Extrusion Pumps
For High Viscosity Fluids
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Extrusion pumps are frequently put in the most difficult of applications: moving high viscosity fluids. Extrusion pumps are used to apply a bead of material. In some instances the pump supplies a continuous bead; other applications call for intermittent delivery. Typical high-viscosity fluids pumped include caulks, heavy lubricants, mastics, sealers and inks.

Application Parameters

Viscosity is the largest obstacle in an extrusion application. As viscosities increase, fluid flow decreases. In general, 2-ball pumps can be used for fluids with viscosities up to 50,000 cPs. Chop-check pumps are for higher viscosity fluids. Pump ratios in extrusion applications range from 9:1 to 65:1.

Additional equipment is needed to keep an extrusion pump primed. Follower plates, lifts and rams assist the flow of material into the pump inlet. Without this equipment, the fluid will not “flow” into the pump. Lifts can be used for fluids with viscosities up to 200,000 cPs. Rams are needed for fluids with higher viscosities. If a fluid is stringy, a Ram may be needed for fluids with viscosities as low as 60,000 cPs.

Extrusion pumps also use fluid mass to keep the pump primed. When bulk tanks are used, the weight of the fluid will push it into the pump inlet.

Accessories Required

Several accessories will improve the efficiency of an Extrusion application. They include:

- **Follower Plates**: Plates mount directly to pump inlet. Fluid is assisted into pump. Available for 5-gallon (19-liter) pails and 55-gallon (208-liter) drums.
- **Follower Seals**: Forms seal between Follower Plate and Container to maintain prime. Available in Single or Double Lip Models. Use Single-Lip Wiper for viscosities up to 300,000 cP. Double Lip Wiper provides better wiping action on higher viscosity fluids. Use Double-Lip Wipers for fluids viscosities over 300,000 cP.
- **Lifts**: Eases change over of empty containers. An internal cylinder lifts the pump from the container. Weight of air motor, pump and mounting bracket maintain pump prime. Used on medium to high viscosity fluids. Available for 5 and 55-gallon containers.
- **Rams**: Function like a lift, but also exert downward force. Ram air cylinders push pump and follower plate into the fluid. Available in single or two-post configurations, for 5 or 55-gallon containers. Used on medium to high viscosity fluids.
- **Portability Kits**: For single-post ram mounted pumps. Wheels bolt onto base of ram. Eases portability of unit around application site.
- **Floor Mounts**: Used when fluid is stored in large, bulk containers. Gravity feeds material into the pump inlet. Locate as close to fluid container as possible.
- **Downstream Fluid Regulators**: Used to control fluid pressure at the dispense point. Downstream regulators cut fluid pressure to desired level. Also used to eliminate pulsation to provide even consistent flow of material.
- **Extrusion Guns**: Used to dispense fluids with viscosities above 200,000 cPs. Available in manual or automatic configurations. “Snuff-back” guns eliminate drool at work site.
- **Extrusion Nozzle Kit**: For manual or automatic extrusion guns. Size of orifice diameter controls size of bead extruded from the gun.
**Typical Extrusion Applications**

**Typical Extrusion Accessories**

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### 2-Ball Pumps

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### Chop-Check Pumps

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**Package Contents**

650239
9:1 Ratio, Carbon Steel Extrusion Package
65814-B ........................ Carbon Steel Pump
651840-1 ......................... Carbon Steel Follower Plate
65778 .......................... Portable Lift

**Basic Pump Performance**

Air Inlet Pressure Range .......... 30 - 150 PSI (2 - 10.2 bar)
Fluid Pressure Range .............. 270 - 1350 PSI (18.3 - 91.8 bar)
Flow @ 75 Cycles/Minute.......... 4 GPM (15.1 lpm)
Displacement Per Cycle ......... 11 in^3
Lower Pump Material ............ Carbon Steel
Packings ........................ Teflon
Plunger Material ................. Carbon Steel
Air Motor ........................ 65445-B
Air Motor Repair Kit ........... 61268
Lower Pump End Series ....... 65965
Lower Pump Repair Kit .......... 637058

**Package Contents**

650239-1
9:1 Ratio, Carbon Steel Extrusion Package
65814-1B ........................ Carbon Steel Pump
651840-1 ......................... Carbon Steel Follower Plate
65778 .......................... Portable Lift

**Basic Pump Performance**

Air Inlet Pressure Range .......... 30 - 150 PSI (2 - 10.2 bar)
Fluid Pressure Range .............. 270 - 1350 PSI (18.3 - 91.8 bar)
Flow @ 75 Cycles/Minute.......... 4 GPM (15.1 lpm)
Displacement Per Cycle ......... 11 in^3
Lower Pump Material ............ Carbon Steel
Packings ........................ Teflon
Plunger Material ................. Carbon Steel
Air Motor ........................ 65445-B
Air Motor Repair Kit ........... 61268
Lower Pump End Series ....... 65965-1
Lower Pump Repair Kit .......... 637059

**Package Contents**

650240
9:1 Ratio, Carbon Steel Extrusion Package
65814-B ........................ Carbon Steel Pump
651840-1 ......................... Carbon Steel Follower Plate
65778 .......................... Portable Lift
66104 .......................... Hose (Includes hose, extrusion gun and nozzle)

**Basic Pump Performance**

Air Inlet Pressure Range .......... 30 - 150 PSI (2 - 10.2 bar)
Fluid Pressure Range .............. 270 - 1350 PSI (18.3 - 91.8 bar)
Flow @ 75 Cycles/Minute.......... 4 GPM (15.1 lpm)
Displacement Per Cycle ......... 11 in^3
Lower Pump Material ............ Carbon Steel
Packings ........................ Thiokol Leather
Plunger Material ................. Carbon Steel
Air Motor ........................ 65445-B
Air Motor Repair Kit ........... 61268
Lower Pump End Series ....... 65965
Lower Pump Repair Kit .......... 637058
Package Contents

NP322L01-1
22:1 Ratio, Carbon Steel Extrusion Package

- NM232E-11-P43: Carbon Steel Pump
- 129121-400: Air Filter/Regulator
- 651840-1: Carbon Steel Follower Plate
- 67075: Portable Lift

Basic Pump Performance

Air Inlet Pressure Range: 30 - 150 PSI (2 - 10.2 bar)
Fluid Pressure Range: 660 - 3300 PSI (44.8 - 244.4 bar)
Maximum Working Flow: 1.0 GPM (3.8 lpm)
Displacement Per Cycle: 1.9 in³ (31.1 cm³)
Lower Pump Material: Carbon Steel
Plunger Material: 17 - 4 Stainless Steel

Air Motor: 66915
Air Motor Repair Kit: 637316
Lower Pump End Series: 67100-P43
Lower Pump Repair Kit: 637290-P43

Package Contents

NP322L02-1
22:1 Ratio, Stainless Steel Extrusion Package

- NM232F-11-P43: Stainless Steel Pump
- P29122-600: Air Filter/Regulator w/Gauge
- 651841-1: Stainless Steel Follower Plate
- 67075: Portable Lift

Basic Pump Performance

Air Inlet Pressure Range: 30 - 150 PSI (2 - 10.2 bar)
Fluid Pressure Range: 660 - 3300 PSI (44.8 - 244.4 bar)
Maximum Working Flow: 1.0 GPM (3.8 lpm)
Displacement Per Cycle: 1.9 in³ (31.1 cm³)
Lower Pump Material: 15 - 5 Stainless Steel
Plunger Material: 17 - 4 Stainless Steel

Air Motor: 66915
Air Motor Repair Kit: 637316
Lower Pump End Series: 67101-P43
Lower Pump Repair Kit: 637291-P43

Easy-Roll Dispensing of:
- Caulking
- Mastics
- Sealers
- Heavy Lubricant
- Paste Inks
**Package Contents**

**NP322R01-1**

22:1 Ratio, Carbon Steel Extrusion Package

- NM2322E-11-P43 - Carbon Steel Pump
- F25241-100 - Air Filter
- R27241-600 - Air Regulator
- 651840-1 - Carbon Steel Follower Plate
- 651615-C - Single Post Ram
- 66713 - Optional Portability Kit
- 67189 - Hold Down Kit Included

**Basic Pump Performance**

- Air Inlet Pressure Range: 30 - 150 PSI (2 - 10.2 bar)
- Fluid Pressure Range: 660 - 3300 PSI (44.8 - 244.4 bar)
- Maximum Working Flow: 1.0 GPM (3.8 lpm)
- Displacement Per Cycle: 1.9 in³ (31.1 cm³)
- Lower Pump Material: Carbon Steel
- Plunger Material: 17 - 4 Stainless Steel
- Air Motor: 66915
- Air Motor Repair Kit: 637316
- Lower Pump End Series: 67100-P43
- Lower Pump Repair Kit: 637290-P43

**Package Contents**

**NP322R02-1**

22:1 Ratio, Stainless Steel Extrusion Package

- NM2322F-11-P43 - Stainless Steel Pump
- F25241-100 - Air Filter
- R27241-600 - Air Regulator
- 651841-1 - Stainless Steel Follower Plate
- 651615-C - Single Post Ram
- 66713 - Optional Portability Kit
- 67189 - Hold Down Kit Included

**Basic Pump Performance**

- Air Inlet Pressure Range: 30 - 150 PSI (2 - 10.2 bar)
- Fluid Pressure Range: 660 - 3300 PSI (44.8 - 244.4 bar)
- Maximum Working Flow: 1.0 GPM (3.8 lpm)
- Displacement Per Cycle: 1.9 in³ (31.1 cm³)
- Lower Pump Material: 15 - 5 Stainless Steel
- Plunger Material: 17 - 4 Stainless Steel
- Air Motor: 66915
- Air Motor Repair Kit: 637316
- Lower Pump End Series: 67100-P43
- Lower Pump Repair Kit: 637290-P43

**Stationary Dispensing of:**

- RTV Silicones
- Mastics
- Sealers
- Heavy Lubricant
- Paste Inks
### Package Contents

**650540-1**

43:1 Ratio, Carbon Steel Extrusion Package
- 67120-P43 Carbon Steel Pump
- 651840-1 Carbon Steel Follower Plate
- 67075 Portable Lift

**Basic Pump Performance**

- Air Inlet Pressure Range: 30 - 150 PSI (2 - 10.2 bar)
- Fluid Pressure Range: 1290 - 6450 PSI (87.7 - 438.7 bar)
- Flow @ 75 Cycles/Minute: 0.9 GPM (3.4 lpm)
- Displacement Per Cycle: 2.8 in³ (45.8 cm³)
- Lower Pump Material: Carbon Steel
- Plunger Material: 17-4 Stainless Steel (Chrome Plated)
- Air Motor: 65440
- Air Motor Repair Kit: 61268
- Lower Pump End Series: 67100-P43
- Lower Pump Repair Kit: 637290-P43

---

**650541-1**

43:1 Ratio, Stainless Steel Extrusion Package
- 67121-P43 Stainless Steel Pump
- 651841-1 Stainless Steel Follower Plate
- 67075 Portable Lift

**Basic Pump Performance**

- Air Inlet Pressure Range: 30 - 150 PSI (2 - 10.2 bar)
- Fluid Pressure Range: 1290 - 6450 PSI (87.7 - 438.7 bar)
- Flow @ 75 Cycles/Minute: 0.9 GPM (3.4 lpm)
- Displacement Per Cycle: 2.8 in³ (45.8 cm³)
- Lower Pump Material: Stainless Steel
- Plunger Material: 17-4 Stainless Steel (Chrome Plated)
- Air Motor: 65440
- Air Motor Repair Kit: 61268
- Lower Pump End Series: 67101-P43
- Lower Pump Repair Kit: 637291-P43

---

**Easy-Roll High Pressure Dispensing of:**
- Body Sealers
- Window Glaze
- Caulking Compounds
- Heavy Lubricant
- Construction Adhesive
# Package Contents

**650542-1** (-2 Same except Follower is 651840-2)

**43:1 Ratio, Carbon Steel Extrusion Package**

- 67120-P43  
  Carbon Steel Pump
- 651840-1  
  Carbon Steel Follower Plate
- 651615-C  
  Single Post Ram
- 66713   
  Optional Portability Kit
- 67189   
  Hold Down Kit Included

---

**Package Contents**

**650543-1  43:1 Ratio, Stainless Steel Extrusion Package**

- 67121-P43  
  Stainless Steel Pump
- 651841-1  
  Stainless Steel Follower Plate
- 651615-C  
  Single Post Ram
- 66713   
  Optional Portability Kit
- 67189   
  Hold Down Kit Included

---

**Basic Pump Performance**

**Air Inlet Pressure Range**  
30 - 150 PSI (2 - 10.2 bar)

**Fluid Pressure Range**  
1290 - 6450 PSI (87.7 - 438.7 bar)

**Flow @ 75 Cycles/Minute**  
0.9 GPM (3.4 lpm)

**Displacement Per Cycle**  
2.8 in³ (45.8 cm³)

**Lower Pump Material**  
15 - 5 Stainless Steel

**Plunger Material**  
17 - 4 Stainless Steel (Chrome Plated)

**Air Motor**  
65440

**Air Motor Repair Kit**  
61268

**Lower Pump End Series**  
67100-P43

**Lower Pump Repair Kit**  
637290-P43

---

**65054X-1**

**Air Inlet Pressure Range**  
30 - 150 PSI (2 - 10.2 bar)

**Fluid Pressure Range**  
1290 - 6450 PSI (87.7 - 438.7 bar)

**Flow @ 75 Cycles/Minute**  
0.9 GPM (3.4 lpm)

**Displacement Per Cycle**  
2.8 in³ (45.8 cm³)

**Lower Pump Material**  
15 - 5 Stainless Steel

**Plunger Material**  
17 - 4 Stainless Steel (Chrome Plated)

**Air Motor**  
65440

**Air Motor Repair Kit**  
61268

**Lower Pump End Series**  
67101-P43

**Lower Pump Repair Kit**  
637291-P43

---

**Package Contents**

**650543-1  43:1 Ratio, Stainless Steel Extrusion Package**

- 67121-P43  
  Stainless Steel Pump
- 651841-1  
  Stainless Steel Follower Plate
- 651615-C  
  Single Post Ram
- 66713   
  Optional Portability Kit
- 67189   
  Hold Down Kit Included

---

**Basic Pump Performance**

**Air Inlet Pressure Range**  
30 - 150 PSI (2 - 10.2 bar)

**Fluid Pressure Range**  
1290 - 6450 PSI (87.7 - 438.7 bar)

**Flow @ 75 Cycles/Minute**  
0.9 GPM (3.4 lpm)

**Displacement Per Cycle**  
2.8 in³ (45.8 cm³)

**Lower Pump Material**  
15 - 5 Stainless Steel

**Plunger Material**  
17 - 4 Stainless Steel (Chrome Plated)

**Air Motor**  
65440

**Air Motor Repair Kit**  
61268

**Lower Pump End Series**  
67101-P43

**Lower Pump Repair Kit**  
637291-P43
Ordering

Packages include Pump, 651616-X Ram, Follower Plate Assembly, 65940 Filter/Regulator-Lubricator Kit, 91790 Air Motor Muffler & 90° Outlet Elbow.

To get the desired pump ratio and follower options, replace the X with appropriate numbers from the "Pump Information," "Follower Options" and "Packing Options" Charts.

**NP4**  **XXR**  **-**  **XX**  **-**  **XXX**

**Series**

4-1/4” Air Motor

**Pump Information**

21  30:1 Stainless Steel 2-Ball Pump  
(#650485-X43)  Page 45

22  22:1 Stainless Steel 2-Ball Pump  
(#650484-X43)  Page 41

24  11:1 Stainless Steel 2-Ball Pump  
(#650483-X43)  Page 38

31  23:1 Carbon Steel Chop Check Pump  
(#650492-X43-B)  Page 56

34  12:1 Carbon Steel Chop Check Pump  
(#650491-X43-B)  Page 51

**Follower Options**

02  Aluminum Follower Plate with Polyurethane Double-Lipped Seal

52  Teflon Coated Aluminum Follower Plate with Polyurethane Double-Lipped Seal

* For additional follower options see pages 16-18.

**Packing Options**

343  Glass-Filled Teflon (Upper & Lower)

C43  UHMW-PE (Upper & Lower)

G43  UHMW-PE/Leather Staggered

P43  UHMW-PE/Teflon Staggered (Upper) / UHMW-PE (Lower)

R43  Teflon/UHMW-PE Staggered / (Upper) Teflon (Lower)

**Popular Model Example:**

NP434R-02-G43
Ordering

Packages include Pump, 651616-X Ram, Follower Plate Assembly, 65940 Filter-Regulator-Lubricator Kit, 91790 Air Motor Muffler & 90° Outlet Elbow.

To get the desired pump ratio and follower options, replace the X with appropriate numbers from the “Pump Information,” “Follower Options” and “Packing Options” Charts.

NP6 XXR - XX - XXX

Series
6" Air Motor

Pump Information

21 60:1 Stainless Steel 2-Ball Pump (#650685-X43) Page 49
22 45:1 Stainless Steel 2-Ball Pump (#650684-X43) Page 47
23 23:1 Stainless Steel 2-Ball Pump (#650683-X43) Page 42
31 46:1 Carbon Steel Chop Check Pump (#650683X43-B) Page 64
34 23:1 Carbon Steel Chop Check Pump (#650691-X43-B) Page 57

Packing Options

343 Glass-Filled Teflon (Upper & Lower)
C43 UHMW-PE (Upper & Lower)
G43 UHMW-PE/Leather Staggered
P43 UHMW-PE/Teflon Staggered (Upper) / UHMW-PE (Lower)
R43 Teflon/UHMW-PE Staggered (Upper) / Teflon (Lower)

Follower Options

02 Aluminum Follower Plate with Polyurethane Double-Lipped Seal
03 Aluminum Follower Plate with EPR Double-Lipped seal
52 Teflon Coated Aluminum Follower Plate with Polyurethane Double-Lipped Seal

For additional follower options see pages 16-18.

Popular Model Example: NP624R-02-G43

NP8 XXR - XX - XXX

Series
8" Air Motor

Pump Information

34 44:1 Carbon Steel Chop Check Pump (#650891-X43D) Page 63

Packing Options

34D Glass-Filled Teflon (Upper & Lower)
C4D UHMW-PE (Upper & Lower)
G4D UHMW-PE/Leather Staggered
J3E Polyurethane (Upper)/UHMW-PE (Lower)
P4D UHMW-PE/Teflon Staggered (Upper)/UHMW-PE (Lower)
R4D Teflon/UHMW-PE Staggered (Upper)/Teflon (Lower)

Follower Options

02 Aluminum Follower Plate with Polyurethane Double-Lipped Seal
52 Teflon Coated Aluminum Follower Plate with Polyurethane Double-Lipped Seal

* For additional follower options see pages 16-18.
Floor Mounts

Model Number | Description | Pumps Used With | Mounting Footprint
--- | --- | --- | ---
65138 | Floor Mount - Accepts suction line from bulk containers or mixing tanks. 3” NPT(F) inlet. 1/4” NPT(F) vent port with plug. | 4½” & 6” air motor, 2-ball and extrusion pumps. Also 8” 40:1 2-ball and 44:1 extrusion pumps. Hydraulic-8.1, 3.3:1 2-ball 2:1, 3.6:1 Extrusion - 28:1, 45:1, 65:1 | A
65139 | Floor Mount - Accepts suction line from bulk containers or mixing tanks. 3” NPT(F) inlet. 1/4” NPT(F) vent port with plug. | 8”, 10” and 12” air motor 2-ball and extrusion pumps. Hydraulic-12:1, 2.4:1. | B

Bulk/Tote tank Supply Components

Model Number | Description
--- | ---
A 628088-7 | Material Supply Hose - Heavy duty (1” diameter) hose features neoprene construction with a 5,000 psi max. working pressure capacity. Both ends 1” NPT(M). Length: 7 ft.
B 67073 | Ball Valve - For use with 628088-7 material supply hose. 4,500 psi max. working pressure rated.
C 628089-X | Material Hose With Fittings - 3” diameter hose has cross-linked polyethylene (internal) and neoprene (external) construction. Hose comes with female cam-lever locking coupler, male adapter, cam-lever locking dust cap and dust plug. Length: 2 ft. (628089-2), 4 ft. (628089-4) & 6 ft. (628089-6). Maximum working pressure: 125 psi
D 65138, 65139 | Pump Floor Mount - See above for floor mount information.

Rams for 5-Gallon Drums

Model Number | Description | Used With | Follower Plate Used With
--- | --- | --- | ---
651615-D | Single Post Ram - For use with materials up to 1,000,000 CPS viscosity. For 5-gallon containers. Hold-down clamps secure pail. 66713 Portability Kit available for mobile applications. | “N” Series 22:1 pumps & 4½” air motor 6” air motor 43:1 extrusion pump except models listed for 651613-B | 651840-X, 651615-C
66713 | Portability Kit - Mounts directly to the base of the 651615-C Ram, to allow ease of portability. Will clear 28” (711 mm) openings. Has 12” (305 mm) tires. | 651615-C Single Post Rams and Ram packages
Rams

Two Post Ram - For use with materials over 200,000 CPS viscosity. Consists of two 3-1/2” diameter air cylinders joined by cross-over tubes and welded to a steel base. Cast aluminum follower plate has double edge Buna N wiper to clean drum and seal material from atmosphere.

Base - 39” (991 mm) x 24” (610 mm)
Raised height - 101” (2.5 m)
Lowered position height - 63” (1.6 m).

Mounting footprint is strictly a reference letter used to simplify the matching of pumps to follower plates and related accessories. (i.e. pump with “A” mounting footprint will fit any accessory with “A” mounting footprint.

NOTE: Bare Ram - No follower plate - P/N-67081

<table>
<thead>
<tr>
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## Pump/Drum Stabilizing Brackets

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<th>Model Number</th>
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<th>Follower Plate</th>
<th>Used With</th>
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<td>66353-1</td>
<td>Pump Stabilizing Brackets - Attaches easily to 651616 Ram. Kit includes hardware.</td>
<td>8&quot;, 10&quot;, 12&quot;</td>
<td>Air Motor Pumps</td>
<td>–</td>
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<tr>
<td>67133</td>
<td>Drum Hold-Down Brackets - Kit includes 2 brackets, clamp screws, nuts. Used with 651616-XX.</td>
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</table>
Extra Heavy-Duty Rams
55-Gallon Containers

Heavy-duty Ram - Features 5-1/2" diameter post construction capable of delivering 0-11 psi* follower down force. This extra measure of down force makes the 651612 Ram the best choice for the hard-duty supply of heavy inks, RTV silicones, caulks, varnishes, highly viscous adhesives and much more. Drum hold down bracket included.

* WARNING: Before using maximum follower down force, check container or consult container manufacturer for maximum pressure rating.

Mounting footprint is strictly a reference letter used to simplify the matching of pumps to follower plates and related accessories. (i.e. pump with “A” mounting footprint will fit any accessory with “A” mounting footprint.

<table>
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<td>Tube Type</td>
<td>Viton</td>
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</table>

Single Post Rams

Single Post Ram / Lift - Provides responsive pump lifting and pump lowering – with sufficient downforce to permit pump extrusion of materials up to 500,000 c.p.s. It’s ability to revolve 360-degrees allows the ongoing placement and rotation of three, 55-Gallon containers – a critical feature in applications that demand continuous material supply.

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Fits ARO Pump</th>
<th>Height Raised</th>
<th>Height Lowered</th>
<th>Air Inlet</th>
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<td>4-1/4&quot;-6&quot; Air Motors</td>
<td>110&quot;</td>
<td>63&quot;</td>
<td>1/4&quot;NPT</td>
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<td>651614-2</td>
<td>8&quot; to 12&quot; Air Motors</td>
<td>110&quot;</td>
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<td>Small Hydraulic Motor</td>
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<td>1/4&quot;NPT</td>
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<td>110&quot;</td>
<td>63&quot;</td>
<td>1/4&quot;NPT</td>
</tr>
</tbody>
</table>

The above models include the brackets and hardware needed to accommodate two-ball or extrusion tie-rod style pumps.

65116 Follower Plate Air Assist Kit - Air assist valve supplies air pressure to bottom of follower to aid in bringing follower to top in less time. Kit includes valve, hose and necessary mounting hardware.
Follower Plates 5 Gallon Containers

Mounting footprint is strictly a reference letter used to simplify the matching of pumps to follower plates and related accessories. (i.e. pump with “A” mounting footprint will fit any accessory with “A” mounting footprint.

<table>
<thead>
<tr>
<th>Model:</th>
<th>Material:</th>
<th>Coating:</th>
<th>Wiper Type:</th>
<th>Wiper Material:</th>
<th>Ram/Lift Used With:</th>
<th>Mounting Footprint:</th>
</tr>
</thead>
<tbody>
<tr>
<td>66469</td>
<td>Carbon Steel</td>
<td>None</td>
<td>Single Lip</td>
<td>Nitrile</td>
<td>651614-1, 651615-C Rams</td>
<td>A</td>
</tr>
<tr>
<td>66731</td>
<td>Carbon Steel</td>
<td>Electroless Nickel</td>
<td>Single Lip</td>
<td>Nitrile</td>
<td>651615-C Rams</td>
<td>C</td>
</tr>
<tr>
<td>66731-1</td>
<td>Carbon Steel</td>
<td>Electroless Nickel</td>
<td>Double Lip</td>
<td>Polyurethane</td>
<td>651614-4, 651616 &amp; 651615-C Rams</td>
<td>C</td>
</tr>
<tr>
<td>66731-2</td>
<td>Carbon Steel</td>
<td>Electroless Nickel</td>
<td>Double Lip</td>
<td>EPR</td>
<td>651614-1, 651615-C Rams</td>
<td>C</td>
</tr>
<tr>
<td>66732</td>
<td>Carbon Steel</td>
<td>Electroless Nickel</td>
<td>Double Lip</td>
<td>Nitrile</td>
<td>651614-1, 651615-C Rams</td>
<td>A</td>
</tr>
<tr>
<td>66732-1</td>
<td>Carbon Steel</td>
<td>Electroless Nickel</td>
<td>Double Lip</td>
<td>Polyurethane</td>
<td>651614-1, 651615-C Rams</td>
<td>A</td>
</tr>
<tr>
<td>66732-2</td>
<td>Carbon Steel</td>
<td>Electroless Nickel</td>
<td>Double Lip</td>
<td>EPR</td>
<td>651614-1, 651615-C Rams</td>
<td>A</td>
</tr>
<tr>
<td>651840-1</td>
<td>Carbon Steel</td>
<td>None</td>
<td>290-mm Single Lip</td>
<td>Polyethylene/Urethane</td>
<td>651615-C Rams &amp; 67075-X, 65778 Lift</td>
<td>C</td>
</tr>
<tr>
<td>651840-2</td>
<td>Carbon Steel</td>
<td>None</td>
<td>295mm. Designed for metric pails</td>
<td>Nitrile</td>
<td>651615-C Rams &amp; 67075-X, 65778 Lift</td>
<td>C</td>
</tr>
<tr>
<td>651840-3</td>
<td>Carbon Steel</td>
<td>None</td>
<td>311.9mm. Designed for metric pails</td>
<td>Polyethylene/ Urethane</td>
<td>651615-C Rams &amp; 67075-X, 65778 Lift</td>
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<tr>
<td>651841-1</td>
<td>Stainless Steel</td>
<td>None</td>
<td>290-mm</td>
<td>Polyethylene/ Urethane</td>
<td>651615-C Rams &amp; 67075-X, 65778</td>
<td>G</td>
</tr>
<tr>
<td>651842-1</td>
<td>Stainless Steel</td>
<td>None</td>
<td>290-mm</td>
<td>Polyethylene/ Urethane</td>
<td>651615-C Rams</td>
<td>D</td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Used With</th>
<th>Mounting Footprint</th>
</tr>
</thead>
<tbody>
<tr>
<td>91364-10</td>
<td>Seal Protectors - Package of 10 for 5-gallon followers to be inserted between the follower plate and the material in the container. This helps to prevent corrosive materials from attacking the wiper and reduces clean-up time.</td>
<td>5-gallon Follower Plates</td>
<td>-</td>
</tr>
<tr>
<td>67136</td>
<td>Follower Plate Adapter - For attaching Integrity to follower plates or floor stand. Includes stainless steel adapter w/2” NPT(F) threads, seal and hardware.</td>
<td>66248 &amp; 66516 Followers. 651616-1,-2,-3 Rams. 65136 Floor Mounts</td>
<td>A</td>
</tr>
</tbody>
</table>
### Follower Plates 55-Gallon Containers

Mounting footprint is strictly a reference letter used to simplify the matching of pumps to follower plates and related accessories. (i.e. pump with “A” mounting footprint will fit any accessory with “A” mounting footprint.

<table>
<thead>
<tr>
<th>Model:</th>
<th>Material:</th>
<th>Coating:</th>
<th>Wiper Type:</th>
<th>Wiper Material:</th>
<th>Ram/Lift Used With:</th>
<th>Mounting Footprint:</th>
</tr>
</thead>
<tbody>
<tr>
<td>66248</td>
<td>Carbon Steel</td>
<td>None</td>
<td>Single Lip</td>
<td>Nitrile, Polyethylene</td>
<td>651614-X Ram 640169 Lift</td>
<td>A</td>
</tr>
<tr>
<td>66248-1</td>
<td>Carbon Steel</td>
<td>None</td>
<td>Single Lip</td>
<td>Polyethylene</td>
<td>651614-X Ram 640169 Lift</td>
<td>A</td>
</tr>
<tr>
<td>66516</td>
<td>Aluminum</td>
<td>None</td>
<td>Double Lip</td>
<td>Nitrile</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>A</td>
</tr>
<tr>
<td>66516-1</td>
<td>Aluminum</td>
<td>None</td>
<td>Double Lip</td>
<td>Polyurethane</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>A</td>
</tr>
<tr>
<td>66516-2</td>
<td>Aluminum</td>
<td>None</td>
<td>Double Lip</td>
<td>EPR</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>A</td>
</tr>
<tr>
<td>66516-5</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Double Lip</td>
<td>Nitrile</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>A</td>
</tr>
<tr>
<td>66516-6</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Double Lip</td>
<td>Polyurethane</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>A</td>
</tr>
<tr>
<td>66516-7</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Double Lip</td>
<td>EPR</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>A</td>
</tr>
<tr>
<td>66517</td>
<td>Aluminum</td>
<td>None</td>
<td>Double Lip</td>
<td>Nitrile</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>B</td>
</tr>
<tr>
<td>66517-1</td>
<td>Aluminum</td>
<td>None</td>
<td>Double Lip</td>
<td>Polyurethane</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>B</td>
</tr>
<tr>
<td>66517-2</td>
<td>Aluminum</td>
<td>None</td>
<td>Double Lip</td>
<td>EPR</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>B</td>
</tr>
<tr>
<td>66517-5</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Double Lip</td>
<td>Nitrile</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>B</td>
</tr>
<tr>
<td>66517-6</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Double Lip</td>
<td>Polyurethane</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>B</td>
</tr>
<tr>
<td>66517-7</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Double Lip</td>
<td>EPR</td>
<td>651614-X 651616-X Rams 651612-X Rams</td>
<td>B</td>
</tr>
</tbody>
</table>
# Follower Plates 55-Gallon Containers

Mounting footprint is strictly a reference letter used to simplify the matching of pumps to follower plates and related accessories. (i.e. pump with “A” mounting footprint will fit any accessory with “A” mounting footprint.

<table>
<thead>
<tr>
<th>Model</th>
<th>Material:</th>
<th>Coating:</th>
<th>Wiper Type:</th>
<th>Wiper Material:</th>
<th>Ram Used With:</th>
<th>Mounting Footprint:</th>
</tr>
</thead>
<tbody>
<tr>
<td>67195-1</td>
<td>Aluminum</td>
<td>None</td>
<td>Tube Type</td>
<td>Neoprene</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>A</td>
</tr>
<tr>
<td>67195-2</td>
<td>Aluminum</td>
<td>None</td>
<td>Tube Type</td>
<td>EPR</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>A</td>
</tr>
<tr>
<td>67195-3</td>
<td>Aluminum</td>
<td>None</td>
<td>Tube Type</td>
<td>Viton</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>A</td>
</tr>
<tr>
<td>67195-5</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Tube Type</td>
<td>Neoprene</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>A</td>
</tr>
<tr>
<td>67195-6</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Tube Type</td>
<td>EPR</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>A</td>
</tr>
<tr>
<td>67195-7</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Tube Type</td>
<td>Viton</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>A</td>
</tr>
<tr>
<td>67196-1</td>
<td>Aluminum</td>
<td>None</td>
<td>Tube Type</td>
<td>Nitrile</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>B</td>
</tr>
<tr>
<td>67196-2</td>
<td>Aluminum</td>
<td>None</td>
<td>Tube Type</td>
<td>EPR</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>B</td>
</tr>
<tr>
<td>67196-3</td>
<td>Aluminum</td>
<td>None</td>
<td>Tube Type</td>
<td>Viton</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>B</td>
</tr>
<tr>
<td>67196-5</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Tube Type</td>
<td>Nitrile</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>B</td>
</tr>
<tr>
<td>67196-6</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Tube Type</td>
<td>EPR</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>B</td>
</tr>
<tr>
<td>67196-7</td>
<td>Aluminum</td>
<td>Teflon</td>
<td>Tube Type</td>
<td>Viton</td>
<td>651614-X, 651616-X, 651612-X</td>
<td>B</td>
</tr>
</tbody>
</table>

## Pump Follower/Floor Stand Adapters/Seal Protectors

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Ram Used With</th>
<th>Mounting Footprint:</th>
</tr>
</thead>
<tbody>
<tr>
<td>67134</td>
<td>Follower Plate Adapter - For attaching NM2322X-X &amp; 6712X-P43 pumps to 55-gal. follower plates or floor stands</td>
<td>66516-X &amp; 6719X-X Followers, 651616-1, 651616-2, 651616-3, 651614-X and 651612-X Rams, 65138 Floor Mount</td>
<td>C</td>
</tr>
<tr>
<td>67136</td>
<td>Follower Plate Adapter - For attaching Integrity pumps to follower plates or floor stand. Includes stainless steel adapter w/2&quot; NPT(F) threads, seal and hardware.</td>
<td>66248 &amp; 66516 Followers, 651616-1, 651616-2, 651616-3 Rams, 65138 Floor Mount</td>
<td>A</td>
</tr>
<tr>
<td>91363-10</td>
<td>Seal Protectors - Package of 10 for 55-gallon followers to be inserted between the follower plate and the material in the container. This helps to prevent corrosive materials from attacking the wiper and reduces clean-up time.</td>
<td>55-Gallon Follower Plates</td>
<td>-</td>
</tr>
</tbody>
</table>
### Downstream Regulators

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Base Housing</th>
<th>Seat</th>
<th>Regulated Pressure Range PSI (bar)</th>
<th>Max. Inlet Pressure PSI (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>651780-A1A-B</td>
<td>C/S</td>
<td>T/C</td>
<td>400-1,250 (28-86)</td>
<td>3,000 (207)</td>
</tr>
<tr>
<td>651780-A1B-B</td>
<td>C/S</td>
<td>T/C</td>
<td>1,000-3,000 (69-207)</td>
<td>6,000 (414)</td>
</tr>
<tr>
<td>651780-A3A-B</td>
<td>S/S</td>
<td>T/C</td>
<td>400-1,250 (28-86)</td>
<td>3,000 (207)</td>
</tr>
<tr>
<td>651780-A3B-B</td>
<td>S/S</td>
<td>T/C</td>
<td>1,000-3,000 (69-207)</td>
<td>6,000 (414)</td>
</tr>
<tr>
<td>651780-B1A-B</td>
<td>C/S</td>
<td>T/C</td>
<td>400-1,250 (28-86)</td>
<td>3,000 (207)</td>
</tr>
<tr>
<td>651780-B1B-B</td>
<td>C/S</td>
<td>T/C</td>
<td>1,000-3,000 (69-207)</td>
<td>6,000 (414)</td>
</tr>
<tr>
<td>651780-B3A-B</td>
<td>S/S</td>
<td>T/C</td>
<td>400-1,250 (28-86)</td>
<td>3,000 (207)</td>
</tr>
<tr>
<td>651780-B3B-B</td>
<td>S/S</td>
<td>T/C</td>
<td>1,000-3,000 (69-207)</td>
<td>6,000 (414)</td>
</tr>
<tr>
<td>651781-B1B-B</td>
<td>C/S</td>
<td>T/C</td>
<td>750-2,500 (52-172)</td>
<td>6,000 (414)</td>
</tr>
<tr>
<td>651781-C1B-B</td>
<td>C/S</td>
<td>T/C</td>
<td>2,000-3,000 (138-345)</td>
<td>6,000 (414)</td>
</tr>
<tr>
<td>651780-C3B-B</td>
<td>C/S</td>
<td>T/C</td>
<td>400-5,000 (14-285)</td>
<td>6,000 (414)</td>
</tr>
<tr>
<td>651780-C3R-B</td>
<td>S/S</td>
<td>T/C</td>
<td>750-5,000 (52-345)</td>
<td>6,000 (414)</td>
</tr>
</tbody>
</table>

**Flow rates tested in 55 CPS material**

### Backpressure Models

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Base Housing</th>
<th>Seat</th>
<th>Regulated Pressure Range PSI (bar)</th>
<th>Max. Inlet Pressure PSI (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>651780-B1B-B</td>
<td>C/S</td>
<td>T/C</td>
<td>1,000-3,000 (69-207)</td>
<td>3,000 (207)</td>
</tr>
<tr>
<td>651781-C3B-B</td>
<td>S/S</td>
<td>T/C</td>
<td>1,000-3,000 (69-207)</td>
<td>3,000 (207)</td>
</tr>
</tbody>
</table>

**Flow rates tested in 55 CPS material**

### Material Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C/S</td>
<td>Carbon Steel</td>
<td>T/C</td>
<td>Tungsten Carbide</td>
</tr>
<tr>
<td>S/S</td>
<td>Stainless Steel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Downstream Regulators

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Base Housing</th>
<th>Seat</th>
<th>Reg. Pressure Range</th>
<th>Working Pressure w/Gage</th>
<th>Inlet Pressure</th>
<th>Gauge Pressure Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3/8” ports, standard flow to 3 GPM (11.4 liters)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>651790-A1B-B</td>
<td>Z/A T/C</td>
<td></td>
<td>5-30 (0-2)</td>
<td>120 (8.3)</td>
<td>750 (51.7)</td>
<td>0-60 (0-4)</td>
</tr>
<tr>
<td>651790-A1C-B</td>
<td>Z/A T/C</td>
<td></td>
<td>20-60 (1.3-4.1)</td>
<td>120 (8.3)</td>
<td>750 (51.7)</td>
<td>0-60 (0-4)</td>
</tr>
<tr>
<td>651790-A2B-B</td>
<td>Z/A T/C</td>
<td></td>
<td>50-200 (3.4-14)</td>
<td>600 (41.3)</td>
<td>750 (51.7)</td>
<td>0-300 (0-20)</td>
</tr>
<tr>
<td>651790-A3B-B</td>
<td>S/S 4/S</td>
<td></td>
<td>5-30 (0-2)</td>
<td>120 (8.3)</td>
<td>750 (51.7)</td>
<td>0-60 (0-4)</td>
</tr>
<tr>
<td>651790-A3C-B</td>
<td>S/S T/C</td>
<td></td>
<td>20-60 (1.3-4.1)</td>
<td>120 (8.3)</td>
<td>750 (51.7)</td>
<td>0-60 (0-4)</td>
</tr>
<tr>
<td>651790-A3D-B</td>
<td>S/S T/C</td>
<td></td>
<td>50-200 (3.4-14)</td>
<td>600 (41.3)</td>
<td>750 (51.7)</td>
<td>0-300 (0-20)</td>
</tr>
<tr>
<td>651790-A4B-B</td>
<td>S/S 3/S</td>
<td></td>
<td>5-30 (0-2)</td>
<td>120 (8.3)</td>
<td>500 (34)</td>
<td>0-60 (0-4)</td>
</tr>
<tr>
<td>651790-A4C-B</td>
<td>S/S 3/S</td>
<td></td>
<td>20-60 (1.3-4.1)</td>
<td>120 (8.3)</td>
<td>500 (34)</td>
<td>0-60 (0-4)</td>
</tr>
<tr>
<td>651790-A4D-B</td>
<td>S/S 3/S</td>
<td></td>
<td>50-200 (3.4-14)</td>
<td>600 (41.3)</td>
<td>500 (34)</td>
<td>0-300 (0-20)</td>
</tr>
<tr>
<td>Gauge Included.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **3/8” ports, high-flow to 6 GPM (22.7 liters)** |
| 651790-B1D-B | Z/A T/C       |      | 30-200 (2-14)       | 600 (41.4)              | 1250 (86)     | 0-300 (0-20)        |
| 651790-B1E-B | Z/A T/C       |      | 100-800 (7-55)      | 1250 (86.2)             | 1250 (86)     | 0-1,000 (0-69)      |
| 651790-B3D-B | S/S T/C       |      | 30-200 (2-14)       | 600 (41.4)              | 1250 (86)     | 0-300 (0-20)        |
| 651790-B3E-B | S/S T/C       |      | 100-800 (7-55)      | 1250 (86.2)             | 1250 (86)     | 0-1,000 (0-69)      |
| 651790-B4D-B | S/S 3/S       |      | 30-200 (2-14)       | 600 (41.4)              | 500 (34)      | 0-300 (0-20)        |
| Gauge Included. |

| **3/8” ports, remote models, flow to 3 GPM (11.4 liters)** |
| 651790-A1R-B | Z/A T/C       |      | 30-200 (2-14)       | 500 (34)                | 750 (51.7)    | -                   |
| *651790-A3R-B | S/S T/C       |      | 30-200 (2-14)       | 500 (34)                | 750 (51.7)    | -                   |
| 651790-A4R-B | S/S 3/S       |      | 30-200 (2-14)       | 500 (34)                | 500 (34)      | -                   |

| *Gauge NOT Included. |

| **3/8” ports, remote models, flow to 6 GPM** (22.7 liters) |
| *651790-B4R-B | S/S 3/S       |      | 30-200 (2-14)       | 500 (34)                | -             | -                   |

**Flow rates tested in 30 wt. oil

### Backpressure Regulators

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Base Housing</th>
<th>Seat</th>
<th>Reg. Pressure Range</th>
<th>Working Pressure w/Gage</th>
<th>Inlet Pressure</th>
<th>Gauge Pressure Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3/8” ports, high-flow to 6 GPM (22.7 liters)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>651791-B1D-B</td>
<td>Z/A T/C</td>
<td></td>
<td>0-200 (0-14)</td>
<td>200 (14)</td>
<td>200 (14)</td>
<td>0-300 (0-20)</td>
</tr>
<tr>
<td>651791-B1E-B</td>
<td>Z/A T/C</td>
<td></td>
<td>0-800 (0-55)</td>
<td>800 (55)</td>
<td>800 (55)</td>
<td>0-1,000 (0-69)</td>
</tr>
<tr>
<td>651791-B3D-B</td>
<td>S/S T/C</td>
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<td>0-200 (0-14)</td>
<td>200 (14)</td>
<td>200 (14)</td>
<td>0-300 (0-20)</td>
</tr>
<tr>
<td>651791-B3E-B</td>
<td>S/S T/C</td>
<td></td>
<td>0-800 (0-55)</td>
<td>800 (55)</td>
<td>800 (55)</td>
<td>0-1,000 (0-69)</td>
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<tr>
<td>651791-B4D-B</td>
<td>S/S 3/S</td>
<td></td>
<td>0-200 (0-14)</td>
<td>200 (14)</td>
<td>200 (14)</td>
<td>0-300 (0-20)</td>
</tr>
</tbody>
</table>

**Flow rates tested in 55 CPS Material

| **1-1/4” ports, system-flow** to 18.5 GPM (701)** |
| 651791-C3D-B | S/S T/C       |      | 0-200 (0-14)        | 200 (14)                | 200 (14)      | 0-300 (0-20)        |
| 651791-C4D-B | S/S 3/S       |      | 0-200 (0-14)        | 200 (14)                | 200 (14)      | 0-300 (0-20)        |

**Flow rates tested in 55 CPS Material

### Material Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/S</td>
<td>300 Series Stainless Steel</td>
<td>Z/A</td>
<td>Zinc Aluminum</td>
</tr>
<tr>
<td>S/S</td>
<td>Stainless Steel</td>
<td>T/C</td>
<td>Tungsten Carbide</td>
</tr>
</tbody>
</table>

---

**Low Pressure Fluid Regulator**

The ARO I.D.L. Fluid Regulator features smooth, consistent pressure regulation with easy-tum adjustment. Patented easy-access seat plug permits immediate service access to the regulator’s ball and seat. Patented “floating” ball and seat design maintains proper regulation, even during significant fluctuations in line pressure.
Typical Metering System

Measuring Cylinder System
Utilize ARO pumps, measuring cylinders, a manual 4-way fluid control valve, standard hoses and dispensing valves. Shifting the control valve in either direction will allow the cylinder to fill to a pre-set volume.

Suggested System Components
- Aro Pump
- Flow Gun (Dispensing Valve)
- Airline Filter, Regulator, Lubricator
- Measuring Cylinder - see below for details
- 4-way Control Valve - see below for details

Accuracy
The measuring cylinder system has a consistent accuracy rate of ± 2%, depending on material characteristics.

Ordering

Measuring Cylinders
665006 Measures .05 to 4 ounces, 9-1/2” long, 3” wide and 4-1/8” high. Dispenses predetermined quantities of fluid or semi-fluid material. 5,000 P.S.I. pressure, 1/4 inch NPTF. Constructed of carbon steel with neoprene seals & Buna-N O-rings.

665007 Measures 4 to 8 ounces, 12” long 3” wide and 4-1/8 high. 5,000 P.S.I. pressure rating.

665008 Measures 12 to 16 ounces, 17” long 3” wide and 4-1/8” high. 5,000 P.S.I. pressure rating.

Manual Control Valve
665009 Four-way control valve for ARO measuring cylinders. Pressure rating up to 5,000 P.S.I. All steel construction. 9-1/4 high, 9” long, 2-1/2” wide, 1/4” NPTF inlet and outlet.
### Automatic Extrusion Guns

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Pumps Used With</th>
<th>Outlet Port Size</th>
<th>Working Pressure PSI (Bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*651511</td>
<td>Flow Gun - Requires 4-way air valve to open and close. Adjusting screw varies stroke length. Secures to 1/2” diameter rod by allen screw. Aluminum body with tungsten carbide seats. Order 66541-XX Extrusion Nozzle Kit separately.</td>
<td>5000 (345) NPT (2) 11/16-16 (M)</td>
<td>50 (3.4)</td>
<td>at 2000 fluid pressure</td>
</tr>
<tr>
<td>651513-11-B</td>
<td>Flow Gun - Has air open, spring return actuator. Requires 3-way air valve to open. Adjusting screw varies stroke length. Secures to 1/2” diameter rod by allen screw. 316 stainless steel with tungsten carbide seat. Order 66541-XX Extrusion Nozzle Kit separately.</td>
<td>5000 (345) NPS &amp; 11/16-16 (F) 1/8 NPT (M)</td>
<td>50 (3.4)</td>
<td>at 2000 fluid pressure</td>
</tr>
<tr>
<td>651536-1</td>
<td>Snuff-Back Gun - High flow automatic dispensing gun is designed to handle high-viscosity materials. Requires a 4-way air valve to open and close.</td>
<td>5000 (345) NPT (2) 1/4 NPT (F)</td>
<td>50 (3.4)</td>
<td>at 2000 fluid pressure</td>
</tr>
<tr>
<td>651537-1</td>
<td>Flow Gun - Similar to 651511 except with carbon steel body tungsten carbide ball and seat.</td>
<td>5000 (345) NPT (2) 3/8 NPT (F)</td>
<td>50 (3.4)</td>
<td>at 2000 fluid pressure</td>
</tr>
</tbody>
</table>

*WARNING:* Do not use with halogenated hydrocarbons. This model contains aluminum parts that come in contact with the material being dispensed. Aluminum is not compatible with halogenated hydrocarbon solvents.

### Manual Extrusion Guns

Used to extrude material over 200,000 CPS.

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Max Fluid Pressure PSI (bar)</th>
<th>Fluid Inlet PSI In. (mm)</th>
<th>Fluid Outlet I.D. &amp; Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>*651500</td>
<td>Flow Gun - Aluminum body with tungsten carbide seats. Order 66541-XX Extrusion Nozzle Kit separately.</td>
<td>7500 (517) 3/8 (F) 11/16-16 (M)</td>
<td>.250 (6) &amp; .093 (2.3)</td>
<td></td>
</tr>
<tr>
<td>651533</td>
<td>Flow Gun - Wetted parts of 316 series stainless steel with tungsten carbide seats. Order 66541-XX Extrusion Nozzle Kit separately.</td>
<td>5000 (345) NPS(M) 1/4 (2) 11/16-16 (M)</td>
<td>.093 (2.3) &amp; .063 (1.6)</td>
<td></td>
</tr>
<tr>
<td>641523-1</td>
<td>Flow Gun - Wetted parts of 300 Series stainless steel with Teflon packings. Order 76751 Adapter and 66541-XX Extrusion Nozzle Kit separately.</td>
<td>3000 (207) 3/8 (F) 1/4 NPT(F)</td>
<td>.250 (6) &amp; .063 (1.6)</td>
<td></td>
</tr>
</tbody>
</table>

*WARNING:* Do not use with halogenated hydrocarbons. This model contains aluminum parts that come in contact with the material being dispensed. Aluminum is not compatible with halogenated hydrocarbon solvents.

### Extrusion Gun Nozzle Kits

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Diameter</th>
<th>Model Number</th>
<th>Diameter</th>
<th>Model Number</th>
<th>Diameter</th>
<th>Model Number</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>76571</td>
<td>Adapter</td>
<td>1/4NPT(M) to 11/16-16(M) adapts 66541-XX Extrusion Nozzle Kit to fluid outlet for 641523-1 Flow Gun.</td>
<td>66541-XX</td>
<td>Extrusion Nozzle Kit - Used on manual or automatic extrusion guns. Hardened steel assembly includes nozzle and cap. 11/16-16 UN(F).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66541-3</td>
<td>.031</td>
<td>66541-9</td>
<td>.093</td>
<td>66541-17</td>
<td>.172</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66541-4</td>
<td>.046</td>
<td>66541-12</td>
<td>.125</td>
<td>66541-18</td>
<td>.187</td>
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<td></td>
</tr>
<tr>
<td>66541-6</td>
<td>.063</td>
<td>66541-15</td>
<td>.156</td>
<td>66541-25</td>
<td>.250</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>66541-37</td>
<td>.375</td>
<td></td>
<td></td>
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</tbody>
</table>
**Features/Benefits**

- **Spray Valves for the Atomization of Low-Viscosity Fluids** - These compact, air-operated, automatic spray valves provide air-atomized application of low-viscosity fluids. They are designed to be used with either supply pumps or pressure tanks. Several unique design features seal the material from outside air and moisture and prevent premature curing of material. This allows for either continuous or intermittent use and reduces the need for daily cleanup.

- **Unique Spray Patterns Matched to Application Requirements** - To meet the needs of your individual application, both flat and round spray patterns are available. For wide surface coverage with minimum film thickness, flat spray models are available in both 90° and 45° spray patterns. For a more focused pattern, with a thicker film build, or a conical substrate, the round spray models are the appropriate choice.

- **Compact Design Provides Mounting Versatility** - The narrow dimensions, block shape and hose placement allows installation in narrow, recessed areas. Multiple valves can be grouped together in an area normally occupied by a single conventional spray valve.

- **Extrusion Valves for Precise Applications of Bead Patterns** - For applications that require a precise bead of material, rather than a sprayed coating, several models of extrusion valves are available. Like the spray valves, separate air pressure and material flow adjustments provide regulation of emissions for material savings and precise, accurate patterns.

Multiple valves can be grouped together to achieve a multiple bead pattern.

**Spray Patterns**

<table>
<thead>
<tr>
<th>Flat Spray 90° Pattern</th>
<th>Material Control</th>
<th>Atomizing Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSI (bar)</td>
<td>PSI (bar)</td>
<td>PSI (bar)</td>
</tr>
<tr>
<td>15 (1)</td>
<td>55 (3.7)</td>
<td>20 (1.3)</td>
</tr>
<tr>
<td>30 (2)</td>
<td>90 (6.2)</td>
<td>35 (2.4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flat Spray 45° Pattern</th>
<th>Material Control</th>
<th>Atomizing Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSI (bar)</td>
<td>PSI (bar)</td>
<td>PSI (bar)</td>
</tr>
<tr>
<td>15 (1)</td>
<td>55 (3.7)</td>
<td>20 (1.3)</td>
</tr>
<tr>
<td>30 (2)</td>
<td>90 (6.2)</td>
<td>35 (2.4)</td>
</tr>
</tbody>
</table>
### Spray Patterns

<table>
<thead>
<tr>
<th>Material Pressure (PSI)</th>
<th>Control Air Pressure (PSI)</th>
<th>Atomizing Air Pressure (PSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 (1)</td>
<td>55 (3.7)</td>
<td>20 (1.3)</td>
</tr>
<tr>
<td>30 (2)</td>
<td>90 (6.2)</td>
<td>35 (2.4)</td>
</tr>
<tr>
<td>15 (1)</td>
<td>100 (6.9)</td>
<td>60 (4)</td>
</tr>
<tr>
<td>30 (2)</td>
<td>100 (6.9)</td>
<td>20 (1.3)</td>
</tr>
</tbody>
</table>

### Extrusion Accessories • Low-Profile Compact Dispensing Valves

<table>
<thead>
<tr>
<th>Model</th>
<th>Diameter (mm)</th>
<th>Fluid Inlet NPT (M)</th>
<th>Atomizing Air Inlet NPT (M)</th>
<th>Control Air Inlet NPT (M)</th>
<th>Minimum Control Air Required Pressure PSI (bar)</th>
<th>Maximum Fluid Operating Pressure PSI (bar)</th>
<th>Recommended Range Atomizing Air Pressure PSI (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>407442-8</td>
<td>0.8</td>
<td>1/4</td>
<td>1/4</td>
<td>1/8</td>
<td>55 (3.7)</td>
<td>180 (12)</td>
<td>7.5-37.5 (.5-2.5)</td>
</tr>
<tr>
<td>407442-10</td>
<td>1.0</td>
<td>1/4</td>
<td>1/4</td>
<td>1/8</td>
<td>55 (3.7)</td>
<td>180 (12)</td>
<td>7.5-37.5 (.5-2.5)</td>
</tr>
<tr>
<td>407442-15</td>
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<td>1/4</td>
<td>1/8</td>
<td>55 (3.7)</td>
<td>180 (12)</td>
<td>7.5-37.5 (.5-2.5)</td>
</tr>
<tr>
<td>407442-8-4</td>
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<td>1/4</td>
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<td>1/4</td>
<td>1/8</td>
<td>55 (3.7)</td>
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<td>7.5-37.5 (.5-2.5)</td>
</tr>
<tr>
<td>407442-15-4</td>
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<td>1/8</td>
<td>55 (3.7)</td>
<td>180 (12)</td>
<td>7.5-37.5 (.5-2.5)</td>
</tr>
<tr>
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<td>1/4</td>
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<td>90 (6)</td>
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<td>90 (6)</td>
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<td>90 (6)</td>
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<td>407444-8</td>
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<td>1/4</td>
<td>1/8</td>
<td>55 (3.7)</td>
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<td>7.3-37.5 (.5-2.5)</td>
</tr>
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<td>407444-10</td>
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<td>1/4</td>
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<td>55 (3.7)</td>
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<td>1/4</td>
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<td>90 (6)</td>
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<td>90 (6)</td>
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<td>90 (6)</td>
<td>1000 (69)</td>
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<td>90 (6)</td>
<td>1000 (69)</td>
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</table>
Material Filters

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Maximum Fluid Pressure PSI (Bar)</th>
<th>Filter Mesh Microns</th>
<th>Filter Inlet(s) Size (Qty) NPT</th>
<th>Filter Outlet(s) Size (Qty) NPT</th>
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<tbody>
<tr>
<td>651412</td>
<td>5,000 (345)</td>
<td>70</td>
<td>1/4-F (2)</td>
<td>1/4-F (3)</td>
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<tr>
<td>651412-B</td>
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<td>1/4-F (3)</td>
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<tr>
<td>651422-40</td>
<td>6,000 (414)</td>
<td>40</td>
<td>1/2-F (2)</td>
<td>1/2-F (1)</td>
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<td>651422-70</td>
<td>6,000 (414)</td>
<td>70</td>
<td>1/2-F (2)</td>
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<td>651422-100</td>
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<tr>
<td>651420-70</td>
<td>6,000 (414)</td>
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<td>1/2-F (2)</td>
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<tr>
<td>651420-100</td>
<td>6,000 (414)</td>
<td>100</td>
<td>1/2-F (2)</td>
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<td>651418-40-B</td>
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<td>1/F (2)</td>
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<tr>
<td>651418-70-B</td>
<td>6,000 (414)</td>
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<td>1/F (2)</td>
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<td>1/F (2)</td>
<td>3/8-F (3)</td>
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Swivels

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Thread Size</th>
<th>Type</th>
<th>Max. Working Pressure PSI (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>636075</td>
<td>1/8 (M) x 1/8 (F)</td>
<td>Fabric with Neoprene</td>
<td>8,000 (552)</td>
</tr>
<tr>
<td>636085</td>
<td>3/8 (M) x 3/8 (F)</td>
<td>Fabric with Neoprene</td>
<td>8,000 (552)</td>
</tr>
<tr>
<td>635117</td>
<td>1/2 (M) x 1/2 (F)</td>
<td>Fabric with Neoprene</td>
<td>8,000 (552)</td>
</tr>
<tr>
<td>635108</td>
<td>3/4 (M) x 3/4 (F)</td>
<td>Fabric with Neoprene</td>
<td>1,000 (69)</td>
</tr>
<tr>
<td>636077</td>
<td>1/8 (M) x 1/8 (F)</td>
<td>Fabric with Neoprene</td>
<td>8,000 (552)</td>
</tr>
<tr>
<td>636088</td>
<td>3/8 (M) x 3/8 (F)</td>
<td>Fabric with Neoprene</td>
<td>8,000 (552)</td>
</tr>
<tr>
<td>635106</td>
<td>1/2 (F) x 3/8 (M)</td>
<td>Fabric with Neoprene</td>
<td>8,000 (552)</td>
</tr>
<tr>
<td>636087-B*</td>
<td>1/4-18 NPT (F) x 1/4-18 NPT (M)</td>
<td>Fabric with Neoprene</td>
<td>5,000 (345)</td>
</tr>
<tr>
<td>636086-B</td>
<td>1/4-18 NPT (F) x 1/4-18 NPT (M)</td>
<td>Fabric with Neoprene</td>
<td>5,000 (345)</td>
</tr>
</tbody>
</table>

* Includes internally mounted element

Swivels are used to give mobility and flexibility for material hoses and dispensing guns. Select the proper working pressure and check the compatibility of the seals with the material being pumped.

- **straight**
- **“Z”**
## Air Filter/Regulator/Lubricator

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Pumps Used With</th>
<th>Port Size</th>
<th>Reg. Pressure Range</th>
<th>Max. Flow Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MODULE/AIR 1000™ F/R/L</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C28121-800 Filter/Regulator/Lubricator</td>
<td>Drop/fog-type lubrication, 20 micron filter, polycarbonate bowl w/guard.</td>
<td>2&quot; &amp; 3&quot;, 1/4 (F), air motor pumps</td>
<td>1/4</td>
<td>5-125 (3.6)</td>
<td>13 SCFM (6 dm³/s)</td>
</tr>
<tr>
<td>P29122-600 Filter/Regulator</td>
<td>Drop/fog-type lubrication, 20 micron filter, polycarbonate bowl w/guard.</td>
<td>2&quot; &amp; &quot;N&quot;, 1/4 (F), air motors</td>
<td>1/4</td>
<td>5-125 (3.6)</td>
<td>12 SCFM (6 dm³/s)</td>
</tr>
<tr>
<td><strong>MODULE/AIR 2000™ F/R/L</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C28241-810 Filter/Regulator/Lubricator</td>
<td>Drop/fog-type lubrication, 40 micron filter, metal bowls w/ sight glass.</td>
<td>4⅝ &amp; 6&quot;, 1/2 (F), air motor pumps</td>
<td>1/2</td>
<td>6-125 (3.8)</td>
<td>140 SCFM (66 dm³/s)</td>
</tr>
<tr>
<td>P29241-610 Filter/Regulator</td>
<td>Drop/fog-type lubrication, 40 micron filter, metal bowls w/ sight glass.</td>
<td>4¼ &amp; 6&quot;, 1/2 (F), air motors</td>
<td>1/2</td>
<td>5-125 (3.6)</td>
<td>110 SCFM (52 dm³/s)</td>
</tr>
<tr>
<td><strong>HEAVY DUTY F/R/L</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28353 Filter/Regulator/Lubricator</td>
<td>Drop/fog-type lubrication, 40 micron filter, polycarbonate bowl w/guard.</td>
<td>8&quot;, 10&quot;, 3/4 (F), air motor pumps</td>
<td>3/4</td>
<td>5-125 (3.6)</td>
<td>75 SCFM (35 dm³/s)</td>
</tr>
<tr>
<td><strong>F/R/L Assemblies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>651729 Kit Assembly Heavy-Duty FRL w/ hose &amp; mounting bracket for installation to Two Post Ram.</td>
<td>10&quot; &amp; 12&quot;, 3/4 (M), air motor pumps</td>
<td>3/4</td>
<td>5-125 (3.6)</td>
<td>75 SCFM (35 dm³/s)</td>
<td></td>
</tr>
<tr>
<td>651730 Kit Assembly Heavy-Duty FRL w/ hose &amp; mounting bracket for installation to Two Post Ram.</td>
<td>8&quot;, 3/4 (M), air motor pumps</td>
<td>3/4</td>
<td>5-125 (3.6)</td>
<td>75 SCFM (35 dm³/s)</td>
<td></td>
</tr>
<tr>
<td>65940 Kit Assembly Heavy-Duty FRL w/ hose &amp; mounting bracket for installation to Two Post Ram.</td>
<td>4¼ &amp; 6&quot;, 1/2 (M), 6&quot; air motor pumps</td>
<td>1/2</td>
<td>5-200 (13.8)</td>
<td>65 SCFM (31 dm³/s)</td>
<td></td>
</tr>
</tbody>
</table>

### Air Line Lubricant

**62274** One Quart Bottle - A high quality “EP” extreme pressure gear oil, non-detergent, rust or oxidation inhibited, with a viscosity of 700-1000 S.U.S. at 100° F.
2-Way Solenoid/Pilot Acting Solenoid Valves

- Normally Closed
- Brass Body
- Stainless Steel Stem
- Spring Return
- Connector Options include CN-30 or CHW-30

Note: See Page 28 for cable connectors.

2-Way Direct Acting Solenoid Valves

- Normally Closed
- Brass Body
- Stainless Steel Stem
- Spring Return
- Connector Options include CN-30 or CHW-30, except 1/4" valve which uses CSN or CHW.

Note: See Page 28 for cable connectors.

3-Way Solenoid Actuated Valves

- Normally Closed
- Aluminum Body
- Spring Return
- Connector Options include CN-30 or CHW-30 for CAT6-P or CSN or CHW for all others

Note: See Page 28 for cable connectors.

Air Control Needle Valves

- Composite Body
- Can be Panel Mounted
- Infinite Control Settings
- Corrosion-Resistant Stainless Steel Insert & Stem

Lock-Out Valves/Hasp

- Meets OSHA lock-out / tag-out regulations
- Installs upstream of air filter / regulator unit

* Safety lock-out for Module-Air 1000
a Typical Installation

Connectors

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSN</td>
<td>Strain relief connector for 3-way valves</td>
</tr>
<tr>
<td>CSN-30</td>
<td>Strain relief connector for 2-way valves and CAT66P-XXX-X Valves</td>
</tr>
<tr>
<td>CHW</td>
<td>Molded cable connector for 3-way valves, 36&quot; molded leads</td>
</tr>
<tr>
<td>CHW-JU</td>
<td>Molded cable connector for 2-way valves and CAT66P-XXX-X, 36&quot; molded leads</td>
</tr>
</tbody>
</table>

Coils

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>116218-39</td>
<td>22 mm, 24 VDC Coil</td>
</tr>
<tr>
<td>116218-33</td>
<td>22 mm, 120 VAC Coil</td>
</tr>
<tr>
<td>119378-39</td>
<td>30 mm, 24 VDC Coil</td>
</tr>
<tr>
<td>119378-33</td>
<td>30 mm, 120 VAC Coil</td>
</tr>
</tbody>
</table>

ARO Diaphragm Pump

ARO Piston Pump
Over-Run Controls

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Pumps Used With</th>
<th>Air Inlet NPT</th>
<th>Air Outlet NPT</th>
<th>Pressure Range PSI (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>635040</td>
<td>ARO-STOP® Valve</td>
<td>&quot;N&quot; Series, air motor pumps only</td>
<td>1/4 (F)</td>
<td>1/4 (M)</td>
<td>20-175 (1.4-12)</td>
</tr>
<tr>
<td>23644-400</td>
<td>ARO-STOP® Valve</td>
<td>4&quot; &amp; 6&quot; air motor pumps</td>
<td>1/2 (F)</td>
<td>1/2 (M)</td>
<td>20-175 (1.4-12)</td>
</tr>
<tr>
<td>635043</td>
<td>ARO-STOP® Valve</td>
<td>8&quot;, 10&quot;</td>
<td>3/4 (F)</td>
<td>3/4 (M)</td>
<td>20-175 (1.4-12)</td>
</tr>
</tbody>
</table>

Air Motor Muffler

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Pump Used With</th>
<th>Air Inlet NPT</th>
<th>Size Inches X Inches</th>
<th>PSI (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>91790</td>
<td>Air Motor Muffler</td>
<td>4½&quot; &amp; 6&quot; air motor pumps</td>
<td>1-1/4 (M)</td>
<td>3-1/2 x 11-3/16</td>
<td>89 x 284</td>
</tr>
<tr>
<td>92460</td>
<td>Air Motor Muffler</td>
<td>8&quot; air motor, pumps</td>
<td>1-1/4 (M)</td>
<td>5-5/8 x 15-3/8</td>
<td>143 x 391</td>
</tr>
<tr>
<td>66718</td>
<td>Air Motor Muffler</td>
<td>10&quot; &amp; 12&quot; air motor, pumps</td>
<td>Bolted-on</td>
<td>9 x 20</td>
<td>229 x 508</td>
</tr>
</tbody>
</table>

Wet Sol “Plus”

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Used With</th>
</tr>
</thead>
<tbody>
<tr>
<td>66333-B</td>
<td>Wet Sol - One Quart Container</td>
<td>All pumps with wet cups.</td>
</tr>
<tr>
<td>66334-B</td>
<td>Wet Sol - One Gallon Container</td>
<td></td>
</tr>
</tbody>
</table>
How to Order Hose

The material characteristic chart below indicates what type of hose material is recommended for specific fluids. The charts of the following two pages list the fluid hoses in order of use, size, tube and cover materials, and maximum working pressure. In selecting the proper hose, be sure the hose material and fluid is compatible and that the maximum working pressure won’t be exceeded in the application.

Standard length hoses, which are a stock item ready for shipment, are listed in the “available length” column of the selection chart.

<table>
<thead>
<tr>
<th>Hose Material</th>
<th>Characteristics</th>
<th>Recommended For</th>
<th>Not Recommended For</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna N</td>
<td>Buna N is highly resistant to petroleum base oils and many cleaners. Hoses incorporating a Buna N tube make excellent air hoses when lubrication is required in the air line.</td>
<td>Ammonia solutions, Petroleum oils and fluids, Water, Silicone greases and oils, Di-ester base lubricants, Ethylene glycol base fluids, Abrasive material, Corn oil, Ethylene Alcohol, Soap solution.</td>
<td>Acetate Solvents, Ketones (MEK, Acetone), Strong acids, Ozone, Automatic Brake fluid, Benzene, Carbon Disulfide, Ethylene Chloride.</td>
</tr>
<tr>
<td>GRS</td>
<td>GRS (Government Rubber Styrene) has superior wear characteristics. With high tensile properties and good abrasion and moisture resistance, it makes a fine air hose.</td>
<td>Alcohol, Water.</td>
<td>Ozone, Petroleum oil, Many chemicals, Abrasive material.</td>
</tr>
<tr>
<td>Polysulfide (Thiokol)</td>
<td>Thiokol is highly resistant to most paint solvents, thereby lending itself for use as a flexible supply line for carrying paint, latex materials, gasoline, and oil.</td>
<td>Automatic brake fluid, Alcohols, Water, Non-oxidizing acids, Oil, Ketones (MEK, Acetone).</td>
<td>Ozone, Heat, Phosphate ester base hydraulic fluids, Abrasive material, Freon.</td>
</tr>
<tr>
<td>Neoprene</td>
<td>Neoprene has very good resistance to ozone, sunlight, and oxidation. It also performs well in contact with oils, is heat and flame-resistant and has good tensile strength and resilience. Neoprene is considered to be an excellent hose covering.</td>
<td>Refrigerants (Freons), Petroleum oil, Mild acids, Silicate ester lubricants, Abrasive material, Calcium Chloride.</td>
<td>Phosphate ester fluids, Ketones (MEK, Acetone), Benzene.</td>
</tr>
<tr>
<td>Nylon</td>
<td>Nylon is tough, retains its shape at elevated temperatures, and is highly resistant to abrasion and to the effects of most chemicals. It is unaffected by oil and enamel or lacquer solvents when used as a fluid supply hose.</td>
<td>Lubricating oils and grease, Aliphatic and Aromatic hydro-carbons, Common esters, Ketones, Ethers, Alkalies, Abrasive Material, Benzene, Butyl Alcohol, Carbon Tetrachloride.</td>
<td>Strong acids, RTV, Creosote, Oxidizing Agents.</td>
</tr>
</tbody>
</table>

For further hose material compatibility consult Aro’s Material Compatibility Guide, Form # 8677-P.
### Air & Fluid Hose / Low Pressure

<table>
<thead>
<tr>
<th>Model</th>
<th>Fitting Thread Sizes</th>
<th>Hose Materials</th>
<th>Standard Lengths Feet</th>
<th>PSI (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2” I.D., 27/32” O.D., 1 fabric braid</td>
<td>1/2 NPT(M) x 1/2 NPT(M)</td>
<td>GRS</td>
<td>5</td>
<td>125 (9)</td>
</tr>
<tr>
<td>1/4”, 5/8” O.D., 2 fabric braid</td>
<td>1/4 NPT(M) x 1/4 NPT(M)</td>
<td>Buna N Neoprene</td>
<td>3, 5, 10, 25</td>
<td>250 (17)</td>
</tr>
<tr>
<td>3/4” I.D., 1-3/16” O.D., 2 fabric braid</td>
<td>3/4 NPT(M) x 3/4 NPT(M)</td>
<td>Neoprene</td>
<td>5, 10, 15</td>
<td>600 (41)</td>
</tr>
</tbody>
</table>

### Fluid Hose / Low Pressure

1/2”, 11/16” O.D., 2 fabric wire braid

<table>
<thead>
<tr>
<th>Model</th>
<th>Fitting Thread Sizes</th>
<th>Hose Materials</th>
<th>Standard Lengths Feet</th>
<th>PSI (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>622581-6</td>
<td>1/2 NPT(M) x 1/2 NPT(M)</td>
<td>Thiokol Neoprene</td>
<td>6</td>
<td>200 (14)</td>
</tr>
<tr>
<td>3/4”, 1-1/4” O.D., 2 fabric braid</td>
<td>3/4 NPT(M) x 3/4 NPT(M)</td>
<td>Thiokol Neoprene</td>
<td>6</td>
<td>200 (14)</td>
</tr>
</tbody>
</table>

### Fluid Hose / Medium Pressure

3/8”, 5/8” O.D., 2 nylon w/static wire braid

<table>
<thead>
<tr>
<th>Model</th>
<th>Fitting Thread Sizes</th>
<th>Hose Materials</th>
<th>Standard Lengths Feet</th>
<th>PSI (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>628042-XXX</td>
<td>1/4 NPSM(FSN) x 1/4 NPSM(FSN)</td>
<td>Nylon</td>
<td>25, 30, 50</td>
<td>3000 (207)</td>
</tr>
<tr>
<td>1/2”, 51/64” O.D., 2 spiral, 1 wire braid</td>
<td>1/2 NPSM(F) x 1/2 NPSM(F)</td>
<td>Nylon</td>
<td>25</td>
<td>4500 (310)</td>
</tr>
</tbody>
</table>

### RTV/Moisture Lok™ Hose

3/8” I.D., 11/16” O.D., polyester braid

<table>
<thead>
<tr>
<th>Model</th>
<th>Fitting Thread Sizes</th>
<th>Hose Materials</th>
<th>Standard Lengths Feet</th>
<th>PSI (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>628055-XXX</td>
<td>1/2 NPSM(F) x 1/2 NPSM(F)</td>
<td>Nylon</td>
<td>10, 15, 25</td>
<td>2250 (190)</td>
</tr>
<tr>
<td>1/2” I.D., 13/16” O.D., polyester braid</td>
<td>1/2 NPT(M) x 1/2 NPT(M)</td>
<td>Polymer Polyurethane</td>
<td>5, 10, 15, 25</td>
<td>2000 (138)</td>
</tr>
</tbody>
</table>
**Basic Data:**

Fluid Viscosity  
Air Pressure at Pump  
Distance to Dispensing Point (Plumbing Length)  
Flow Requirements (in gallons Per Minute)  
Container Size

**Determine Ratio:**

Calculate Pressure Drop ($\Delta P$)

\[ \Delta P \times (\text{Viscosity} \times \text{Plumbing Length} \times \text{Flow} \times 0.000245) \div (\text{Plumbing I.D.})^4 \]

Calculate Required pump Ratio

\[ \Delta P \div \text{Air Pressure at Pump} \times \text{Pump Ratio Required} \]

**Pump Selection:**

- Final Selection  
  Is a pre-assembled A.S.A.P. package available?  
  Will system be made up of components ordered individually?

**Select Accessories:**

- Dispensing Gun  
- I.D.L. Fluid Regulator  
- Follower Plate & Seal  
- Control Valves to Operate Pump  
- Airline Filter-Regulator-Lubricator  
- Air Motor Muffler  
- Ram / Lift / Pedestal-Mount / Wall-Mount  
- Wet-Sol / Airline Oil
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 270 - 1350 PSI (18.3 - 91.8 bar)
- **Max. Rec'd Cycles Per Minute**: 60
- **Displacement Per Cycle**: 11 in³ (180.2 cm³)
- **Cycles Per Gallon (Liter)**: 21 (5.5)
- **Flow @ 60 Cycles / Minute**: 2.9 GPM (10.8 lpm)
- **Noise Level @ 60 Psi**: 80 db(A)

**Pump Specifications**

- **Lower Pump Material**: 316 Stainless Steel
- **Plunger Material**: 316 Stainless Steel
- **Cylinder Material**: Stainless Steel
- **Air Motor**: 65444-B
- **Motor Repair Kit**: 61268
- **Motor Diameter**: 4-1/4”
- **Stroke**: 4”
- **Air Inlet**: 1/2” NPT(F)
- **Lower Pump Model**: 65108/65108-X
- **Lower Pump Repair Kit**: 637010 for 650408-B/650408-5-B
  637010-4 for 650408-4-B/650408-6-B
- **Material Inlet**: 1-1/4” NPT(F)
- **Material Outlet**: 3/4” NPT(F)
- **Weight**: 35 lbs. (15.8 kgs.)

**Ordering**

- **6 5 0 4 0 8 - B**: Packings: Teflon (Upper & Lower)
- **6 5 0 4 0 8 - X - B**: Packings
  - 4 : UHMW-PE (Upper & Lower)
  - 5 : Teflon, w/Ultra Coated Tube and Rod (Upper & Lower)
  - 6 : UHMW-PE, w/Ultra Coated Tube and Rod (Upper & Lower)

**Accessories**

- **Air F/R/L**: C28241-810
- **Wall Mount**: 66100
- **Airline Oil**: 62274
- **Muffler**: 91790
- **Wet Sol**: 66333-B
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 270 - 1350 PSI (18.3 - 91.8 bar)
- **Max. Rec’d Cycles Per Minute**: 75
- **Displacement Per Cycle**: 11 in³ (180.2 cm³)
- **Cycles Per Gallon (Liter)**: 21 (5.5)
- **Flow @ 60 Cycles / Minute**: 2.8 GPM (10.5 lpm)
- **Noise Level @ 60 Psi**: 80 db(A)

**Pump Specifications**

- **Lower Pump Material**: 316 Stainless Steel
- **Plunger Material**: 316 Stainless Steel
- **Cylinder Material**: Stainless Steel
- **Air Motor**: 65444-B
- **Motor Repair Kit**: 61268
- **Motor Diameter**: 4-1/4”
- **Stroke**: 4”
- **Air Inlet**: 1/2” NPT(F)
- **Lower Pump Model**:
  - 65106 for 650409
  - 65106-4 for 650409-4
- **Lower Pump Repair Kit**:
  - 637010 for 650409
  - 637010-4 for 650409-4
- **Material Inlet**: 1-1/4” NPSM(F)
- **Material Outlet**: 3/4” NPT(F)
- **Weight**: 45 lbs. (203 kgs.)

**Ordering**

650409

**Accessories**

- **Air F/R/L**: C28241-810
- **Wall Mount**: 66100
- **Airline Oil**: 62274
- **Muffler**: 91790
- **Wet Sol**: 66333-B
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 270 - 1350 PSI (18.3 - 91.8 bar)
- **Max. Rec’d Cycles Per Minute**: 60
- **Displacement Per Cycle**: 11 in³ (180.2 cm³)
- **Cycles Per Gallon (Liter)**: 21 (5.5)
- **Flow @ 60 Cycles / Minute**: 2.8 GPM (10.5 lpm)
- **Noise Level @ 60 Psi**: 80 db(A)

**Pump Specifications**

- **Lower Pump Material**: Carbon Steel
- **Plunger Material**: Carbon Steel (Hard Chrome)
- **Cylinder Material**: Carbon Steel
- **Motor Diameter**: 4-1/4”
- **Motor Repair Kit**: 61268
- **Motor Repair Kit**: 61268
- **Air Motor**: 371777 for 650453-5
- **Order parts separately for**: 650453-7, -8, -9
- **Material Inlet**: 1-1/2" NPT(F)
- **Material Outlet**: 3/4" NPT(F)
- **Weight**: 35 lbs. (15.8 kgs.) for 650453-7/650453-9
  49 lbs. (22.2 kgs.) for 650453-5/650453-8

**Ordering**

```
6 5 0 4 5 3 - X
```

<table>
<thead>
<tr>
<th>Type</th>
<th>Packings</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 : Stub</td>
<td>Leather/Teflon</td>
</tr>
<tr>
<td>5 : 55-Gallon</td>
<td>Teflon</td>
</tr>
<tr>
<td>9 : Stub</td>
<td>UHMW-PE/Leather</td>
</tr>
<tr>
<td>8 : 55-Gallon</td>
<td>UHMW-PE</td>
</tr>
</tbody>
</table>

**Accessories**

- **Air F/R/L**: C28241-810
- **Wall Mount**: 66100
- **Airline Oil**: 62274
- **Muffler**: 91790
- **Wet Sol**: 66333-B
### Pump Performance

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 300 - 1200 PSI (20.4 - 81.6 bar)
- **Max. Rec’d Cycles Per Minute**: 60
- **Displacement Per Cycle**: 59.9 in³ (981.5 cm³)
- **Cycles Per Gallon (Liter)**: 3.8 (1.0)
- **Flow @ 60 Cycles / Minute**: 15 GPM (56.7 lpm)
- **Noise Level @ 60 Psi**: 88 db(A) w/muffler

### Pump Specifications

- **Lower Pump Material**: 300 Stainless Steel
- **Plunger Material**: 304 Stainless Steel (Hard Chrome)
- **Cylinder Material**: 304 Stainless Steel (Hard Chrome)
- **Air Motor**: 66523-B
- **Motor Repair Kit**: 66614
- **Motor Diameter**: 8”
- **Stroke**: 6”
- **Air Inlet**: 3/4" NPT(F)
- **Lower Pump Model**: 66942-XXF
- **Lower Pump Repair Kit**: 637211-XXX
- **Material Inlet**: 2" NPTF-1
- **Material Outlet**: 1-1/4” NPTF-(f)
- **Weight**: 102 lbs. (46.3 kgs.)

### Ordering

**6 1 3 1 1 2 - X X F - C**

- **Packings**
  - C6: UHMW-PE
  - K3: CG-Filled Teflon with, Buna N Energizer
  - L6: Mineral-Filled Teflon
  - P6: UHMW-PE/Teflon Staggered
  - R6: Teflon/UHMW-PE Staggered

### Accessories

Reference Mounting Footprint “A” for related rams/accessories

- **Air F/R/L**: 28353
- **Wall Mount**: 66542
- **Mounting Post**: 67187-1
- **Airline Oil**: 62274
- **Muffler**: 92460
- **Wet Sol**: 66333-B
- **Floor/Follower Adpt.**: 67136
Pump Performance

Air Inlet Pressure Range . . . . 30 - 120 PSI (2 - 8.3 bar)
Fluid Pressure Range ......... 300 - 1200 PSI (20.4 - 81.6 bar)
Max. Rec'd Cycles Per Minute . 60
Displacement Per Cycle ....... 59.9 in³ (981.5 cm³)
Cycles Per Gallon (Liter) . . . . 3.8 (1.0)
Flow @ 60 Cycles / Minute .... 15 GPM (56.7 lpm)
Noise Level @ 60 Psi .......... 88 db(A) w/muffler

Pump Specifications

Lower Pump Material ............ 400 Stainless Steel
Plunger Material ................. 15-5 Stainless Steel (Hard Chrome)
Cylinder Material ................. 15-5 Stainless Steel (Hard Chrome)
Air Motor ......................... 66523-B
Motor Repair Kit ................. 66614
Motor Diameter ................. 8”
Stroke .............................. 6”
Air Inlet ........................... 3/4” NPT(F)
Lower Pump Model ............... 66941-X6D
Lower Pump Repair Kit ........... 637211-XXX
Material Inlet ..................... 2” NPT(M)
Material Outlet ................... 1-1/4” NPT(F)
Weight .............................. 102 lbs. (46.3 kgs.)

Ordering

650866-X6D-B

Packings
C: UHMW-PE
P: UHMW-PE/Teflon / Staggered
L: Mineral-Filled Teflon
R: Teflon/UHMW-PE Staggered

Accessories

Reference Mounting Footprint “A” for related rams/accessories
Air F/R/L: 28353
Wall Mount: 66542
Mounting Post: 67187-1
Airline Oil: 62274
Muffler: 92460
Wet Sol: 66333-B
Floor/Follower Adpt. 67136

Graphs showing performance metrics for pump operation.
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 330 - 1650 PSI (22.4 - 112.2 bar)
- **Max. Rec'd Cycles Per Minute**: 60
- **Displacement Per Cycle**: 14.5 in³ (237.6 cm³)
- **Cycles Per Gallon (Liter)**: 16 (4.2)
- **Flow @ 60 Cycles / Minute**: 3.7 GPM (13.9 lpm)
- **Noise Level @ 60 Psi**: 81.8 db(A)

**Pump Specifications**

- **Lower Pump Material**: 300 Stainless Steel
- **Plunger Material**: 17-4 Stainless Steel
- **Cylinder Material**: 316 Stainless Steel
- **Air Motor**: 65465-B
- **Motor Repair Kit**: 61268
- **Motor Diameter**: 4-1/4” (10.8 cm)
- **Stroke**: 6”
- **Air Inlet**: 1/2”NPT(F)
- **Lower Pump Model**: 66300-X4X
- **Lower Pump Repair Kit**: 637305-X4X
- **Material Inlet**: 1” NPT(F) / 2” NPT(M)
- **Material Outlet**: 1” NPTF-1(F)
- **Weight**: 42.9 lbs. (19.5 kgs.)

**Ordering**

```
6 5 0 4 8 3 - X 4 X
```

- **Plungers**: 3 : 17-4 Stainless Steel, Hard Chrome Plated
- **Packings**: 3 : 17-4 Stainless Steel, Ultra Coated
- **UHMW-PE**: B : 17-4 Stainless Steel, C : UHMW-PE/Leather
- **G**: UHMW-PE/Leather
- **P**: UHMW-PE/Leather (Upper), UHMW-PE (Lower)
- **R**: Teflon/UHMW-PE (Upper), Teflon (Lower)

**Accessories**

- **Reference Mounting Footprint “A” or “D” for related rams/accessories**
- **Air F/R/L**: C28241-810
- **Airline Oil**: 62274
- **Air Motor Muffler**: 91790
- **Wet Sol**: 66333-B
- **Wall Mount**: 66101
- **Floor/Follower Adpt.**: 67136
- **Floor Mount**: 65138
**Pump Performance**

- **Air Inlet Pressure Range:** 30 - 90 PSI (2 - 6.1 bar).
- **Fluid Pressure Range:** 1,350 PSI (91.8 bar) Max.
- **Max. Rec’d Cycles Per Minute:** 60
- **Displacement Per Cycle:** 59.9 in³ (981.5 cm³)
- **Cycles Per Gallon (Liter):** 3.8 (1.0)
- **Flow @ 60 Cycles / Minute:** 15 GPM (56.7 lpm)
- **Noise Level @ 60 Psi:** 82 db(A) w/muffler

**Pump Specifications**

- **Lower Pump Material:** 400 Series Stainless Steel
- **Plunger Material:** 15-5 Stainless Steel (Hard Chrome)
- **Cylinder Material:** 15-5 Stainless Steel (Hard Chrome)
- **Air Motor:** 66651-B
- **Motor Repair Kit:** 637110
- **Motor Diameter:** 10”
- **Stroke:** 6”
- **Air Inlet:** 3/4” NPT(F)
- **Lower Pump Model:** 66941-X6D
- **Lower Pump Repair Kit:** 637211-XXX
- **Material Inlet:** 2” NPT(M)
- **Material Outlet:** 1-1/4” NPT(F)
- **Weight:** 125 lbs. (56.8 kgs.)

**Ordering**

- **Packings:**
  - C: UHMW-PE
  - L: Mineral-Filled Teflon
  - P: UHMW-PE/Teflon (Upper), UHMW-PE (Lower)
  - R: Teflon/UHMW-PE (Upper), Teflon (Lower)

**Accessories**

- **Reference Mounting Footprint “A”** for related rams/accessories
  - Air F/R/L: 28353
  - Wall Mount: 66542
  - Airline Oil: 62274
  - Muffler: 66718
  - Wet Sol: 66333-B
  - Floor/Follower Adpt. 67136
Pump Performance

Air Inlet Pressure Range........ 30 - 90 PSI (2 - 6.1 bar)
Fluid Pressure Range........... 3450 - 1,350 PSI (91.8 bar)
Max. Rec'd Cycles Per Minute . 60
Displacement Per Cycle ........ 59.9 in³ (981.5 cm³)
Cycles Per Gallon (Liter) ....... 3.8 (1.0)
Flow @ 60 Cycles / Minute ...... 15 GPM (56.7 lpm)
Noise Level @ 60 Psi.......... 82 db(A) w/muffler

Pump Specifications

Lower Pump Material.......... 300 Stainless Steel
Plunger Material.............. 304 Stainless Steel (Hard Chrome)
Cylinder Material.............. 304 Stainless Steel (Hard Chrome)
Air Motor..................... 66651-B
Motor Repair Kit............. 637110
Motor Diameter............... 10”
Stroke.......................... 6”
Air Inlet ....................... 3/4” NPT(F)
Lower Pump Model............. 66942-XXF
Lower Pump Repair Kit...... 637211-XXX
Material Inlet................ 2” NPT(M)
Material Outlet.............. 1-1/4” NPT(F)
Weight......................... 125 lbs. (56.8 kgs.)

Accessories

Reference Mounting Footprint “A” for related rams/accessories
Air F/R/L: 28353
Wall Mount: 66542
Airline Oil: 62274
Muffler: 66718
Wet Sol: 66333-B
Floor/Follower Adpt. 67136
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 660 - 3300 PSI (44.8 - 224.4 bar)
- **Max. Rec'd Cycles Per Minute**: 60
- **Displacement Per Cycle**: 7.5 in³ (122.9 cm³)
- **Cycles Per Gallon (Liter)**: 30.8 (8.1)
- **Flow @ 60 Cycles / Minute**: 1.9 GPM (7.2 lpm)
- **Noise Level @ 60 Psi**: 81.8 db(A)

**Pump Specifications**

- **Lower Pump Material**: 300 Stainless Steel
- **Plunger Material**: 17-4 Stainless Steel
- **Cylinder Material**: 316 Stainless Steel
- **Air Motor**: 65465-B
- **Motor Repair Kit**: 61268
- **Motor Diameter**: 4-1/4”
- **Stroke**: 6”
- **Air Inlet**: 1/2” NPT(F)
- **Exhaust Port**: 1-1/4” NPT(F)
- **Lower Pump Model**: 66301-X4X
- **Lower Pump Repair Kit**: 637306-X43
- **Material Inlet**: 1” NPT(F), 2” NPT(M)
- **Material Outlet**: 1” NPT(F)
- **Weight**: 42.9 lbs. (19.5 kgs.)

**Ordering**

<table>
<thead>
<tr>
<th>Packings</th>
<th>Plungers</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 : Teflon</td>
<td>3 : 17-4 S. S. Hard Chrome Plated</td>
</tr>
<tr>
<td>C : UHMW-PE</td>
<td>B : 17-4 S.S. “Ultra” Coated</td>
</tr>
<tr>
<td>G : UHMW-PE/Leather Staggered</td>
<td></td>
</tr>
<tr>
<td>P : UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower)</td>
<td></td>
</tr>
<tr>
<td>R : Teflon/UHMW-PE Staggered (Upper), Teflon (Lower)</td>
<td></td>
</tr>
</tbody>
</table>

**Accessories**

- **Reference Mounting Footprint “A” or “D” for related rams/accessories**
  - **Air F/R/L**: C28241-810
  - **Airline Oil**: 62274
  - **Air Motor Muffler**: 91790
  - **Wet Sol**: 66333-B
  - **Wall Mount**: 66101
  - **Floor/Follower Adpt.**: 66136
  - **Floor Mount**: 65138
  - **4-1/4”, 22:1, 2-Ball • Piston Pumps**: 41650484-X4X

**Graphs**

- Fluid Pressure vs. Air Consumption
- Fluid Pressure vs. U.S. Gallons
- Fluid Pressure vs. Liters
- Air Pressure vs. U.S. Gallons
- Air Pressure vs. Liters
**Pump Performance**

Air Inlet Pressure Range: 30 - 120 PSI (2 - 8.3 bar)
Fluid Pressure Range: 690 - 3450 PSI (46.9 - 234.6 bar)
Max. Rec'd Cycles Per Minute: 60
Displacement Per Cycle: 14.5 in³ (237.6 cm³)
Cycles Per Gallon (Liter): 15.9 (4.2)
Flow @ 60 Cycles / Minute: 3.7 GPM (13.9 lpm)
Noise Level @ 60 Psi: 84.8 db(A)

**Pump Specifications**

Lower Pump Material: 300 Stainless Steel
Plunger Material: 17-4 Stainless Steel
Cylinder Material: 316 Stainless Steel
Air Motor: 65665-B
Motor Repair Kit: 61355
Motor Diameter: 6"
Stroke: 6"
Air Inlet: 1/2” NPTF
Exhaust Port: 1-1/4” NPTF
Lower Pump Model: 66300-X4X
Lower Pump Repair Kit: 637305-X43
Material Inlet: 1” NPT(F) 2” NPT(M)
Material Outlet: 1” NPTF
Weight: 46.2 lbs. (21 kgs.)

**Ordering**

Packings
3: Teflon
C: UHMW-PE
G: UHMW-PE/Leather Staggered
P: UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower)
R: Teflon/UHMW-PE Staggered (Upper), Teflon (Lower)

Plungers
3: 17-4 S. S. Hard Chrome Plated
B: 17-4 S.S. “Ultra” Coated

**Accessories**

Reference Mounting Footprint “A” or “D” for related rams/accessories
Air F/R/L: C28241-810
Airline Oil: 62274
Air Motor Muffler: 91790
Wet Sol: 66333-B
Wall Mount: 66101
Floor/Follower Adpt. 67136
### Pump Performance

- **Air Inlet Pressure Range**: 30 - 90 PSI (2 - 6.1 bar)
- **Fluid Pressure Range**: 2070 PSI (140.8 bar) Max.
- **Max. Rec’d Cycles Per Minute**: 70
- **Displacement Per Cycle**: 59.9 in³ (981.5 cm³)
- **Cycles Per Gallon (Liter)**: 3.8 (1.0)
- **Flow @ 60 Cycles / Minute**: 18.1 GPM (68.6 lpm)
- **Noise Level @ 70 Psi**: 88 db(A) w/muffler

### Pump Specifications

- **Lower Pump Material**: 400 Stainless Steel
- **Plunger Material**: 15-5 Stainless Steel (Hard Chrome)
- **Cylinder Material**: 15-5 Stainless Steel (Hard Chrome)
- **Air Motor**: 66506-B
- **Motor Repair Kit**: 637112
- **Motor Diameter**: 12" (305 mm)
- **Stroke**: 6" (152.4 mm)
- **Air Inlet**: 3/4" NPT(F)
- **Lower Pump Model**: 66941-X6D
- **Lower Pump Repair Kit**: 637211-XXX
- **Material Inlet**: 2" NPT(M)
- **Material Outlet**: 1-1/4" NPT(F)
- **Weight**: 140 lbs. (63.6 kgs.)

### Ordering

- **Part Number**: 6 5 0 9 6 7 - X 6 D - B
- **Packings**:
  - C: UHMW-PE
  - L: Mineral-Filled Teflon
  - P: UHMW-PE/Teflon (Upper), UHMW-PE (Lower)
  - R: Teflon/UHMW-PE (Upper), Teflon (Lower)

### Accessories

- **Reference Mounting Footprint “A”** for related rams/accessories
  - Air F/R/L: 28353
  - Wall Mount: 66542
  - Airline Oil: 62274
  - Muffler: 66718
  - Wet Sol: 66333-B
  - Floor/Follower Adpt. 67136

### Graphs

- **Performance based on 90 wt. gear oil at ambient temperature**
- **Cycles Per Minute** vs. **Fluid Pressure (PSI)**
- **Cycles Per Minute** vs. **Air Consumption (SCFM)**
- **Performance based on 90 wt. gear oil at ambient temperature**
- **Cycles Per Minute** vs. **Fluid Pressure (Bar)**
- **Cycles Per Minute** vs. **Air Consumption (l/s)**
- **Cycles Per Minute** vs. **Liters Per Minute Delivery**
Pump Performance

- Air Inlet Pressure Range: 30 - 90 PSI (2 - 6.1 bar).
- Fluid Pressure Range: 2070 PSI (140.8 bar) Max.
- Max. Rec'd Cycles Per Minute: 70
- Displacement Per Cycle: 59.9 in³ (981.5 cm³)
- Cycles Per Gallon (Liter): 3.8 (1.0)
- Flow @ 60 Cycles / Minute: 18.1 GPM (68.6 lpm)
- Noise Level @ 70 Psi: 88 db(A) w/muffler

Pump Specifications

- Lower Pump Material: 300 Stainless Steel
- Plunger Material: 304 Stainless Steel (Hard Chrome)
- Cylinder Material: 304 Stainless Steel (Hard Chrome)
- Air Motor: 66506-B
- Motor Repair Kit: 637112
- Motor Diameter: 12"
- Stroke: 6"
- Air Inlet: 3/4" NPT(F)
- Lower Pump Model: 66942-XXF
- Lower Pump Repair Kit: 637211-XXX
- Material Inlet: 2" NPT(M)
- Material Outlet: 1-1/4" NPT(F)
- Weight: 140 lbs. (63.6 kgs.)

Ordering

6 1 3 1 2 4 - X X F - C

Packings
- C6: UHMW-PE
- K3: CG-Filled Teflon with Buna N Energized
- L6: Mineral-Filled Teflon
- R6: Teflon/UHMW-PE (Upper), Teflon (Lower)

Accessories

Reference Mounting Footprint “A” for related rams/accessories
- Air F/R/L: 28353
- Wall Mount: 66542
- Airline Oil: 62274
- Muffler: 66718
- Wet Sol: 66333-B
- Floor/Follower Adpt: 67136

Graphs and diagrams showing pump performance metrics and specifications.
Pump Performance

Air Inlet Pressure Range........ 30 - 120 PSI (2 - 8.3 bar)
Fluid Pressure Range ............ 900 - 4500 PSI (61.2 - 306.1 bar)
Max. Rec'd Cycles Per Minute .. 60
Displacement Per Cycle .......... 5.5 in³ (90.1 cm³)
Cycles Per Gallon (Liter) ....... 41.9 (11)
Flow @ 60 Cycles / Minute ....... 1.3 GPM (4.9 lpm)
Noise Level @ 60 Psi ............ 81.8 db(A)

Pump Specifications

Lower Pump Material ............... 300 Stainless Steel
Plunger Material .................. 17-4 Stainless Steel
Cylinder Material ................ 316 Stainless Steel
Air Motor .......................... 65465-B
Motor Repair Kit ................... 61268
Motor Diameter ................... 4-1/4”
Stroke ............................. 6”
Air Inlet ........................... 1/2” NPT(F)
Exhaust Port ....................... 1-1/4” NPT(F)
Lower Pump Model .............. 66302-X4X
Lower Pump Repair Kit .......... 637307-X43
Material Inlet ........................ 1” NPT(F)
Material Outlet .................... 1” NPT(F)
Weight ............................ 42.9 lbs. (19.5 kgs.)

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</tr>
</tbody>
</table>

Accessories

Reference Mounting Footprint “A” or “D” for related rams/accessories
Air F/R/L: C28241-810
Airline Oil: 62274
Air Motor Muffler: 91790
Wet Sol: 66333-B
Floor/Follower Adpt. 67136
Floor Mount: 65138
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 1200 - 4800 PSI (81.6 - 326.5 bar)
- **Max. Rec’d Cycles Per Minute**: 60
- **Displacement Per Cycle**: 14.5 in³ (237.6 cm³)
- **Cycles Per Gallon (Liter)**: 16 (4.2)
- **Flow @ 60 Cycles / Minute**: 3.7 GPM (13.9 lpm)
- **Noise Level @ 60 Psi**: 89.8 db(A)

**Pump Specifications**

- **Lower Pump Material**: 300 Stainless Steel
- **Plunger Material**: 17-4 Stainless Steel
- **Cylinder Material**: 316 Stainless Steel
- **Air Motor**: 66523-B
- **Motor Repair Kit**: 66614
- **Motor Diameter**: 8”
- **Stroke**: 6”
- **Air Inlet**: 3/4” NPT(F)
- **Exhaust Port**: 1-1/4” NPT(F)
- **Lower Pump Model**: 66300-X4X
- **Lower Pump Repair Kit**: 637305-X43
- **Material Inlet**: 1” NPT(F)
- **Material Outlet**: 1” NPT(F)
- **Weight**: 68.1 lbs. (30.9 kgs.)

**Ordering**

- **Packings**: Teflon, UHMW-PE/Leather Staggered, UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower)
- **Plungers**: 17-4 S.S. Hard Chrome Plated, 17-4 S.S. “Ultra” Coated

**Accessories**

- **Reference Mounting Footprint “A” or “D” for related rams/accessories**
  - Air F/R/L: 28353
  - Airline Oil: 62274
  - Air Motor Muffler: 92460
  - Wet Sol: 66333-B
  - Floor/Follower Adpt. 67136
  - Rams: Page 13
  - Floor Mounts: 65138
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 1350 - 5400 PSI (92.8 - 367.3 bar)
- **Max. Rec'd Cycles Per Minute**: 60
- **Displacement Per Cycle**: 7.5 in³ (122.9 cm³)
- **Cycles Per Gallon (Liter)**: 30.9 (8.1)
- **Flow @ 60 Cycles / Minute**: 1.9 GPM (7.2 lpm)
- **Noise Level @ 60 Psi**: 84.8 db(A)

**Pump Specifications**

- **Lower Pump Material**: 300 Stainless Steel
- **Plunger Material**: 17-4 Stainless Steel
- **Cylinder Material**: 316 Stainless Steel
- **Air Motor**: 65665-B
- **Motor Repair Kit**: 61355
- **Motor Diameter**: 6”
- **Stroke**: 6”
- **Air Inlet**: 1/2” NPT(F)
- **Lower Pump Model**: 66301-X4X
- **Lower Pump Repair Kit**: 637306-X43
- **Material Inlet**: 1” NPT(F) 2” NPT(M)
- **Material Outlet**: 1” NPT(F)
- **Weight**: 46.2 lbs. (21 kgs.)

**Ordering**

```
6 5 0 6 8 4 - X 4 X
```

**Packing Selection**

- **3**: Teflon
- **C**: UHMW-PE
- **G**: UHMW-PE/Leather Staggered
- **P**: UHMW-PE/Teflon Staggered (Upper),
  UHMW-PE (Lower)
- **R**: Teflon/UHMW-PE Staggered (Upper),
  Teflon (Lower)

**Plunger Selection**

- **3**: 17-4 S. S. Hard Chrome Plated
- **B**: 17-4 S. S. “Ultra” Coated

**Accessories**

- **Reference Mounting Footprint “A” or “D”** for related rams/accessories
- **Air F/R/L**: C28241-810
- **Airline Oil**: 62274
- **Air Motor Muffler**: 91790
- **Wet Sol**: 66333-B
- **Wall Mounts**: 66101
- **Floor/Follower Adpt.**: 67136
**Pump Performance**

Air Inlet Pressure Range .......... 30 - 90 PSI (2 - 6.1 bar)
Fluid Pressure Range ................ 1350 - 4500 PSI (91.8 - 306.1 bar)
Max. Rec’d Cycles Per Minute .... 60
Displacement Per Cycle ............. 20.7 in³ (339.2 cm³)
Cycles Per Gallon (Liter) ........... 11.2 (3.0)
Flow @ 60 Cycles / Minute .......... 5.4 GPM (20.4 lpm)
Noise Level @ 60 Psi ............... 82 db(A) w/66718 muffler

**Pump Specifications**

Lower Pump Material ............... Carbon Steel
Plunger Material .................... 17-4 Stainless Steel (Hard Chrome)
Cylinder Material .................... 420 Stainless Steel
Air Motor .......................... 66651-B
Motor Repair Kit ..................... 637110
Motor Diameter ...................... 10"
Stroke ............................... 6"
Air Inlet ............................ 3/4" NPT(F)
Lower Pump Model ................... 66475-X4D
Lower Pump Repair Kit .............. 637098-XXX
Material Inlet ....................... 2" NPT(F)
Material Outlet ..................... 1" NPT(F)
Weight ............................. 132 lbs. (60 kgs.)

**Ordering**

6 5 0 8 6 3 - X 4 D - B
Packings
3 : Teflon
C : UHMW-PE
G : UHMW-PE/Leather Staggered
P : UHMW-PE/Teflon Staggered
R : Teflon/UHMW-PE Staggered

**Accessories**

Reference Mounting Footprint “B”
for related rams/accessories

Air F/R/L: 28353
Airline Oil: 62274
Air Motor Muffler: 66718
Wet Sol: 66333-B
Wall Mount: 66542
Floor Mounts: 65139

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**Graphs:**

- Performance based on 90 wt. gear oil at ambient temperature.
- Air Consumption (SPG) vs. U.S. Gallons per Minute Delivery.
- Performance based on 90 wt. gear oil at ambient temperature.
- Air Consumption (liter/sec) vs. Liters per Minute Delivery.
**Pump Performance**

Air Inlet Pressure Range...... 30 - 120 PSI (2 - 8.3 bar)
Fluid Pressure Range .......... 1800 - 6000 PSI (124 - 408 bar)
Max. Rec'd Cycles Per Minute .. 60
Displacement Per Cycle ...... 5.5 in³ (90.1 cm³)
Cycles Per Gallon (Liter) ...... 41.9 (11.0)
Flow @ 60 Cycles / Minute ...... 1.3 GPM (4.9 lpm)
Noise Level @ 60 Psi ......... 84.8 dB(A)

**Pump Specifications**

Lower Pump Material ......... 300 Stainless Steel
Plunger Material ............. 17-4 Stainless Steel
Cylinder Material ............ 316 Stainless Steel
Air Motor ................... 65665-B
Motor Repair Kit ............. 61355
Motor Diameter ............. 6”
Stroke ..................... 6”
Air Inlet .................... 1/2” NPT(F)
Lower Pump Model .......... 66302-X4X
Lower Pump Repair Kit ...... 637307-X43
Material Inlet .............. 1” NPT(F), 2” NPT(M)
Material Outlet ............. 1” NPT(F)
Weight .................... 46.2 lbs. (21 kgs.)

**Ordering**

6 5 0 6 8 5 - X 4 X
Packings 3 : Teflon
C : UHMW-PE
G : UHMW-PE/Leather Staggered
P : UHMW-PE/Teflon Staggered (Upper),
   UHMW-PE (Lower)
R : Teflon/UHMW-PE Staggered (Upper),
   Teflon (Lower)

**Accessories**

Reference Mounting Footprint “A” or “D”
for related rams/accessories
Air F/R/L: C28241-810
Airline Oil: 62274
Air Motor Muffler: 91790
Wet Sol: 66333-B
Wall Mounts: 66101
Floor/Follower Adpt. 67136
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 90 PSI (2 - 6.1 bar)
- **Fluid Pressure Range**: 1950 - 6500 PSI (132.6 - 442 bar)
- **Max. Rec’d Cycles Per Minute**: 60
- **Displacement Per Cycle**: 20.7 in³ (339 cm³)
- **Cycles Per Gallon (Liter)**: 11.2 (2.9)
- **Flow @ 60 Cycles / Minute**: 5.4 GPM (20.4 lpm)
- **Noise Level @ 60 Psi**: 88 db(A) w/66718 muffler

**Pump Specifications**

- **Lower Pump Material**: Carbon Steel
- **Plunger Material**: 17-4 Stainless Steel (Hard Chrome)
- **Cylinder Material**: 420 Stainless Steel
- **Air Motor**: 66506-B
- **Motor Repair Kit**: 637112
- **Motor Diameter**: 12" (305.0 mm)
- **Stroke**: 6" (152.4 mm)
- **Air Inlet**: 3/4" NPT(F)
- **Lower Pump Model**: 66475-X4D
- **Lower Pump Repair Kit**: 637098-XXX
- **Material Inlet**: 2" NPT(F)
- **Material Outlet**: 1" NPT(F)
- **Weight**: 147 lbs. (66.8 kgs.)

**Ordering**

6 5 0 9 6 3 - X 4 D - B

**Packings**
- 3: Teflon
- C: UHMW-PE
- G: UHMW-PE/Leather Staggered
- P: UHMW-PE/Teflon Staggered
- R: Teflon/UHMW-PE Staggered

**Accessories**

**Reference Mounting Footprint “B”** for related rams/accessories

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<th>Item</th>
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<tr>
<td>Air F/R/L:</td>
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<tr>
<td>Airline Oil:</td>
<td>62274</td>
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<tr>
<td>Air Motor Muffler:</td>
<td>66718</td>
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<tr>
<td>Wet Sol:</td>
<td>66333-B</td>
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<td>Wall Mounts:</td>
<td>66542</td>
</tr>
<tr>
<td>Floor Mount:</td>
<td>65139</td>
</tr>
</tbody>
</table>

![Graphs showing pump performance and consumption](image-url)
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 360 - 1800 PSI (24.4 - 122.4 bar)
- **Max. Rec'd Cycles Per Minute**: 60
- **Displacement Per Cycle**: 12.6 in³ (206.4 cm³)
- **Cycles Per Gallon (Liter)**: 18.3 (4.8)
- **Flow @ 60 Cycles / Minute**: 3.3 GPM (12.4 lpm)
- **Noise Level @ 60 Psi**: 80 db(A) w/muffler

**Pump Specifications**

- **Lower Pump Material**: Carbon Steel
- **Plunger Material**: 17-4 Stainless Steel (Hard Chrome)
- **Cylinder Material**: Carbon Steel
- **Motor Motor**: 65465-B
- **Motor Repair Kit**: 61268
- **Motor Diameter**: 4-1/4”
- **Stroke**: 6”
- **Air Inlet**: 1/2” NPT(F)
- **Exhaust Port**: 1-1/4” NPT(F)
- **Lower Pump Model**: 66243-X43-B
- **Lower Pump Repair Kit**: 637071-X43-B
- **Material Inlet**: Flange Mount
- **Material Outlet**: 1” NPT(F)
- **Weight**: 64 lbs. (29 kgs.)

**Accessories**

- **Reference Mounting Footprint “A”** for related rams/accessories
  - Air F/R/L: C28241-810
  - Airline Oil: 62274
  - Air Motor Muffler: 91790
  - Wet Sol: 66333-B
  - Floor Mount: 65138
  - Rams: Pages 13-15

**Ordering**

6 5 0 4 9 1 - X 4 3 - B

Packings:
- 3: Glass-Filled Teflon (Upper & Lower)
- C: UHMW-PE (Upper & Lower)
- G: UHMW-PE/Leather Staggered (Upper & Lower)
- P: UHMW-PE/Teflon Staggered (Upper), UHMW-(Lower)
- R: Teflon/UHMW-PE Staggered (Upper), Teflon (Lower)
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 390 - 1560 PSI (26.5 - 106.1 bar)
- **Max. Rec'd Cycles Per Minute**: 60
- **Displacement Per Cycle**: 40.4 in³ (662 cm³)
- **Cycles Per Gallon (Liter)**: 5.7 (1.5)
- **Flow @ 60 Cycles / Minute**: 10.5 GPM (39.6 lpm)
- **Noise Level @ 60 Psi**: 80 db(A) w/muffler

**Pump Specifications**

- **Lower Pump Material**: Carbon Steel
- **Plunger Material**: Carbon Steel (Hard Chrome)
- **Cylinder Material**: Carbon Steel
- **Air Motor**: 66523-B
- **Motor Repair Kit**: 66614
- **Motor Diameter**: 8”
- **Stroke**: 6”
- **Air Inlet**: 3/4” NPT(F)
- **Exhaust Port**: 1-1/4” NPT(F)
- **Lower Pump Model**: 66236-XXE-B
- **Lower Pump Repair Kit**: 637128-XX4-B
- **Material Inlet**: Flange Mount
- **Material Outlet**: 1-1/2” NPT(F)
- **Weight**: 125.5 lbs. (57 kgs.)

**Ordering**

650871-XXE-C

Packings / Springs

- **34**: Glass-Filled Teflon (Upper & Lower), Multiple Wave Spring
- **C4**: UHMW-PE (Upper & Lower), Multiple Wave Spring
- **F4**: UHMW-PE/Leather Staggered (Upper), UHMW-PE (Lower), Multiple Wave Spring
- **J3**: Polyurethane (Upper), UHMW-PE (Lower), No Spring
- **J8**: Polyurethane (Upper), UHMW-PE (Lower), Multiple Wave Spring
- **P4**: UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower), Multiple Wave Spring
- **R4**: Teflon/UHMW-PE Staggered (Upper), Teflon (Lower)
  - Multiple Wave Spring

**Accessories**

Reference Mounting Footprint “B” for related rams/accessories

- **Air F/R/L**: 28353
- **Airline Oil**: 62274
- **Air Motor Muffler**: 92460
- **Wet Sol**: 66333-B
- **Floor Mount**: 65139
- **Ram**: Pages 13-15
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 90 PSI (2 - 6.1 bar)
- **Fluid Pressure Range**: 1,800 PSI (122.4 bar)
- **Max. Rec'd Cycles Per Minute**: 60
- **Displacement Per Cycle**: 40.4 in³ (662 cm³)
- **Cycles Per Gallon (Liter)**: 5.7 (1.5)
- **Flow @ 60 Cycles / Minute**: 10.5 GPM (39.6 lpm)
- **Noise Level @ 60 Psi**: 82 db(A) w/muffler

**Pump Specifications**

- **Lower Pump Material**: Carbon Steel
- **Plunger Material**: Carbon Steel (Hard Chrome)
- **Cylinder Material**: Carbon Steel
- **Air Motor**: 66651-B
- **Motor Repair Kit**: 637110
- **Motor Diameter**: 10”
- **Stroke**: 6”
- **Air Inlet**: 3/4” NPT(F)
- **Exhaust Port**: 1-1/4” NPT(F)
- **Lower Pump Model**: 66236-XXE-B
- **Lower Pump Repair Kit**: 637128-XX4-B
- **Material Inlet**: Bolted Flange
- **Material Outlet**: 1-1/2” NPT(F)
- **Weight**: 144 lbs. (65.4 kgs.)

**Ordering**

**650875-XXE-C**

Packings / Springs
- **C4**: UHMW-PE (Upper & Lower), Multiple Wave Spring
- **F4**: UHMW-PE/Leather Staggered (Upper), UHMW-PE (Lower), Multiple Wave Spring
- **J3**: Polyurethane (Upper), UHMW-PE (Lower), No Spring
- **P4**: UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower), Multiple Wave Spring
- **R4**: Teflon/UHMW-PE Staggered (Upper), Teflon (Lower), Multiple Wave Spring

**Accessories**

*Reference Mounting Footprint “B” for related rams/accessories*

- **Air F/R/L**: 28353
- **Airline Oil**: 62274
- **Air Motor Muffler**: 66718
- **Wet Sol**: 66333-B
- **Floor Mount**: 65139
- **Rams**: Pages 13-15
**Pump Performance**

Air Inlet Pressure Range .. 30 - 120 PSI (2 - 8.3 bar)
Fluid Pressure Range ...... 660 - 3300 PSI (44.8 - 244.4 bar)
Displacement Per Cycle ...... 1.9 in³ (31.1 cm³)
Cycles Per Gallon (Liter) ... 121.5 (32.1)
Maximum Working Flow ...... 1.0 GPM (3.8 lpm)
Noise Level @ 100 Psi ...... 85 db(A)

**Pump Specifications**

Lower Pump Material ....... Carbon Steel
Plunger Material ......... 17 - 4 Stainless Steel
Cylinder Material .......... Carbon Steel
Air Motor .................. 66915
Motor Repair Kit .......... 637316
Motor Diameter ........... 3"
Stroke ...................... 3"
Air Inlet .................. 1/4" NPTF-1 (f)

Lower Pump Models:
- Model NM2322E-11-P43 67100-P43
- Model NM2322E-11-P48 67100-P48
- Model NM2322E-71-P43 67100-P43

Lower Pump Repair Kits:
- Model NM2322E-11-P43 637290-P43
- Model NM2322E-11-P48 637290-P48
- Model NM2322E-71-P43 637290-P43

Material Inlet ............... Follower Plate Mounted
Material Outlet ............. 1/2" NPT(F)
Weight ..................... 28.7 lbs. (13 kgs.)

**Ordering**

<table>
<thead>
<tr>
<th>NM2322E-X-P4X</th>
<th>Packing / Plunger</th>
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</thead>
<tbody>
<tr>
<td>11</td>
<td>Standard Length (651615-C)</td>
</tr>
<tr>
<td>71</td>
<td>Extended Length (651613-B)</td>
</tr>
<tr>
<td>3</td>
<td>UHMW-PE/Teflon Staggered (Upper), UHMW-PE Grooved Piston (Lower)</td>
</tr>
<tr>
<td>8</td>
<td>UHMW-PE/Teflon Staggered (Upper), UHMW-PE Single Lip Cup (Lower)</td>
</tr>
</tbody>
</table>

**Accessories**

Reference Mounting Footprint “C” for related rams/accessories
- Air F/R/L: C28121-800
- Airline Oil: 62274
- Wet Sol: 66333-B
- Follower Plate: See Page 16
Pump Performance

Air Inlet Pressure Range .......... 30 - 120 PSI (2 - 8.3 bar)
Fluid Pressure Range .......... 660 - 3300 PSI (44.8 - 244.4 bar)
Max. Rec'd Cycles Per Minute .......... 120
Displacement Per Cycle .......... 1.9 in³ (31.1 cm³)
Cycles Per Gallon (Liter) .......... 121.5 (32.1)
Maximum Working Flow .......... 1.0 GPM (3.8 lpm)
Noise Level @ 100 Psi .......... 85 db(A)

Pump Specifications

Lower Pump Material .......... 316 Stainless Steel
Plunger Material .......... 17 - 4 Stainless Steel (Hard Chrome)
Cylinder Material .......... 15-5 Stainless Steel (Hard Chrome)
Air Motor .......... 66915
Motor Repair Kit .......... 637316
Motor Diameter .......... 3”
Stroke .......... 3”
Air Inlet .......... 1/4” NPTF-1 (F)

Lower Pump Models:
Model NM2322F-11-P43 .......... 67101-P43
Model NM2322F-11-P48 .......... 67101-P43
Model NM2322F-71-P43 .......... 67101-P43

Lower Pump Repair Kits:
Model NM2322F-11-P43 .......... 637291-P43
Model NM2322F-11-P48 .......... 637291-P48
Model NM2322F-71-P43 .......... 637291-P43

Material Inlet .......... Follower Plate Mounted
Material Outlet .......... 1/2” NPT(F)
Weight .......... 28.7 lbs. (13 kgs.)

Accessories

Reference Mounting Footprint “C” for related rams/accessories
Air F/R/L: C28121-800
Airline Oil: 62274
Wet Sol: 66333-B
Follower Plate: 651841-1
See Page 16

Ordering

N M 2 3 2 2 F - X X - P 4 X

Packing / Plunger
11 : Standard Length (651615-C)
71 : Extended Length (651615-B)
3 : UHMW-PE/Teflon Staggered (Upper), UHMW-PE Grooved Piston (Lower)
8 : UHMW-PE/Teflon Staggered (Upper), UHMW-PE Single Lip Cup (Lower)
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 690 - 3450 PSI (46.9 - 234.6 bar)
- **Max. Rec’d Cycles Per Minute**: 60
- **Displacement Per Cycle**: 6.9 in³ (113 cm³)
- **Cycles Per Gallon**: 33 (8.8)
- **Flow @ 60 Cycles / Minute**: 1.8 GPM (6.8 lpm)
- **Noise Level @ 60 Psi**: 80 db(A)

**Pump Specifications**

- **Lower Pump Material**: Carbon Steel
- **Plunger Material**: 17-4 Stainless (Hard Chrome)
- **Cylinder Material**: Carbon Steel
- **Air Motor**: 65465-B
- **Motor Repair Kit**: 61268
- **Motor Diameter**: 4-1/4”
- **Stroke**: 6”
- **Air Inlet**: 1/2” NPT(F)
- **Exhaust Port**: 1-1/4” NPT(F)
- **Lower Pump Model**: 650492-X43-B
- **Lower Pump Repair Kit**: 637074-X43-B
- **Material Inlet**: Bolted Flange
- **Material Outlet**: 1” NPT(F)
- **Weight**: 63.7 lbs. (28.9 kgs.)

**Ordering**

6 5 0 4 9 2 - X 4 3 - B

**Packings**

- **3**: Glass-Filled Teflon (Upper & Lower)
- **C**: UHMW-PE (Upper & Lower)
- **G**: UHMW-PE/Leather Staggered (Upper & Lower)
- **P**: UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower)
- **R**: Teflon/UHMW-PE Staggered (Upper), Teflon (Lower)

**Accessories**

Reference Mounting Footprint “A” for related rams/accessories

- **Air F/R/L**: C28241-810
- **Airline Oil**: 62274
- **Air Motor Muffler**: 91790
- **Wet Sol**: 66333-B
- **Floor Mount**: 65138
- **Rams**: Pages 13-15
**Pump Performance**

Air Inlet Pressure Range: 30 - 120 PSI (2 - 8.3 bar)
Fluid Pressure Range: 690 - 3450 PSI (46.9 - 234.6 bar)
Max. Rec'd Cycles Per Minute: 60
Displacement Per Cycle: 12.6 in³ (206.4 cm³)
Cycles Per Gallon (Liter): 18.3 (4.8)
Flow @ 60 Cycles / Minute: 3.3 GPM (12.4 lpm)
Noise Level @ 60 Psi: 83 db(A) w/muffler

**Pump Specifications**

Lower Pump Material: Carbon Steel
Plunger Material: 17-4 Stainless Steel (Hard Chrome)
Cylinder Material: Carbon Steel
Air Motor: 65665-B
Motor Repair Kit: 61355
Motor Diameter: 6"
Stroke: 6"
Air Inlet: 1/2" NPT(F)
Exhaust Port: 1-1/4" NPT(F)
Lower Pump Model: 66243-X43-B
Lower Pump Repair Kit: 637071-X43-B
Material Inlet: Bolted Flange
Material Outlet: 1" NPT(F)
Weight: 67 lbs. (30.4 kgs.)

**Ordering**

6 5 0 6 9 1 - X 4 3 - B
Packings:
3: Glass-Filled Teflon (Upper & Lower)
C: UHMW-PE (Upper & Lower)
G: UHMW-PE/Leather Staggered (Upper & Lower)
P: UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower)
R: Teflon/UHMW-PE Staggered (Upper), Teflon (Lower)

**Accessories**

Reference Mounting Footprint “A” for related rams/accessories
Air F/R/L: C28241-810
Airline Oil: 62274
Air Motor Muffler: 91790
Wet Sol: 66333-B
Floor Mount: 65138
Rams: Pages 13-15
58 | 8”, 28:1, Chop Check • Piston Pumps

- Proven ARO® Air Motor Reliability
- Poly-Pak® Seals for Improved Endurance
- Abrasion-Resistant Hard Chrome Plated Plunger
- Tie-Rod Design for Fast Access
- UHMW-PE Packings for Maximum Compatibility
- Delivers 20 Cubic Inches per Cycle

**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar)
- **Fluid Pressure Range**: 840 - 3360 PSI (57.1 - 228.5 bar)
- **Max. Rec’d Cycles Per Minute**: 70
- **Displacement Per Cycle**: 20
- **Volume/Cycle**: 11.08 oz. (661.8 ml)
- **Flow @ 70 Cycles / Minute**: 6.06 GPM (22.94 lpm)
- **Noise Level @ 60 Psi**: 89.8 db(A)

**Ordering**

<table>
<thead>
<tr>
<th>Order Model</th>
<th>Packings Upper</th>
<th>Packings Lower</th>
<th>Description</th>
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<tr>
<td>Complete Pump Models</td>
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<tr>
<td>650888-C4D</td>
<td>UHMW-PE (V-type)</td>
<td>UHMW-PE (V-type)</td>
<td>8” Motor/28:1 Ratio</td>
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<td>PolyPak® (Polymyte®)</td>
<td>UHMW-PE (V-type)</td>
<td>8” Motor/28:1 Ratio</td>
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<tr>
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<td>Lower Pump Assembly</td>
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<td>Pump Repair Kits</td>
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<td>Lower Pump Rep. Kit</td>
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<td>PolyPak® (Polymyte®)</td>
<td>UHMW-PE (V-type)</td>
<td>Lower Pump Rep. Kit</td>
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</tbody>
</table>

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**Accessories**

- **Reference Mounting Footprint “B”** for related rams/accessories
- **Air F/R/L**: 28353
- **Airline Oil**: 62274
- **Air Motor Muffler**: 92460
- **Wet Sol**: 66333-B
- **Floor Mount**: 65139
- **Rams**: Pages 13-15
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 90 PSI (2 - 6.1 bar).
- **Fluid Pressure Range**: 2700 PSI (183.6 bar) Max.
- **Max. Rec'd Cycles Per Minute**: 60
- **Displacement Per Cycle**: 40.4 in³ (662 cm³)
- **Cycles Per Gallon (Liter)**: 5.7 (1.5)
- **Flow @ 60 Cycles / Minute**: 10.5 GPM (39.6 lpm)
- **Noise Level @ 60 Psi**: 88 db(A) w/muffler

**Pump Specifications**

- **Lower Pump Material**: Carbon Steel
- **Plunger Material**: Carbon Steel
- **Cylinder Material**: Carbon Steel (Hard Chrome)
- **Air Motor**: 66506-B
- **Motor Repair Kit**: 637112
- **Motor Diameter**: 12"
- **Stroke**: 6"
- **Air Inlet**: 3/4" NPT(F)
- **Exhaust Port**: 1-1/4" NPT(F)
- **Lower Pump Model**: 66236-XXE-B
- **Lower Pump Repair Kit**: 637128-XX4-B
- **Material Inlet**: Bolted Flange
- **Material Outlet**: 1-1/2" NPT(F)
- **Weight**: 147 lbs. (66.8 kgs.)

**Accessories**

- **Reference Mounting Footprint “B”** for related rams/accessories
- **Air F/R/L**: 28353
- **Airline Oil**: 62274
- **Air Motor Muffler**: 66718
- **Wet Sol**: 66333-B
- **Floor Mount**: 65139
- **Rams**: Pages 13-15

**Ordering**

- **Packings / Springs**
  - 34: Glass-Filled Teflon (Upper & Lower), Multiple Wave Spring
  - C4: UHMW-PE (Upper & Lower), Multiple Wave Spring
  - F4: UHMW-PE/Leather Staggered (Upper), UHMW-PE (Lower), Multiple Wave Spring
  - J3: Polyurethane (Upper), UHMW-PE (Lower), No Spring
  - P4: Teflon/UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower), Multiple Wave Spring
  - R4: Teflon/UHMW-PE Staggered (Upper), Teflon (Lower) Multiple Wave Spring

- **Graphs**
  - Performance based on 90 wt. gear oil at ambient temperature
  - Performance based on 90 wt. gear oil at ambient temperature

**Diagram**

- Diagram of pump specifications

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**Reference**

- 650971-XXE-C

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Pump Performance

Air Inlet Pressure Range ........ 30 - 120 PSI (2 - 8.3 bar)
Fluid Pressure Range .......... 1290 - 6450 PSI (87.7 - 438.7 bar)
Max. Rec'd Cycles Per Minute . 60
Displacement Per Cycle ....... 2.8 in³ (45.8 cm³)
Cycles Per Gallon (Liter) ..... 82.5 (21.7)
Flow @ 75 Cycles / Minute ... .9 GPM (3.4 lpm)
Noise Level @ 60 Psi .......... 80 db(A)

Pump Specifications

Lower Pump Material .......... Carbon Steel
Plunger Material ............... 17-4 Stainless Steel
Cylinder Material .............. Carbon Steel
Air Motor ....................... 65440
Motor Repair Kit ............... 61268
Motor Diameter ............... 4-1/4"
Stroke .......................... 4"
Air Inlet ......................... 1/2" NPT(F)
Exhaust Port ................... 1-1/4" NPT(F)

Lower Pump Models:
Model 67120-P43 .......... 67100-P43
Model 67120-P48 .......... 67100-P48

Lower Pump Repair Kits:
Model 67120-P43 .......... 637290-P43
Model 67120-P48 .......... 637290-P48

Material Inlet ................. Follower Plate Mounted
Material Outlet .............. 1/2" NPT(F)
Weight .......................... 44 lbs. (20 kgs.)

Accessories

Reference Mounting Footprint “C” for related rams/accessories
Air F/R/L: C28241-810
Airline Oil: 62274
Air Motor Muffler: 91790
Wet Sol: 66333-B
Follower Plate: Page 16

Ordering

6 7 1 2 0 - P 4 X

Packing P: UHMW-PE/Teflon
Staggered (Upper),
UHMW-PE (Lower)

Plungers 3: HD SS w/chrome plating and standard lower packing
8: HD SS w/chrome plating and cup type lower packing
Pump Performance

- Air Inlet Pressure Range: 30 - 120 PSI (2 - 8.3 bar)
- Fluid Pressure Range: 1290 - 6450 PSI (87.7 - 438.7 bar)
- Max. Rec'd Cycles Per Minute: 60
- Displacement Per Cycle: 2.8 in³ (45.8 cm³)
- Cycles Per Gallon (Liter): 82.5 (21.7)
- Flow @ 75 Cycles / Minute: 0.9 GPM (3.4 lpm)
- Noise Level @ 60 Psi: 80 db(A)

Pump Specifications

- Lower Pump Material: 300 Stainless Steel
- Plunger Material: 17-4 Stainless Steel (Hard Chrome)
- Cylinder Material: 15-5 Stainless Steel (Hard Chrome)
- Air Motor: 65440
- Motor Repair Kit: 61268
- Motor Diameter: 4-1/4”
- Stroke: 4”
- Air Inlet: 1/2” NPT(F)
- Exhaust Port: 1-1/4” NPT(F)

Lower Pump Model:
- Model 67121-P43: 67101-P43
- Model 67121-P48: 67101-P48

Lower Pump Repair Kits:
- Model 67121-P43: 637291-P43
- Model 67121-P48: 637291-P48

Material Inlet: Follower Plated Mounted
Material Outlet: 1/2” NPT(F)
Weight: 44 lbs. (20 kgs.)

Accessories

- Reference Mounting Footprint “C” for related rams/accessories
- Air F/R/L: C28241-810
- Airline Oil: 62274
- Air Motor Muffler: 91790
- Wet Sol: 66333-B
- Follower Plate: Page 16

Ordering

6 7 1 2 1 - P 4 X

Packing:
3: UHMW-PE/Teflon Staggered (Upper), UHMW-PE Grooved Piston (Lower)
8: UHMW-PE/Teflon Staggered (Upper), UHMW-PE Single Lip Cup (Lower)
- Proven ARO® Air Motor Reliability
- Poly-Pak® Seals for Improved Endurance
- Abrasion-Resistant Hard Chrome Plated Plunger
- Tie-Rod Design for Fast Access
- UHMW-PE Packings for Maximum Compatibility
- Delivers 20 Cubic Inches per Cycle

**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 90 PSI (2.1 - 6.2 bar)
- **Fluid Pressure Range**: 1320 - 3960 PSI (89.7 - 269.4 bar)
- **Max. Rec’d Cycles Per Minute**: 70
- **Displacement Per Cycle**: 20
- **Volume/Cycle**: 11.08 oz. (661.8 ml)
- **Flow @ 70 Cycles / Minute**: 6.06 GPM (22.94 lpm)
- **Noise Level @ 60 Psi**: 89.8 db(A)

**Ordering**

<table>
<thead>
<tr>
<th>Order Model</th>
<th>Packings Upper</th>
<th>Packings Lower</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Complete Pump Models</td>
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<tr>
<td>650889-C4D</td>
<td>UHMW-PE (V-type)</td>
<td>UHMW-PE (V-type)</td>
<td>10&quot; Motor/44:1 Ratio</td>
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<td>PolyPak® (Polymyte®)</td>
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<tr>
<td>637348-C4D</td>
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<td>Lower Pump Rep. Kit</td>
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<td>637348-J3D</td>
<td>PolyPak® (Polymyte®)</td>
<td>UHMW-PE (V-type)</td>
<td>Lower Pump Rep. Kit</td>
</tr>
</tbody>
</table>

Polymyte® and PolyPak® are registered trademarks of Parker Company

**Accessories**

Reference Mounting Footprint “B” for related rams/accessories

- **Air F/R/L**: 28353
- **Airline Oil**: 62274
- **Air Motor Muffler**: 66718
- **Wet Sol**: 66333-B
- **Floor Mount**: 65139
- **Rams**: 651612-4
**Pump Performance**

- **Air Inlet Pressure Range**: 30 - 120 PSI (2 - 8.3 bar).
- **Fluid Pressure Range**: 5280 PSI (359.1 bar) Max.
- **Max. Rec’d Cycles Per Minute**: 60
- **Displacement Per Cycle**: 14.5 in³ (237.6 cm³)
- **Cycles Per Gallon (Liter)**: 15.9 (4.2)
- **Flow @ 60 Cycles / Minute**: 3.8 GPM (14.3 lpm)
- **Noise Level @ 60 PSI**: 88 db(A) w/muffler

**Pump Specifications**

- **Lower Pump Material**: Carbon Steel
- **Plunger Material**: 17-4 Stainless Steel (Hard Chrome)
- **Cylinder Material**: Carbon Steel
- **Air Motor**: 66523-B
- **Motor Repair Kit**: 66614
- **Motor Diameter**: 8" (203.2 mm)
- **Stroke**: 6" (152.4 mm)
- **Air Inlet**: 3/4” NPT(F)
- **Exhaust Port**: 1-14” NPT(F)
- **Lower Pump Model**: 66243-X4D-B
- **Lower Pump Repair Kit**: 637071-X43-B
- **Material Inlet**: Bolted Flange
- **Material Outlet**: 1” NPT(F)
- **Weight**: 89 lbs. (40.4 kgs.)

**Ordering**

6 5 0 8 9 1 - X 4 D - C

**Packings**

- 3: Glass-Filled Teflon (Upper & Lower)
- C: UHMW-PE (Upper & Lower)
- G: UHMW-PE/Leather Staggered (Upper & Lower)
- P: UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower)
- R: Teflon/UHMW-PE Staggered (Upper), Teflon (Lower)

**Accessories**

Reference Mounting Footprint “A” for related rams/accessories

- **Air F/R/L**: 28353
- **Airline Oil**: 62274
- **Air Motor Muffler**: 92460
- **Wet Sol**: 66333-B
- **Floor Mount**: 65138
- **Rams**: Page 13
**Pump Performance**

- Air Inlet Pressure Range: 30 - 120 PSI (2 - 8.3 bar)
- Fluid Pressure Range: 1380 - 6900 PSI (93.8 - 469.3 bar)
- Max. Rec’d Cycles Per Minute: 60
- Displacement Per Cycle: 6.9 in³ (113 cm³)
- Cycles Per Gallon (Liter): 33.4 (8.8)
- Flow @ 60 Cycles / Minute: 1.8 GPM (6.4 lpm)
- Noise Level @ 60 Psi: 83 db(A) w/muffler

**Pump Specifications**

- Lower Pump Material: Carbon Steel
- Plunger Material: 17-4 Stainless Steel (Hard Chrome)
- Cylinder Material: Carbon Steel
- Air Motor: 65665-B
- Motor Repair Kit: 61355
- Motor Diameter: 6”
- Stroke: 6”
- Air Inlet: 1/2” NPT(F)
- Exhaust Port: 1-1/4” NPT(F)
- Lower Pump Model: 66266-X43-B
- Lower Pump Repair Kit: 637074-X43-B
- Material Inlet: Bolted Flange
- Material Outlet: 1” NPT(F)
- Weight: 67 lbs. (30.4 kgs.)

**Ordering**

- **6 5 0 6 9 2 - X 4 3 - B**

  Packings:
  - 3: Glass-Filled Teflon (Upper & Lower)
  - C: UHMW-PE (Upper & Lower)
  - G: UHMW-PE/Leather Staggered
  - P: UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower)
  - R: Teflon/UHMW-PE Staggered (Upper), Teflon (Lower)

**Accessories**

- Reference Mounting Footprint “A” for related rams/accessories
  - Air F/R/L: C28241-810
  - Airline Oil: 62274
  - Air Motor Muffler: 91790
  - Wet Sol: 66333-B
  - Floor Mount: 65138
  - Rams: Page 13
- Proven ARO® Air Motor Reliability
- Poly-Pak® Seals for Improved Endurance
- Abrasion-Resistant Hard Chrome Plated Plunger
- Tie-Rod Design for Fast Access
- UHMW-PE Packings for Maximum Compatibility
- Delivers 20 Cubic Inches per Cycle

### Pump Performance

- **Air Inlet Pressure Range**: . . . . . . 30 - 90 PSI (2.1 - 6.2 bar)
- **Fluid Pressure Range**: . . . . . . . 1950 - 5850 PSI (134.5 - 403.4 bar)
- **Max. Rec’d Cycles Per Minute**: 70
- **Displacement Per Cycle**: . . . . . . . . 20
- **Volume/Cycle**: . . . . . . . . . . . . 11.08 oz. (327.6 ml)
- **Flow @ 70 Cycles / Minute**: . . . . 6.06 GPM (22.94 lpm)
- **Noise Level @ 60 Psi**: . . . . . . . . 89.8 db(A)

### Ordering

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<tr>
<th>Order Model</th>
<th>Packings Upper</th>
<th>Packings Lower</th>
<th>Description</th>
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<td>UHMW-PE (V-type)</td>
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<td>UHMW-PE (V-type)</td>
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<td>UHMW-PE (V-type)</td>
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<td>Lower Pump Rep. Kit</td>
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</tbody>
</table>

Polymyte® and PolyPak® are registered trademarks of Parker Company

### Accessories

Reference Mounting Footprint “B”

- **Air F/R/L**: 28353
- **Airline Oil**: 62274
- **Air Motor Muffler**: 66718
- **Wet Sol**: 66333-B
- **Floor Mount**: 65139
- **Rams**: Pages 13-15

*The pump sound pressure level has been updated to an Equivalent Continuous Sound Level (Leq) to meet the intent of ANSI S1.13-1971, CAGI PNEUROP S5.1 using four microphone locations.*
### Pump Performance

Hydraulic Inlet Pressure Range: 50 - 2000 PSI (3.4 - 137.9 bar)
Fluid Pressure Range: 40 - 1600 PSI (2.8 - 110.3 bar)
Hydraulic flow req’d @ 50 cpm: 8.7 GPM (32.9 lpm)
Max. Rec’d Cycles Per Minute: 50
Displacement Per Cycle: 59.6 in³
Volume / Cycle: 33.0 oz. (976.3 ml)
Flow @ 50 Cycles / Minute: 12.9 GPM (48.8 lpm)
Maximum Temperature Limit: 135° F (57° C)

### Pump Specifications

Lower Pump Material: 400 Stainless Steel
Plunger Material: 15-5 Stainless Steel (Hard Chrome)
Cylinder Material: 15-5 Stainless Steel (Hard Chrome)
Hydraulic Motor: 61626-100
Motor Repair Kit: 637148-1
Motor Size: 4.125 in.² (26.6 cm²)
Stroke: 6"
Hydraulic Inlet: 1/2” NPT(F)
Hydraulic Return: 3/4” NPT(F)
Lower Pump Model: 66941-X6D
Lower Pump Repair Kit: 637211-XX3
Material Inlet: 2” - 11-1/2 N.P.T.F. - 1 (m)
Material Outlet: 1-1/4” - 11-1/2 N.P.T.F. - 1 (f)
Weight: 140 lbs (63.5 Kgs.)

### Ordering

650940-X6D-B

Packings / Springs:
- C: UHMW-PE
- K: Carbon-Graphite Filled Teflon
- L: Mineral Filled Teflon
- P4: UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower)
- R4: Teflon/UHMW-PE (Upper), Teflon (Lower)

### Accessories

Reference Mounting Footprint “A” for related rams/accessories
- Floor Mount: 65138
- Wet Sol: 66999-B
- Wall Mount Bracket: 61938-1
- Floor Mount Adapter: 67136
Pump Performance

Hydraulic Inlet Pressure Range . 50 - 2000 PSI (3.4 - 136 bar)
Fluid Pressure Range ......... 60 - 2668 PSI (4 - 181.5 bar)
Hydraulic flow req'd @ 50 cpm. . 8.7 GPM (32.9 lpm)
Max. Rec'd Cycles Per Minute . 50
Displacement Per Cycle ......... 6.9 in³
Volume / Cycle ............... 3.9 oz. (114 ml)
Cycles Per Gallon (Liter) ........ 33.2
Flow @ 50 Cycles / Minute .... 1.5 GPM (5.7 lpm)
Maximum Temperature Limit . . 130° F (54° C)

Pump Specifications

Lower Pump Material .......... Carbon Steel
Plunger Material ............... Carbon Steel (Hard Chrome)
Cylinder Material .......... Carbon Steel
Hydraulic Motor ............... 61626-100
Motor Repair Kit .......... 637148-1
Motor Size ................ 4.125 in² (26.6 cm²)
Stroke ...................... 6" (152.4 mm)
Hydraulic Inlet ................ 1/2" NPT(F)
Hydraulic Return ............. 3/4" NPT(F)
Lower Pump Model ........... 66236-XXE-B
Lower Pump Repair Kit ...... 637128-XX4-B
Material Inlet ................. Bolted Flange
Material Outlet ............... 1-1/2" NPT(F)
Weight ..................... 144 lbs (65.5 Kgs.)

Ordering

650941-XXE-C
Packings / Springs
F4 : UHMW-PE/Leather Staggered (Upper),
     UHMW-PE (Lower)
J3 : Polyurethane (Upper)
     UHMW-PE (Lower)
P4 : UHMW-PE/Teflon Staggered (Upper),
     UHMW-PE (Lower)
R4 : Teflon/UHMW-PE (Upper)
     Teflon (Lower)

Accessories

Reference Mounting Footprint “B”
for related rams/accessories
Floor Mount: 65139
Wet Sol: 66333-B
Rams: Pages 13-14
**Pump Performance**

- **Hydraulic Inlet Pressure Range**: 50 - 1200 PSI (3.4 - 83 bar)
- **Fluid Pressure Range**: 100 - 2400 PSI (6.9 - 165.5 bar)
- **Hydraulic flow req’d @ 50 cpm**: 8.7 GPM (32.9 lpm)
- **Max. Rec’d Cycles Per Minute**: 50
- **Displacement Per Cycle**: 12.5 in³
- **Volume / Cycle**: 6.9 oz. (205 ml)
- **Cycles Per Gallon (Liter)**: 18.5
- **Flow @ 50 Cycles / Minute**: 2.7 GPM (10.2 lpm)
- **Maximum Temperature Limit**: 130° F (54° C)

**Pump Specifications**

- **Lower Pump Material**: Carbon Steel (Hard Chrome)
- **Plunger Material**: 17-4 Stainless Steel
- **Cylinder Material**: Carbon Steel
- **Hydraulic Motor**: 67147
- **Motor Repair Kit**: 637315
- **Motor Size**: 2.062 in² (13.3 cm²)
- **Stroke**: 6”
- **Hydraulic Inlet**: 3/8” NPT(F)
- **Hydraulic Return**: 1/2” NPT(F)
- **Lower Pump Model**: 66243-XX3-B
- **Lower Pump Repair Kit**: 637071-XX3-B
- **Material Inlet**: N/A
- **Material Outlet**: 1” - 11-1/2 N.P.T.F. - 1 (f)
- **Weight**: 68 lbs (30.9 Kgs.)

**Ordering**

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<tr>
<td>3 : Glass Filled Teflon</td>
<td>4 : Multiple Wave Spring</td>
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<td>G : UHMW-PE/Leather Staggered</td>
<td>w/Alternate Solvent Cup</td>
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<td>R : Teflon/UHMW-PE Staggered(Upper) Teflon (Lower)</td>
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**Accessories**

- **Reference Mounting Footprint “A”**
- **for related rams/accessories**
- **Floor Mount**: 65138
- **Wet Sol**: 66999-B
- **Wall Mount Bracket**: 61938-1
- **Rams**: Pages 13-14
- **Floor/Follower Adapter**: 67136
Pump Performance

Hydraulic Inlet Pressure Range . 50 - 1200 PSI (3.4 - 137.9 bar)
Fluid Pressure Range . . . . . . 120 - 4800 PSI (8.3 - 331.0 bar)
Max. Rec’d Cycles Per Minute . 50
Displacement Per Cycle . . . . 20.3 in³
Volume / Cycle . . . . . . . . 11.3 oz. (333.0 ml)
Cycles Per Gallon (Liter) . . . 11.4
Flow @ 50 Cycles / Minute . . . 4.4 GPM (16.7 lpm)
Maximum Temperature Limit . 130° F (54° C)

Pump Specifications

Lower Pump Material . . . . . Carbon Steel
Plunger Material . . . . . . . . 17-4 Stainless Steel (Hard Chrome)
Cylinder Material . . . . . . . 15-5 Stainless Steel
Air Motor . . . . . . . . . . . . . 61626-100
Motor Repair Kit . . . . . . 637148-1
Motor Size . . . . . . . . . . . 4.125 in.² (26.6 cm²)
Stroke . . . . . . . . . . . . . 6” (15.2 cm)
Hydraulic Inlet . . . . . . . 1/2” - 14 NPT - 1 (f)
Hydraulic Return . . . . . . 3/4” - 14 NPS (f)
Lower Pump Model . . . . . 66475-X4D
Lower Pump Repair Kit . . . 637098-X43
Material Inlet . . . . . . . . 2” - 11-1/2 N.P.T.F. - 1 (f)
Material Outlet . . . . . . . 1” - 11-1/2 N.P.T.F. - 1 (f)
Weight . . . . . . . . . . . . 140 lbs (63.5 Kgs.)

Ordering

650939-X4D-B

Packings
3 : Glass Filled Teflon
C : UHMW-PE
G : UHMW-PE/Leather Staggered
P : UHMW-PE/Teflon Staggered (Upper),
UHMW-PE (Lower)
R : Teflon/UHMW-PE Staggered(Upper)
Teflon (Lower)

Accessories

Reference Mounting Footprint “B”
for related rams/accessories
Floor Mount: 65139
Wet Sol: 66999-B
Wall Mount Bracket 61938-1
Rams: Pages 13-14
**Pump Performance**

Hydraulic Inlet Pressure Range . . . 50 - 1200 PSI (3.4 - 83 bar)
Fluid Pressure Range ............ 165 - 3994 PSI (11.4 - 275 bar)
Hydraulic Flow Req’d @ 50 cpm . . 8.7 gpm (32.9 lpm)
Max. Rec’d Cycles Per Minute . . 50
Displacement Per Cycle ......... 7.4 in³
Volume / Cycle .................. 4.1 oz. (121.8 ml)
Cycles Per Gallon (Liter) ....... 31.1
Flow @ 50 Cycles / Minute ....... 1.6 GPM (6.1 lpm)
Maximum Temperature Limit . . 130° F (54° C)

**Pump Specifications**

Lower Pump Material .......... 316 Stainless Steel
Plunger Material ............... 17-4 Stainless Steel
Cylinder Material .............. 316 Stainless Steel
Air Motor . . . . . . . . . . . . . 67147
Motor Repair Kit .......... 637315
Motor Size ................. 2.062 in.² (13.3 cm²)
Stroke ....................... 6" (15.2 cm)
Hydraulic Inlet ............... 3/8" - 18 NPT - 1 (f)
Hydraulic Return ............. 1/2" - 14 NPS (f)
Lower Pump Model ......... 66301-XXX
Lower Pump Repair Kit .... 637306-X43
Material Inlet .............. 1" - 11-1/2 NPTF - 1 (f) &
Material Outlet .............. 1" - 11-1/2 NPTF - 1 (f)
Weight .................... 41.3 lbs (18.7 Kgs.)

**Ordering**

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| Springs |
| 4 : Multiple Wave Spring |
| 7 : Multiple Wave Spring w/440 Stainless Steel Balls |
| P : UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower) |
| R : Teflon/UHMW-PE Staggered(Upper) Teflon (Lower) |

**Plunger Type**

| 3 : Hardened Stainless Steel w/ Hard Chrome Plating |
| B : Hardened Stainless Steel w/ Ceramic Coating |

**Accessories**

Reference Mounting Footprint “A” or “D” for related rams/accessories

- Floor Mount: 65138
- Wet Sol: 66999-B
- Wall Mount Bracket: 61938-1
- Floor/Follower Adapter: 67136
Pump Performance

Hydraulic Inlet Pressure Range . 65 - 1200 PSI (4.5 - 81.6 bar)
Fluid Pressure Range .......... 180 - 4320 PSI (12.2 - 293.8 bar)
Hydraulic flow req'd @ 50 cpm . 8.7 GPM (32.9 lpm)
Max. Rec'd Cycles Per Minute . 50
Displacement Per Cycle ........ 6.9 in³ (113 cm³)
Volume / Cycle ............... 3.8 oz. (112 ml)
Cycles Per Gallon (Liter) ...... 33 (8.8)
Flow @ 50 Cycles / Minute .... 1.5 GPM (5.7 lpm)
Maximum Temperature Limit .. 130° F (54° C)

Pump Specifications

Lower Pump Material .......... Carbon Steel
Plunger Material ............. 17 - 4 Stainless Steel, (Hard Chrome)
Cylinder Material ............. Carbon Steel
Hydraulic Motor .............. 67147
Motor Repair Kit ............. 637315
Motor Size .................. 2.062 in² (13.3 cm²)
Stroke ...................... 5.75" (14.6 cm)
Hydraulic Inlet ............. 3/8" NPT(F)
Hydraulic Return ........... 1/2" NPT(F)
Lower Pump Model .......... 66266-X43-B
Lower Pump Repair Kit ...... 637074-X43-B
Material Inlet ................ Bolted Flange
Material Outlet ............... 1" NPT(F)
Weight ....................... 68 lbs (30.9 Kgs.)

Ordering

6 5 0 9 3 5 - X 4 3 - C

Packings
3 : Teflon
C : UHMW-PE
G : UHMW-PE/Leather Staggered
P : UHMW-PE/Teflon Staggered (Upper), UHMW-PE (Lower)
R : Teflon/UHMW-PE Staggered (Upper), Teflon (Lower)

Accessories

Reference Mounting Footprint “A”
for related rams/accessories

Floor Mount: 65138
Wet Sol: 66333-B
Rams: Pages 13-14
**General Piston Style Pump**

IR/ARO warrants to the original use purchaser of the ARO manufactured products depicted in this catalog that ARO will repair or replace free of charges, including return shipping costs within the Continental United States of America, any such product which under normal use and service proves defective in material or workmanship, as determined by Aro Inspection, within five (5) years from date of purchase provided the claimed defective product, or thereof is promptly returned to the ARO factory or ARO Customer Service Center with transportation charges prepaid.

If ARO inspection discloses no defect in material or workmanship, repair or replacement and return will be made at customary charges.

The foregoing warranty supersedes, voids and is in lieu of all or any other warranties, express or implied, and no warranty of merchantability or fitness for particular purpose is intended or made. ARO's sole obligation and the original use purchaser's sole remedy is as stated above and in no event shall ARO be liable for any special, direct, indirect, incidental, consequential or other damages or expenses of any nature including, without limitation, loss of profits or production time incurred by the original use purchaser or any other party.

**Air Systems Components**

IR/ARO warrants to the original use purchaser of the Air Systems Components depicted in this catalog that ARO will repair or replace, free of charges, including return shipping costs within the Continental United States of America, any such product which under normal use and service proves defective in material or workmanship, as determined by Aro Inspection, within twelve (12) months from date of purchase provided the claimed defective product, or thereof is promptly returned to the ARO Customer Service Repair Center or a factory-authorized service repair center, with transportation charges prepaid. Full warranty information available upon request.

**Noise Emissions**

The pump sound pressure levels published below have been updated to an Equivalent Continuous Sound Level ($L_{Aeq}$) to meet the intent of ANSI S1.13-1971. CAGI-PNEUROP S5.1 using four microphone locations.

<table>
<thead>
<tr>
<th>PUMP MOTOR SIZE/STROKE (INCHES)</th>
<th>MUFFLER</th>
<th>AIR OPERATING PRESSURE (PSI)</th>
<th>CYCLES/MIN</th>
<th>SOUND PRESSURE ($L_{Aeq}$)</th>
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<tr>
<td>Piston Pumps</td>
<td></td>
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<tr>
<td>2/4</td>
<td>NONE</td>
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Ingersoll Rand Industrial Technologies provides products, services, and solutions to enhance the efficiency and productivity of our commercial, industrial, and process customers. Our innovative products include air compressors, air systems components, tools, pumps, material and fluid handling systems and microturbines.

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