

Gas engine must be purchased separately.

O.E.M. Triplex Plunger Pumps

Models **4HP35G1**
 4HP40G1

SPECIFICATIONS

| | U.S. Measure | Metric Measure |
|------------------------------|--------------|----------------|
| MODEL 4HP35G1 | | |
| Volume | 3.5 GPM | (13 L/M) |
| Max. Discharge Pressure..... | 3000 PSI | (210 BAR) |
| Max. RPM | 3200 RPM | (3200 RPM) |
| Stroke | 0.311" | (7.9 mm) |

MODEL 4HP40G1

| | | |
|------------------------------|----------|------------|
| Volume..... | 4.0 GPM | (15.0 L/M) |
| Max. Discharge Pressure..... | 3000 PSI | (210 BAR) |
| Max. RPM | 3200 RPM | (3200 RPM) |
| Stroke | 0.354" | (9.0 mm) |

COMMON PUMP SPECIFICATIONS

| | | |
|-------------------------------|------------------------|-----------------------|
| Max. Inlet Pressure..... | Flooded to 75 PSI | (Flooded to 5.25 BAR) |
| Bore..... | 0.630" | (16 mm) |
| Shaft Diameter (Hollow) | 1" | (25.4 mm) |
| Max. Fluid Temperature | 140°F | (62°C) |
| Crankcase Capacity | 22.65 oz. | (0.67 L) |
| Inlet Port (1) | 1/2" NPT | (1/2" NPT) |
| By-Pass Port (1) | 3/8" NPT | (3/8" NPT) |
| Discharge Ports (2) | 3/8" NPT | (3/8" NPT) |
| Weight (Pump Only) | 24.31 lbs. | (11.0 kg) |
| Dimensions (Pump Only) ... | 10.83" x 7.08" x 6.38" | (275 x 180x 162 mm) |

PUMP FEATURES

- Triplex plunger design provides a smooth fluid flow.
- Specially formulated Hi-Pressure V-Packing and concentrically ground ceramic plungers assure maximum seal life.
- Built-in flange mount for easy, direct mounting to most gas engines. Eliminates the need for pulleys, belts, gearboxes.
- Optional modular regulating unloader with built-in by-pass and stainless steel flow-thru screws to assure system pressure control and pump protection.
- Optional direct mounting chemical injector for cleaning flexibility.

| | | | |
|--------------------------------------|---|---|---|
| DETERMINING THE PUMP R.P.M. | $\frac{\text{Rated G.P.M.}}{\text{Rated R.P.M.}}$ | = | $\frac{\text{"Desired" G.P.M.}}{\text{"Desired" R.P.M.}}$ |
| DETERMINING THE REQUIRED H.P. | $\frac{\text{GPM x PSI}}{1460}$ | = | Electric Brake H.P. Required |
| DETERMINING MOTOR PULLEY SIZE | $\frac{\text{Motor Pulley O.D.}}{\text{Pump R.P.M.}}$ | = | $\frac{\text{Pump Pulley O.D.}}{\text{Motor R.P.M.}}$ |

Note: Consult engine manufacturer when using gas or diesel engine.
 Refer to pump Service Manual for important Inlet Condition Check-List, Start-up Procedure, Tech Bulletins and Pump Maintenance information.

HORSEPOWER REQUIREMENTS

| MODEL | FLOW | | PRESSURE | | | RPM |
|----------------|----------|-----|----------|----------|----------|------|
| | U.S. GPM | L/M | PSI 2000 | PSI 2500 | PSI 3000 | |
| | | | BAR 140 | BAR 175 | BAR 210 | |
| 4HP35G1 | 3.5 | 13 | 4.8 | 6.0 | 7.2 | 3200 |
| 4HP40G1 | 4.0 | 15 | 5.5 | 6.9 | 8.3 | 3200 |

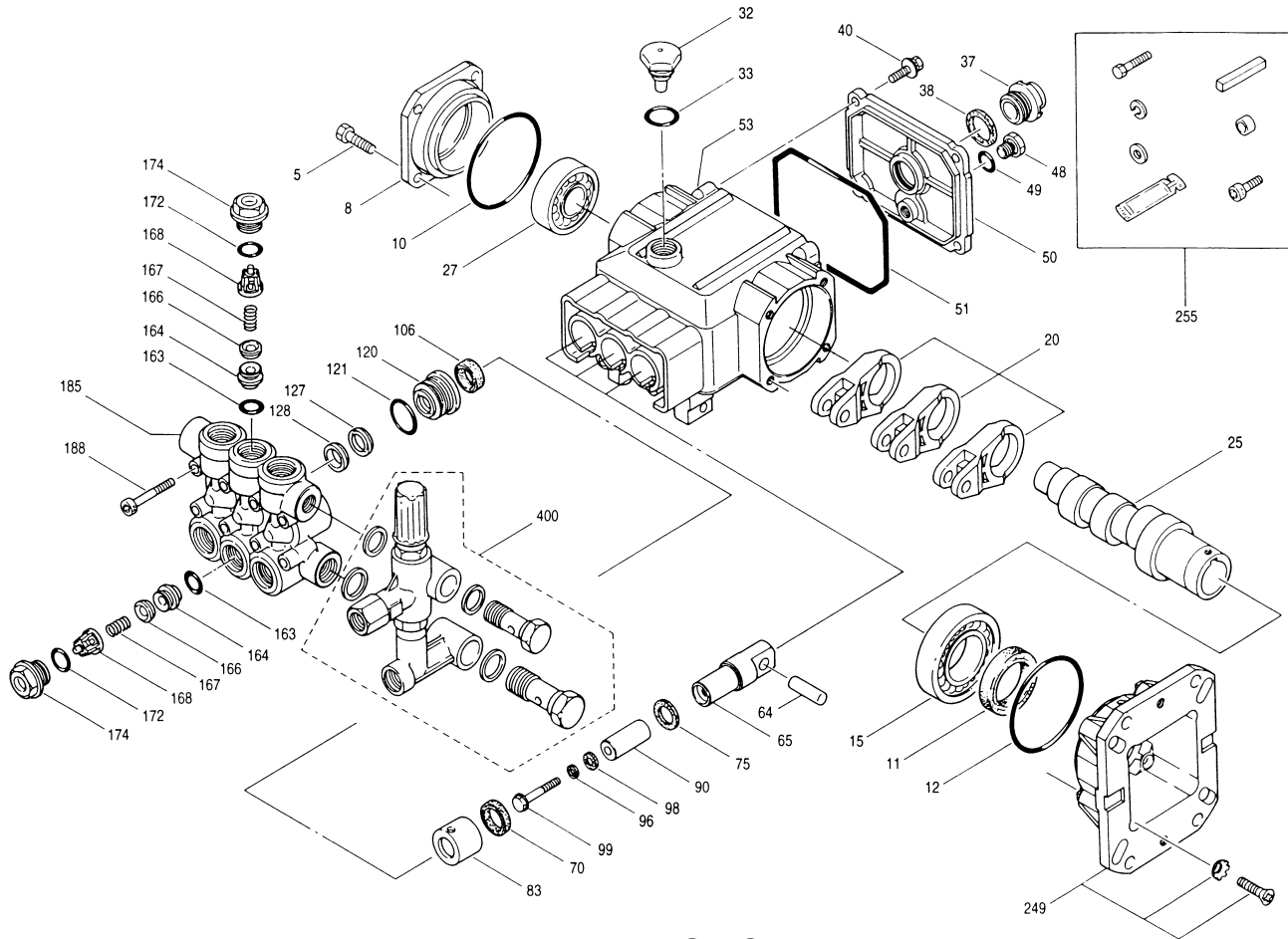
"Customer confidence is our greatest asset"

EXPLODED VIEW

May 1995

4HP PLUNGER PUMP MODELS

O.E.M. 4HP35G1, 4HP40G1



PARTS LIST

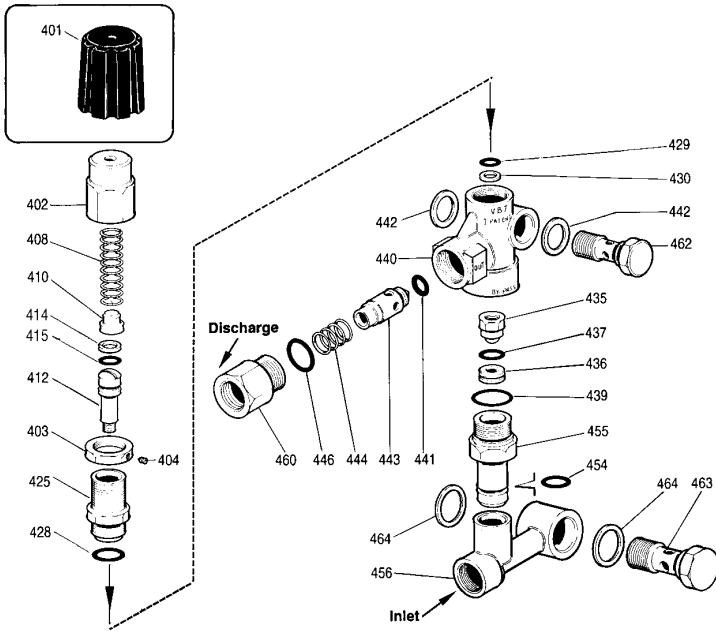
| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|----------|----------------------------------|-----|--------|------------------------------------|---|-----|
| 5 | 92521 | Z Sems Hex Head Screw (M8x20) | 4 | 98 | 45891 | Z Gasket, Plunger Retainer | 3 |
| 8 | 46461 | A Bearing Case | 1 | •46730 | B Sealing Gasket, Plunger Retainer | 3 | |
| 10 | 14037 | B O-Ring, Flange | 1 | 99 | 104360 | S Plunger Retainer | 3 |
| 11 | 46419 | B Oil Seal, Crankshaft | 1 | •46729 | S Plunger Retainer | 3 | |
| 12 | 14037 | B O-Ring, Bearing Case | 1 | 106 | 46435 | B Lo-Pressure Seal | 3 |
| 15 | 146421 | Bearing - Inner | 1 | 120 | 46471 | BB Seal Case | 3 |
| 20 | 46677 | ZZ Connecting Rod | 3 | 121 | 13980 | B O-Ring, Seal Case | 3 |
| 25 | 46551 | Crankshaft - 4HP35G1 | 1 | 127 | 46617 | BT V-Packing | 3 |
| | 46460 | Crankshaft - 4HP40G1 | 1 | 128 | 46618 | P Male Adapter | 3 |
| 27 | 14480 | Bearing - Outer | 1 | 163 | 17547 | B O-Ring, Valve Seat | 6 |
| 32 | 46798 | Domed Oil Filler Cap | 1 | 164 | 46658 | S Valve Seat | 6 |
| 33 | 14179 | B O-Ring, Oil Filler Cap | 1 | 166 | 46429 | S Valve | 6 |
| 37 | 43987 | Oil Gauge, Bubble | 1 | 167 | 43750 | S Valve Spring | 6 |
| 38 | 44428 | B Gasket, Flat Flex. | 1 | 168 | 45860 | P Spring Retainer | 6 |
| 40 | 92519 | Z Sems Hex Head Screw (M6x16) | 4 | 172 | 17615 | B O-Ring, Valve Plug | 6 |
| 48 | 25625 | Drain Plug | 1 | 174 | 46388 | BB Valve Plug | 6 |
| 49 | 23170 | B O-Ring, Drain Plug | 1 | 185 | 46526 | BB Manifold Head | 1 |
| 50 | 46379 | A Crankcase Cover | 1 | 188 | 87868 | Z Hex Socket Head Screw (M8x107) | 8 |
| 51 | 14048 | B O-Ring, Crankcase Cover | 1 | 249 | 46679 | A Flange | 1 |
| 53 | 46454 | A Crankcase | 1 | 46123 | Z Toothed Lock Washer (M8) | 4 | |
| 64 | 46404 | S Pin, Plunger Rod | 3 | 46403 | Z Hex Flat Head Screw (M8x25) | 4 | |
| 65 | 46525 | BB Plunger Rod | 3 | 255 | 30519 | Bolt Mount Kit | 1 |
| | •46728 | BB Plunger Rod | 3 | 34100 | Hex Bolt (3/8" x 1-3/8") | 4 | |
| 70 | 29257 | B Oil Seal, Crankcase | 3 | 30921 | Spring Washer (3/8") | 4 | |
| 75 | 43900 | S Barrier Slinger | 3 | 30980 | Washer (3/8") | 4 | |
| | •46732 | S Barrier Slinger | 3 | 6106 | Antiseize Lubricant | 1 | |
| 83 | 46408 | P Seal Retainer | 3 | 45217 | Key (1/4"x1/4"x2-1/2") HD | 1 | |
| 88 | 45697 | S Keyhole Washer | 3 | 34042 | Spacer | 4 | |
| | • | Keyhole Washer | N/A | 87788 | Set Screw (M5x8) | 1 | |
| 90 | 46524 | CC Plunger | 3 | 300 | 34062 | Seal Kit (Incls: 97,106,121,127) | 1 |
| | •46727 | CC Plunger | 3 | 310 | 34060 | BB Valve Kit (Incls: 163,164,166,167,168,172) | 2 |
| 96 | 43235 | T Back-up Ring, Plunger Retainer | 3 | 400 | 7650 | BB Modular Unloader Assembly | 1 |
| 97 | 17399 | B O-Ring, Plunger Retainer | 3 | | | | |
| | • | O-Ring, Plunger Retainer | N/A | | | | |

• Items 88 and 97 are no longer used with • items. These items must be replaced as a set. See Tech Bulletin 71 for additional information.

MATERIAL CODES (Not Part of Part Number): B=Buna N BB=Brass CC=Ceramic P=PVDF S=304SS SS=316SS T=Teflon V=Viton Z=Zinc Plated

7650 UNLOADER SPECIFICATIONS

| | U.S. Measure | Metric Measure |
|------------------------------|----------------------|--------------------|
| GPM | 2.0-5.0 GPM | (8-19 L/M) |
| PSI | 700-3000 PSI | (50-210 BAR) |
| Inlet Port - Rear | 3/8" NPT | (3/8" NPT) |
| Discharge Port - Front | 3/8" NPT | (3/8" NPT) |
| By-Pass Port - Bottom | 3/8" NPT | (3/8" NPT) |
| Weight | 21.4 oz. | (0.65 L) |
| Dimensions | 3.25" x 1.0" x 4.81" | (76 x 25 x 108 mm) |



| ITEM | PART NO. | DESCRIPTION | QTY. |
|------|----------|--|------|
| 401 | 32088 | P Black Cap (Optional) | |
| 402 | 33859 | BB Hex Adjusting Cap | 1 |
| 403 | 33857 | Z Locking Nut (M18x1) | 1 |
| 404 | 33061 | Z Set Screw (M4x4) | 1 |
| 408 | 32094 | White Spring | 1 |
| 410 | 32819 | Z Spring Guide | 1 |
| 412 | 33860 | SS Valve Stem | 1 |
| 414 | — | Back-up Ring, Stem | 1 |
| 415 | — | O-Ring, Stem | 1 |
| 425 | 33861 | Piston Retainer | 1 |
| 428 | 33043 | B O-Ring, Retainer | 1 |
| 429 | — | B O-Ring, Stem | 2 |
| 430 | — | T Back-up Ring, Stem | 1 |
| 435 | 33853 | SS Valve and Ball Assembly (M6) | 1 |
| 436 | 33862 | SS Seat | 1 |
| 437 | 32008 | B O-Ring, Seat | 1 |
| 439 | 33044 | B O-Ring, By-Pass Fitting | 2 |
| 440 | — | BB Valve Body | 1 |
| 441 | 32851 | B O-Ring, Flow Balancer | 1 |
| 442 | 33856 | Seal Washer 3/8" | 2 |
| 443 | 33852 | BB Flow Balancer | 1 |
| 444 | 33843 | SS Spring, Flow Balancer | 1 |
| 446 | 33043 | B O-Ring, Discharge Fitting | 1 |
| 454 | — | V O-Ring, By-Pass Fitting | 1 |
| 455 | 33863 | BB By-Pass Fitting | 1 |
| 456 | 33850 | By-Pass Manifold 1/2" NPT | 1 |
| 460 | 33855 | Discharge Fitting 3/8" NPTF | 1 |
| 462 | 33882 | SS Screw, Flow-Thru 3/8" NPT | 1 |
| 463 | 33884 | SS Screw, Flow-Thru 1/2" NPT | 1 |
| 464 | 33854 | Seal Washer 1/2" | 2 |
| 468 | 33098 | O-Ring Kit (Incls: 414, 415, 428, 429, 430, 437, 439, 441, 446, 454) | 1 |
| — | 7650.223 | Unloader w/Injector (2.1 mm) | 1 |
| — | 7650.224 | Unloader w/Injector (2.3 mm) | 1 |

OPERATION

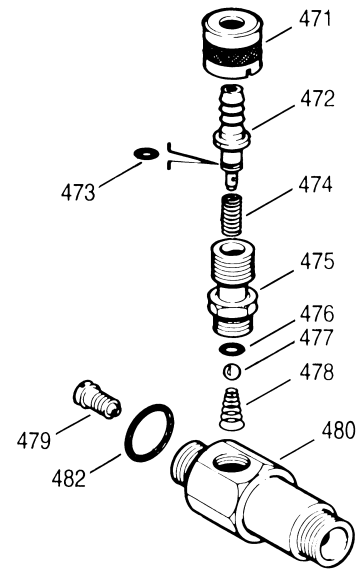
A Regulating Unloader comes with each HP pump to provide system pressure regulation and pump protection.

A built-in by-pass system is provided. For frequent or prolonged by-pass, a Thermo Valve is recommended.

If unit is INFREQUENTLY USED OR PERIODICALLY STORED, seals may become dry. The system must be PURGED BEFORE OPERATION (system fluid must flow through the pump without discharge restriction) to assure full system pressure is reached.

CHEMICAL INJECTOR SPECIFICATIONS

| Model | 7223 | 7224 |
|----------------------|--------------|--------------|
| Flow | 3.0-4.0 GPM | 4.0-5.0 GPM |
| Nozzle Orifice | 2.1 mm | 2.3 mm |
| Hose Barb | 1/4" | 1/4" |
| Inlet Port | 3/8" NPTM | 3/8" NPTM |
| Discharge Port | 3/8" NPTM | 3/8" NPTM |
| Dimensions | 2" x 1" x 3" | 2" x 1" x 3" |
| Weight | 6.3 oz. | 6.3 oz. |



| ITEM | PART NO. | DESCRIPTION | MODEL USED | QTY. |
|------|----------|--|------------|------|
| 471 | 32940 | BB Adjustment Collar | All Models | 1 |
| 472 | 32941 | BB Hose Barb | All Models | 1 |
| 473 | 33503 | B O-Ring | All models | 1 |
| 474 | 33500 | S Spring | All Models | 1 |
| 475 | 33506 | BB Ball Seat Retainer | All Models | 1 |
| 476 | 33504 | V O-Ring | All Models | 1 |
| 477 | 33502 | SS Ball | All Models | 1 |
| 478 | 33501 | SS Spring | All Models | 1 |
| 479 | 32073 | S Injector Orifice (2.1 mm) Std. | 7223 | 1 |
| | 32074 | S Injector Orifice (2.3 mm) Opt. | 7224 | 1 |
| 480 | — | BB Body-Unloader Mount | All Models | 1 |
| 481 | 33481 | BB Adjustable Barb Assembly (Incls: 471, 472, 473, 474, 475) | All Models | 1 |
| 482 | 33480 | BB Fixed Barb Assy - Optional (Incls: 475, 476, 477, 478) | All Models | 1 |

CHEMICAL INJECTOR PERFORMANCE CHART

| Desired Pump Flow | Orifice Size | Injector Model | Lo-Pressure Nozzle (Maximum injecting pressure less hose friction loss) | Max. Chem. Draw (0 PSI) (Downstream) | Hi-Press Nozzle "Deduction" (Pressure drop across Inj.) |
|-------------------|--------------|----------------|---|--------------------------------------|---|
| 3.5 | 2.1 mm | 7223 | 300 PSI | 50 oz/min | 200 PSI |
| 3.5 | 2.3 mm | 7224 | 185 PSI | 56 oz/min | 175 PSI |
| 4.0 | 2.1 mm | 7223 | 375 PSI | 54 oz/min | 250 PSI |
| 4.0 | 2.3 mm | 7224 | 225 PSI | 50 oz/min | 225 PSI |

Optimum performance of chemical injector occurs with a 35 ft. high pressure hose and a minimum 3/8" I.D. The type of hose, extended lengths, reduced I.D. and fittings may create back pressures in excess of the low pressure nozzle rating and prevent the injector from drawing chemical. See Hose Friction Loss Chart in High Pressure Guide. **Deduct hose friction loss from above low PSI Nozzle. Consult factory for assistance with other options.**

CAUTION:

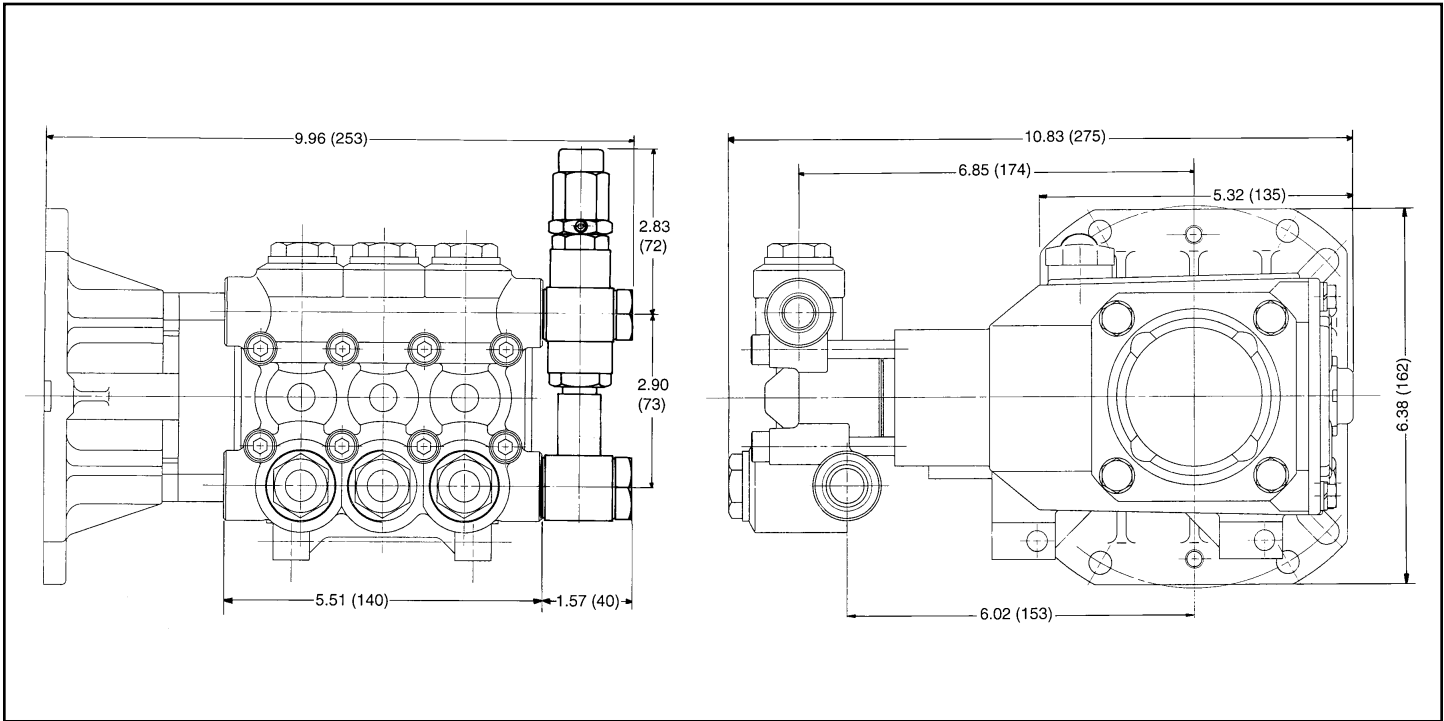
Deduct the pressure drop shown in the performance chart from your desired system pressure to arrive at the maximum high pressure nozzle rating. This is essential to avoid over-pressurizing the pump.

Chemical draw occurs under low pressure. Select the Dual Nozzle (32149), Adjustable Nozzle (32151), or Vari-Nozzle (36666-72) to permit the adjustment from low to high pressure.

For optimum performance when using a chemical injector, use a **single wire braid hose** on the discharge line. Too flexible a hose will prevent the unloader from receiving the full pressure signal to activate the by-pass mode.

For correct nozzle selection, **read system pressure at the pump. DO NOT READ SYSTEM PRESSURE AT THE HIGH PRESSURE GUN.** Incorrect pressure reading may result in: pump operation at excessive pressures, inconsistent chemical draw or possible damage to the pump or unloader.

DIMENSIONAL



Products described hereon are covered by one or more of the following U.S. patents 3558244, 3652188, 3809508, 3920356, 3930756 and 5035580

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