carbon Steel, 3500 psi |
| 24E924 | Heated Hose, 50 ft, 1/2, Carbon Steel, 3500 psi |
| 24E926 | Heated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi |
| 24E928 | Heated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi |
| 24E930 | Heated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi |
| 24E932 | Heated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi |
| 24E934 | Heated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi |
| 24E936 | Heated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi |
| 24E938 | Heated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi |
| 24E940 | Heated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi |
| 24E942 | Heated Hose, 5 ft, 1/2, Stainless Steel, 3500 psi |
| 24E944 | Heated Hose, 10 ft, 1/2, Stainless Steel, 3500 psi |
| 24E946 | Heated Hose, 25 ft, 1/2, Stainless Steel, 3500 psi |
| 24E948 | Heated Hose, 50 ft, 1/2, Stainless Steel, 3500 psi |
| 262174 | Unheated Hose, 5 ft, 1/4, Carbon Steel, 3500 psi |
| 262176 | Unheated Hose, 10 ft, 1/4, Carbon Steel, 3500 psi |
| 262178 | Unheated Hose, 25 ft, 1/4, Carbon Steel, 3500 psi |
| 262180 | Unheated Hose, 50 ft, 1/4, Carbon Steel, 3500 psi |

| 262182 Unheated Hose, 5 ft, 3/8, Carbon Steel, 3500 psi 262184 Unheated Hose, 10 ft, 3/8, Carbon Steel, 3500 psi 262186 Unheated Hose, 25 ft, 3/8, Carbon Steel, 3500 psi 262188 Unheated Hose, 50 ft, 3/8, Carbon Steel, 3500 psi 262190 Unheated Hose, 5 ft, 1/2, Carbon Steel, 3500 psi 262192 Unheated Hose, 10 ft, 1/2, Carbon Steel, 3500 psi 262194 Unheated Hose, 25 ft, 1/2, Carbon Steel, 3500 psi 262196 Unheated Hose, 50 ft, 1/2, Carbon Steel, 3500 psi 262237 Unheated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi 262239 Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi 262241 Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi 262243 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262245 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262247 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262259 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi | | |
|---|--------|--|
| 262186 Unheated Hose, 25 ft, 3/8, Carbon Steel, 3500 psi 262188 Unheated Hose, 50 ft, 3/8, Carbon Steel, 3500 psi 262190 Unheated Hose, 5 ft, 1/2, Carbon Steel, 3500 psi 262192 Unheated Hose, 10 ft, 1/2, Carbon Steel, 3500 psi 262194 Unheated Hose, 25 ft, 1/2, Carbon Steel, 3500 psi 262196 Unheated Hose, 50 ft, 1/2, Carbon Steel, 3500 psi 262237 Unheated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi 262239 Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi 262241 Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi 262243 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262245 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262182 | Unheated Hose, 5 ft, 3/8, Carbon Steel, 3500 psi |
| 262188 Unheated Hose, 50 ft, 3/8, Carbon Steel, 3500 psi 262190 Unheated Hose, 5 ft, 1/2, Carbon Steel, 3500 psi 262192 Unheated Hose, 10 ft, 1/2, Carbon Steel, 3500 psi 262194 Unheated Hose, 25 ft, 1/2, Carbon Steel, 3500 psi 262196 Unheated Hose, 50 ft, 1/2, Carbon Steel, 3500 psi 262237 Unheated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi 262239 Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi 262241 Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi 262243 Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi 262243 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262245 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262184 | Unheated Hose, 10 ft, 3/8, Carbon Steel, 3500 psi |
| 262190 Unheated Hose, 5 ft, 1/2, Carbon Steel, 3500 psi 262192 Unheated Hose, 10 ft, 1/2, Carbon Steel, 3500 psi 262194 Unheated Hose, 25 ft, 1/2, Carbon Steel, 3500 psi 262196 Unheated Hose, 50 ft, 1/2, Carbon Steel, 3500 psi 262237 Unheated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi 262239 Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi 262241 Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi 262243 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262245 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262186 | Unheated Hose, 25 ft, 3/8, Carbon Steel, 3500 psi |
| 262192 Unheated Hose, 10 ft, 1/2, Carbon Steel, 3500 psi 262194 Unheated Hose, 25 ft, 1/2, Carbon Steel, 3500 psi 262196 Unheated Hose, 50 ft, 1/2, Carbon Steel, 3500 psi 262237 Unheated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi 262239 Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi 262241 Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi 262243 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262245 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262188 | Unheated Hose, 50 ft, 3/8, Carbon Steel, 3500 psi |
| 262194 Unheated Hose, 25 ft, 1/2, Carbon Steel, 3500 psi 262196 Unheated Hose, 50 ft, 1/2, Carbon Steel, 3500 psi 262237 Unheated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi 262239 Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi 262241 Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi 262243 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262245 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262190 | Unheated Hose, 5 ft, 1/2, Carbon Steel, 3500 psi |
| 262196 Unheated Hose, 50 ft, 1/2, Carbon Steel, 3500 psi 262237 Unheated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi 262239 Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi 262241 Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi 262243 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262245 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262192 | Unheated Hose, 10 ft, 1/2, Carbon Steel, 3500 psi |
| 262237 Unheated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi 262239 Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi 262241 Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi 262243 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262245 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262194 | Unheated Hose, 25 ft, 1/2, Carbon Steel, 3500 psi |
| 262239 Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi 262241 Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi 262243 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262245 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262196 | Unheated Hose, 50 ft, 1/2, Carbon Steel, 3500 psi |
| 262241 Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi 262243 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262245 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262237 | Unheated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi |
| 262243 Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi 262245 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262239 | Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi |
| 262245 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262241 | Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi |
| 262247 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262243 | Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi |
| 262249 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262245 | Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi |
| 262251 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262247 | Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi |
| 262253 Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262249 | Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi |
| 262255 Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262251 | Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi |
| 262257 Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi | 262253 | Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi |
| ,,,,,,, _ | 262255 | Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi |
| 262259 Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi | 262257 | Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi |
| | 262259 | Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi |

A (Red) Individual

| Part | Description |
|--------|--|
| 24E901 | Heated Hose, 5 ft, 1/4, Carbon Steel, 3500 psi |
| 24E903 | Heated Hose, 10 ft, 1/4, Carbon Steel, 3500 psi |
| 24E905 | Heated Hose, 25 ft, 1/4, Carbon Steel, 3500 psi |
| 24E907 | Heated Hose, 50 ft, 1/4, Carbon Steel, 3500 psi |
| 24E909 | Heated Hose, 5 ft, 3/8, Carbon Steel, 3500 psi |
| 24E911 | Heated Hose, 10 ft, 3/8, Carbon Steel, 3500 psi |
| 24E913 | Heated Hose, 25 ft, 3/8, Carbon Steel, 3500 psi |
| 24E915 | Heated Hose, 50 ft, 3/8, Carbon Steel, 3500 psi |
| 24E917 | Heated Hose, 5 ft, 1/2, Carbon Steel, 3500 psi |
| 24E919 | Heated Hose, 10 ft, 1/2, Carbon Steel, 3500 psi |
| 24E921 | Heated Hose, 25 ft, 1/2, Carbon Steel, 3500 psi |
| 24E923 | Heated Hose, 50 ft, 1/2, Carbon Steel, 3500 psi |
| 24E925 | Heated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi |
| 24E927 | Heated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi |
| 24E929 | Heated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi |
| 24E931 | Heated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi |
| 24E933 | Heated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi |
| 24E935 | Heated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi |
| 24E937 | Heated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi |
| 24E939 | Heated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi |
| 24E941 | Heated Hose, 5 ft, 1/2, Stainless Steel, 3500 psi |
| 24E943 | Heated Hose, 10 ft, 1/2, Stainless Steel, 3500 psi |
| 24E945 | Heated Hose, 25 ft, 1/2, Stainless Steel, 3500 psi |
| 24E947 | Heated Hose, 50 ft, 1/2, Stainless Steel, 3500 psi |
| 262173 | Unheated Hose, 5 ft, 1/4, Carbon Steel, 3500 psi |
| 262175 | Unheated Hose, 10 ft, 1/4, Carbon Steel, 3500 psi |
| 262177 | Unheated Hose, 25 ft, 1/4, Carbon Steel, 3500 psi |
| 262179 | Unheated Hose, 50 ft, 1/4, Carbon Steel, 3500 psi |
| 262181 | Unheated Hose, 5 ft, 3/8, Carbon Steel, 3500 psi |
| 262183 | Unheated Hose, 10 ft, 3/8, Carbon Steel, 3500 psi |
| 262185 | Unheated Hose, 25 ft, 3/8, Carbon Steel, 3500 psi |
| 262187 | Unheated Hose, 50 ft, 3/8, Carbon Steel, 3500 psi |
| 262189 | Unheated Hose, 5 ft, 1/2, Carbon Steel, 3500 psi |
| 262191 | Unheated Hose, 10 ft, 1/2, Carbon Steel, 3500 psi |
| 262193 | Unheated Hose, 25 ft, 1/2, Carbon Steel, 3500 psi |
| 262195 | Unheated Hose, 50 ft, 1/2, Carbon Steel, 3500 psi |
| 262236 | Unheated Hose, 5 ft, 1/4, Stainless Steel, 3500 psi |
| 262238 | Unheated Hose, 10 ft, 1/4, Stainless Steel, 3500 psi |
| 262240 | Unheated Hose, 25 ft, 1/4, Stainless Steel, 3500 psi |
| 262242 | Unheated Hose, 50 ft, 1/4, Stainless Steel, 3500 psi |
| 262244 | Unheated Hose, 5 ft, 3/8, Stainless Steel, 3500 psi |
| 262246 | Unheated Hose, 10 ft, 3/8, Stainless Steel, 3500 psi |
| 262248 | Unheated Hose, 25 ft, 3/8, Stainless Steel, 3500 psi |
| 262250 | Unheated Hose, 50 ft, 3/8, Stainless Steel, 3500 psi |

| 262252 | Unheated Hose, 5 ft, 1/2, Stainless Steel, 3500 psi |
|--------|--|
| 262254 | Unheated Hose, 10 ft, 1/2, Stainless Steel, 3500 psi |
| 262256 | Unheated Hose, 25 ft, 1/2, Stainless Steel, 3500 psi |
| 262258 | Unheated Hose, 50 ft, 1/2, Stainless Steel, 3500 psi |

Hose Bundling Accessories

| Part | Description |
|--------|--|
| 24E953 | Air Hose, 5 ft |
| 15B280 | Air Hose, 10 ft |
| 15C624 | Air Hose, 25 ft |
| 15B295 | Air Hose, 50 ft |
| 24E900 | Signal Cable, 5 pin, Male/Female, 2.0 meter |
| 24E899 | Signal Cable, 5 pin, Male/Female, 4.0 meter |
| 24E898 | Signal Cable, 5 pin, Male/Female, 8.5 meter |
| 24E897 | Signal Cable, 5 pin, Male/Female, 16.0 meter |
| 24E896 | Fluid Temperature Sensor Cable, 4 pin, Male/Female, 2.0 meter |
| 24E895 | Fluid Temperature Sensor Cable, 4 pin, Male/Female, 3.0 meter |
| 24E894 | Fluid Temperature Sensor Cable, 4 pin, Male/Female, 8.0 meter |
| 24E893 | Fluid Temperature Sensor Cable, 4 pin, Male/Female, 15.7 meter |
| 24E954 | Scuff Guard, 1.75 in. (44 mm), 200 ft (61 m) Roll |
| 24E961 | Scuff Guard, 1.75 in. (44 mm), 200 ft (61 m) Roll |
| 261821 | Wire Connector, 6AWG (4.11 mm) |
| 24E955 | Hose Lacing, 1500 ft (457.2 m) Roll |
| 15B679 | Hose Safety Label |

Applicator

NOTE: When selecting an applicator, if an applicator is chosen which does not have a signal communicating to the HFR, then the sizes of the A and B pumps added together must be greater or equal to 120 cc. For example: A (red) pump size = 20 cc, B (blue) pump size = 100 cc, 20 cc + 100 cc = 120 cc. Since the pump sizes combined = 120 cc, an applicator may be selected which does not have a signal communicating to the HFR.

| Part | Description |
|--------|--|
| 24A085 | L-Head 10/14 With Calibration Orifice |
| 24A092 | S-Head 6-500 L/S With Calibration Orifice |
| 24J187 | GX-16, 24:1, Straight, Machine Mount |
| 24K233 | GX-16, 24:1, Left, Machine Mount |
| 24K234 | GX-16, No Orifice, Left, Machine Mount |
| 24E876 | GX-16, No Orifice, Straight, Machine Mount |
| 24E877 | GX-16, 24:1, Right, Machine Mount |
| 24E878 | GX-16, No Orifice, Right, Machine Mount |
| CS00RD | Fusion CS, 1:1 Only, 0.029 |
| CS01RD | Fusion CS, 1:1 Only, 0.042 |
| CS02RD | Fusion CS, 1:1 Only, 0.052 |
| 246100 | Fusion AP, 1:1 Only, 0.029 |
| 247007 | Fusion MP, 1:1 Only, 0.029 |
| 246101 | Fusion AP, 1:1 Only, 0.042 |
| 247019 | Fusion MP, 1:1 Only, 0.047 |
| 246102 | Fusion AP, 1:1 Only, 0.052 |
| 247025 | Fusion MP, 1:1 Only, 0.057 |
| 24D500 | Applicator, MD2, 1:1, Soft, Carbon Steel |
| 24D501 | Applicator, MD2, 1:1, Soft, Carbon Steel, Electric |
| 24D502 | Applicator, MD2, 1:1, Soft, Carbon Steel, Lever |
| 24D503 | Applicator, MD2, 1:1, Soft, Stainless Steel |
| 24D504 | Applicator, MD2, 1:1, Soft, Stainless Steel, Electric |
| 24D505 | Applicator, MD2, 1:1, Soft, Stainless Steel, Lever |
| 24D509 | Applicator, MD2, 1:1, Hard, Carbon Steel |
| 24D510 | Applicator, MD2, 1:1, Hard, Carbon Steel, Electric |
| 24D511 | Applicator, MD2, 1:1, Hard, Carbon Steel, Lever |
| 24D512 | Applicator, MD2, 1:1, Hard, Carbon Steel, Pneumatic |
| 24D513 | Applicator, MD2, 1:1, Hard, Stainless Steel |
| 24D514 | Applicator, MD2, 1:1, Hard, Stainless Steel, Electric |
| 24D515 | Applicator, MD2, 1:1, Hard, Stainless Steel, Lever |
| 24D516 | Applicator, MD2, 1:1, Hard, Stainless Steel, Pneumatic |
| 24D521 | Applicator, MD2, 10:1, Soft, Carbon Steel |

| 24D522 | Applicator, MD2, 10:1, Soft, Carbon Steel, Electric |
|--------|---|
| 24D523 | Applicator, MD2, 10:1, Soft, Carbon Steel, Lever |
| 24D524 | Applicator, MD2, 10:1, Soft, Stainless Steel |
| 24D525 | Applicator, MD2, 10:1, Soft, Stainless Steel, Electric |
| 24D526 | Applicator, MD2, 10:1, Soft, Stainless Steel, Lever |
| 24D530 | Applicator, MD2, 10:1, Hard, Carbon Steel |
| 24D531 | Applicator, MD2, 10:1, Hard, Carbon Steel, Electric |
| 24D532 | Applicator, MD2, 10:1, Hard, Carbon Steel, Lever |
| 24D533 | Applicator, MD2, 10:1, Hard, Carbon Steel, Pneumatic |
| 24D534 | Applicator, MD2, 10:1, Hard, Stainless Steel |
| 24D535 | Applicator, MD2, 10:1, Hard, Stainless Steel, Electric |
| 24D536 | Applicator, MD2, 10:1, Hard, Stainless Steel, Lever |
| 24D537 | Applicator, MD2, 10:1, Hard, Stainless Steel, Pneumatic |
| 24E505 | MD2 Orifice Adapter Kit |
| 257999 | EP Pour Gun, Pistol Grip, 1/4 in. Purge Rod |
| 24C932 | EP Pour Gun, Machine mount, 1/4 in. Purge Rod |
| 24C933 | EP Pour Gun, Pistol Grip, 3/8 in. Purge Rod |
| 24C934 | EP Pour Gun, Machine Mount, 3/8 in. Purge Rod |

NOTE: The mixer and shroud must be ordered separately if an MD2 applicator is selected. See the MD2 Valve manual in **Related Manuals**, page 3, for mixer and shroud options.

B (Blue) Applicator Orifice

S-Head and L-Head

| Description | Part | For Use With Applicator: |
|-------------|--------|--------------------------|
| Calibrate | 24A036 | S-Head Only |
| 0.25 | 24A037 | S-Head Only |
| 0.35 | 24A038 | S-Head Only |
| 0.50 | 24A039 | S-Head Only |
| 0.60 | 24A040 | S-Head Only |
| 0.70 | 24A041 | S-Head Only |
| 0.80 | 24A042 | S-Head Only |
| 0.90 | 24A043 | S-Head Only |
| 1.00 | 24A044 | S-Head Only |
| 1.10 | 24A045 | S-Head Only |
| 1.20 | 24A046 | S-Head Only |
| 1.30 | 24A047 | S-Head Only |
| 1.40 | 24A050 | S-Head Only |
| 1.50 | 24A051 | S-Head Only |
| 1.60 | 24A052 | S-Head Only |

| 1.70 | 24A053 | S-Head Only |
|-----------|----------|-------------|
| 1.80 | 24A054 | S-Head Only |
| 1.90 | 24A055 | S-Head Only |
| 2.00 | 24A056 | S-Head Only |
| 2.50 | 24A057 | S-Head Only |
| 3.00 | 24A058 | S-Head Only |
| 3.50 | 24A059 | S-Head Only |
| 4.00 | 24A060 | S-Head Only |
| 4.20 | 24A061 | S-Head Only |
| 4.50 | 24A062 | S-Head Only |
| 5.00 | 24A063 | S-Head Only |
| 5.50 | 24A064 | S-Head Only |
| 6.00 | 24A065 | S-Head Only |
| 6.50 | 24A066 | S-Head Only |
| 7.00 | 24A067 | S-Head Only |
| Calibrate | M0934A-4 | L-Head Only |
| 0.25 | 247761 | L-Head Only |
| 0.45 | 247762 | L-Head Only |
| 0.5 | 247763 | L-Head Only |
| 0.75 | 247764 | L-Head Only |
| 0.8 | 247765 | L-Head Only |
| 0.85 | 247766 | L-Head Only |
| 1 | 247767 | L-Head Only |
| 1.1 | 247811 | L-Head Only |
| 1.2 | 247848 | L-Head Only |
| 1.25 | 248858 | L-Head Only |
| 1.3 | 247859 | L-Head Only |
| 1.4 | 247860 | L-Head Only |
| 1.5 | 247861 | L-Head Only |
| 1.6 | 247862 | L-Head Only |
| 1.65 | 247863 | L-Head Only |
| 1.7 | 247864 | L-Head Only |
| 1.75 | 247865 | L-Head Only |
| 1.8 | 247866 | L-Head Only |
| 1.9 | 247867 | L-Head Only |
| 2 | 247868 | L-Head Only |
| 2.4 | 247869 | L-Head Only |
| 3.2 | 247870 | L-Head Only |
| 3.6 | 247871 | L-Head Only |
| 4.2 | 247872 | L-Head Only |
| 5 | 247873 | L-Head Only |
| 5.6 | 247874 | L-Head Only |
| L | <u> </u> | L |

GX-16

| Description | Part |
|-------------|-------------------|
| 257701 | 0.011 in. Orifice |
| 257702 | 0.013 in. Orifice |
| 257703 | 0.016 in. Orifice |
| 257704 | 0.018 in. Orifice |
| 257705 | 0.020 in. Orifice |
| 257706 | 0.022 in. Orifice |
| 257707 | 0.023 in. Orifice |
| 257708 | 0.024 in. Orifice |
| 257709 | 0.025 in. Orifice |

| 257710 | 0.026 in. Orifice |
|--------|-------------------|
| 257711 | 0.028 in. Orifice |
| 257712 | 0.029 in. Orifice |
| 257713 | 0.032 in. Orifice |
| 257714 | 0.035 in. Orifice |
| 257715 | 0.036 in. Orifice |
| 257716 | 0.038 in. Orifice |
| 257717 | 0.039 in. Orifice |
| 257718 | 0.040 in. Orifice |
| 257719 | 0.042 in. Orifice |
| 257720 | 0.043 in. Orifice |
| 257721 | 0.044 in. Orifice |
| 257722 | 0.049 in. Orifice |
| 257723 | 0.052 in. Orifice |
| 257724 | 0.061 in. Orifice |
| 24K682 | 0.085 in. Orifice |

EP^TM Gun

| Description | Part | For Use With Applicator: |
|----------------------|--------|-------------------------------|
| Orifice Kit | 24E250 | EP 250, 6 Blue, 6 Red |
| 0.51 mm Poly Orifice | 24C751 | EP 250 Poly Side Orifice, Std |
| 0.79 mm Poly Orifice | 24C752 | EP 250 Poly Side Orifice, Std |
| 1.19 mm Poly Orifice | 24C753 | EP 250 Poly Side Orifice, Std |
| 1.52 mm Poly Orifice | 24C754 | EP 250 Poly Side Orifice, Std |
| 1.70mm Poly Orifice | 24C755 | EP 250 Poly Side Orifice, Std |
| 2.18 mm Poly Orifice | 24C756 | EP 250 Poly Side Orifice, Std |
| 0.41 mm Poly Orifice | 24C805 | EP 250 Poly Side Orifice |
| 0.61 mm Poly Orifice | 24C806 | EP 250 Poly Side Orifice |
| 0.71 mm Poly Orifice | 24C807 | EP 250 Poly Side Orifice |
| 0.89 mm Poly Orifice | 24C808 | EP 250 Poly Side Orifice |
| 0.99 mm Poly Orifice | 24C809 | EP 250 Poly Side Orifice |
| 1.07 mm Poly Orifice | 24C810 | EP 250 Poly Side Orifice |
| 1.32 mm Poly Orifice | 24C811 | EP 250 Poly Side Orifice |
| 1.40 mm Poly Orifice | 24C812 | EP 250 Poly Side Orifice |
| 1.60 mm Poly Orifice | 24C813 | EP 250 Poly Side Orifice |
| 1.85 mm Poly Orifice | 24C815 | EP 250 Poly Side Orifice |
| Orifice Kit | 24E251 | EP 375, 6 Blue, 6 Red |
| 0.51 mm Poly Orifice | 24C761 | EP 375 Poly Side Orifice, Std |
| 0.79 mm Poly Orifice | 24C762 | EP 375 Poly Side Orifice, Std |
| 1.19 mm Poly Orifice | 24C763 | EP 375 Poly Side Orifice, Std |
| 1.52 mm Poly Orifice | 24C764 | EP 375 Poly Side Orifice, Std |
| 1.70 mm Poly Orifice | 24C765 | EP 375 Poly Side Orifice, Std |
| 2.18 mm Poly Orifice | 24C766 | EP 375 Poly Side Orifice, Std |
| 0.41 mm Poly Orifice | 24C794 | EP 375 Poly Side Orifice |
| 0.61 mm Poly Orifice | 24C795 | EP 375 Poly Side Orifice |
| 0.71 mm Poly Orifice | 24C796 | EP 375 Poly Side Orifice |
| 0.89 mm Poly Orifice | 24C797 | EP 375 Poly Side Orifice |
| 0.99 mm Poly Orifice | 24C798 | EP 375 Poly Side Orifice |
| 1.07 mm Poly Orifice | 24C799 | EP 375 Poly Side Orifice |
| 1.32 mm Poly Orifice | 24C800 | EP 375 Poly Side Orifice |
| 1.40 mm Poly Orifice | 24C801 | EP 375 Poly Side Orifice |
| 1.60 mm Poly Orifice | 24C802 | EP 375 Poly Side Orifice |
| 1.85 mm Poly Orifice | 24C804 | EP 375 Poly Side Orifice |

ISO A (Red) Applicator Orifice

S-Head and L-Head

The A (Red) applicator orifices for the S-Head and L-Head are the same as the B (Blue) applicator orifices. See page 10.

GX-16

| Description | Part |
|-------------|-------------------|
| 257701 | 0.011 in. Orifice |
| 257702 | 0.013 in. Orifice |
| 257703 | 0.016 in. Orifice |
| 257704 | 0.018 in. Orifice |
| 257705 | 0.020 in. Orifice |
| 257706 | 0.022 in. Orifice |
| 257707 | 0.023 in. Orifice |
| 257708 | 0.024 in. Orifice |
| 257709 | 0.025 in. Orifice |
| 257710 | 0.026 in. Orifice |
| 257711 | 0.028 in. Orifice |
| 257712 | 0.029 in. Orifice |
| 257713 | 0.032 in. Orifice |
| 257714 | 0.035 in. Orifice |
| 257715 | 0.036 in. Orifice |
| 257716 | 0.038 in. Orifice |
| 257717 | 0.039 in. Orifice |
| 257718 | 0.040 in. Orifice |
| 257719 | 0.042 in. Orifice |
| 257720 | 0.043 in. Orifice |
| 257721 | 0.044 in. Orifice |
| 257722 | 0.049 in. Orifice |
| 257723 | 0.052 in. Orifice |
| 257724 | 0.061 in. Orifice |
| 24K682 | 0.085 in. Orifice |

EP Gun

| Description | Part | For Use With Applicator: |
|---------------------|--------|------------------------------|
| 0.51 mm Iso Orifice | 24D223 | EP 250 Iso Side Orifice, Std |
| 0.79 mm Iso Orifice | 24D224 | EP 250 Iso Side Orifice, Std |
| 1.19 mm Iso Orifice | 24D225 | EP 250 Iso Side Orifice, Std |
| 1.52 mm Iso Orifice | 24D226 | EP 250 Iso Side Orifice, Std |
| 1.70mm Iso Orifice | 24D227 | EP 250 Iso Side Orifice, Std |
| 2.18 mm Iso Orifice | 24D228 | EP 250 Iso Side Orifice, Std |
| 0.41 mm Iso Orifice | 24D229 | EP 250 Iso Side Orifice |
| 0.61 mm Iso Orifice | 24D230 | EP 250 Iso Side Orifice |
| 0.71 mm Iso Orifice | 24D231 | EP 250 Iso Side Orifice |
| 0.89 mm Iso Orifice | 24D232 | EP 250 Iso Side Orifice |
| 0.99 mm Iso Orifice | 24D233 | EP 250 Iso Side Orifice |
| 1.07 mm Iso Orifice | 24D234 | EP 250 Iso Side Orifice |
| 1.32 mm Iso Orifice | 24D235 | EP 250 Iso Side Orifice |
| 1.40 mm Iso Orifice | 24D236 | EP 250 Iso Side Orifice |
| 1.60 mm Iso Orifice | 24D237 | EP 250 Iso Side Orifice |

| 1.85 mm Iso Orifice | 24D238 | EP 250 Iso Side Orifice |
|---------------------|--------|------------------------------|
| 0.51 mm Iso Orifice | 24D239 | EP 375 Iso Side Orifice, Std |
| 0.79 mm Iso Orifice | 24D240 | EP 375 Iso Side Orifice, Std |
| 1.19 mm Iso Orifice | 24D241 | EP 375 Iso Side Orifice, Std |
| 1.52 mm Iso Orifice | 24D242 | EP 375 Iso Side Orifice, Std |
| 1.70 mm Iso Orifice | 24D243 | EP 375 Iso Side Orifice, Std |
| 2.18 mm Iso Orifice | 24D244 | EP 375 Iso Side Orifice, Std |
| 0.41 mm Iso Orifice | 24D245 | EP 375 Iso Side Orifice |
| 0.61 mm Iso Orifice | 24D246 | EP 375 Iso Side Orifice |
| 0.71 mm Iso Orifice | 24D247 | EP 375 Iso Side Orifice |
| 0.89 mm Iso Orifice | 24D248 | EP 375 Iso Side Orifice |
| 0.99 mm Iso Orifice | 24D249 | EP 375 Iso Side Orifice |
| 1.07 mm Iso Orifice | 24D250 | EP 375 Iso Side Orifice |
| 1.32 mm Iso Orifice | 24D251 | EP 375 Iso Side Orifice |
| 1.40 mm Iso Orifice | 24D252 | EP 375 Iso Side Orifice |
| 1.60 mm Iso Orifice | 24D253 | EP 375 Iso Side Orifice |
| 1.85 mm Iso Orifice | 24D254 | EP 375 Iso Side Orifice |
| | | 1 |

AC Power Pack with S-Head/L-Head Hoses, Optional Boom

| Part | Description |
|--------|---|
| 24D829 | 230V, Boom, L-Head Hoses |
| 24D830 | 230V, Boom, S-Head Hoses |
| 24D834 | 400V, Boom, L-Head Hoses |
| 24D835 | 400V, Boom, S-Head Hoses |
| 24D831 | 230V, L-Head Hoses, No Boom |
| 24D832 | 230V, S-Head Hoses, No Boom |
| 24D836 | 400V, L-Head Hoses, No Boom |
| 24D837 | 400V, S-Head Hoses, No Boom |
| 24F297 | 230V, L-Head Application, No Boom, No Hoses |
| 24J912 | 230V, S-Head Application, No Boom, No Hoses |
| 24F298 | 400V, L-Head Application, No Boom, No Hoses |
| 24J913 | 230V, S-Head Application, No Boom, No Hoses |
| 257798 | Power Pack GX-16 Connection Kit |
| 24E347 | Hydraulic Power Pack Level Sensor Kit |
| 24C872 | Hydraulic Power Pack Pressure Gauge Kit |
| 24E348 | Hydraulic Power Pack Temperature Sensor |
| 124217 | Power Pack Accumulator Charging kit |

Dispense Valve Interface Kit

| Part | Description |
|--------|--|
| 24C757 | MD2 Valve Solenoid, Machine Mount |
| 24D160 | MD2 Valve Solenoid, Remote Mount |
| 24D161 | Auto-Fusion Solenoid for Fusion Dispense Valve |
| 24C067 | Fusion Gun Pressure Adjust Kit |

Flow Meters

Flow Meter Electronics (Necessary)

| Part | Description |
|--------|----------------------------|
| 24J318 | Flow Meter Electronics Kit |

"A" and "B" Side Flow Meter (One for each side)

| Part | Description |
|--------|---|
| 24J319 | \$3000 Flow Meter Kit (0.01 to 0.53 gpm, 50 to 2000 cc per min) (1 to 1000 cps) |
| 24J320 | G3000 Flow Meter Kit (0.02 to 1.0 gpm, 75 to 3800 cc per min) (20 to 3000 cps) |
| 24J321 | G3000HR Flow Meter Kit (0.01 to 0.5 gpm, 38 to 1900 cc per min) (20 to 3000 cps) |
| 24J322 | HG6000 Flow Meter Kit (0.013 to 6.0 gpm, 50 to 22,700 cc per min) (30 to 1,000,000 cps) |
| 24J323 | HG6000HR Flow Meter Kit (0.007 to 2.0 gpm, 25 to 7571 cc per min) (30 to 1,000,000,cps) |

Flow Meter Calibration Kit (per applicator)

| Part | Description |
|--------|--------------------------------------|
| 24J324 | L-Head Flow Meter Calibration Kit |
| 24J325 | S-Head Flow Meter Calibration Kit |
| 24J326 | P2 Flow Meter Calibration Kit |
| 24J357 | GX-16 Flow Meter Calibration Kit |
| 24F227 | EP/Fusion Flow Meter Calibration Kit |
| 255247 | MD2 1:1 Flow Meter Calibration Kit |
| 255245 | MD2 10:1 Flow Meter Calibration Kit |

Pump Feed Kits

| Part | Description |
|--------|--|
| 246081 | 2:1 (Air/Fluid) Carbon Steel Complete Supply Pump Kit |
| 246369 | H515 (Air/Fluid) Carbon Steel Complete Supply Pump Kit |
| 246375 | H716 (Air/Fluid) Carbon Steel Complete Supply Pump Kit |
| 24D328 | H1050 (Air/Fluid) Carbon Steel Complete Supply Pump Kit |
| 257769 | High-Flo [®] (Air/Fluid) Carbon Steel Complete Supply Pump Kit |
| 24D091 | 2:1 (Air/Fluid) Stainless Steel Complete Supply Pump Kit |
| 24D092 | H515 (Air/Fluid) Stainless Steel Complete Supply Pump Kit |
| 24D093 | H716 (Air/Fluid) Stainless Steel Complete Supply Pump Kit |

| 24D094 | H1050 (Air/Fluid) Stainless Steel Complete Supply Pump Kit |
|--------|---|
| 24D095 | 5:1 Monarch 55G Stainless Steel Complete Supply Pump Kit |
| 24D096 | 5:1 Monarch 5G Stainless Steel Complete Supply Pump Kit |
| 257777 | High-Flo Stainless Steel Complete Supply Pump Kit |
| 246366 | Husky [™] 515 Pump, Drum with Riser Tube |
| 246367 | Husky 716 Pump, Drum with Riser Tube |
| 24D329 | Husky 1050 Pump, Drum with Riser Tube |
| 233052 | Husky 515 Diaphragm Pump, Drum with Riser Tube |
| 233057 | Husky 716 Diaphragm Pump, Drum with Riser Tube |
| 24D097 | Husky 1050 SS Pump, Drum with Riser Tube |
| 295616 | 2:1 (Air/Fluid) Stainless Steel Supply Pumps with Riser Tubes |
| 24D098 | 5:1 Monarch, 5G, Stainless Steel Supply Pumps with Riser Tubes |
| 24D099 | 5:1 Monarch, 55G, Stainless Steel Supply Pumps with Riser Tubes |
| 246481 | Husky 515 Pump with Carbon Steel Fluid Plumbing |
| 246482 | Husky 716 Pump with Carbon Steel Fluid Plumbing |
| 24D332 | Husky 1050 Pump with Carbon Steel Fluid Plumbing |
| 246898 | 2:1 Supply Pump with Carbon Steel Fluid Plumbing |
| 24D100 | Husky 515 Pump with Stainless Steel Fluid Plumbing |
| 24D101 | Husky 716 Pump with Stainless Steel Fluid Plumbing |
| 24D102 | Husky 1050 Pump with Stainless Steel Fluid Plumbing |
| 24D103 | 2:1 Supply Pump with Stainless Steel Fluid Plumbing |
| 24D104 | 5:1 Monarch Pump with Stainless Steel Fluid Plumbing |
| 24D105 | 5:1 Monarch Pump with Stainless Steel Fluid Plumbing |
| 24E396 | One 2:1 T-2 Pump, Carbon Steel |
| 24E397 | One 2:1 T-2 Pump, Stainless Steel |
| 24E398 | One Monarch 5:1 Pump, 5G |
| 24E399 | One Monarch 5:1 Pump, 55G |
| 246419 | Carbon Steel Riser Tube Assembly |
| 246477 | Carbon Steel Return Tube |
| 246483 | Air Supply for Feed Pump and Gun |
| 247616 | Desiccant Dryer |
| 15C381 | Desiccant Dryer Cartridge |
| 233048 | Drum Pump Accessory Kit |
| 24D106 | Stainless Steel Return Tube Accessory Kit |
| 244053 | 26 sq. in., 60 mesh, Stainless Steel Fluid Filter |
| 116178 | 26 sq. in., 30 mesh, Stainless Steel Fluid Filter Element |
| 116179 | 26 sq. in., 60 mesh, Stainless Steel Fluid Filter Element |
| 116180 | 26 sq. in., 100 mesh, Stainless Steel Fluid Filter Element |
| 116181 | 26 sq. in., 200 mesh, Stainless Steel Fluid Filter Element |
| 213058 | 36 sq. in., 60 mesh, Carbon Steel Fluid Filter |
| 108106 | 36 sq. in., 30 mesh, Carbon Steel Fluid Filter Element |
| 108107 | 36 sq. in., 60 mesh, Carbon Steel Fluid Filter Element |
| 108108 | 36 sq. in., 100 mesh, Carbon Steel Fluid Filter Element |
| | |

| 108109 | 36 sq. in., 150 mesh, Carbon Steel Fluid Filter Element |
|--------|---|
| 108110 | 36 sq. in., 200 mesh, Carbon Steel Fluid Filter Element |

B (Blue) and A (Red) Feed Tanks

| Part | Description |
|--------|--|
| 24D562 | 38L Tank, No Agitation, Chiller, Desiccant, 2 Level Sensors |
| 24D564 | 38L Tank, Agitation, Chiller, Desiccant, 2 Level Sensors |
| 24D565 | 75L Tank, No Agitation, Chiller, Desiccant, 2 Level Sensors |
| 24C317 | 75L Tank, Agitation, Chiller, Desiccant, 2 Level Sensors |
| 24D568 | 38L Tank, No Agitation, No Level Sensors |
| 24D569 | 38L Tank, No Agitation, 2 Level Sensors |
| 24D570 | 38L Tank, Agitation, 2 Level Sensors |
| 24D571 | 38L Tank, Agitation, Slinger Plate, 2 Level Sensors |
| 24D572 | 38L Tank, Agitation, Slinger Plate, Heat, Insulation, 2 Level Sensors |
| 24D573 | 38L Tank, Agitation, Heat, Insulation, 2 Level Sensors |
| 24D574 | 75L Tank, No Agitation, No Level Sensors |
| 24D575 | 75L Tank, No Agitation, 2 Level Sensors |
| 24D576 | 75L Tank, Agitation, 2 Level Sensors |
| 24D577 | 75L Tank, Agitation, Slinger Plate, 2 Level Sensors |
| 24D578 | 75L Tank, Agitation, Slinger Plate, Heat, Insulation, 2 Level Sensors |
| 24D579 | 75L Tank, Agitation, Heat, Insulation, 2 Level Sensors |
| 257757 | Insulator Blanket for 38L Tank |
| 257758 | Insulator Blanket for 75L Tank |
| 257770 | Refill Kit For Customer Supplied Feed System |
| 257778 | Nitrogen Kit For 1 Tank |
| 257779 | Nitrogen Kit For 2 Tanks |
| 257916 | Vacuum Pump Kit, 6.9 cfm, 1st, 230V, 1 phase |
| 24D271 | 3rd Level Sensor Prox Switch Option |
| LC0097 | Desiccant Dryer, 3/8 in. Npt With Adapter And Cartridge |
| LC0098 | Desiccant Dryer Refill Cartridge |
| 24J209 | 20gal (75L) Stainless Steel Tank, 3 Level Sensors, Insulated |
| 24J243 | 2gal (7.6L) Stainless Steel Tank |

Additional Accessories

Miscellaneous

| Part | Description |
|--------|---|
| 24C871 | Hydraulic Power Pack Hydraulic Tank Fluid Level Sensor |
| 24C873 | Hydraulic Power Pack Manifold Oil Temperature Sensor |
| 24P090 | Mobile Pallet Base with Casters |
| 24F516 | IsoGuard Select fluid, 6 quarts |
| 121728 | Extension Cable for Advanced Display Module, 4 meter, |
| 255244 | Foot Switch with Guard and 4 meter Cable |
| 24F227 | EP and Fusion [®] Gun Ratio Check |
| 24F235 | 25 ft hose extensions for L-Head applicator; material, hydraulic, and signal cables |
| 24F236 | 50 ft hose extensions for L-Head applicator; material, hydraulic, and signal cables |
| 24F237 | 25 ft hose extensions for S-Head applicator; material, hydraulic, and signal cable |
| 24F238 | 50 ft hose extensions for S-Head applicator; material, hydraulic, and signal cable |
| 24K206 | Nip Sensor Kit |
| 24H019 | Air Inlet Filter for Hydraulic Power Pack |

Communications Gateway Module (CGM)

The HFR Communication Gateway Module allows the user to control an HFR through an external control device such as a PLC. The DGM operates in conjunction with the existing Advanced Display Module (ADM) such that both devices can be used to control the machine. See HFR Communication Gateway Module manual for more information

| Part | Description |
|--------|--|
| 24J415 | CGM Mounting KIt (Required) |
| CGMDN0 | GCA Gateway Module, DeviceNet Fieldbus |
| CGMEP0 | GCA Gateway Module, EtherNet/IP Fieldbus |
| CGMPB0 | GCA Gateway Module, PROFIBUS Fieldbus |
| CGMPN0 | GCA Gateway Module, PROFINET Fieldbus |

Discrete Gateway Module (DGM)

The HFR Discrete Gateway Module allows the user to control an HFR through multiple external control devices such as contact blocks or relays. The DGM operates in conjunction with the existing Advanced Display Module (ADM) such that both devices can be used to control the machine. See HFR Communication Gateway Module manual for more information

| Part | Description |
|--------|----------------------------|
| 24F843 | Single DGM Cube with Board |
| 24F844 | Two DGM Cubes with Board |
| 24G830 | Single DGM Cube |

Manual and Semi-Automatic Recirculation Kits

| Part | Description |
|--------|--|
| 24D107 | Manual Recirculation Kit, Stainless Steel |
| 24E379 | Manual Recirculation Kit, Carbon Steel |
| 24N486 | Semi-Automatic Recirculation Kit, Component A |
| 24N487 | Semi-Automatic Recirculation Kit, Component B |
| 24N990 | Solenoid Valve Kit, for Semi-Automatic Recirculation |

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

WARNING



ELECTRIC SHOCK HAZARD

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.

- Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment.
- Connect only to grounded power source.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.



TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDSs to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
- Always wear chemically impermeable gloves when spraying, dispensing, or cleaning equipment.



PERSONAL PROTECTIVE EQUIPMENT

You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.



SKIN INJECTION HAZARD



High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**



- Do not point dispensing device at anyone or at any part of the body.
- Do not put your hand over the fluid outlet.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- · Check hoses and couplings daily. Replace worn or damaged parts immediately.

WARNING





FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- If there is static sparking or you feel a shock, **stop operation immediately.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



PRESSURIZED EQUIPMENT HAZARD

Fluid from the gun/dispense valve, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.

- Follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.



EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

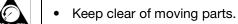
- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

WARNING



MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.



- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.



BURN HAZARD

Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns:

• Do not touch hot fluid or equipment.

Important Two-Component Material Information

Isocyanate Conditions











Spraying or dispensing materials containing isocyanates creates potentially harmful mists, vapors, and atomized particulates.

Read material manufacturer's warnings and material MSDS to know specific hazards and precautions related to isocyanates.

Prevent inhalation of isocyanate mists, vapors, and atomized particulates by providing sufficient ventilation in the work area. If sufficient ventilation is not available, a supplied-air respirator is required for everyone in the work area.

To prevent contact with isocyanates, appropriate personal protective equipment, including chemically impermeable gloves, boots, aprons, and goggles, is also required for everyone in the work area.

Material Self-ignition





Some materials may become self-igniting if applied too thickly. Read material manufacturer's warnings and material MSDS.

Keep Components A (Red) and B (Blue) Separate







Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination of the equipment's wetted parts, **never** interchange component A (Red) and component B (Blue) parts.

Moisture Sensitivity of Isocyanates

Isocyanates (ISO) are catalysts used in two component foam and polyurea coatings. ISO will react with moisture (such as humidity) to form small, hard, abrasive crystals, which become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity. If used, this partially cured ISO will reduce performance and the life of all wetted parts.

NOTE: The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

To prevent exposing ISO to moisture:

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. Never store ISO in an open container.
- Keep the IsoGuard Select cylinder filled with IsoGuard Select, part 24F516. The lubricant creates a barrier between the ISO and the atmosphere.
- Use moisture-proof hoses specifically designed for ISO, such as those supplied with your system.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Never use solvent on one side if it has been contaminated from the other side.
- Always lubricate threaded parts with ISO pump oil or grease when reassembling.
- Keep the pump grease cup filled with grease. The grease creates a barrier between the ISO and the atmosphere.

Foam Resins with 245 fa Blowing Agents

Some foam blowing agents will froth at temperatures above 90°F (33°C) when not under pressure, especially if agitated. To reduce frothing, minimize preheating in a circulation system.

Changing Materials

- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- Most materials use ISO on the A (Red) side, but some use ISO on the B (Blue) side. See the following section.

A (Red) and B (Blue) Components

IMPORTANT!

Material suppliers can vary in how they refer to plural component materials.

Be aware that when standing in front of the manifold on proportioner:

- Component A (Red) is on the left side.
- Component B (Blue) is on the right side.

For all machines:

- The A (Red) side is intended for ISO, hardeners, and catalysts.
- If one of the materials is moisture-sensitive that material should always be on the A (Red) side.
- The B (Blue) side is intended for polyols, resins, and bases.

NOTE: For machines with material volume ratios other than 1:1, the higher volume side is typically the B (Blue) side.

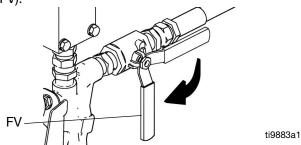
Shutdown



- 1. Park pumps.
 - a. From the Home screen, press and select Standby mode.
 - b. Press . Material will dispense. Pump will park automatically. Once pump is parked, pump will stop moving.

If a dispense gun with a trigger is installed, pulling the trigger will begin a park operation. Material will dispense. Continue pulling the trigger until the pump stops moving.

- 2. Press the power key on the ADM
- (a)
- 3. Turn main power switch (MP) to OFF position.
- 4. Close A (Red) and B (Blue) side fluid supply valves (FV).



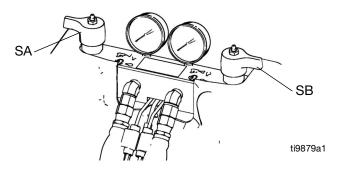
- 5. Perform Pressure Relief Procedure, page 21.
- 6. Shut down feed pumps as required. See your feed pump manual.

Pressure Relief Procedure



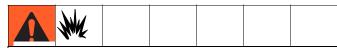
- 1. Shut off feed pumps and agitator, if used.
- 2. Turn PRESSURE RELIEF/DISPENSE valves (SA,

SB) to PRESSURE RELIEF/CIRCULATION Proute fluid to waste containers or supply tanks. Ensure gauges drop to 0.



- 3. For models with an EP Gun installed, engage gun safety lock.
- 4. Relieve pressure in EP Gun or dispense valve. See your gun manual.

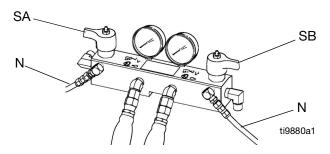
Flushing



Flush equipment only in a well-ventilated area. Do not dispense flammable fluids. Do not turn on heaters while flushing with flammable solvents.

- Flush out old fluid with new fluid, or flush out old fluid with a compatible solvent before introducing new fluid.
- Use the lowest possible pressure when flushing.
- All fluid components are compatible with common solvents. Use only moisture-free solvents. See Technical Specifications, page 92 for wetted components. See solvent manufacturers information for material compatibility.
- To flush feed hoses, pumps, and heaters separately from heated hoses, set PRESSURE RELIEF/DISPENSE valves (SA, SB) to PRESSURE

RELIEF/CIRCULATION Flush through bleed lines (N).



• To flush entire system, circulate through gun fluid manifold (with manifold removed from gun).

NOTE: To prevent moisture from reacting with isocyanate, always leave the system dry or filled with a moisture-free plasticizer or oil. Do not use water. See **Important Two-Component Material Information**, page 19.

Repair

Pumpline

Refer to your Z-Series Chemical Pumps manual and HFR Hydraulic Driver manuals for more detailed pumpline repair information. See **Related Manuals**, page 3.

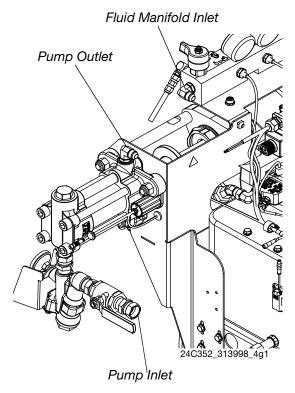
Remove Chemical Pumps



This procedure removes the chemical pumps so that replacement parts can be installed. See Z-Series Chemical Pumps manual for replacement parts installation procedure.

- 1. **For models with heat,** turn off all heat including heated hoses and primary heaters.
- 2. Flush system, see Flushing, page 22.
- 3. Perform Shutdown, page 21.
- 4. Remove the front pump shroud.

5. Disconnect the chemical pump inlet and outlet fluid lines. Do not disconnect the fluid manifold inlet line or the fluid line connections at the heater.



6. Unthread smaller cylinder from hydraulic driver and slide inside larger cylinder. Use punch slots in lube cylinder to aid rotation if necessary. See Fig. 1.

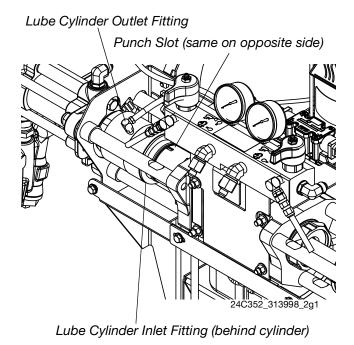


FIG. 1: Lube Cylinder

7. Remove two shoulder bolts from LVDT collar then remove collar from B side pump shaft. See Fig. 2.

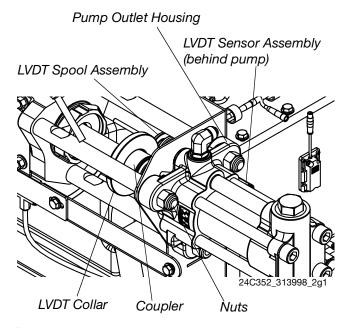


Fig. 2

- 8. Remove coupler from the A and B side pump shafts. See Fig. 2.
- 9. Unscrew LVDT sensor assembly and spool assembly from pump outlet housing. Wipe off spool assembly. See Fig. 2.
- 10. Remove three nuts securing pump to tie rods. See Fig. 2.

Install Chemical Pumps

Reconnect or install a different size chemical pump to achieve desired ratio.

- 1. Install nuts on tie rods after the pumps have been installed. Torque to 50-60 ft-lb (68-81 N•m).
- 2. Install coupler on A and B side pump shafts.
- 3. Install LVDT Assembly.
 - Apply a very light coat of hydraulic oil on LVDT sensor tube and install through pump outlet housing. Install spool assembly.
 - Install LVDT collar on coupler and pump shaft.
 Ensure that the split on the LVDT collar does not ride in the spool assembly.
 - Apply thread sealant to shoulder bolts then install in LVDT collar. Torque to 40-50 in-lb (4.5-5.6 N•m).
- 4. Grease pumps if using moisture sensitive materials. See **Grease Cup Maintenance**.
- 5. Reconnect inlet and outlet fluid lines.

Grease Cup Maintenance



Frequency of greasing intervals are dependent on material being pumped. As a basic schedule, lubricate the pump with grease after 250 gallons of material (five drums of fifty five gallon pails) has passed through pump.

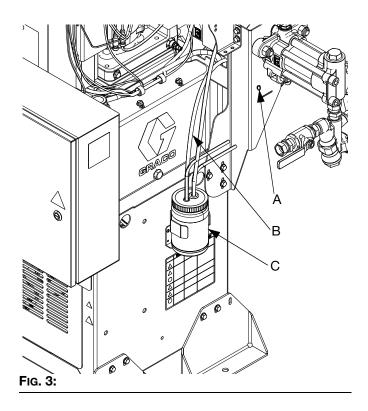
If the grease has become hardened, remove the hardened materials or grease. Shorten the intervals between greasing the pump.

If the grease remains clear and free of material, intervals between greasing the pump can be increased.

To Grease the Pump:

- 1. Locate the grease fitting (A) mounted to the pump bracket near the pump that is being greased.
- 2. Attach grease gun to the grease fitting. Pump new grease into the pump until fresh grease is observed discharging from grease relief tube (B) into the grease reservoir bottle (C).

Repeat for other pump. See Fig. 3.



Remove HFR Hydraulic Driver



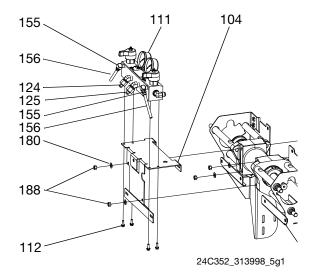
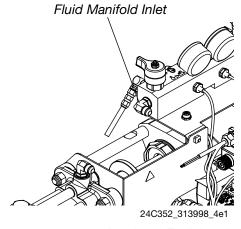


Fig. 4

This procedure removes the HFR Hydraulic Driver so replacement parts can be installed. See HFR Hydraulic Driver manual for replacement parts installation procedure.

- 1. Perform **Remove Chemical Pumps** procedure, page 22.
- 2. Disconnect the fluid manifold inlet lines.

NOTE: Do not disconnect the fluid line connections at the heater.



3. Remove pump support brackets. Each bracket is secured with three screws at the base frame and two screws at the manifold bracket.

 See Fig. 4. Remove four nuts (188) securing hydraulic driver to hydraulic power pack. This will also loosen manifold plate (104) from hydraulic driver. Remove manifold plate. Remove hydraulic driver.

Install HFR Hydraulic Driver

This procedure installs the hydraulic driver after replacement parts have been installed and actuator has been reassembled. See HFR Hydraulic Driver manual for replacement parts installation procedure, **Related Manuals**, page 3.

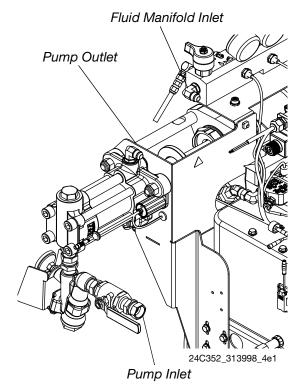
- Hang the hydraulic driver on the studs. Verify o-rings between driver and hydraulic power pack are installed and lubricated. Secure the driver with nuts and washer at bottom-left and top-right corners.
- Install manifold bracket. Secure at top-left and bottom-right corners.
- Install pump support brackets, torque to 300 in-lb (33.9 N•m). This will also install manifold plate (104) to hydraulic driver.
- 4. Connect fluid manifold inlet lines.
- 5. Perform **Install Chemical Pumps** procedure, page 24.

Remove PowerHouse Pumpline



The Hydraulic Power Pack must be removed to perform some Hydraulic Power Pack repair procedures. In order to remove the Hydraulic Power Pack, the PowerHouse pumpline must be removed. See starting on page 28 for more information.

- 1. Perform **Shutdown** procedure, page 21.
- 2. Flush the system, see Flushing, page 22.
- Disconnect the chemical pump inlet, pump outlet, and fluid manifold inlet lines. Do not disconnect the fluid line connections at the heater.



4. Remove lube cylinder inlet and outlet fittings. Let cylinder drain.

Punch Slot (same on opposite side)

Lube Cylinder Outlet Fitting

24C352_313998_8e1

Fig. 5: Lube Cylinder, Viewed from Rear Left of Machine

Lube Cylinder Inlet Fitting

5. See Fig. 6. Remove four screws (107) securing pumpline to hydraulic power pack. This will also loosen manifold plate (104) from hydraulic driver.

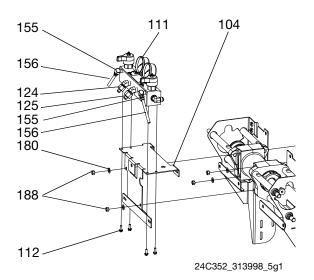


Fig. 6

 While supporting the pumpline, remove the three bolts on each side of the machine securing the pump support brackets to the machine base. See Fig. 7. Remove pumpline.

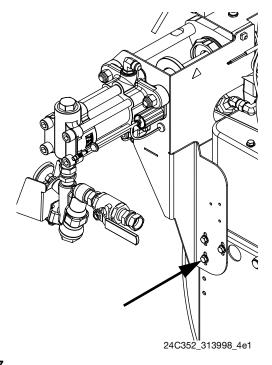


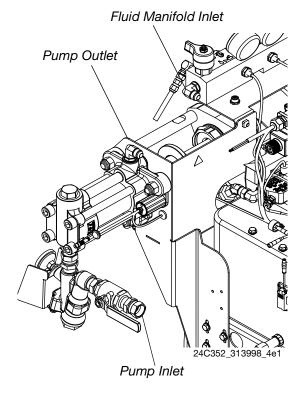
Fig. 7

Install PowerHouse Pumpline

The Hydraulic Power Pack must be removed to perform some Hydraulic Power Pack repair procedures. In order to remove the Hydraulic Power Pack, the PowerHouse pumpline must be removed.

This procedure is for installing the PowerHouse pumpline at the end of the Hydraulic Power Pack Repair procedure. See , starting on page 28, for more information.

- While supporting the pumpline, install the three bolts on each side of the machine securing the pump support brackets to the machine base. See Fig. 7. Torque to 150 in-lb (16.9 N•m).
- See Fig. 6. Align manifold plate (104) with hydraulic driver. Align hydraulic driver with hydraulic power pack. Install four screws (107) securing hydraulic driver to hydraulic power pack. This will also install manifold plate (104) to hydraulic driver. Torque to 300 in-lb (33.9 N•m).
- Install lube cylinder inlet and outlet fittings. See Fig.Apply thread sealant to threads.
- 4. Grease pumps if using moisture sensitive materials. See **Grease Cup Maintenance** page 24.
- 5. Connect the chemical pump inlet, pump outlet, and fluid manifold inlet lines.



Hydraulic Power Pack Repair

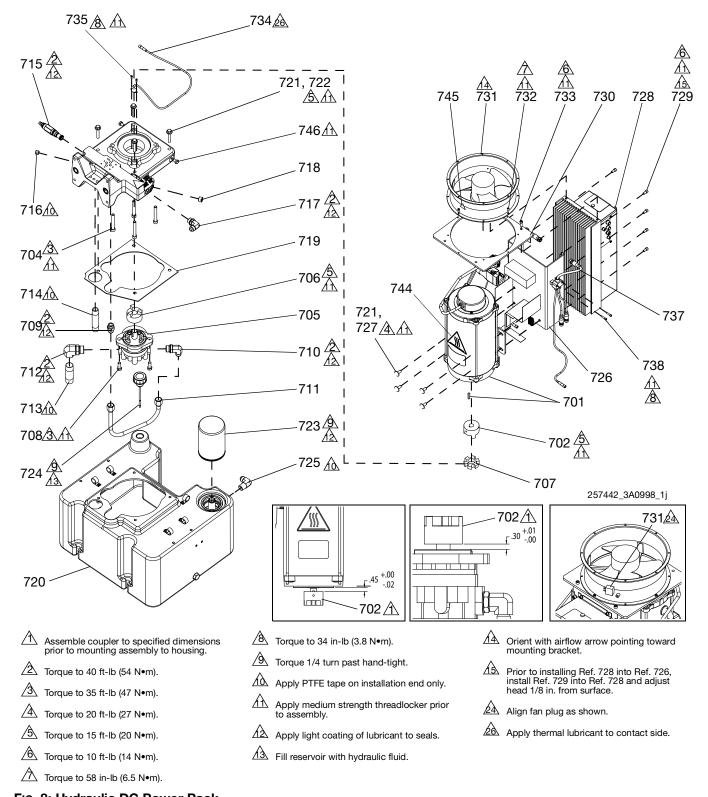


Fig. 8: Hydraulic DC Power Pack

Remove Hydraulic Power Pack Shroud

- Remove four screws from base of shroud.
- 2. Lift shroud off of Hydraulic Power Pack.

Install Hydraulic Power Pack Shroud

NOTICE

Do not over-torque any item that threads into the hydraulic tank. This will strip the threads and require tank replacement.

- 1. Place shroud on top of Hydraulic Power Pack.
- 2. Install four screws securing shroud to hydraulic tank.

Replace Hydraulic Filter

Filter is located at right rear of hydraulic power pack. See Fig. 8, page 29.

NOTICE

If any debris falls into the hydraulic tank, the debris must be removed or machine damage will result.

- 1. Perform **Shutdown** procedure, page 21.
- 2. Use compressed air to remove any loose debris around the hydraulic filter.
- 3. Remove new filter from wrapping.
- 4. Apply a light coat of hydraulic fluid to the o-ring on the face of the hydraulic filter.
- Being careful not to allow any debris into the hydraulic tank remove old filter from tank then quickly install new filter.

Replace Fan



See Fig. 8 on page 29.

- 1. Perform Shutdown procedure, page 21.
- Remove Hydraulic Power Pack Shroud.
- 3. Remove four screws (732) connecting fan to mounting plate.
- 4. Remove fan and install new fan.
- Install four screws (732) connecting fan to Motor and Motor Control Module.
- 6. Install Hydraulic Power Pack Shroud.

Remove Motor Control Module



See Fig. 8 on page 29.

- 1. Perform Shutdown procedure, page 21.
- 2. Remove Hydraulic Power Pack Shroud.
- 3. Remove four screws (732) connecting fan to Motor and Motor Control Module. Remove fan and mounting plate.
- 4. Note the location of each Motor Control Module cable then remove all electrical cables on the left and right sides of the Motor Control Module.
- 5. Remove six screws (729) securing Motor Control Module in place.
- Slowly and carefully slide the Motor Control Module up until the cable on the bottom of the Motor Control Module can be accessed and removed. Disconnect the cable.
- 7. Slide the Motor Control Module up and remove.

Adjust Motor Control Module Selector Switch

NOTICE

If the Motor Control Module is replaced, the selector switch must be set prior to initial startup of the Motor Control Module or damage may occur.

The Motor Control Module uses an 8-position selector switch (S) to set system maximum working pressure. See Fig. 9.

The system can be configured to run in two pressure ranges:

- 0-3000 psi (0-20.7 MPA, 0-207 bar): For systems will all components rated to 3000 psi maximum working pressure or higher.
- 0-2000 psi (0-13.8 MPA, 0-138 bar): For systems with one or more component rated less than 3000 psi maximum working pressure. For example, if the dispense valve is rated to 2500 psi, then the 0-2000 psi range must be used.

NOTE: The Motor Control Module selector switch (S) position #1 sets the system to 2000 psi maximum working pressure. Selector switch position #3 sets the system to 3000 psi maximum working pressure.

The factory setting for the Motor Control Module selector switch is position #1 to set the machine to 2000 psi if the machine is shipped with no hoses or hoses rated to 2000 psi maximum working pressure. If the machine is shipped with hoses rated to 3000 psi maximum working pressure or higher then the factory setting for the selector switch is position #3 to set the machine to 3000 psi.

The selector switch position will be properly set at the factory for new systems. When a motor control module is replaced, the selector switch must be set to the correct setting by the user prior to initial startup.

To change the maximum working pressure rating of the system in the field, all outlet components including hoses and dispense valve must be rated at or above the new system maximum working pressure rating. For example, if the new system rating will be 3000 psi, all system components must be rated to at least 3000 psi maximum working pressure.





- Do not install components rated to less than the highest pressure in the selected pressure range.
 For example, if the 0-2000 psi range is selected do not install items rated less than 2000 psi. If the 0-3000 psi range is selected do not install items rated less than 3000 psi. Doing so may lead to overpressurization and ruptured components.
- High-pressure fluid from ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation.
 Get immediate surgical treatment.

To set the Motor Control Module selector switch:

- 1. Turn machine power off.
- 2. Remove the access cover (D). See Fig. 9.
- 3. Set the selector switch (S).
- 4. Install access cover (D).

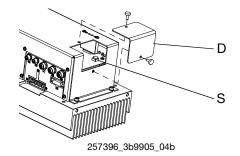


Fig. 9

Install Motor Control Module



This procedure starts assuming that the old Motor Control Module is removed from the machine. See Remove Motor Control Module procedure, see page 30.

See Fig. 8, page 29.

1. Perform Adjust Motor Control Module Selector Switch procedure, page 31.

NOTICE

Motor Control Module selector switch position must be set prior to startup of Motor Control Module or damage may occur.

- 2. Slide the Motor Control Module into the slot.
- 3. Attach the cable on the bottom of the Motor Control Module.
- 4. Install the six screws (729) securing Motor Control Module in place.
- 5. Install electrical cables on left and right sides of the Motor Control Module.
- 6. Install four screws (732) connecting fan to Motor and Motor Control Module. Install fan and mounting plate.
- 7. Install Hydraulic Power Pack Shroud, page 30.

Remove Hydraulic Power Pack











The hydraulic power pack weighs up to 300 lb. To avoid serious injury due the hydraulic power pack falling, secure the hydraulic lift when raising the hydraulic power pack.

NOTICE

If any debris falls into the hydraulic tank, the debris must be removed or machine damage will result.

This procedure removes the hydraulic power pack from the machine as a single unit to enable further disassembly. User must purchase three 5/16-18 eye-bolts capable of holding 300 lb to perform this procedure.

See Fig. 8, page 29.

- 1. Perform **Shutdown** procedure, page 21.
- 2. Perform Remove Hydraulic Power Pack Shroud, page 30.
- 3. Perform Remove Motor Control Module procedure, page 30.
- 4. Perform Remove PowerHouse Pumpline procedure, page 26.
- 5. Disconnect heat exchanger inlet hose and fitting from elbow fitting (617). Disconnect heat exchanger outlet hose and fitting from elbow fitting (025).
- 6. Remove the two bolts (746) from the fluid housing (703) and replace each with a strong 5/16-18 thread eye-bolt. Install a third strong 5/16-18 eye-bolt as indicated. See Fig. 10. See Fig. 8 on page 29 for full hydraulic power pack view.

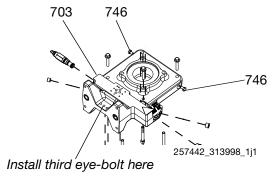


FIG. 10

- 7. Run a rope through the three eye-bolts and between the motor and the Motor Control Module. Secure to a hydraulic lift.
- 8. Remove the four bolts (604) and washers (603) securing the tank to the electrical enclosure. See Power Pack Module, page 49.
- 9. Lift the hydraulic power pack and place on a sturdy location capable of supporting up to 300 lbs.

Install Hydraulic Power Pack



NOTICE

If any debris falls into the hydraulic tank, the debris must be removed or machine damage will result.

NOTICE

Do not over-torque any item that threads into the hydraulic tank. This will strip the threads and require tank replacement.

This procedure assumes the Hydraulic Power Pack has been removed from the machine and is assembled except for the Motor Control Module.

See Fig. 8, page 29.

- Run a rope through the three eye-bolts and between the Motor and the Motor Control Module. Secure to a hydraulic lift.
- 2. Lift the Hydraulic Power Pack and place onto the electronic enclosure.
- 3. Align the holes with the tank then install finger-tight the four bolts (604) and washers (603) securing the tank to the electrical enclosure. Torque to 10 ft-lb (14 N•m).
- 4. Remove rope and lift.
- 5. Remove eye-bolts. Install original bolts (746) into fluid housing (703). See Fig. 10, page 32.
- 6. Perform **Install PowerHouse Pumpline** procedure, page 27.
- 7. Perform **Install Motor Control Module** procedure, page 32.
- 8. Connect heat exchanger inlet hose and fitting to elbow fitting (617). Connect heat exchanger outlet hose and fitting to elbow fitting located on rear right face of tank. See **Power Pack Module**, page 49.

Replace Tank Gasket, Tank



See Fig. 8, page 29.

- 1. Perform Remove Hydraulic Power Pack procedure, page 32.
- 2. Remove hex head cap screws (722) securing hydraulic housing (703) to tank (720). Carefully remove motor (701) and hydraulic housing assembly from tank.
- 3. Remove tank gasket. If tank is damaged, replace tank.

NOTICE

Do not over-torque any item that threads into the hydraulic tank. This will strip the threads and require tank replacement.

- Install thrust washers (721) onto hex head cap screws (022). Apply pipe sealant to threads of screws. Align tank gasket (719), hydraulic housing, and tank (720) then install screws. Torque to 15 ft-lb (20 N•m).
- 5. Perform **Install Hydraulic Power Pack** procedure, page 33.

Remove Motor



See Fig. 8 on page 29.

- 1. Perform Remove Hydraulic Power Pack procedure, page 32.
- 2. Remove four hex head cap screws (722) securing hydraulic housing (703) and motor (701) to tank (020). Carefully remove motor and hydraulic housing assembly from tank.
- 3. Remove four hex head cap screws (727) connecting mounting bracket (726) to motor.
- Remove four socket head cap screws (704) securing motor to hydraulic housing. Carefully remove motor from hydraulic housing.

5. Loosen set screw for motor coupler (702) then remove motor coupler.

Install Motor



See Fig. 8, page 29.

- 1. Use four hex head cap screws (727) and thrust washers (721) to install Motor Control Module mounting bracket (726) onto motor (701).
- Install motor coupler (702) onto motor (701).
 Coupler must be 0.45 in. from the face of the motor. Torque motor coupler set screw to 15 ft-lb (20 N•m).
- 3. Install spider coupler (707) into motor coupler.
- 4. Use four socket head cap screws (704) to attach hydraulic housing (703) to motor. Be sure to align teeth of gear coupler with the teeth of the motor coupler. Apply pipe sealant to threads of screws. Torque to 35 ft lb (47 N•m).

NOTICE

Do not over-torque any item that threads into the hydraulic tank. This will strip the threads and require tank replacement.

- Install thrust washers (721) onto hex head cap screws (722). Apply pipe sealant to threads of screws. Align tank gasket (719), hydraulic housing, and tank (720) then install screws. Torque to 15 ft-lb (20 N•m).
- 6. Perform **Install Hydraulic Power Pack** procedure, page 33.

Remove Hydraulic Gear Pump



See Fig. 8, page 29.

- 1. Perform **Remove Hydraulic Power Pack** procedure, page 32.
- 2. Remove hex head cap screws (722) securing hydraulic housing (703) to tank. Carefully remove motor (701) and hydraulic housing assembly.
- 3. Remove tube (711).
- 4. Remove elbow fittings (710, 712) from gear pump (705).
- 5. Remove two hex head cap screws (708) securing gear pump to hydraulic housing.
- 6. Remove spider coupler (707).
- 7. Loosen set screw for gear coupler (706) then remove gear coupler from gear pump.

Install Hydraulic Gear Pump



See Fig. 8, page 29.

- Install gear coupler (706) onto gear pump (705).
 Coupler must be 0.30 in. from the face of the gear pump. Torque gear coupler set screw to 15 ft-lb (20 N•m).
- 2. Install spider coupler (707) into gear coupler.
- Use two hex head cap screws (708) to attach gear pump to hydraulic housing. Be sure to align teeth of gear coupler with the teeth of the motor coupler. Torque screws to 35 ft-lb (47 N•m).
- 4. Apply a light coat of lubricant to seals of elbow fittings (710, 712). Install elbow fittings into gear pump. See Fig. 8 on page 29. for fitting alignment. Torque both fittings to 40 ft-lb (54 N•m).

 Apply a light coating of lubricant to seals of tube (711). Install tube (711) onto elbow fitting (710) and straight fitting (709). Hand-tighten then use wrench to tighten 90 degrees further.

NOTICE

Do not over-torque any item that threads into the hydraulic tank. This will strip the threads and require tank replacement.

- Install thrust washers (721) onto hex head cap screws (722). Apply pipe sealant to threads of screws. Align tank gasket (719), hydraulic housing, and tank (720) then install screws. Torque to 15 ft-lb (20 N•m).
- 7. Perform **Install Hydraulic Power Pack** procedure, page 33.

Parts

Base Machine

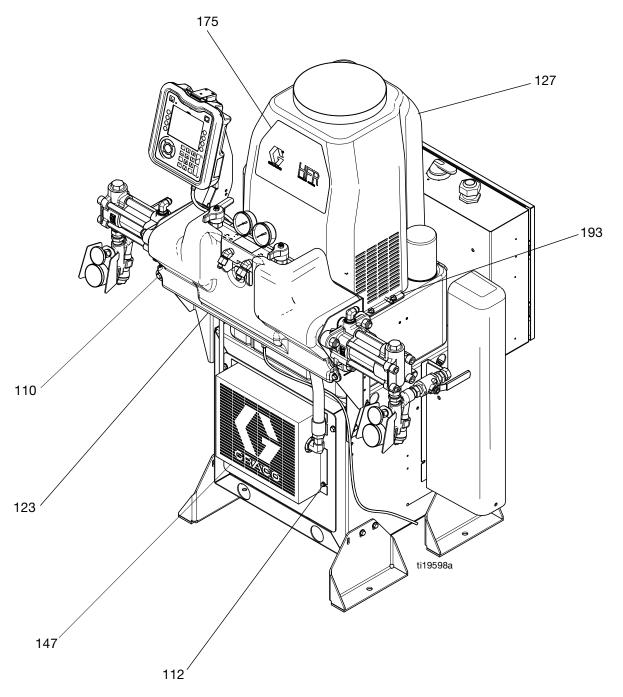
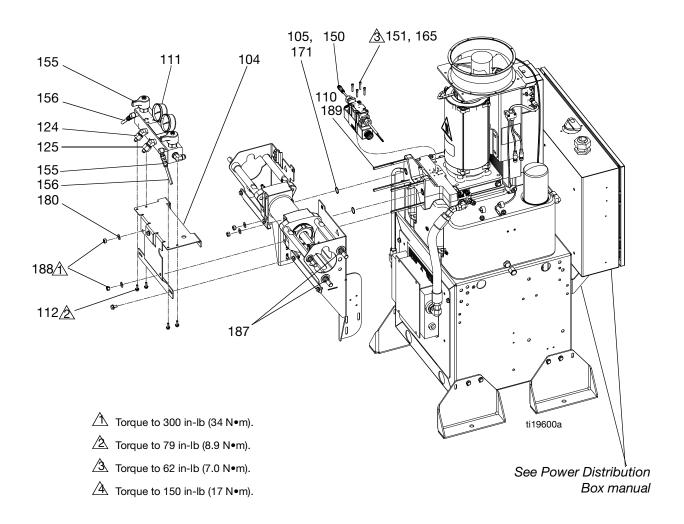


Fig. 11: Base Machine, Image 1 of 6



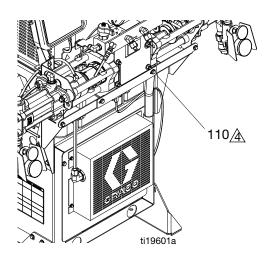


Fig. 12: Base Machine, Image 2 of 6

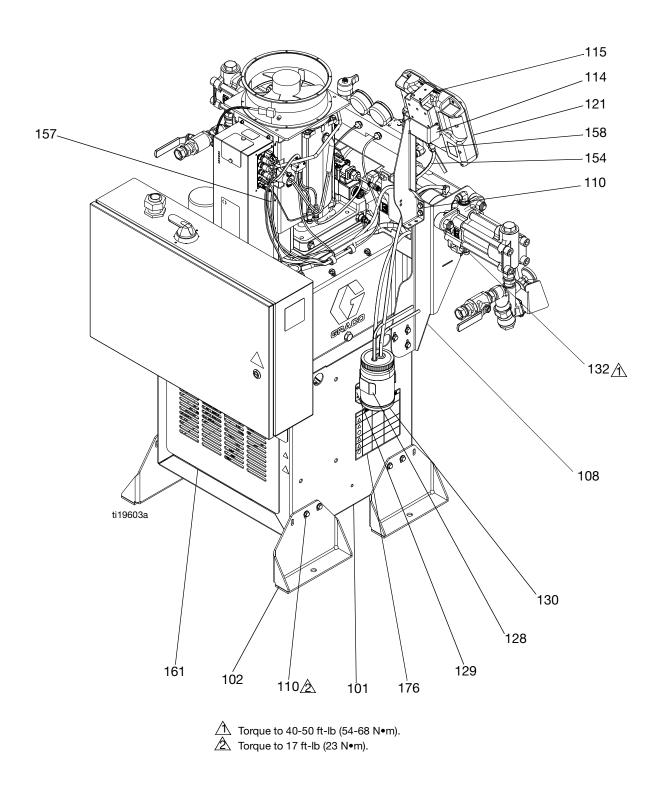


Fig. 13: Base Machine, Image 3 of 6

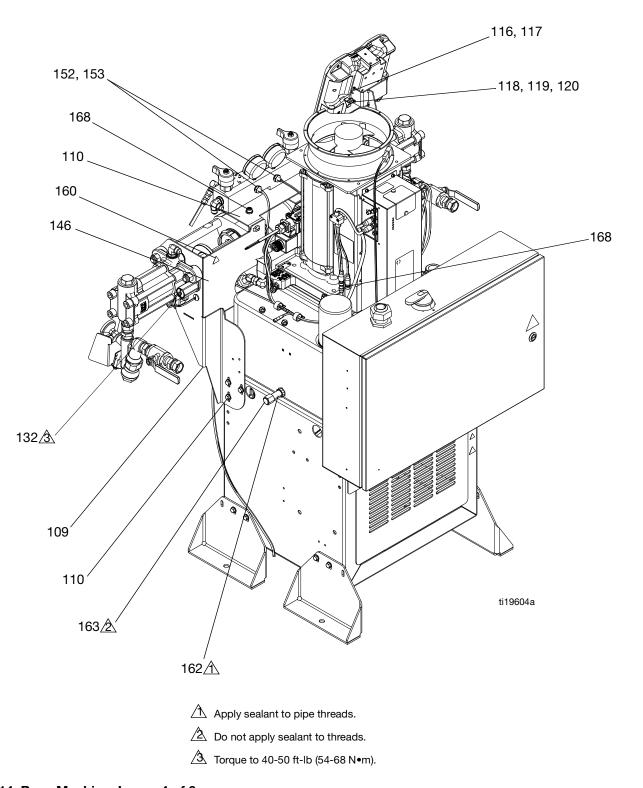
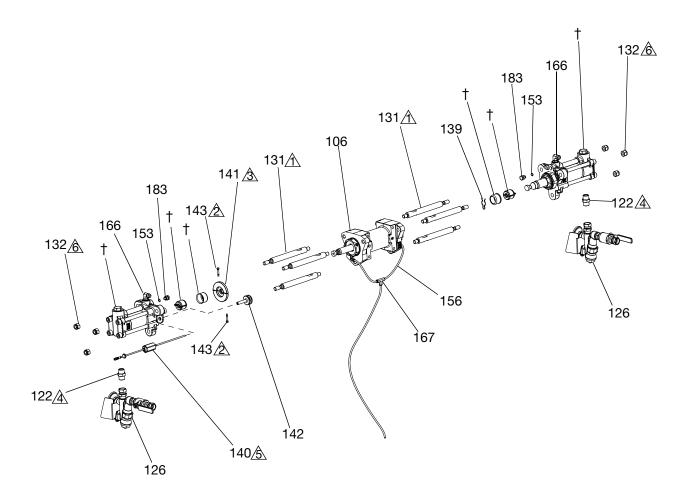


Fig. 14: Base Machine, Image 4 of 6



- ↑ Torque to 50-60 ft-lb (68-81 N•m).
- ^ Torque to 40-50 ft-lb (54-68 N•m).
- Assemble to orientation shown.
- Apply sealant to pipe threads.
- Apply a very thin coating of lubricant to the sensor tube.
- Snug only enough to hold pump module in place until final torque is applied later in assembly.

Fig. 15: Base Machine, Image 5 of 6

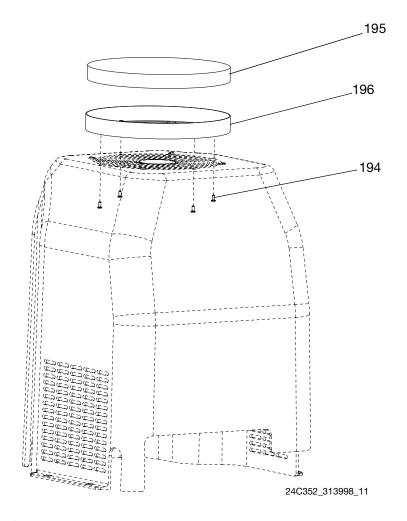


Fig. 16: Base Machine, Image 6 of 6

| | | | Quantity | | | |
|-----|--------|---|---------------|--------------|--|--|
| | | | BASE, BASE, | | | |
| | | | fixed ratio, | fixed ratio, | | |
| Ref | Part | Description | non-stainless | stainless | | |
| 101 | | MODULE, power pack, enclosure, assy | 1 | 1 | | |
| 102 | 24M024 | BRACKET, anchor | 4 | 4 | | |
| 104 | 24E170 | BRACKET, manifold | 1 | 1 | | |
| 105 | 103413 | PACKING, o-ring | 2 | 2 | | |
| 106 | 258771 | DRIVER, hydraulic, horizontal | 1 | 1 | | |
| 107 | 16E281 | STUD, threaded, 3/8-16 x 6.0 long | 4 | 4 | | |
| 108 | | BRACKET, pump, left | 1 | 1 | | |
| 109 | | BRACKET, pump, right | 1 | 1 | | |
| 110 | 111800 | SCREW, cap, hex head | 23 | 23 | | |
| 111 | 255629 | MANIFOLD, inlet, fluid, h-controller | 1 | 20 | | |
| 111 | 289999 | MANIFOLD, fluid, sst | ı | 1 | | |
| 112 | 113796 | SCREW, flanged, hex hd | 4 | 4 | | |
| 114 | 24E647 | BRACKET, ADM mounting | 1 | 1 | | |
| 115 | 255235 | BRACKET, ADM Hounting BRACKET, mounting, assembly | 1 | 1 | | |
| 116 | 120060 | CLIP, speed, tubular | 2 | 2 | | |
| 117 | 122168 | RIVET, aluminum | 2 | 2 | | |
| 118 | 110755 | WASHER, plain | 1 | | | |
| 119 | 100016 | WASHER, lock | 1 | 1 | | |
| 120 | | | 1 | 1 | | |
| | 121253 | KNOB, display adj. | | | | |
| 121 | 24E451 | MODULE, ADM, w/ USB | 1 | 1 | | |
| 122 | 123111 | FITTING, nipple, hex, 3/4 NPT, 3k, ss | 0 | 2 | | |
| 100 | C20487 | FITTING, nipple, hex | 2 | 4 | | |
| 123 | 24C234 | COVER, shroud, front | 1 | 1 | | |
| 124 | 117502 | FITTING, reducer #5 x #8 (JIC) | 1 | 4 | | |
| 405 | 16A361 | FITTING, reducer, #5 x #8 (JIC), sst | 4 | 1 | | |
| 125 | 117677 | FITTING, reducer #6 x #10 (JIC) | 1 | 4 | | |
| 100 | 16A362 | FITTING, reducer, #6x #10 (JIC), sst | 4 | 1 | | |
| 126 | 255159 | KIT, assembly, pair, inlet | 1 | | | |
| 10- | | KIT, pair, inlet, sst, no filter | | 1 | | |
| 127 | 24B855 | COVER, assembly | 1 | 1 | | |
| 128 | 297216 | BRACKET, reservoir, lube | 1 | 1 | | |
| 129 | 295187 | SCREW, machine, ph, 8 x 3/8 | 2 | 2 | | |
| 130 | 258707 | RESERVOIR, bottle, assembly | 1 | 1 | | |
| 131 | 15X519 | ROD, tie, 12 lng, 5/8-11 unc | 6 | 6 | | |
| 132 | 101712 | NUT, lock | 6 | 6 | | |
| 139 | 125966 | CLIP, hairpin | 1 | 1 | | |
| 140 | 258669 | SENSOR, assembly | 1 | 1 | | |
| 141 | 16A509 | COLLAR, sensor, lvdt | 1 | 1 | | |
| 142 | 258704 | SPOOL, assembly, lvdt | 1 | 1 | | |
| 143 | 119999 | BOLT, shoulder | 2 | 2 | | |
| 146 | 24C235 | COVER, pump | 1 | 1 | | |
| 147 | 24C153 | COVER, heat exchanger | 1 | 1 | | |
| 150 | 123313 | VALVE, directional, hydraulic | 1 | 1 | | |
| 151 | 123366 | SCREW, shc, 10-24 x 1.125, s | 4 | 4 | | |
| 152 | 16A093 | SENSOR, pressure, fluid outlet | 2 | 2 | | |
| 153 | 121399 | PACKING, o-ring 012 fx75 | 4 | 4 | | |

| | | | Quantity | | | |
|-----|---------|--|--|------------------------------------|--|--|
| Ref | Part | Description | BASE, fixed ratio, non-stainless | BASE, fixed ratio, stainless | | |
| 154 | 121002 | CABLE, can, female / female 1.5m | 1 | 1 | | |
| 155 | 205447 | COUPLING, hose | 2 | 2 | | |
| 156 | 054826 | TUBE, plastic | 10 | 10 | | |
| 157 | 123798 | CABLE, m8, 4-pin, mf, 1m, molded | 1 | 1 | | |
| 158 | 120999 | RESISTOR, terminal, turck rke 57-tr2 | 1 | 1 | | |
| 160 | 15H108▲ | LABEL, pinch point | 1 | 1 | | |
| 161 | | COVER, enclosure, slotted, assembly | 1 | 1 | | |
| 162 | 122970 | FITTING, adapter, JIC (08) x sae (08), m | 1 | 1 | | |
| 163 | 123140 | FITTING, cap, 1/2 JIC, cs | 1 | 1 | | |
| 164 | | SEALANT, pipe, sst | 1 | 1 | | |
| 165 | | SEALANT, anaerobic | 1 | 1 | | |
| 166 | 121312 | FITTING, elbow, sae x JIC | 2 | | | |
| | 123108 | FITTING, elbow, 3/4 sae x 1/2 JIC, sst | | 2 | | |
| 167 | 123112 | FITTING, t, 1/4 tube, prestolock, brass | 1 | 1 | | |
| 168 | 121581 | HARNESS, I/O, M12 x M12 | 1 | 1 | | |
| 170 | 054175 | TUBE, nylon, rd | 5 | 5 | | |
| 171 | | LUBRICANT, grease | 1 | 1 | | |
| 174 | | LABEL, identification | 1 | 1 | | |
| 175 | | LABEL, HFR metering system | 1 | 1 | | |
| 176 | 15M511▲ | LABEL, warning, eng/span/fre | 1 | 1 | | |
| 177 | | FLUID, hydraulic (gallon) | 9 | 9 | | |
| 178 | 117792 | GUN, grease, 3 oz | 1 | 1 | | |
| 179 | 117773 | LUBRICANT, grease, food grade | 1 | 1 | | |
| 180 | 555621 | WASHER, 3/8 plain flat | 4 | 4 | | |
| 181 | 15V551 | SHIELD, membrane, ADM | 0.100 | 0.100 | | |
| 187 | 16E277 | BUSHING, flanged, 1.0 x 1.25 x 1.0 | 4 | 4 | | |
| 188 | U90126 | NUT, hex, 3/8-16, ms, gr8 | 4 | 4 | | |
| 189 | 071019 | ADHESIVE, anaerobic | 1 | 1 | | |
| 193 | 124804 | SCREW, hex, slotted | 4 | 4 | | |
| 194 | 15U075 | SCREW, cap, bh, 8-32 x 0.37 | 4 | 4 | | |
| 195 | 24H018 | FILTER, air | 1 | 1 | | |
| 196 | 16G251 | HOUSING, filter | 1 | 1 | | |
| 199 | 16H821 | TOKEN, software upgrade | 1 | 1 | | |

[†] See Z-Series Chemical Pumps manual for parts information.

[▲] Replacement Danger and Warning labels, tags and cards are available at no cost.

Base Machine Sub-Assemblies

HFR Hydraulic Driver 258771

See the HFR Hydraulic Driver manual 3A0020 for parts information.

Z-Series Chemical Pumps

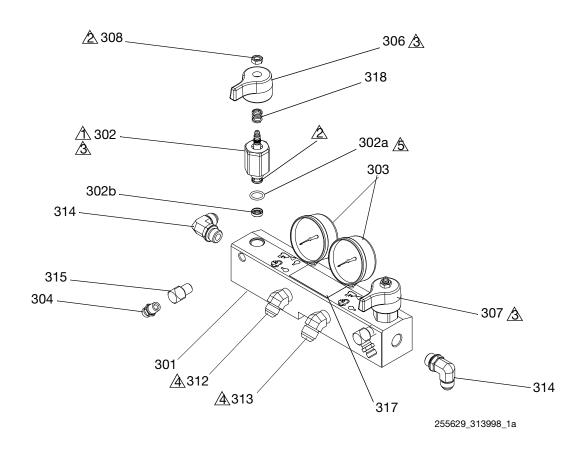
See the Z-Series Chemical Pumps manual for parts information.

Power Distribution Boxes

See the Power Distribution Boxes manual for parts information.

Non-Stainless Steel Fluid Manifold 255629, Stainless Steel Fluid Manifold 289999

Aluminum Manifold with Stainless Steel Fittings, 24P166



↑ Torque to 355-395 in-lb (40.1-44.6 N•m)

Apply sealant (113500) to threads.

riangle Valve must be closed with handle position as shown on drawing.

Adapter fittings for hoses are included in base machine parts. See **Base Machine** starting on page 36 for part numbers.

For assembly 24P166, replace o-ring that comes standard with item 302.

**Apply PTFE or thread sealant to tapered threads.

| | | Part | | | |
|-------|-----------------|-----------------|-----------------|-----------------------------------|---------|
| Ref | Assembly 255629 | Assembly 289999 | Assembly 24P166 | Description | Qt y |
| 301◆ | 247837 | 24E307 | 255228 | MANIFOLD, fluid | 1 |
| 302† | 247824 | 24E306 | 24E306** | VALVE, drain cartridge | 2 |
| 302a | 158674† | 158674† | 556560** | . O-RING | 1 |
| 302b† | 247779 | 247779 | 247779 | . SEAL, seat, valve | 1 |
| 303 | 102814 | 112941 | 112941 | GAUGE, pressure, fluid | 2 |
| 304 | 162453 | 166846 | 166846 | FITTING | 2 |
| 306 | 247788 | 247788 | 247788 | HANDLE, red | 1 |
| 307 | 247789 | 247789 | 247789 | HANDLE, blue | 1 |
| 308† | 112309 | 112309 | 112309 | NUT, hex, jam | 2 |
| 312‡ | 17Y236 | 123106 | 123106 | FITTING, 3/4 ORB x #8 JIC | 1 |
| | 117556 | | | FITTING, #8 JIC x 1/2 npt | 1 |
| 313‡ | 17Y235 | 123107 | 123107 | FITTING, 3/4 ORB x #10 JIC | 1 |
| | 117557 | | | FITTING, #10 JIC x 1/2 npt | 1 |
| 314 | 121312 | 123108 | 126565 | ELBOW, 90 degrees | 2 |
| 315 | 100840 | 166866 | 166866 | ELBOW, street, 1/4 npsm x 1/4 npt | 2 |
| 317▲ | 189285 | 189285 | 189285 | LABEL, caution | 1 |
| 318† | 150829 | 150829 | 150829 | SPRING, compression | 2 |

- ▲ Replacement Warning labels, signs, tags, and cards are available at no cost.
- † Included in the following complete valve kits*:

Assembly 255629

A (Red) Valve Kit (left/red handle) 255149.

B (Blue) Valve Kit (right/blue handle) 255150.

Valve Set Kit (both handles and grease gun) 255148.

Assembly 289999:

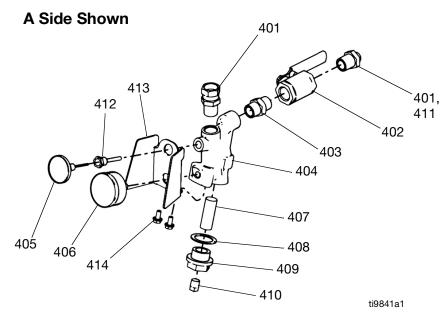
A (Red) Valve Kit (left/red handle) 24E309.

B (Blue) Valve Kit (right/blue handle) 24E310.

Valve Set Kit (both handles and grease gun) 24E308.

- * Complete valve kits also include thread sealant. (Purchase kits separately).
- ** When replacing item 302, item 302a must be ordered to replace the standard o-ring that comes with item 302.
- ‡ To order a replacement part, verify the type of fitting used with your fluid manifold (1/2 NPT of 3/4 ORB fitting).
- Part includes replacement ORB fittings (part 312 and 313).

Non-SST Fluid Inlet Assemblies, 255159 Aluminum Fluid Inlet Assemblies with Stainless Steel Fittings, 24P167

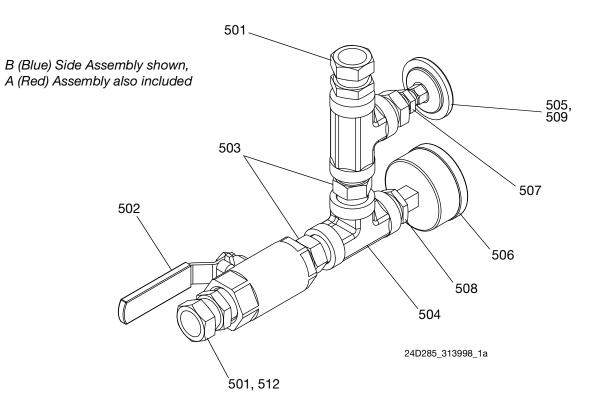


** Apply sealant to all non-swivel fittings.

| | P | art | | |
|-----|-----------------|-----------------|---|-----|
| Ref | Assembly 255159 | Assembly 24P167 | Description | Qty |
| 401 | 118459 | 112268 | UNION, swivel; 3/4 npt(m) 3/4 npsm(f) | 3 |
| 402 | | | VALVE, ball; 3/4 npt (FBE) | 2 |
| 403 | | | NIPPLE; 3/4 npt | 2 |
| 404 | 247503 | 247503 | MANIFOLD, strainer, inlet | 2 |
| 405 | 102124 | 102124 | THERMOMETER, dial | 2 |
| 406 | 120300 | 120300 | GAUGE, pressure, fluid | 2 |
| 407 | 180199 | 180199 | ELEMENT, filter; 20 mesh (standard) | 2 |
| 408 | 15H200 | 15H200 | GASKET, strainer; PTFE | 2 |
| 409 | 15H199 | 15H199 | PLUG, strainer | 2 |
| 410 | | | PLUG, pipe; 3/8 npt | 2 |
| 411 | 296178 | 123980 | UNION, swivel; 3/4 npt(m) x 1/2 npt(f); A side only | 1 |
| 412 | 15D757 | 15D757 | HOUSING, thermometer | 2 |
| 413 | 253481 | 253481 | GUARD, gauge | 2 |
| 414 | 111800 | 111800 | SCREW, cap, hex hd, 5/16-18 x 5/8 in. (16 mm) | 4 |
| 415 | | | SEALANT, pipe, sst | 1 |

⁻⁻⁻ Not available for individual sale.

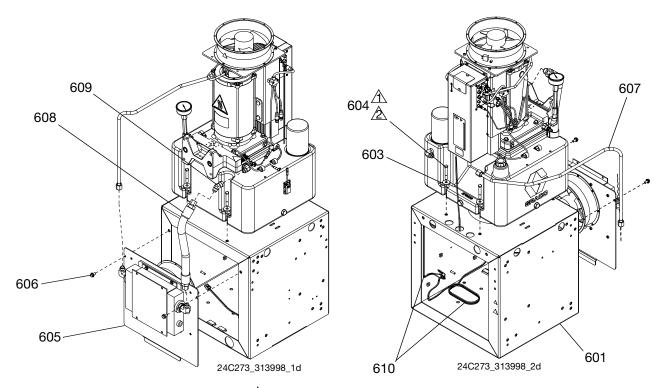
SST Fluid Inlet Assemblies



* Apply sealant and tape to all non-swiveling threads.

| Ref | Part | Description | Qty |
|-----|--------|---|-----|
| 501 | 112268 | SWIVEL, union | 3 |
| 502 | 512485 | VALVE, ball, sst | 2 |
| 503 | 123111 | FITTING, nipple, hex, 3/4npt, 3k, ss | 4 |
| 504 | 501118 | FITTING, tee | 4 |
| 505 | 102124 | THERMOMETER, dial | 2 |
| 506 | 120300 | GAUGE, press, fluid, (water-borne) | 2 |
| 507 | 500352 | BUSHING, hex hd, sst | 2 |
| 508 | 516308 | FITTING, bushing, reducer, sst | 2 |
| 509 | 15D757 | HOUSING, thermometer, Viscon [®] hp | 2 |
| 510 | | SEALANT, pipe, sst | 1 |
| 511 | | TAPE, tfe, sealant | 1 |
| 512 | 123980 | FITTING, straight, swivel, 1/2 x 3/4, FM, sst | 1 |

Power Pack Module



↑ Torque to 10 ft-lb (14 N•m).

Apply sealant to threads.

| Qty | Description | f P | Ref |
|-----|--|------------------|-----|
| 1 | ENCLOSURE, frame, painted | | 601 |
| 1 | MODULE, hydraulic power | 2 - | 602 |
| 4 | WASHER, flat, 3/8, 0.41 x 1.25 x 0.13, ms | B U | 603 |
| 4 | SCREW, machine (matrix) | 1 8 | 604 |
| 1 | COVER, enclosure, heat exch, assy | 5 - | 605 |
| 2 | SCREW, cap, btn hd (matrix) | 6 1 ⁻ | 606 |
| 1 | TUBE, heat exchanger, outlet | 1 1 | 607 |
| 1 | HOSE, heat exchanger, inlet | 3 2 | 608 |
| 1 | FITTING, elb, swvl, 45, jic08, fm, 6k |) 1: | 609 |
| 2 | CORD, fan, heat exch, mcm |) 2 | 610 |
| 1 | SEALANT, anaerobic | | 611 |
| 1 | LABEL, caution, electric shock (not shown) | 2 18 | 612 |
| 1 | LABEL, pinch point (not shown) | 3 1 | 613 |

▲ Replacement Danger and Warning labels, tags and cards are available at no cost.

| | |
|------|--|
| | |
| | |
| | |

Power Pack Module Sub-Assemblies

Hydraulic DC Power Pack Module

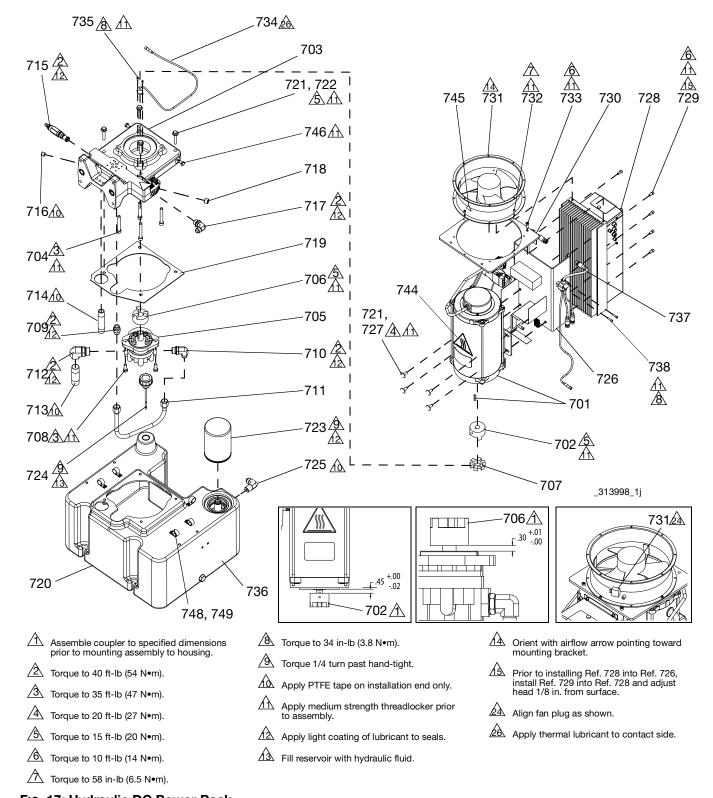


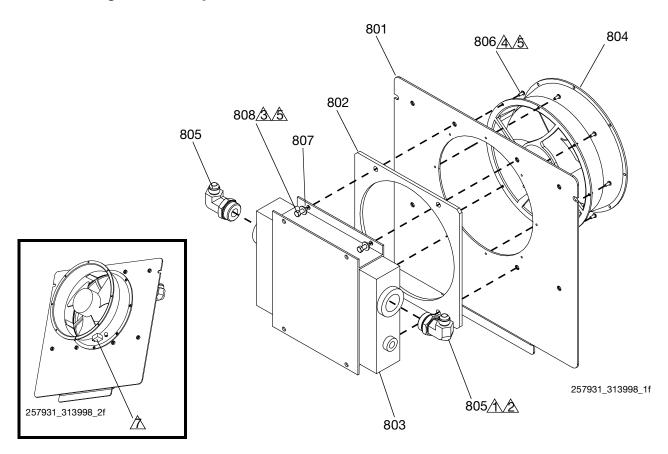
Fig. 17: Hydraulic DC Power Pack

| Ref | Part | Description | Qty |
|-----|---------|---|------|
| 701 | 24C719 | MOTOR, power connector, | 4 ty |
| 701 | 240719 | assembly | ı |
| 702 | 16A951 | COUPLER, motor | 1 |
| 703 | 15W772 | HOUSING, machined.hydraulic, | 1 |
| 704 | 123338 | module SCREW, shc, 3/8-16 x 2.75, s(matrix) | 4 |
| 705 | 122295 | PUMP, gear, hydraulic, h39 | 1 |
| 706 | 16A952 | COUPLER, pump | 1 |
| 707 | 16A953 | COUPLER, spider | 1 |
| 708 | 123942 | SCREW, cap, hex hd (matrix) | 2 |
| 709 | 15T939 | FITTING, straight, jic8 x sae8 | 1 |
| 710 | 122520 | FITTING, elbow, male, sae x jic | 1 |
| 711 | 15W798 | TUBE, pump to tube outlet | 1 |
| 712 | 122606 | FITTING, elbow, male, female | 1 |
| 713 | 115597 | NIPPLE | 1 |
| 714 | 101353 | FITTING, nipple, pipe | 1 |
| 715 | 122527 | VALVE, relief, t-10a cavity, | 1 |
| 715 | 122321 | 0-25g | 1 |
| 716 | 100721 | PLUG, pipe | 1 |
| 717 | 121312 | FITTING, elbow, sae x jic | 1 |
| 718 | 101754 | PLUG, pipe | 1 |
| 719 | 15X622 | • • | 1 |
| | | GASKET, housing, to, tank | |
| 720 | 101071 | RESERVOIR, assembly, 8 gallon | |
| 721 | 101971 | WASHER, thrust | 4 |
| 722 | 111302 | SCREW, cap, hex hd (matrix) | 4 |
| 723 | 15J937 | FILTER, oil, 18-23 psi bypass | 1 |
| 724 | 116915 | CAP, breather filler | 1 |
| 725 | 121486 | FITTING, elbow, male, 1/2jic x 1/2npt | 1 |
| 726 | 15Y912 | BRACKET, mcm mounting | 1 |
| 727 | 100057 | SCREW, cap hex hd (matrix) | 4 |
| 728 | 24Y778 | MODULE, motor control | 1 |
| 729 | 101550 | SCREW, cap, sch (matrix) | 7 |
| 730 | | PLATE, mounting, fan | 1 |
| 731 | 122301 | FAN, 220v | 1 |
| 732 | 112310 | SCREW, cap, sch (matrix) | 8 |
| 733 | 100644 | SCREW, cap, sch (matrix) | 2 |
| 734 | 123367 | HARNESS, m8 x thermal switch, 4-pin | 1 |
| 735 | 102410 | SCREW, cap soc hd (matrix) | 1 |
| 736 | | FLUID, hydraulic (gallon) | 8 |
| 737 | 123303 | HARNESS, m12 | 2 |
| 738 | 295709 | SCREW, soc.hd (matrix) | 4 |
| 739 | | LUBRICANT, grease | 1 |
| 740 | | SEALANT, pipe, sst | 1 |
| 741 | | SEALANT, pipe, sst | 1 |
| | 189285▲ | LABEL, caution | 1 |
| 744 | | LABEL, hot surface | 1 |

| 745 | 15H108▲ | LABEL, pinch point | 1 |
|-----|---------|----------------------------------|---|
| 746 | 109468 | SCREW, cap, hex head | 2 |
| 747 | | LUBRICANT, thermal | 1 |
| 748 | 123601 | CLAMP, wire, harness, nylon, 3/4 | 5 |
| 749 | 103833 | SCREW, mach, crbh | 5 |

▲ Replacement Danger and Warning labels, tags and cards are available at no cost.

Heat Exchanger Assembly



Torque to 65 ft-lb (88 N•m).

Apply lubricant to o-rings before assembling.

⚠ Torque to 8 ft-lb (11 N•m).

△ Torque to 2.5 ft-lb (3.4 N•m).

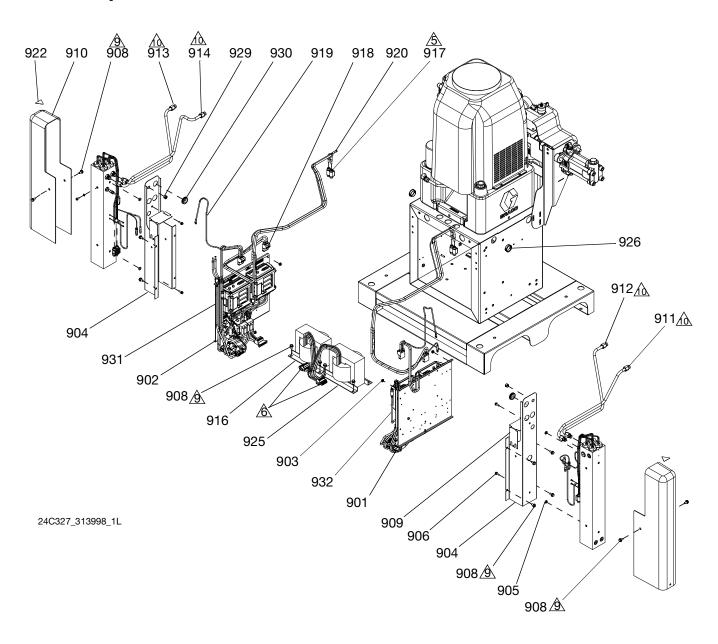
Apply sealant to threads.

Orient fan with airflow arrow pointing toward cover.

Align fan plug as shown.

| Ref | Part | Description | Qty |
|-----|--------|--------------------------------------|-----|
| 801 | 257967 | COVER, enclosure, heat exch, painted | 1 |
| 802 | 15X621 | GASKET, fan, mounting | 1 |
| 803 | 122300 | EXCHANGER, heat, m-4 | 1 |
| 804 | 122301 | FAN, 220v | 1 |
| 805 | 122842 | FITTING, elbow, sae x jic | 2 |
| 806 | 15U075 | SCREW, cap, bh, 8-32 x .37(matrix) | 8 |
| 807 | 110755 | WASHER, plain | 4 |
| 808 | 100022 | SCREW, cap, hex hd (matrix) | 4 |
| 810 | | LUBRICANT, thread | 1 |
| 811 | | SEALANT, anaerobic | 1 |

Heater Options



Assembly NPT portion of Ref. 938 into Ref. 907. Tighten to tight minus 1 turn approximately. Insert Ref. 933 into Ref. 938 an tighten while holding against heater element. Tighten ferrule to 21-25 ft-lb (28-34 N•m). Hold NPT portion to prevent tightening.

Tighten NPT thread at least one turn after RTD has been tightened.

Apply thermal lubricant when assembling Ref. 934.

Apply oxide inhibitor to bare ends of wires and to ferrule ends.

Apply oxide inhibitor included in Ref. 917 to bare ends of wires and to ferrule ends.

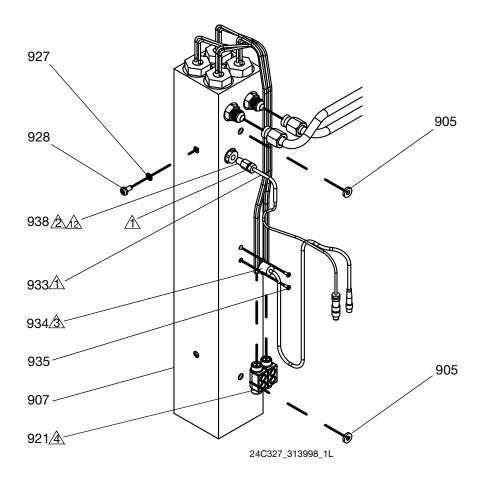
Connect to Ref. 920 through extension

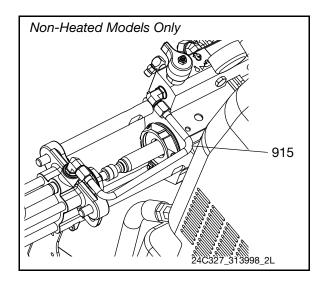
Choose adapter and swivel fitting from kit based on hose size.

Apply lubricant to threads of tube fitting and torque to 21 ft-lb (28 N•m).

Apply sealant and tape to all non-swiveling and non-o-ring threads.

Fig. 18: Heater Options, Image 1 of 4





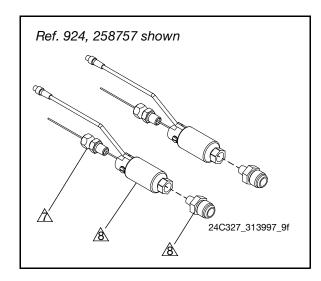
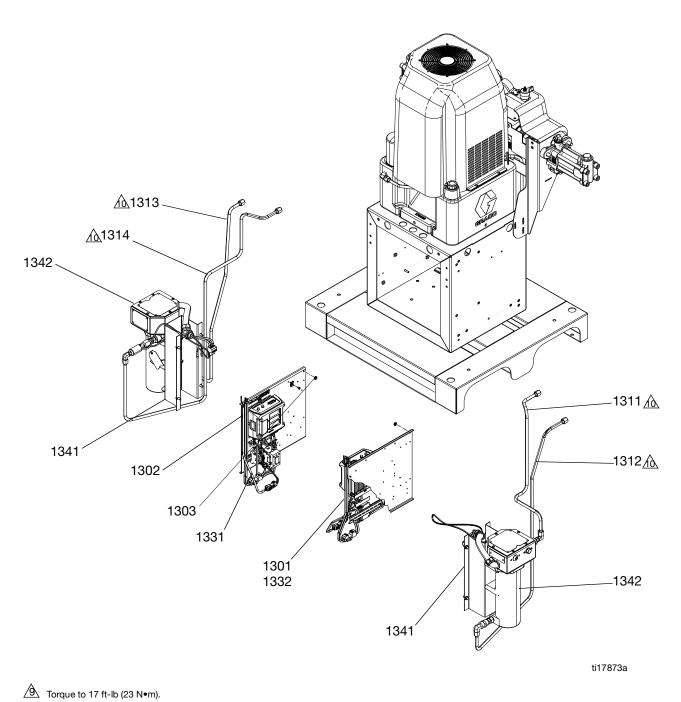


Fig. 19: Heater Options, Image 2 of 4

| | | | | | (| Quantit | у | | |
|------------|------------------|---|---|--|--|---|--------------------------------------|---|---------|
| Ref | Part | Description | A (Red) and B (Blue) Primary Heaters, A (Red) and B (Blue) Hose Heat | A (Red) and B (Blue) Primary Heaters, One Zone of Hose Heat | A (Red) and B (Blue) Hose Heat, Stainless Steel | A (Red) and B (Blue) Hose Heat, Carbon Steel | A (Red) and B (Blue) Primary Heaters | B (Blue) Primary Heaters, B (Blue) Hose Heat | No Heat |
| 901 | | MODULE, panel, pwr, heat, hose, pr, lv | 1 | 1 | | | | | |
| | | MODULE, panel, pwr, heat, hose, lv | | | 1 | 1 | | | |
| | | MODULE, panel, pwr, heat, pri, lv | | | | | 1 | | |
| 902 | | MODULE, panel, pwr, heat, hose, pr, hv | 1 | | 4 | 4 | | 1 | |
| | | MODULE, panel, pwr, heat, hose, hv MODULE, panel, pwr, heat, pri, hv | | 1 | 1 | 1 | 1 | | |
| | | MODULE, panel, pwr, no heat, hv | | 1 | | | ı | | 1 |
| 903 | 115942 | NUT, hex, flange head | 6 | 6 | 6 | 6 | 6 | 3 | 3 |
| 904 | 253192 | BRACKET, painted, heater mount, poly | 2 | 2 | | | 2 | 1 | |
| 905 | 167002 | INSULATOR, heat | 4 | 4 | | | 4 | 2 | |
| 906 | 113796 | SCREW, flanged, hex hd (matrix) | 4 | 4 | | | 4 | 2 | |
| 907 | 24C426 | HEATER, assy, 6kw, 1-zone, rtd, s | 2 | 2 | | | 2 | 1 | |
| 908 | 111800 | SCREW, cap, hex hd (matrix) | 16 | 14 | 4 | 4 | 12 | 8 | |
| 909 | 255360 | COVER, wire, heater, painted | 2 | 2 | | | 2 | 1 | |
| 910 | 253196 | COVER, painted, heater, poly, h-25 | 2 | 2 | | | 2 | 1 | |
| 911 | 16A104 | TUBE, fluid, a, inlet, heater, ams | 1 | 1 | | | 1 | | |
| 912 913 | 16A105 16A106 | TUBE, fluid, b, inlet, heater, ams | 1 | 1 | | | 1 | 1 | |
| 913 | | TUBE, fluid, b, inlet, heater, ams TUBE, fluid, b, outlet, heater, ams | 1 | 1 | | | 1 | 1 | |
| 915 | 16A108 | TUBE, fluid, no heater, ams | ' | 1 | 2 | 2 | ' | 1 | 2 |
| 916 | 24C418 | MODULE, transformer, assy, hv | 1 | 1 | 1 | 1 | | 1 | _ |
| 917 | 261821 | CONNECTOR, wire, 6awg | 2 | 1 | 2 | 2 | | 1 | |
| 918 | 24C314 | HARNESS, wire, hptcm, hoseheat, fixed | 2 | 1 | 2 | 2 | | 1 | |
| 919 | 24C312 | HARNESS, wire, hptcm, heater, fixed | 2 | 2 | | | 2 | 1 | |
| 920 | 122242 | CABLE, m8, 4-pin, mf, 2.5m, mold | 2 | 1 | 2 | 2 | | 1 | |
| 921 | 255716 | KIT, heater wire connector | 1 | 1 | | | 1 | 1 | |
| 922 | | LABEL, caution | 2 | 2 | | | 2 | 1 | |
| 923 | | FLUID, oxide inhibitor | 1 | 1 | | | 1 | 1 | |
| 924 | 258756 | KIT, fts, rtd, dual hose, sst | 1 | | 1 | 4 | | | |
| | 258757 258758 | KIT, fts, rtd, dual hose KIT, fts, rtd, single hose | 1 | 1 | | 1 | | 1 | |
| 925 | 24C779 | MODULE, transformer, assy, lv | 1 | <u> </u> | 1 | 1 | | ' | |
| 926 | 123398 | PLUG, hole, 1.5"dia | ' | | 2 | 2 | | | 2 |
| | 123589 | BUSHING, wire protector, snap-in | 2 | 2 | _ | _ | 2 | 2 | _ |
| | Ĭ | 1 1 | | 1 | | | l . | Ĭ | |

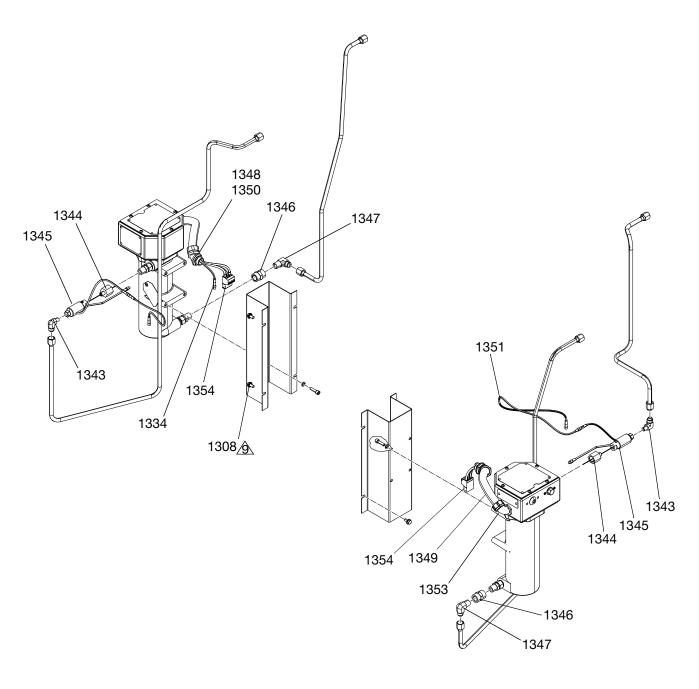
| | | | Quantity | | | | | | |
|-----|--------|---|---|--|--|---|--------------------------------------|---|---------|
| Ref | Part | Description | A (Red) and B (Blue) Primary Heaters, A (Red) and B (Blue) Hose Heat | A (Red) and B (Blue) Primary Heaters, One Zone of Hose Heat | A (Red) and B (Blue) Hose Heat, Stainless Steel | A (Red) and B (Blue) Hose Heat, Carbon Steel | A (Red) and B (Blue) Primary Heaters | B (Blue) Primary Heaters, B (Blue) Hose Heat | No Heat |
| 927 | 100028 | WASHER, lock | 2 | 2 | | | 2 | 1 | |
| 928 | 113783 | SCREW, machine, pn hd (matrix) | 2 | 2 | | | 2 | 1 | |
| 929 | 103361 | BUSHING, snap | 2 | 2 | | | 2 | 1 | |
| 930 | 114269 | GROMMET, rubber | 2 | 2 | | | 2 | 1 | |
| 931 | 121002 | CABLE, can, female / female 1.5m | 1 | 1 | 1 | 1 | 1 | 1 | |
| 932 | 122487 | CABLE, can, male-female, 1.5m | 1 | 1 | 1 | 1 | 1 | | |
| 933 | 124262 | SENSOR, rtd, 1 k ohm, 5 ft, 4 pin, tip sensor | 2 | 2 | | | 2 | 1 | |
| 934 | 123408 | HARNESS, m8 x thermal switch, 3-pin | 2 | 2 | | | 2 | 1 | |
| 935 | 100518 | SCREW, mach, pnhd (matrix) | 4 | 4 | | | 4 | 2 | |
| 936 | | LUBRICANT, thermal | 1 | 1 | | | 1 | 1 | |
| 937 | | LUBRICANT, thread | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 938 | 123325 | FITTING, compression, 1/8npt, ss | 2 | 2 | | | 2 | 1 | |
| 939 | | SEALANT, pipe, sst | 1 | 1 | | | 1 | 1 | |
| 940 | | TAPE, tfe, sealant | 1 | 1 | | | 1 | 1 | |

[▲] Replacement Danger and Warning labels, tags and cards are available at no cost.



Apply lubricant to threads of tube fitting and torque to 21 ft-lb (28 N•m).

Fig. 20: Heater Options, Image 3 of 4



ti17874a

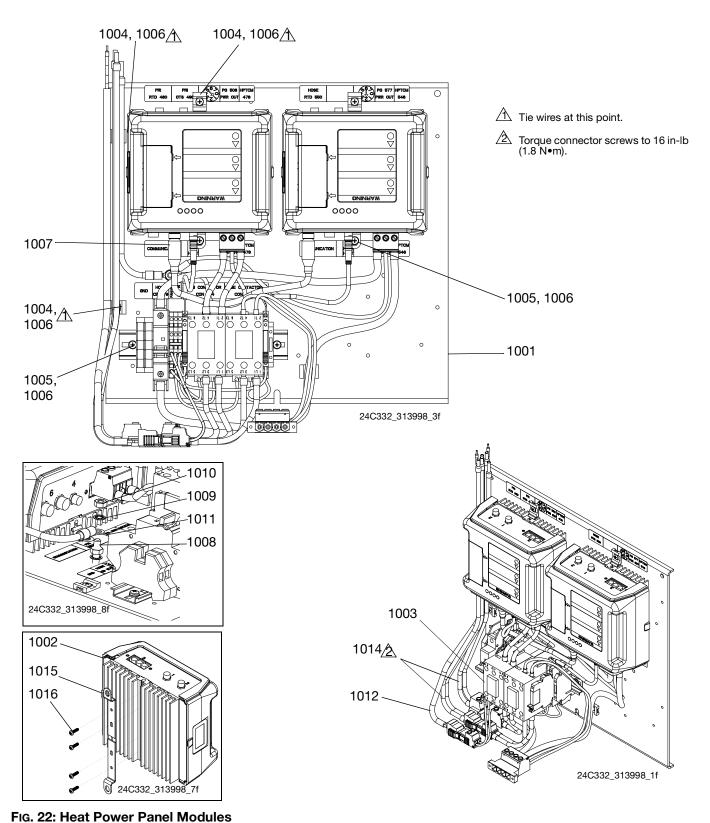
Fig. 21: Heater Options, Image 4 of 4

| | | | Quantity | | | | | |
|------|--------|--|---|--|---|-------------------------------------|---|---|
| Ref | Part | Description | 24G617, HEATER, fix, pr, 1hose, 1fts, viscon | 24J105, HEATER, fix, pr, 1 viscon, 1 std | 24J106, HEATER, fix, pr, 1 vis, 1 std, 2 hose | 24J107, HEATER, fix, pr, 2viscon | 24J108, HEATER, fix, pr, 2 viscon, 1 hose | 24J109, HEATER, fix, pr, 2 viscon, 2 hose |
| 1301 | 24C336 | MODULE, panel, pwr, heat, hose, pr, lv | 1 | | 1 | | 1 | 1 |
| | 24C338 | MODULE, panel, pwr, heat, pri, lv | | 1 | | 1 | | |
| 1302 | 24C332 | MODULE, panel, pwr, heat, hose, pr, hv | | | 1 | | | 1 |
| | 24C334 | MODULE, panel, pwr, heat, pri, hv | 1 | 1 | _ | 1 | 1 | |
| 1303 | 115942 | NUT, hex, flange head | 6 | 6 | 6 | 6 | 6 | 6 |
| 1304 | 253192 | BRACKET, painted, heater mount, poly | 1 | 1 | 1 | | | |
| 1305 | 167002 | INSULATOR, heat | 2 | 2 | 2 | | | |
| 1306 | 113796 | SCREW, flanged, hex hd | 2 | 2 | 2 | | | |
| 1307 | 24C426 | HEATER, assy, 6kw, 1-zone, rtd, s | 1 | 1 | 1 | _ | | |
| 1308 | 111800 | SCREW, cap, hex hd | 10 | 10 | 14 | 8 | 10 | 12 |
| 1309 | 255360 | COVER, wire, heater, painted | 1 | 1 | 1 | | | |
| 1310 | 253196 | COVER, painted, heater, poly, h-25 | 1 | 1 | 1 | | | |
| 1311 | 16A104 | TUBE, fluid, a, inlet, heater, ams | 1 | 1 | 1 | | | |
| | 16H486 | TUBE, fluid, outlet | | - | | 1 | 1 | 1 |
| 1312 | 16A105 | TUBE, fluid, a, outlet, heater, ams | 1 | 1 | 1 | | | |
| | 16H485 | TUBE, fluid, inlet | | | | 1 | 1 | 1 |
| 1313 | 16G338 | TUBE, fluid, b, inlet, heater, visc | 1 | 1 | 1 | 1 | 1 | 1 |
| 1314 | 16G339 | TUBE, fluid, b, outlet, heater, vis | 1 | 1 | 1 | 1 | 1 | 1 |
| 1316 | 24C418 | MODULE, transformer, assy, hv | 1 | | 1 | | 1 | 1 |
| 1317 | 261821 | CONNECTOR, wire, 6awg | 1 | | 2 | | 1 | 2 |
| 1318 | 24C314 | HARNESS, wire, hptcm, hoseheat, fixed | 1 | | 2 | | 1 | 2 |
| 1319 | 24C312 | HARNESS, wire, hptcm, heater, fixed | 1 | 1 | 1 | | | |
| 1320 | 122242 | CABLE, m8, 4-pin, mf, 2.5m, mold | 1 | | 2 | | 1 | 2 |
| 1321 | 255716 | KIT, heater wire connector | 1 | 1 | 1 | | | |
| 1322 | 189285 | LABEL, caution | 1 | 1 | 1 | | | |
| 1323 | 261843 | FLUID, oxide inhibitor | 1 | 1 | 1 | 1 | 1 | 1 |
| 1324 | 258756 | KIT, fts, rtd, dual hose, sst | | | 1 | | | 1 |
| | 258758 | KIT, fts, rtd, single hose | | | | | 1 | |
| | 24G976 | KIT, fts, rtd, single hose, 1/2-2 | 1 | | | | | |
| 1325 | 24C779 | MODULE, transformer, assy, lv | | | 1 | | | 1 |
| 1327 | 100028 | WASHER, lock | 1 | 1 | 1 | | | |
| 1328 | 113783 | SCREW, machine, pn hd) | 1 | 1 | 1 | | | |
| 1329 | 103361 | BUSHING, snap | 1 | 1 | 1 | | | |
| 1330 | 114269 | GROMMET, rubber | 1 | 1 | 1 | | | |
| 1331 | 121002 | CABLE, can, female / female 1.5m | 1 | 1 | 1 | 1 | 1 | 1 |
| 1332 | 122487 | CABLE, can, male-female, 1.5m | 1 | 1 | 1 | 1 | 1 | 1 |
| 1334 | 123408 | HARNESS, m8 x thermal switch, 3-pin | 2 | 2 | 2 | 2 | 2 | 2 |
| 1335 | 100518 | SCREW, mach, pnhd | 2 | 2 | 2 | | | |

| | | | Quantity | | | | | |
|------|--------|---------------------------------------|---|---|--|-------------------------------------|---|--|
| Ref | Part | Description | 24G617, HEATER, fix, pr, 1hose, 1fts, viscon | 24J105, HEATER, fix, pr, 1 viscon, 1 std | 24J106, HEATER, fix, pr, 1 vis, 1 std, 2 hose | 24J107, HEATER, fix, pr, 2viscon | 24J108, HEATER, fix, pr, 2 viscon, 1 hose | 24J109, HEATER, fix, pr, 2 viscon, 2 hose |
| 1336 | 073019 | LUBRICANT, thermal | 1 | 1 | 1 | 1 | 1 | 1 |
| 1337 | 070268 | LUBRICANT, thread | 1 | 1 | 1 | 1 | 1 | 1 |
| 1338 | 123325 | FITTING, compression, 1/8npt, ss | 1 | 1 | 1 | | | |
| 1339 | 070408 | SEALANT, pipe, sst | 1 | 1 | 1 | 1 | 1 | 1 |
| 1340 | 070274 | TAPE, tfe, sealant | 1 | 1 | 1 | 1 | 1 | 1 |
| 1341 | 24J537 | BRACKET, heater, viscon, hfr, painted | 1 | 1 | 1 | 2 | 2 | 2 |
| 1342 | 24J787 | HEATER, sst | 1 | 1 | 1 | 2 | 2 | 2 |
| 1343 | 124813 | FITTING, elbw, 90, jic08x1/4npt | 1 | 1 | 1 | 2 | 2 | 2 |
| 1344 | 124814 | FITTING, rducr, 1/2nptx1/4npt | 1 | 1 | 1 | 2 | 2 | 2 |
| 1345 | 262120 | SENSOR, fluid temp rtd | 1 | 1 | 1 | 2 | 2 | 2 |
| 1346 | 124586 | COUPLING, hex, 1/2npt | 1 | 1 | 1 | 2 | 2 | 2 |
| 1347 | 124885 | FITTING, elbow, 90, jic(08)x1/2npt | 1 | 1 | 1 | 2 | 2 | 2 |
| 1348 | 124956 | FITTING, elbow, 45 deg, 3/4 conduit | 1 | 1 | 1 | 2 | 2 | 2 |
| 1349 | 124955 | CONDUIT, 3/4, gray seal tite | 1 | 1 | 1 | 2 | 2 | 2 |
| 1350 | 124909 | WASHER, reducer, 1in-3/4in | 2 | 2 | 2 | 4 | 4 | 4 |
| 1351 | 123798 | CABLE, m8, 4-pin, mf, 1m, molded | 1 | 1 | 1 | 2 | 2 | 2 |
| 1353 | 124957 | FITTING, elbow, 90 deg, conduit | 1 | 1 | 1 | 2 | 2 | 2 |
| 1354 | 24J142 | HARNESS, wire, hptcm, heater, fixed | 1 | 1 | 1 | 2 | 2 | 2 |
| 1355 | 114225 | TRIM, edge protection | 0.330 | 0.670 | 0.670 | | | |
| 1356 | 105676 | SCREW, mach, pnh | 1 | 1 | 1 | 2 | 2 | 2 |

Heater Sub-Assemblies

Heat Power Panel Module



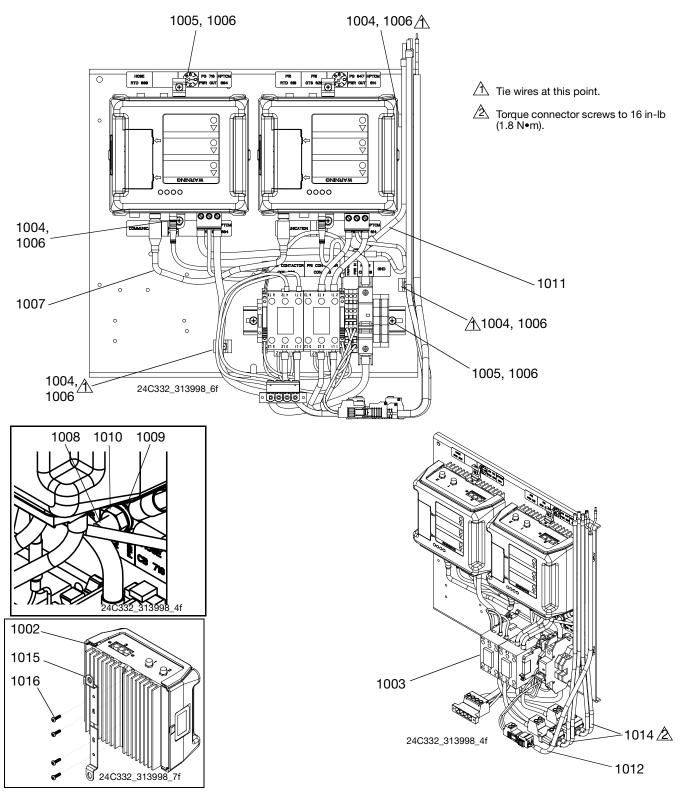
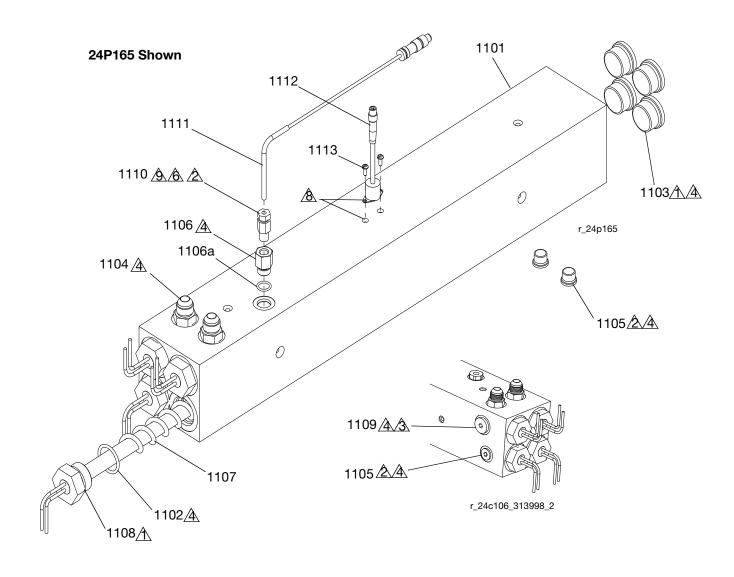
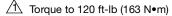


Fig. 23: Heat Power Panel Modules

| | | | Quantity | | | | | | | |
|------|--------|--|---|---------------------------------------|--------------------------------------|------------------------------------|---|---------------------------------------|--------------------------------------|------------------------------------|
| Ref | Part | Description | MODULE, panel, pwr, heat, hose, pr, hv | MODULE, panel, pwr, heat, hose, hv | MODULE, panel, pwr, heat, pri, hv | MODULE, panel, pwr, no heat, hv | MODULE, panel, pwr, heat, hose, pr, lv | MODULE, panel, pwr, heat, hose, lv | MODULE, panel, pwr, heat, pri, lv | MODULE, panel, pwr, no heat, Iv |
| 1001 | | PANEL, electric, heat | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1002 | 255774 | MODULE, high power temp, gca | 2 | 1 | 1 | | 2 | 1 | 1 | |
| 1003 | | MODULE, assy, pwr, heat, hose, pri, hv | 1 | | | | | | | |
| | | MODULE, assy, pwr, heat, hose, hv | | 1 | | | | | | |
| | | MODULE, assy, pwr, heat, pri, hv | | | 1 | | | | | |
| | | MODULE, assy, pwr, no heat, hv | | | | 1 | | | | |
| | | MODULE, assy, pwr, heat, hose, pri, lv | | | | | 1 | | | |
| | | MODULE, assy, pwr, heat, hose, lv | | | | | | 1 | | |
| | | MODULE, assy, pwr, heat, pri, lv | | | | | | | 1 | |
| | | MODULE, assy, pwr, no heat, lv | | | | | | | | 1 |
| 1004 | 123452 | HOLDER, anchor, wire tie, nylon | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 |
| 1005 | 116876 | WASHER, flat | 4 | 3 | 3 | 2 | 4 | 3 | 3 | 2 |
| 1006 | 103833 | SCREW, mach, crbh (matrix) | 9 | 8 | 7 | 6 | 9 | 8 | 7 | 6 |
| 1007 | 125306 | CABLE, can, female / female 0.5m | 1 | | | | 1 | | | |
| 1008 | 100021 | SCREW, cap hex hd (matrix) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1009 | 100028 | WASHER, lock | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 1010 | 100015 | NUT, hex mscr | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 1011 | 24C311 | HARNESS, wire, pdb, ground | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1012 | 24C318 | HARNESS, wire, pdb, terminal | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1014 | 24C304 | HARNESS, wire, pdb, inline heater | 2 | 1 | 1 | | 2 | 1 | 1 | |
| 1015 | 15R535 | BRACKET, mounting, GCA high power | 4 | 2 | 2 | | 4 | 2 | 2 | |
| 1016 | 117831 | SCREW, mach., pan hd (matrix) | 8 | 4 | 4 | | 8 | 4 | 4 | |

Heater - Aluminum with Carbon Steel Fittings, 24C426 Heater - Aluminum with Stainless Steel Fittings, 24P165





^ Torque to 23 ft-lb (31 N•m)

Torque to 40 ft-lb (54 N•m)

Apply lubricant to o-rings before assembling into heater.

Tighten NPT thread at least on turn after RTD has been tightened.

Apply thermal paste when assembling thermal switch.

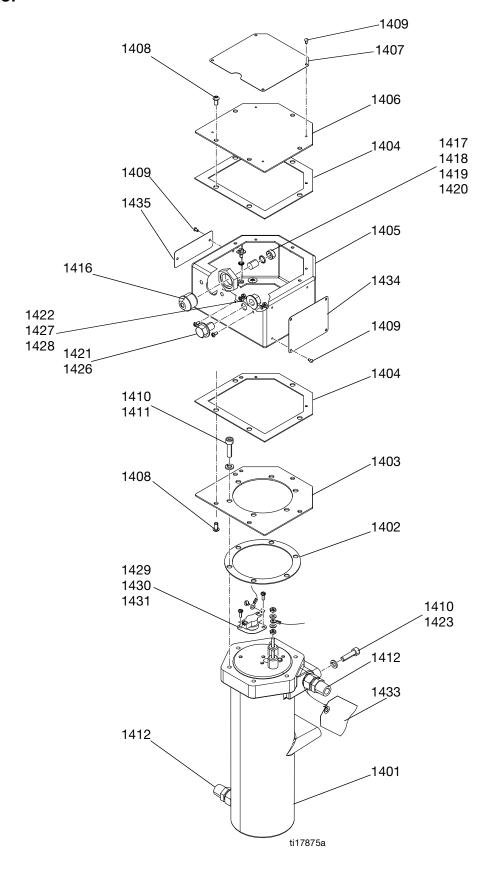
Apply sealant and tape to all non swiveling and non o-ring threads.

| | P | art | | |
|-------|----------|----------|--------------------------------------|-----|
| | Assembly | Assembly | | |
| Ref | 24C426 | 24P165 | Description | Qty |
| 1101 | 15J090 | 15J090 | HEATER, machined, 1 zone, 3500 psi | 1 |
| 1102 | 124132 | 124132 | O-RING | 4 |
| 1103 | 15H305 | 126561 | FITTING, plug hollow hex 1-3/16 sae | 4 |
| 1104 | 121309 | 126562 | FITTING, adapter, sae-orb x jic | 2 |
| 1105 | 15H304 | 126563 | FITTING, plug 9/16 sae | 3 |
| 1106 | 15H306 | 126564◆ | ADAPTER, thermocouple, 9/16 x 1/8 | 1 |
| 1106a | 120336 | ♦ | O-RING, packing | 1 |
| 1107 | 15B135 | 16T320 | MIXER, immersion heater | 4 |
| 1108 | 16A112 | 16A112 | HEATER, immersion (1500W 230V) | 4 |
| 1109 | 295607 | 561460 | PLUG, outlet | 1 |
| 1110 | | 123325 | FITTING, compression, 1/8npt, ss | 1 |
| 1111 | | 124262 | SENSOR, rtd, 1kohm, 90deg, 4pin, tip | 1 |
| 1112 | | 123408 | HARNESS, m8 x thermal switch, 3-pin | 1 |
| 1113 | | 100518 | SCREW, mach, mnhd | 2 |
| 1115 | | | LUBRICANT, thermal | 1 |
| 1116 | | | TAPE, tfe, sealant | 1 |
| 1117 | | | LUBRICANT, thread | 1 |

⁻⁻⁻ Not available for individual sale.

[◆] Item 1106 include fluoroelastomer o-ring.

Heater 24J787



| Ref | Part | Description | Qty |
|-------|--------|------------------------------|-----|
| 1401† | | BLOCK, heater, machined | 1 |
| 1402 | 15A990 | GASKET, heater | 1 |
| 1403 | 15A811 | COVER, heater controls, | 1 |
| | | bottom | |
| 1404 | 15A991 | GASKET, heater | 2 |
| 1405 | 15A809 | ENCLOSURE, controls, | 1 |
| | | heater | |
| 1406 | 15A810 | COVER, heater controls, top | 1 |
| 1407 | 15B625 | LABEL, plate, warning | 1 |
| 1408 | 111962 | SCREW, cap, button hd | 10 |
| 1409 | 100055 | SCREW, drive, #6 | 10 |
| 1410 | 107542 | WASHER, lock, spring | 10 |
| 1411 | 117367 | SCREW, shcs, m8x18 | 6 |
| 1412† | 117344 | FITTING, tube, compression | 2 |
| 1413▲ | 172953 | LABEL, designation | 1 |
| 1414 | 111307 | WASHER, lock, external | 1 |
| 1415 | 116343 | SCREW, ground | 1 |
| 1416 | 15B828 | HOUSING, light, heater, | 1 |
| | | viscon hp | |
| 1417 | 106216 | NUT, lock | 1 |
| 1418 | 15B827 | LENS, light, glass | 1 |
| 1419 | 103338 | PACKING, o-ring | 1 |
| 1420 | 117483 | SCREW, jam, socket | 1 |
| 1421 | 111802 | SCREW, cap, hex hd | 1 |
| 1422 | 112731 | NUT, hex, flanged | 1 |
| 1423 | 109114 | SCREW, cap, sch | 4 |
| 1424 | 100166 | NUT, full hex | 4 |
| 1425 | 102360 | WASHER, flat | 4 |
| 1426 | 15U075 | SCREW, cap, bh, 8-32 x .37 | 2 |
| 1427 | 555388 | NUT, # 8-32 hex | 2 |
| 1428 | 100079 | WASHER, lock, spring | 2 |
| 1429 | 108674 | THERMOSTAT | 1 |
| 1430 | 105676 | SCREW, mach, pnh | 2 |
| 1431 | 073019 | LUBRICANT, thermal | 1 |
| 1432 | 235524 | WIRE, assy | 1 |
| 1433▲ | 177922 | TAG, warning | 1 |
| 1434▲ | 16K138 | LABEL, brand, viscon hp, nvh | 1 |
| 1435▲ | 15B623 | LABEL, plate, des, viscon hp | 1 |
| 1442▲ | 15B777 | LABEL, warning, viscon hp | 1 |
| 1443▲ | 15B819 | LABEL, warning, viscon hp | 1 |

▲ Replacement Danger and Warning labels, tags and cards are available at no cost.

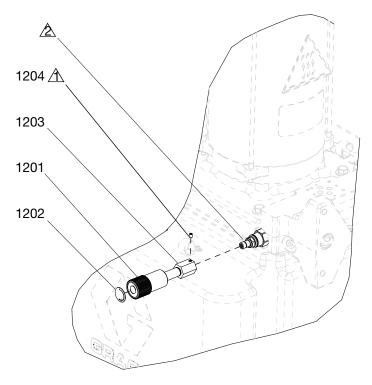
† Items available for purchase in kit 24K290

⁻⁻⁻ Not for individual sale

Kits

DC Power Pack Pressure Adjustment Kit, 24C067

This kit provides a release for excess pressure in the hydraulic system. It must be installed if a Fusion or P2 gun is used

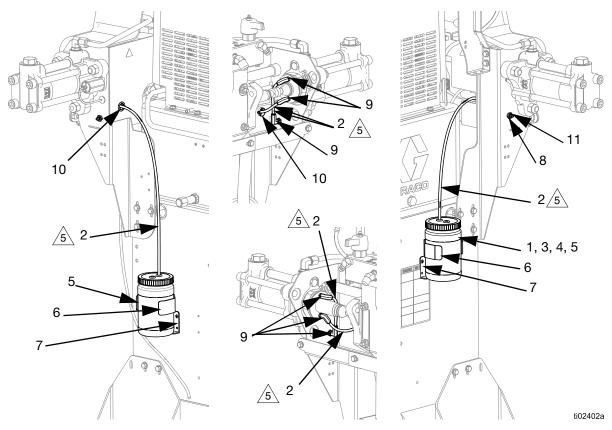


⚠ Torque to 23 in-lb (2.6 N•m).

Part is reference number 15 in hydraulic power pack assembly. See **Hydraulic DC Power Pack Module** on page 51.

| Ref | Part | Description | Qty |
|------|--------|---------------------------|-----|
| 1201 | 15H204 | KNOB, pressure adjustment | 1 |
| 1202 | 15H512 | LABEL, control, H25 | 1 |
| 1203 | 15Y370 | ADAPTER, pressure relief | 1 |
| 1204 | 116624 | SCREW, set, socket head | 1 |

Grease Upgrade Kit, 2006204



Route tubing approximately as shown, ensure that tubing does not impede pump stroke

FIG. 24

| Ref | Part | Description | Qty |
|-----|--------|---------------------------|-----|
| 1 | 103473 | STRAP, TIE, WIRE | 4 |
| 2 | 054175 | TUBE, NYLON, RD | 15 |
| 3 | 118435 | * GROMMET | 4 |
| 4 | 295876 | * CAP, LUBE BOTTLE | 2 |
| 5 | 295758 | * BOTTLE, LUBE | 2 |
| 6 | 297216 | BRACKET, RESERVOIR, LUBE, | 2 |
| | | PAINTED | |
| 7 | 295187 | SCREW, MACHINE, PH, 8X3/8 | 8 |
| 8 | 133893 | BULKHEAD, M5, BRASS | 2 |
| 9 | 120923 | FITTING, ELBOW, MALE, | 6 |
| | | SWIVEL | |
| 10 | 124232 | BUSHING, WIRE PROTECTOR, | 2 |
| | | .875 DIA | |
| 11 | 130883 | FITTING, GREASE, M5 | 2 |

^{*} Item available for purchase in kit 2006205

DC Power Pack Hydraulic Pressure Adjustment Setup



This procedure requires running the machine with the hydraulic power pack shroud removed. Be sure to avoid contact with the fan while the machine is on.

This kit provides a release for excess pressure in the hydraulic system. It must be installed if a Fusion or P2 gun is used.

- 1. Perform Shutdown, page 21.
- 2. Remove Hydraulic Power Pack Shroud, page 30.
- 3. Install pressure relief kit 24C067.

NOTE: Prior to installing pressure adjustment knob (1201), use a 9/16 in. wrench to back the jam nut (1203) all the way out until it stops.

- 4. Turn the pressure adjustment knob (1201) clockwise until it stops.
- 5. Turn the pressure adjustment knob counter-clockwise two full turns.
- 6. Turn main power switch to ON position.
- 7. Setup the machine to spray in Operator mode. Refer to your HFR operation manual. See **Related Manuals**, page 3.

8. While watching the ADM and listening to the motor, begin spraying material.

NOTE: If the ADM displays an overpressure situation, the relief pressure is set too high.

NOTE: If it sounds like the motor is spinning too fast and/or it sounds like hydraulic fluid is being dumped back to the tank, the relief pressure is set too low.

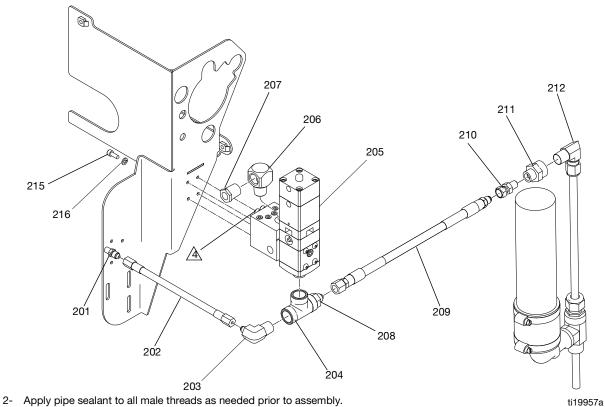
 If the relief pressure is set too high: Clear the over pressure warning on the ADM then turn the pressure adjustment knob counterclockwise 1/4 turn. See HFR operation manual 313997 if necessary.

If the relief pressure is set too low: Turn the pressure adjustment knob clockwise 1/4 turn.

10. Repeat the previous two steps until the relief pressure is correctly set.

Semi-Automatic Circulation Kits:

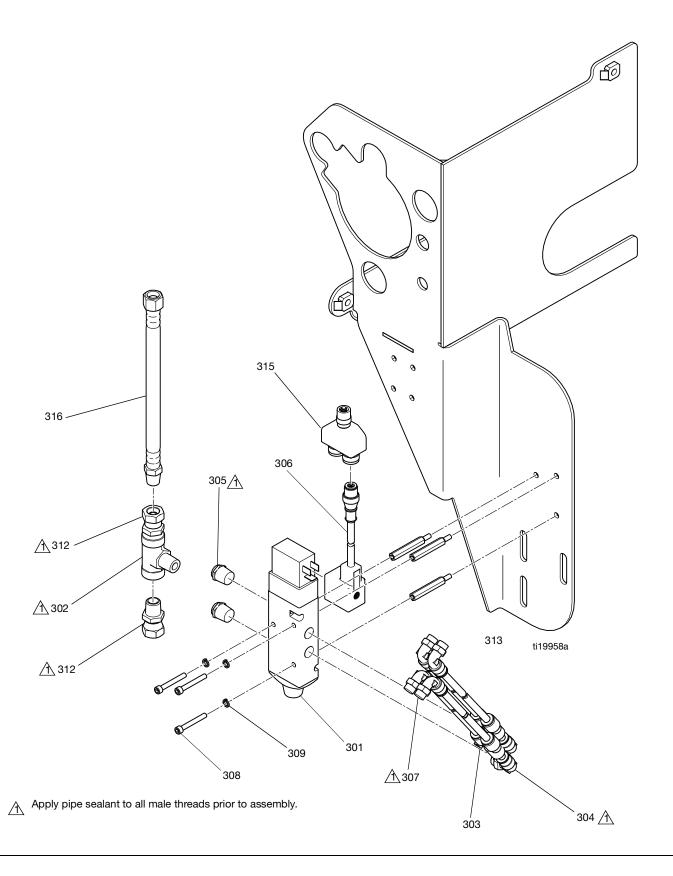
Semi-Automatic Circulation Kit - 24N486, 24N487



Torque to 8 ft-lb (11 N•m).

| | | | Quantity | | | | |
|-----|------------|--|------------------------|------------------------|--|--|--|
| | | | 24N486, KIT, | 24N487, KIT, | | | |
| Ref | Part | Description | circulation, cs, pu, a | circulation, cs, pu, b | | | |
| 201 | 556762 | CONNECTOR, #4 jic 1/4pm | 1 | 1 | | | |
| 202 | 16C509 | HOSE, assy, ss brd, 1/4x24, ss | 1 | 1 | | | |
| 203 | 6308-28 | FITTING, elbow, 90°, jic 04 x 1/2 npt, mm, m | 1 | 1 | | | |
| 204 | 103475 | FITTING, tee, pipe | 1 | 1 | | | |
| 205 | 24P005 | VALVE, endure, amb or temp cond, 1 | 1 | 1 | | | |
| 206 | 158683 | FITTING, elbow, 90 deg | 1 | 1 | | | |
| 207 | 100206 | BUSHING, pipe | 1 | 1 | | | |
| 208 | 6310-200 | ADAPTER, jic 05 x 1/2 npt, m, ms | 1 | | | | |
| | 94/0653/99 | ADAPTER, jic 06 x 1/2 npt, mm, ms, 3k | | 1 | | | |
| 209 | 262175 | HOSE, A, 10 ft (3m), 1/4, moisture-lok, ms | 1 | | | | |
| | 262176 | HOSE, B, 10 ft (3m), 1/4, moisture-lok, ms | | 1 | | | |
| 210 | 122963 | ADAPTER, swivel, jic 05 x 1/4 npt, fm, ms, 6 | 1 | | | | |
| | 117506 | FITTING, swivel, 1/4 npt x #6 jic | | 1 | | | |
| 211 | 124281 | FITTING, cplg, 1/2 npt x 1/4 npt, ff, ms | 1 | 1 | | | |
| 212 | 246477 | KIT, accessory, return tube | 1 | 1 | | | |
| 215 | 124313 | SCREW, shcs, m6-1 x 16 mm, sst | 4 | 4 | | | |
| 216 | 100016 | WASHER, lock | 4 | 4 | | | |

Solenoid Valve (Manual) - 24N990



| Ref. | Part | Description | Qty. |
|------|--------|--------------------------------------|------|
| 301 | 120900 | VALVE, solenoid, 3 way | 1 |
| 302 | 108638 | FITTING, pipe, tee | 1 |
| 303 | 114158 | FITITNG, adapter, y | 2 |
| 304 | 121022 | FITTING, elbow, male, 1/4 npt | 2 |
| 305 | 121021 | MUFFLER, 1/4 npt | 2 |
| 306 | 123395 | HARNESS, pwr valve, tank | 1 |
| 307 | 112698 | ELBOW, male, swivel | 4 |
| 308 | 115968 | SCREW, cap, socket head | 3 |
| 309 | GC2107 | WASHER, lock, spring, #8 | 3 |
| 312 | 114339 | FITTING, union, swivel, 1/4 npt, sst | 2 |
| 313 | 124876 | SPACER, standoff, 1.5 lg, 8-32 thrd | 3 |
| 315 | 120953 | CONNECTOR, splitter | 1 |
| 316 | 299971 | HOSE, 1/4 x 2 ft (0.6 m) (mxf) air | 1 |

Logic Drawings

230V, 1 Phase, No Heat

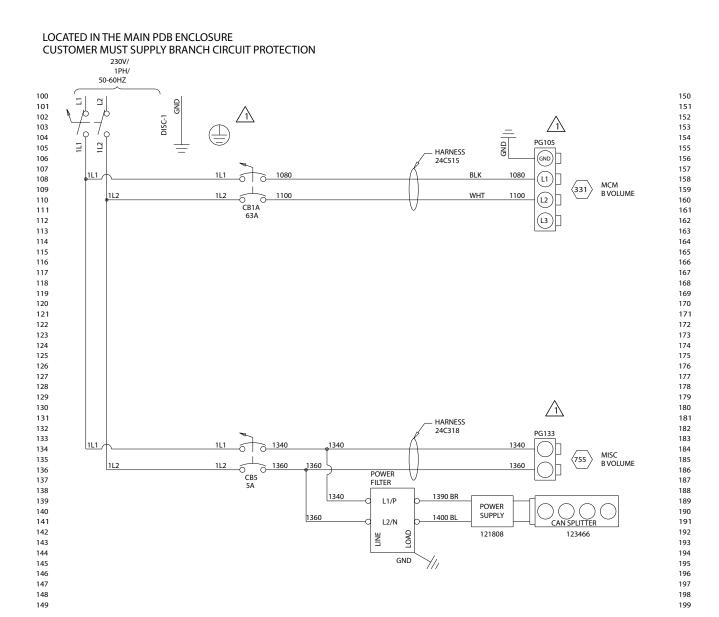


Fig. 25: 230V, 1 Phase, No Heat Logic Drawing; Page 1 of 1

230V, 1 Phase, with Heat

LOCATED IN THE MAIN PDB ENCLOSURE CUSTOMER MUST SUPPLY BRANCH CIRCUIT PROTECTION

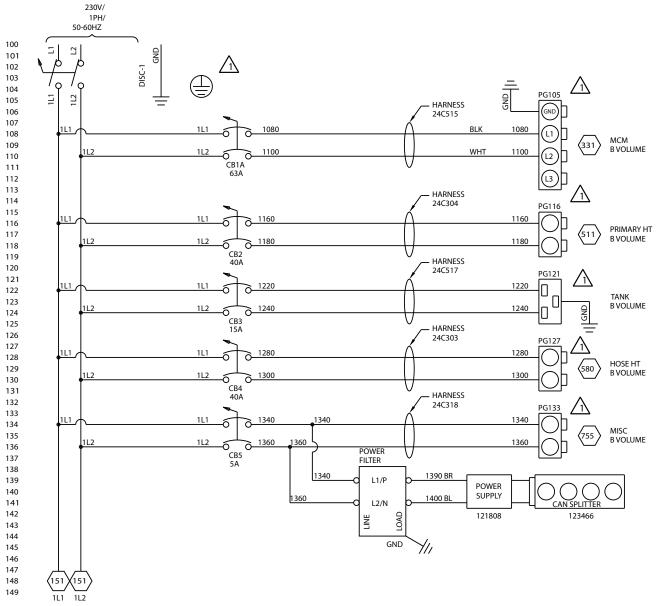


Fig. 26: 230V, 1 Phase, with Heat Logic Drawing; Page 1 of 2

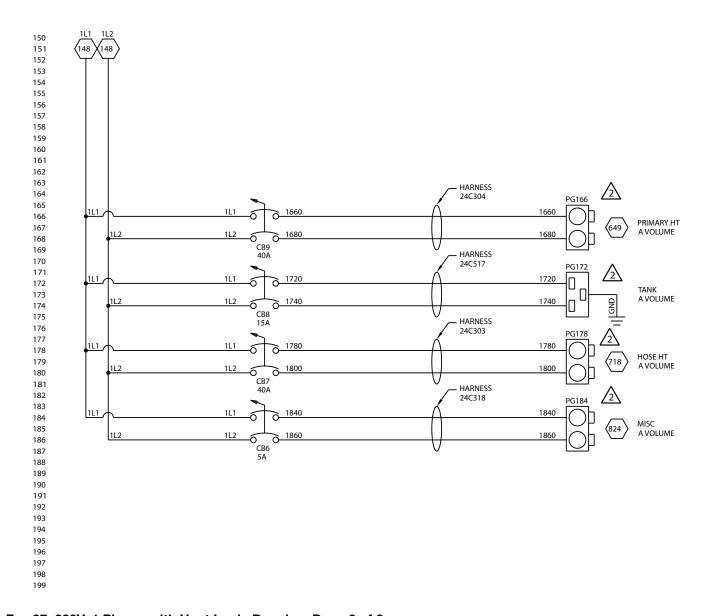


Fig. 27: 230V, 1 Phase, with Heat Logic Drawing; Page 2 of 2

230V, 3 Phase, No Heat

LOCATED IN THE MAIN PDB ENCLOSURE CUSTOMER MUST SUPPLY BRANCH CIRCUIT PROTECTION

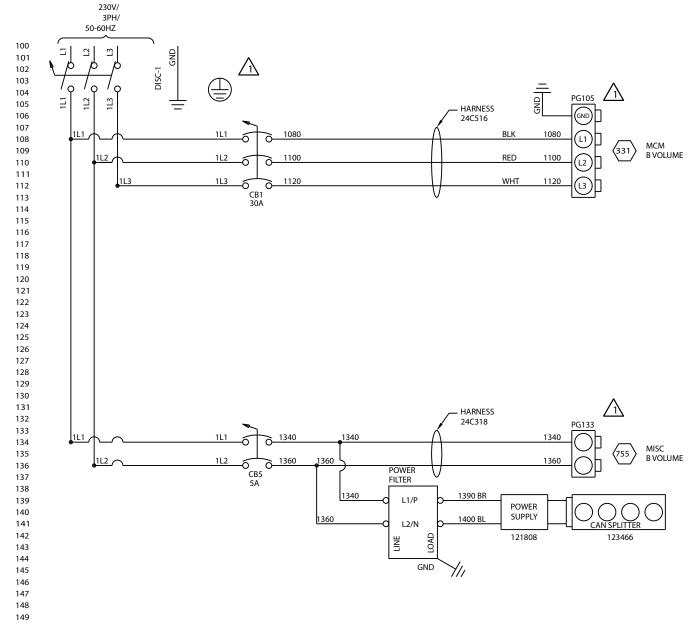


Fig. 28: 230V, 3 Phase, No Heat Logic Drawing; Page 1 of 1

230V, 3 Phase, with Heat

LOCATED IN THE MAIN PDB ENCLOSURE CUSTOMER MUST SUPPLY BRANCH CIRCUIT PROTECTION

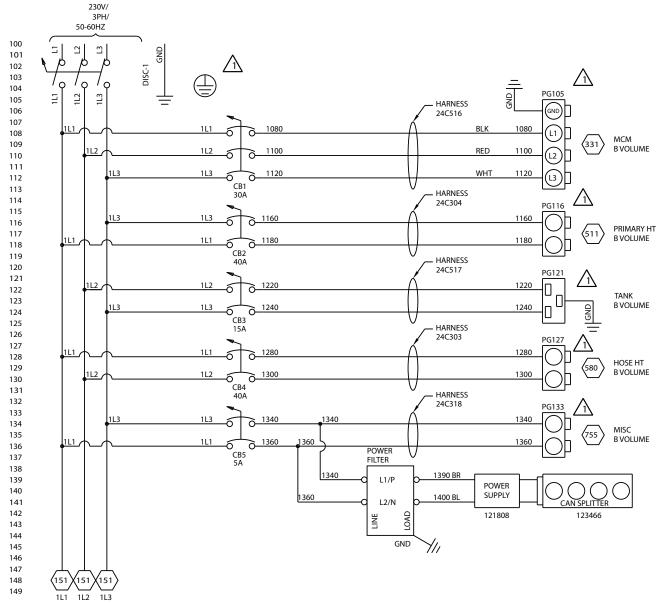


Fig. 29: 230V, 3 Phase, with Heat Logic Drawing; Page 1 of 2

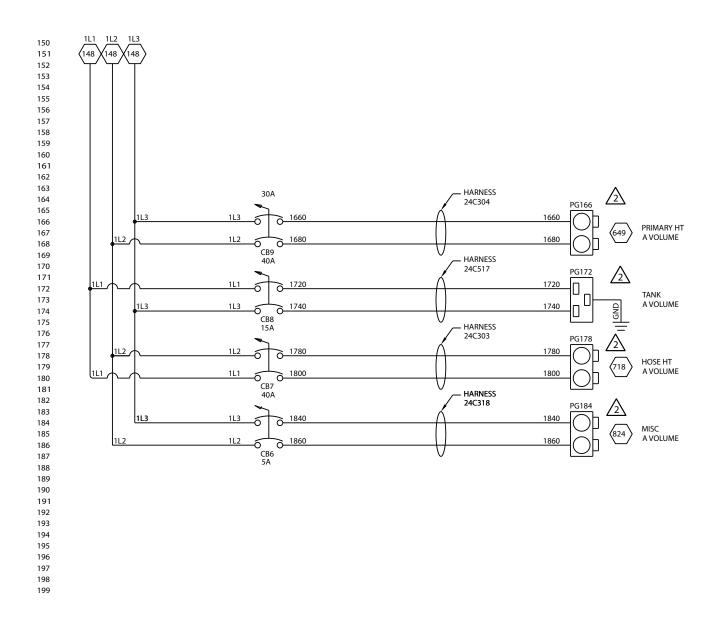


Fig. 30: 230V, 3 Phase, with Heat Logic Drawing; Page 2 of 2

400V, 3 Phase, No Heat

LOCATED IN THE MAIN PDB ENCLOSURE CUSTOMER MUST SUPPLY BRANCH CIRCUIT PROTECTION

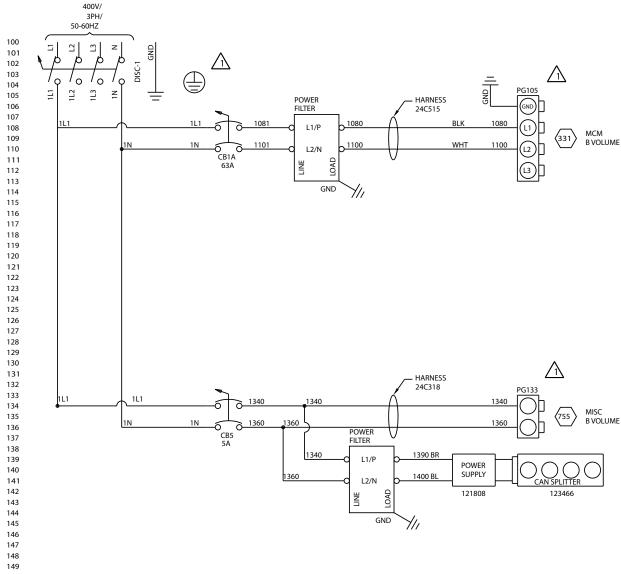


Fig. 31: 400V, 3 Phase, No Heat Logic Drawing; Page 1 of 1

400V, 3 Phase, with Heat

LOCATED IN THE MAIN PDB ENCLOSURE CUSTOMER MUST SUPPLY BRANCH CIRCUIT PROTECTION

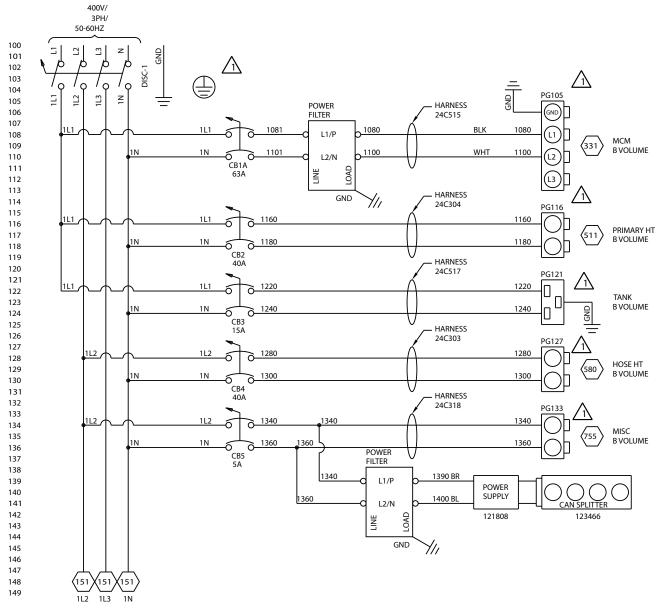


Fig. 32: 400V, 3 Phase, with Heat Logic Drawing; Page 1 of 2

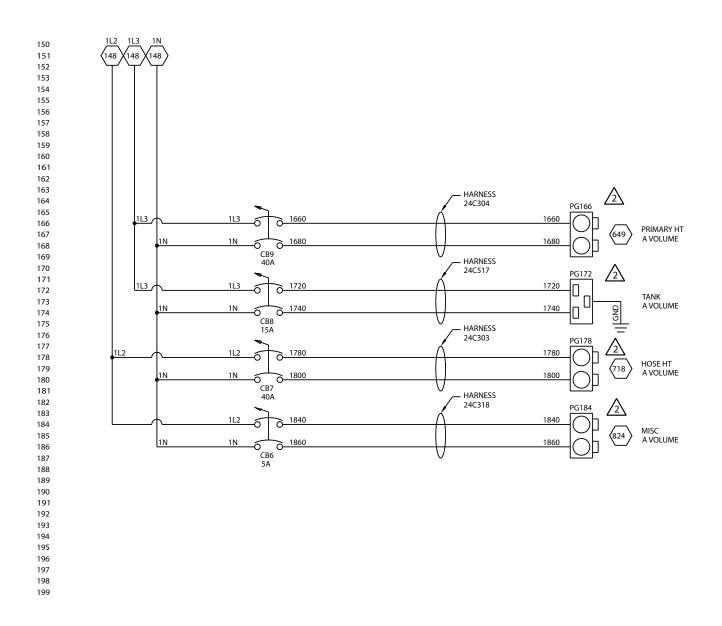


Fig. 33: 400V, 3 Phase, with Heat Logic Drawing; Page 2 of 2

A (Red) Heat

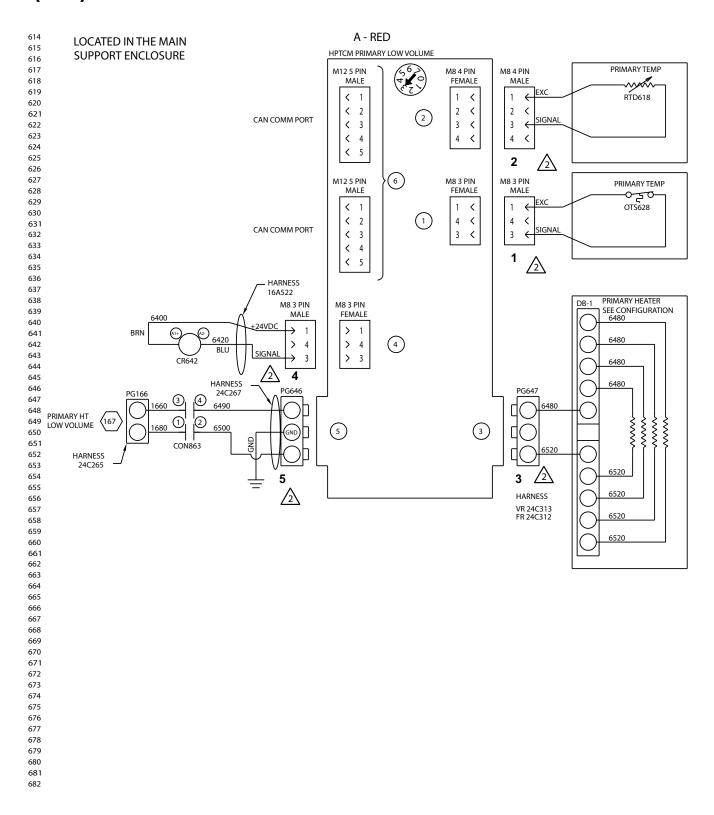


Fig. 34: A (Red) Heat Logic Drawing, Page 1 of 2

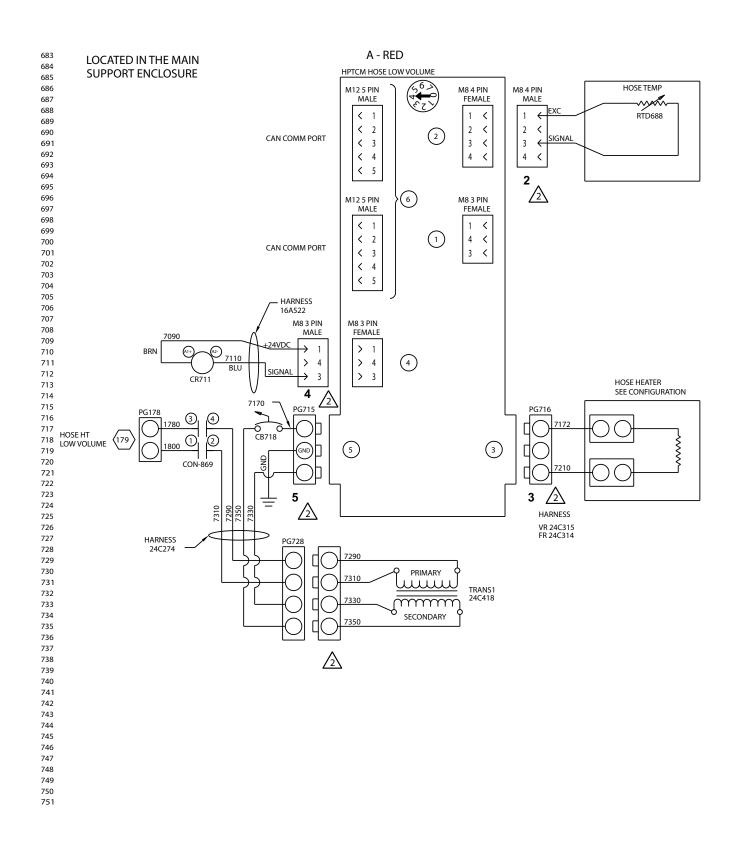


Fig. 35: A (Red) Heat Logic Drawing, Page 2 of 2

B (Blue) Heat

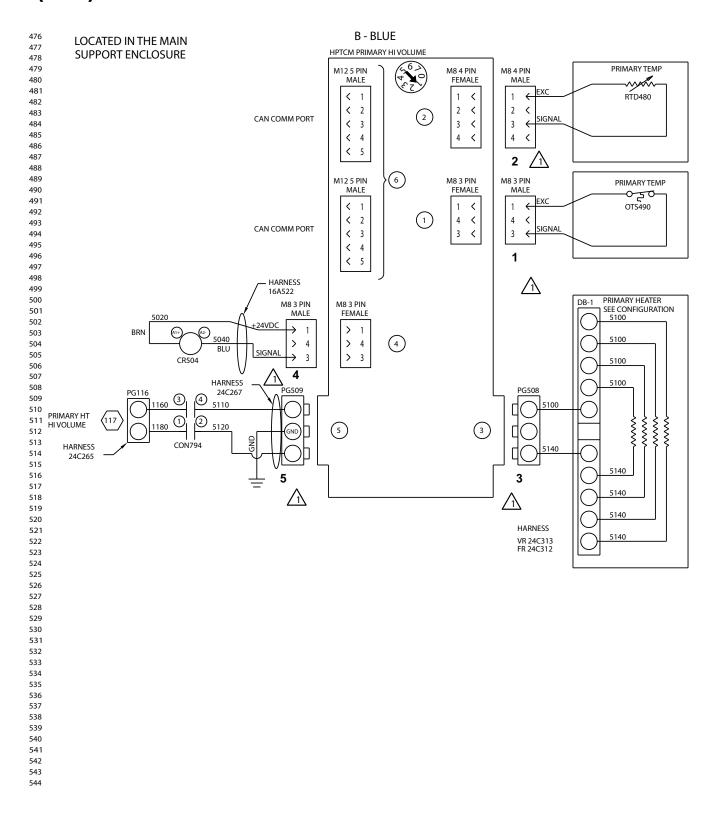


Fig. 36: B (Blue) Heat Logic Drawing, Page 1 of 2

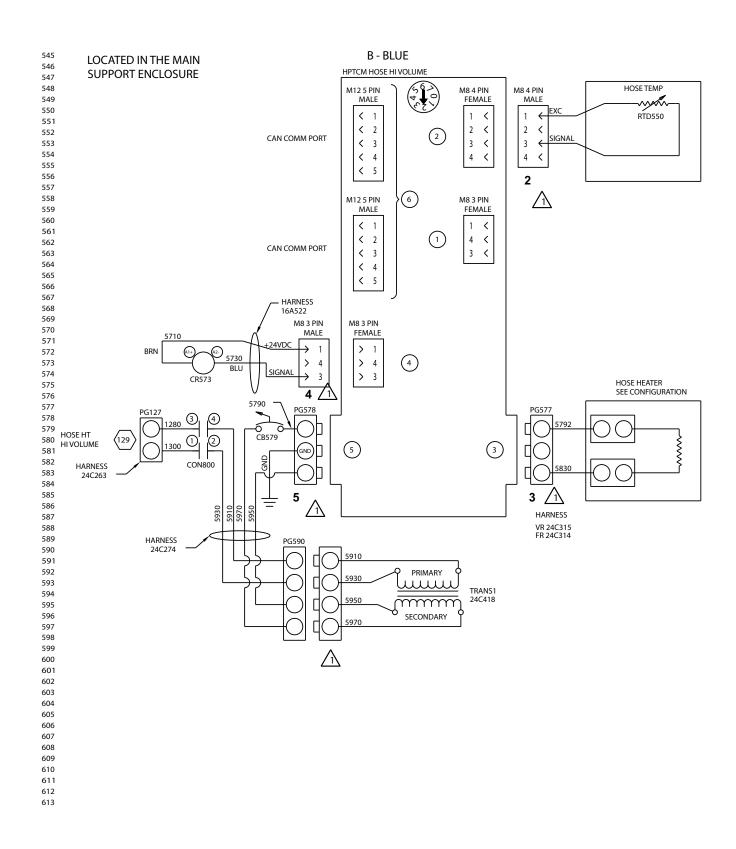


Fig. 37: B (Blue) Heat Logic Drawing, Page 2 of 2

DC Hydraulic Power Pack

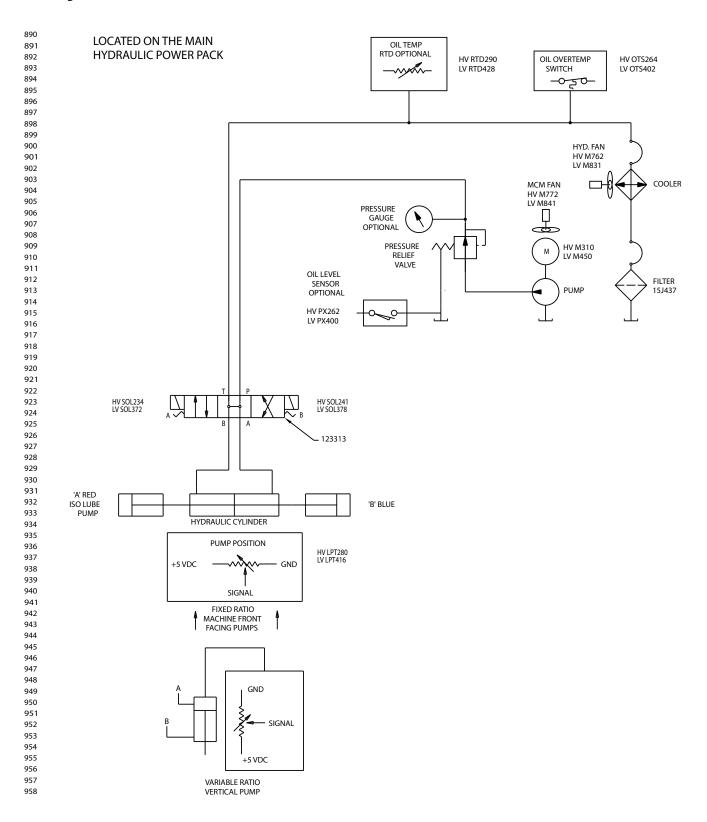


FIG. 38: DC Hydraulic Power Pack Logic Drawing, Page 1 of 1

Motor Control Module (MCM)

For MCM wiring of Circ Spray Models, see the HFR for Circ Spray Operation manual.

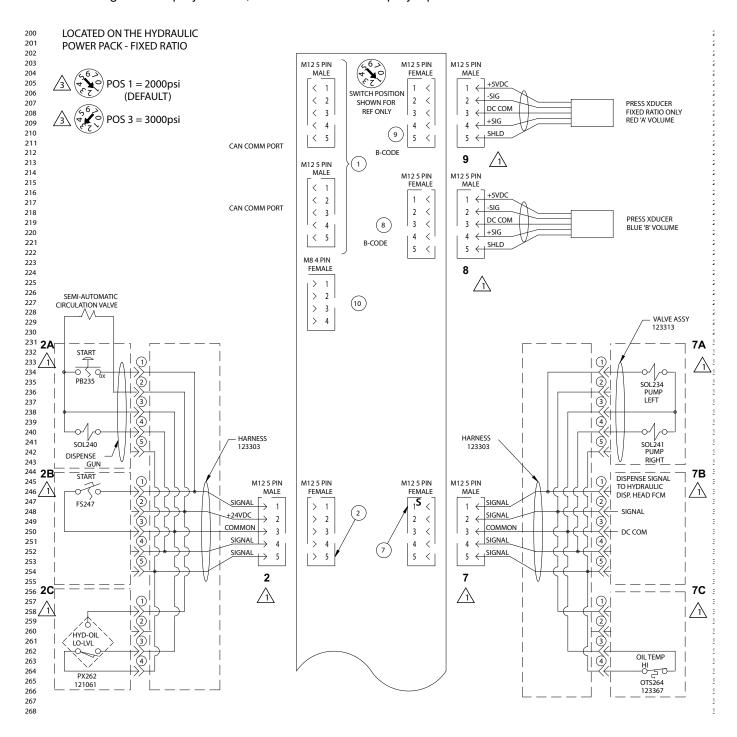


Fig. 39: Motor Control Module (MCM) Logic Drawing, Page 1 of 2

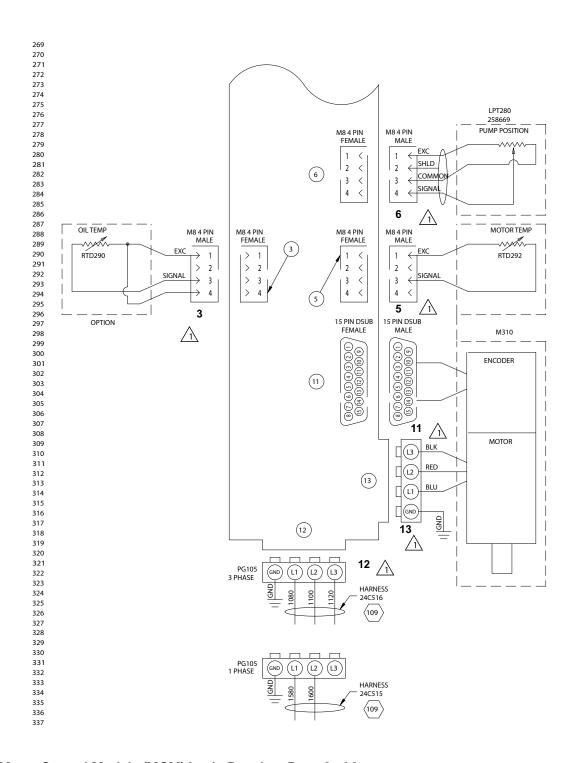


Fig. 40: Motor Control Module (MCM) Logic Drawing, Page 2 of 2

Miscellaneous Power

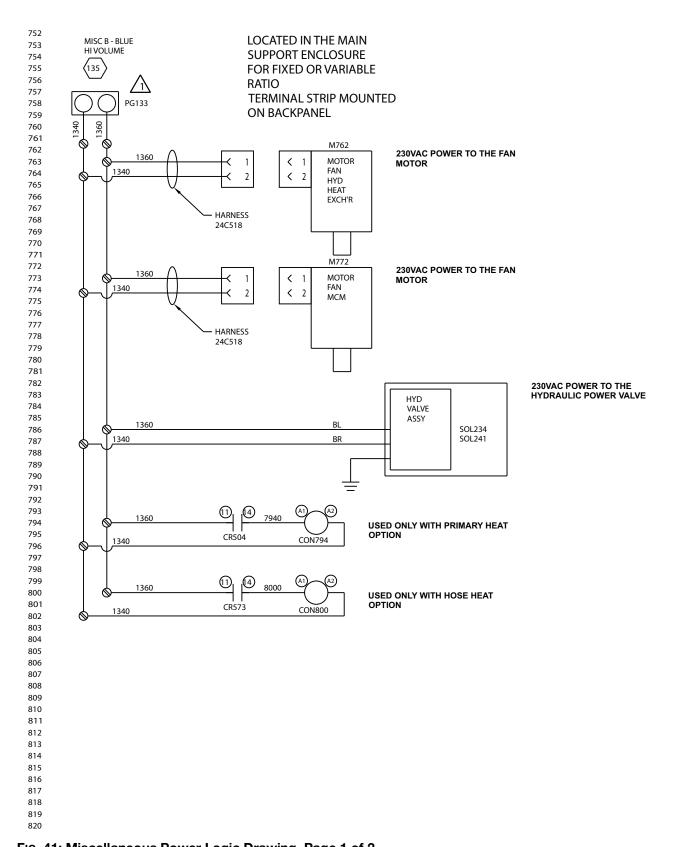


Fig. 41: Miscellaneous Power Logic Drawing, Page 1 of 2

Technical Specifications

Maximum Fluid Working Pressure... 3000 psi (20.7 MPa, 207 bar)

Maximum Fluid Temperature 190°F (88°C)

Fluid Inlet Feed Pressure Range 50 psi (0.35 MPa, 3.5 bar) to 250 psi (1.75 MPa, 17.5 bar)

Fluid Inlets Component A (Red): 1/2 npt(f)

Component B (Blue): 3/4 npt(f)

Component B (Blue): #10 (5/8 in.) JIC (7/8-14 unf), with #6 (3/8 in.) JIC adapter

400V / 3 phase: 360-440V, 50/60 Hz; see 400 V Power Requirements, page 4

Amperage Requirement..... See **Models**, page 4

Heater Power

(A (Red) and B (Blue) heaters total, no

hose, Heated HFR Models only) 12 kW

Hydraulic reservoir capacity 8 gal. (30 liters)

Recommended hydraulic fluid..... Citgo A/W Hydraulic Oil, ISO Grade 46 Weight *Units with 12 kW Heaters:* 868 lb (394 kg)

Units without heaters: 634 lb (288 kg)

Wetted Parts Aluminum, stainless steel, zinc-plated carbon steel, brass, carbide, chrome,

fluoroelastomer, PTFE, ultra-high molecular weight polyethylene, chemically

resistant o-rings

All other brand names or marks are used for identification purposes and are trademarks of their respective owners.

Motor Control Module Technical Data

Input Specifications

Input Line Voltage0-264 Vac, line-to-lineInput Line PhasingSingle or Three Phase

Short Circuit Current Rating 5 kA

Output Specifications

Output Line Voltage0-264 VacOutput Line PhasingThree PhaseOutput Current0-30A

 Enclosure
 Type 1

 Max Ambient Temperature
 50°C (122°F)

Overtemperature protection is provided to protect from motor overload.

Current limit, set via the software, is provided as a secondary protection from motor overload.

All installations and wiring must comply with NEC and local electrical codes.

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

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Original instructions. This manual contains English. MM 313998

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