



## O.E.M. Triplex Plunger Pump

**Standard  
Direct-Drive Gas Model**

# 2X30GS

**Vertical  
Direct-Drive Gas Models**

# 2X20GSV 2X28GSV

### PUMP FEATURES

- Triplex plunger design provides a smooth fluid flow.
- Specially formulated Hi-Pressure Seal and ENP precisioned machined plungers assure maximum seal life.
- Ultimate compact, direct-drive unit for maximum portability.
- Modular Regulating Unloader with built-in by-pass standard on all units to assure system pressure control and pump protection.
- Built-in chemical injector standard on all units offers cleaning flexibility.

### COMMON PUMP SPECIFICATIONS

|                               |                       |                       |
|-------------------------------|-----------------------|-----------------------|
| Inlet Pressure .....          | Flooded to 60 PSI     | (Flooded to 5.25 BAR) |
| Bore .....                    | 0.630"                | (16 mm)               |
| Max. Fluid Temperature .....  | 140°F                 | (60°C)                |
| Crankcase Capacity .....      | 8.5 oz.               | (0.25 L)              |
| Vertical .....                | 12.0 oz.              | (0.36 L)              |
| Inlet Ports .....             | 3/4" GH               | (3/4" GH)             |
| (1) .....                     | 3/8" NPT              | (3/8" NPT)            |
| (1) .....                     | 3/8" NPT              | (3/8" NPT)            |
| Discharge Ports (2) .....     | 3/8" NPT              | (3/8" NPT)            |
| Chemical Injection Port ..... | 3/8" NPT              | (3/8" NPT)            |
| (3/8" NPT)                    |                       |                       |
| Weight .....                  | 11.7 lbs.             | (5.3 kg)              |
| Vertical .....                | 11.83 lbs.            | (5.6 kg)              |
| Dimensions .....              | 7.91" x 7.83" x 6.42" | (201 x 199 x 163 mm)  |
| Vertical .....                | 8.31" x 7.83" x 6.46" | (211 x 199 x 164 mm)  |

Refer to pump Service Manual for important Inlet Condition Check-List, Start-up Procedure, Tech Bulletins and Pump Maintenance information.

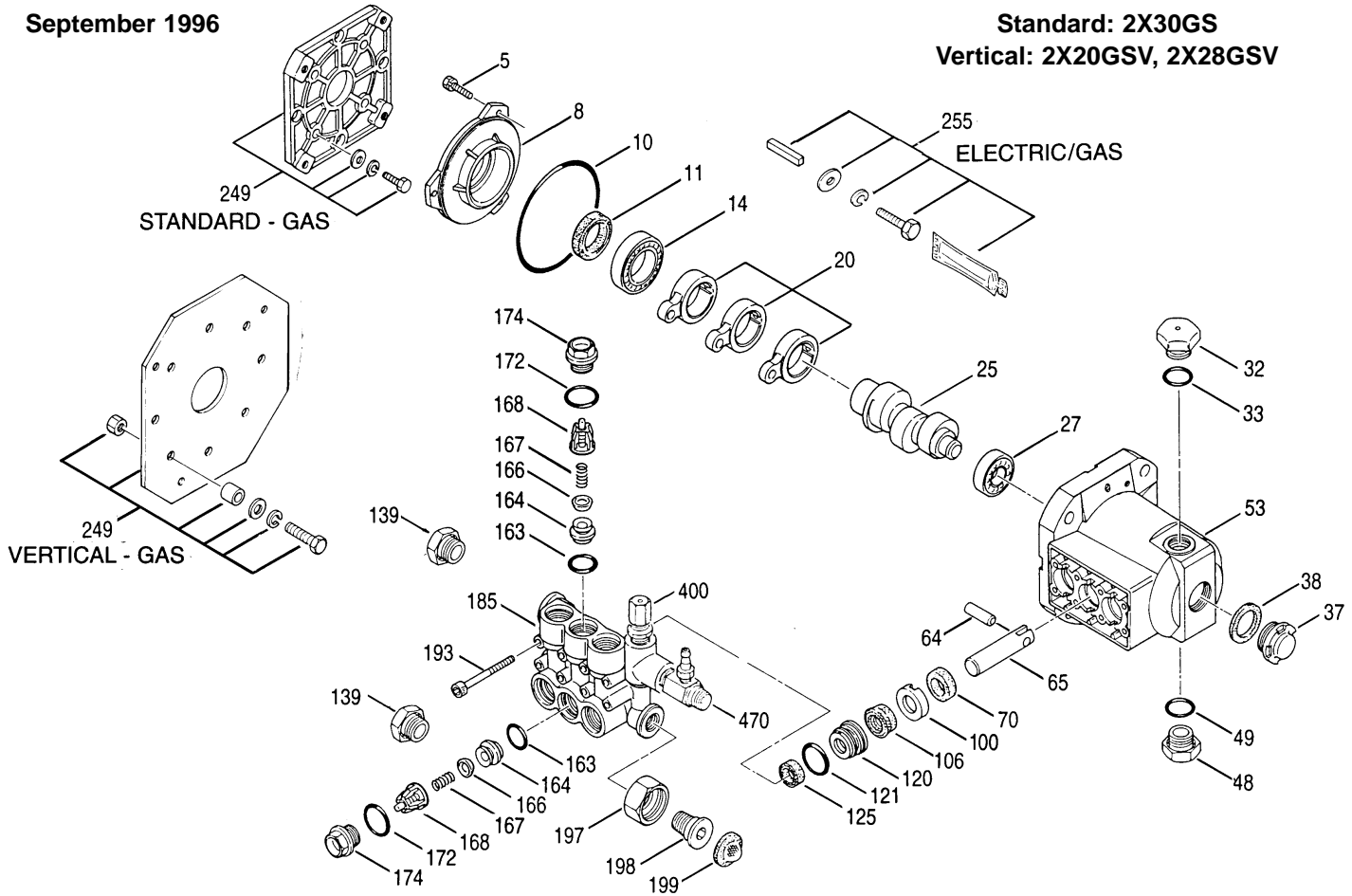
### SPECIFICATIONS

|                               | U.S. Measure | Metric Measure |
|-------------------------------|--------------|----------------|
| <b>MODEL 2X30GS</b>           |              |                |
| Volume .....                  | 3.0 GPM      | (11.0 L/M)     |
| Max. Discharge Pressure ..... | 2000 PSI     | (140 BAR)      |
| Max. RPM .....                | 3200 RPM     | (3200 RPM)     |
| Stroke .....                  | 0.266"       | (6.75 mm)      |
| Shaft Dimensions .....        | 3/4"         | (3/4")         |
| <b>MODEL 2X20GSV</b>          |              |                |
| Volume .....                  | 2.0 GPM      | (7.6 L/M)      |
| Max. Discharge Pressure ..... | 2000 PSI     | (140 BAR)      |
| Max. RPM .....                | 3100 RPM     | (3100 RPM)     |
| Stroke .....                  | 0.189"       | (4.8 mm)       |
| Shaft Dimensions .....        | 7/8"         | (7/8")         |
| <b>MODEL 2X28GSV</b>          |              |                |
| Volume .....                  | 2.8 GPM      | (10.6 L/M)     |
| Max. Discharge Pressure ..... | 2000 PSI     | (140 BAR)      |
| Max. RPM .....                | 3300 RPM     | (3300 RPM)     |
| Stroke .....                  | 0.244"       | (6.2 mm)       |
| Shaft Dimensions .....        | 7/8"         | (7/8")         |

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# EXPLODED VIEW

September 1996



# O.E.M. PLUNGER PUMP MODELS

Standard: 2X30GS

Vertical: 2X20GSV, 2X28GSV

## PARTS LIST

| ITEM | PART NO.  | DESCRIPTION                       | QTY | ITEM | PART NO. | DESCRIPTION                                | QTY |
|------|-----------|-----------------------------------|-----|------|----------|--|-----|
| 5    | 817003 Z  | Hex Head Screw w/SW (M6x12)       | 3   | 166  | 43723 S  | Valve                                      | 6   |
| 8    | 46225 A   | Bearing Case - 2X20E, 2X30GS      | 1   | 167  | 43750 S  | Valve Spring                               | 6   |
|      | 46707     | Bearing Case - 2X20GSV, 2X28GSV   | 1   | 168  | 46583 P  | Spring Retainer                            | 6   |
| 10   | 14041 B   | O-Ring, Bearing Case              | 1   | 172  | 14179 B  | O-Ring, Plug                               | 6   |
| 11   | 55337 B   | Oil Seal                          | 1   | 174  | 46243 BB | Valve Plug (M22x1.5)                       | 6   |
|      | 162188 B  | Oil Seal - 2X20GSV, 2X28GSV       | 1   | 185  | 46375 BB | Manifold Head w/Modular Unloader Body      | 1   |
| 14   | 14488     | Bearing, Inner                    | 1   | 193  | 89953 Z  | Hex Socket Head Screw (M6x55)              | 8   |
|      | 14551     | Bearing, Inner - 2X20GSV, 2X28GSV | 1   | 197  | 46488 BB | Garden Hose Fitting (3/8")                 | 1   |
| 20   | 46228     | Connecting Rod - "H"              | 3   | 198  | 46487 BB | Swivel Nut (3/4")                          | 1   |
| 25   | 46483     | Crankshaft (6.75mm) - 2X30GS      | 1   | 199  | 46489 SS | Screen                                     | 1   |
|      | 46778     | Crankshaft (4.80mm) - 2X20GSV     | 1   | 249  | 30520    | Adapter Mount Kit - STANDARD - GAS         | 1   |
|      | 46709     | Crankshaft (6.20mm) - 2X28GSV     | 1   |      | 46789    | Flange                                     | 1   |
| 27   | 13832     | Bearing, Outer                    | 1   |      | 44843    | Hex Bolt (5/16"-24UNF x 20)                | 4   |
| 32   | 45690 P   | Oil Filler Cap - 2X20GSV          | 1   |      | 15845    | Spring Washer (5/16")                      | 4   |
|      | 44842     | Oil Filler Cap - 2X20GSV, 2X28GSV | 1   |      | 12489    | Washer (5/16")                             | 4   |
| 33   | 14179 B   | O-Ring, Oil Filler Cap            | 1   | 249  | 30523    | Adapter Mount Kit - VERTICAL - GAS         | 1   |
| 37   | 43987 P   | Bubble Oil Gauge                  | 1   |      | 33097    | Adapter Plate                              | 1   |
| 38   | 44428 B   | Gasket, Flat Flex                 | 1   |      | 30912    | Nut (3/8")                                 | 4   |
| 48   | 44842 BBZ | Drain Plug (1/2")                 | 1   |      | 30980    | Flat Washer                                | 1   |
| 49   | 14179 B   | O-Ring, Drain Plug                | 1   |      | 30921    | Lock Washer                                | 1   |
| 53   | 46575 A   | Crankcase                         | 1   |      | 33095    | Retaining Bolt (3/8")                      | 1   |
| 64   | 46229 ST  | Piston Pin                        | 3   |      | 46790    | Spacer                                     | 3   |
| 65   | 46628 BBE | Plunger                           | 3   | 255  | 30516    | Bolt Mount Kit - ELECTRIC/GAS              | 1   |
| 70   | 47215 B   | Oil Seal                          | 3   |      | 34100    | Hex Bolt (3/8"-16UNC x 1-3/8")             | 4   |
| 100  | 46233     | Seal Retainer                     | 3   |      | 30980    | Washer (3/8")                              | 4   |
| 106  | 46435 B   | Lo-Pressure Seal                  | 3   |      | 30921    | Spring Washer (3/8")                       | 4   |
| 120  | 46436 BB  | Seal Case                         | 3   |      | 6106     | Anti-Seize Lubricant                       | 1   |
| 121  | 13976 B   | O-Ring, Seal Case                 | 3   |      | *34050   | Key (3/16 x 3/16 x 27 HD)                  | 1   |
| 125  | 46240 B   | Hi-Pressure Seal                  | 3   |      | 33053    | Seal Kit (Incls: 106,121,125)              | 1   |
| 139  | 46690 BB  | Plug (3/8")                       | 2   |      | 33056    | Valve Kit (Incls: 163,164,166,167,168,172) | 2   |
| 163  | 17547 B   | O-Ring, Valve Seat                | 6   | 400  |          | Modular Unloader - See Individual Parts    | 1   |
| 164  | 46473 BB  | Valve Seat                        | 6   | 470  |          | Chemical Injector - See Individual Parts   | 1   |

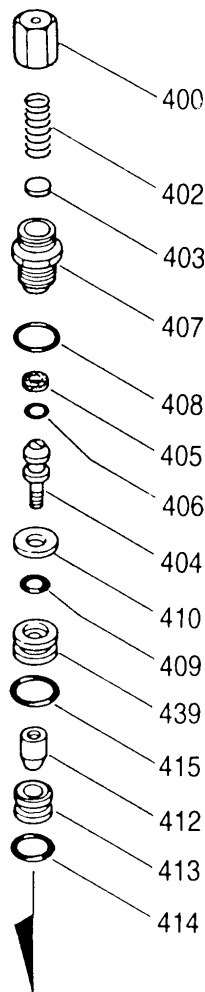
**MATERIAL CODES (Not Part of Part Number):** A=Aluminum B=Buna-N BB=Brass E=Electroless Nickel Plated P=Nylon S=304SS T=Teflon Z=Zinc Plated

\*Discard Key which may come standard with most motors and engines and use only the key included in this kit.

Center raised pilot guide on the **Adapter Plate** assures proper alignment of pump and engine. Before mounting pump onto engine inspect engine for **recessed seal and bearing guide** to permit adapter to completely seat into recess and four bosses to be flush with engine face.

## UNLOADER SPECIFICATIONS

|                                | U.S. Measure | Metric Measure |
|--------------------------------|--------------|----------------|
| GPM.....                       | 3.0 GPM      | (11.0 L/M)     |
| PSI.....                       | 100-1500 PSI | (1-105 BAR)    |
| Discharge Port w/Injector..... | 3/8" NPT     | (3/8" NPT)     |



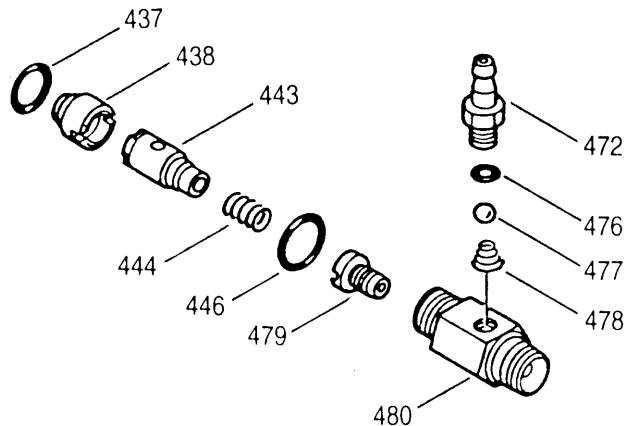
| ITEM | PART NO. | DESCRIPTION                                    | QTY. |
|------|----------|--|------|
| 400  | 46570 BB | Adjusting Cap                                  | 1    |
| 402  | 33094    | Coil Spring - 2000 PSI                         | 1    |
| 403  | 45862 BB | Spring Retainer                                | 1    |
| 404  | 46251 BB | Piston Stem                                    | 1    |
| 405  | 28338 T  | Back-Up Ring                                   | 1    |
| 406  | 22056 B  | O-Ring, Piston Stem                            | 1    |
| 407  | 46248 BB | Piston Retainer                                | 1    |
| 408  | 13969 B  | O-Ring, Piston Retainer                        | 1    |
| 409  | 17399 B  | O-Ring, Retainer - Inner                       | 1    |
| 410  | 46250 T  | Washer   | 1    |
| 412  | 46733 S  | Valve  | 1    |
| 413  | 46253 S  | Valve Seat                                     | 1    |
| 414  | 13963 B  | O-Ring, Valve Seat                             | 1    |
| 415  | 13966 B  | O-Ring, Retainer - Outer                       | 1    |
| 439  | 46249 BB | Valve Retainer                                 | 1    |
| 468  | 33099    | O-Ring Kit<br>(Incls: 405,406,408,409,414,415) | 1    |

The modular Regulating Unloader with built-in by-pass is part of the discharge manifold and is very easily serviced from the top. Remove Hex Adjusting Cap and lift parts from body.

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

## CHEMICAL INJECTOR SPECIFICATIONS

| Model 7231                   | U.S. Measure    | Metric Measure    |
|------------------------------|-----------------|-------------------|
| GPM.....                     | 2.0 GPM         | (7.6 L/M)         |
| Nozzle Orifice.....          | 1.8 mm          | (1.8 mm)          |
| <b>Model 7232</b>            |                 |                   |
| GPM.....                     | 3.0 GPM         | (11.0 L/M)        |
| Nozzle Orifice.....          | 2.1 mm          | (2.1 mm)          |
| <b>Common Specifications</b> |                 |                   |
| Hose Barb.....               | 1/4"            | (1/4")            |
| Tapped Barb.....             | 8/32 UNF        | (8/32 UNF)        |
| Inlet Port.....              | M18 x 1.0       | (M18 x 1.0)       |
| Discharge Port.....          | 3/8" NPTM       | (3/8" NPTM)       |
| Weight.....                  | 5.3 oz.         | (0.15 kg)         |
| Dimensions.....              | 2" x 1" x 1.75" | (52 x 25 x 45 mm) |



| ITEM | PART NO.  | DESCRIPTION             | QTY. |
|------|-----------|-------------------------|------|
| 437  | 13963 B   | O-Ring, Valve Seat      | 1    |
| 438  | 46254 P   | Valve Seat              | 1    |
| 443  | 541060 BB | Check Valve             | 1    |
| 444  | 45924 S   | Spring, Flow Balancer   | 1    |
| 446  | 13969 B   | O-Ring, Adapter         | 1    |
| 470  | 7231      | Fixed Injector (1.8 mm) | 1    |
|      | 7233      | Fixed Injector (2.1 mm) | 1    |
| 472  | 46630 BB  | Barb, Tapped            | 1    |
| 476  | 14187 B   | O-Ring, Injector Valve  | 1    |
| 477  | 46259 S   | Ball                    | 1    |
| 478  | 46260 S   | Spring, Injector Valve  | 1    |
| 479  | 46531 BB  | Orifice (2.1 mm)        | 1    |
|      | 46257 BB  | Orifice (1.8 mm)        | 1    |
| 480  | 46256 BB  | Body                    | 1    |

| CHEMICAL INJECTOR PERFORMANCE CHART                             |                       |                |  |                                      |  |
|---|-----------------------|----------------|--|--------------------------------------|--|
| Optional Special Ported Chemical Injector for Unloader Mounting |                       |                |  |                                      |  |
| Standard Pump Model   | Injector Orifice Size | Injector Model | Lo-Pressure Nozzle Rating (Max. Downstream) (Press for Injector) | Max. Chem. Draw (0 PSI) (Downstream) | Hi-Press Nozzle "Deduction" (Press drop across Inj.) |
| 2X20GSV   | 1.8 mm                | 7231           | 100 PSI  | 52 oz/min                            | 100 PSI  |
| 2X30GS, 2X28GSV   | 2.1 mm                | 7232           | 150 PSI  | 50 oz/min                            | 125 PSI  |

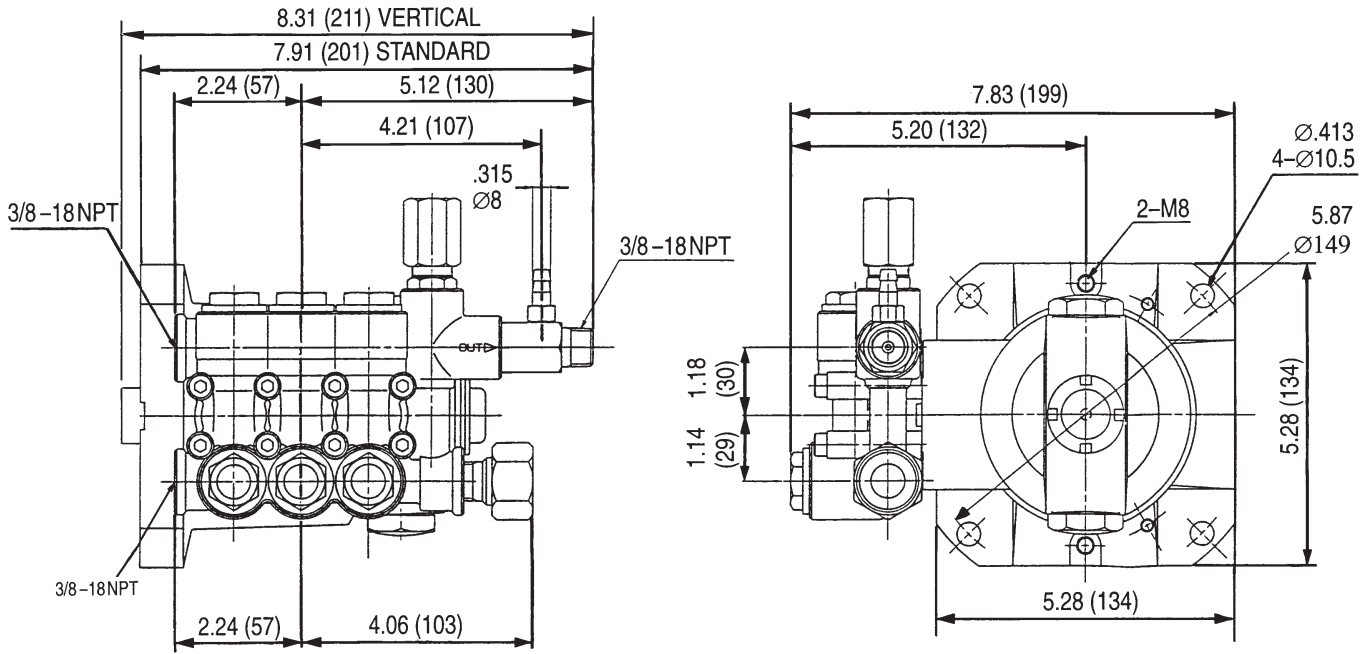
Optimum performance of chemical injector occurs with a 35 ft. high pressure hose and a minimum 3/8" I.D. The type of hose, extended lengths, reduced I.D. and fittings may create back pressures in excess of the low pressure nozzle rating and prevent the injector from drawing chemical. See Hose Friction 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.

The Chemical Injector is mounted directly to the discharge of the unloader. **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 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 DRAWING



### DETERMINING THE REQUIRED H.P.

$$\frac{\text{GPM} \times \text{PSI}}{1460} = \text{Electric Brake H.P. Required}$$

### HORSEPOWER REQUIREMENTS

| Flow |      | Pressure |          |          |          | Pump RPM |
|------|------|----------|----------|----------|----------|----------|
|      |      | PSI 1000 | PSI 1200 | PSI 1500 | PSI 2000 |          |
| GPM  | L/M  | BAR 70   | BAR 85   | BAR 105  | BAR 140  |          |
| 2.0  | 7.6  | 1.4      | 1.6      | 2.1      | 2.7      | 3100     |
| 2.8  | 10.6 | 1.9      | 2.3      | 2.9      | 3.9      | 3300     |
| 3.0  | 11.0 | 2.1      | 2.5      | 3.1      | 4.2      | 3200     |

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