Eaton®
Light Duty Hydrostatic

Hydrostatic Transmissions — Models 6, 7, and 11
Ball Piston Pumps — Models 7 and 11
The Eaton Light Duty Hydrostatic Transmission consists of a variable displacement radial ball piston hydraulic pump, a fixed displacement radial ball piston hydraulic motor and a system of valves, all contained in one housing. It can be used in many different types of applications where variable output speed is a requirement. It has many advantages over other variable speed drives (electric and mechanical) and gear type transmissions.

- **Response** — These transmissions respond faster than any other type of power-transmitting system.

- **Precise speed** — Has the capability of maintaining precise speed under varying load conditions.

- **Ease of operation** — One lever controls direction and speed smoothly without gear change.

- **Low maintenance** — Simple design keeps maintenance to a minimum.

- **Increased Productivity and Versatility** — It allows complete matching of power to load.

- **Self contained** — There are no external high pressure lines, separate drive components, etc.

- **Simplified final product design** — It reduces the number of mechanical drive components.

- **Positive Braking Action** — The lever that controls speed also provides braking. The output shaft speed decreases as lever is moved toward neutral. With lever in neutral, output stops.
Smooth Performance
This graph shows the difference in operation of the hydrostatic transmission compared to a three speed gear transmission. The smooth curve represents the uniform matching of torque and speed requirements by the hydrostatic transmission.

The gear transmission has only three points of peak power while the hydrostatic transmission offers a continuous curve without peaks and valleys. You don’t have to stop and shift down to gain more torque, just move the control lever toward neutral and the output torque capability increases.

The Model 6, 7, and 11 transmissions can be mounted directly to commercially available Peerless axles, on brackets with a chain drive from the output shaft, or customer furnished gear box.

Simplified Operation
A single control lever connected to the pump section controls both speed and direction of the transmission output shaft. Infinite speed control is achieved by varying the displacement ratios between the pump and motor. Moving the control lever from neutral to forward produces one direction of output shaft rotation. When the lever is in neutral position, output shaft rotation stops. Moving the lever from neutral to reverse produces the opposite output shaft rotation from the forward position. Output shaft speed increases as the lever is moved from neutral.


Applications
Lawn Maintenance Equipment
- Tractors — Small Frame 6 Kw [8 hp]
- Tractors — Medium Frame 7,5 Kw [10 hp]
- Tractors — Medium Frame 10,5 Kw [14 hp]
- Tractors — Heavy Frame 15 Kw [20 hp]
- LawnSeeders
- Commercial Mowers

Golf Course Maintenance Equipment
- Mobile Sprayers
- Greens Mowers
- Sand Trap Rakes

Machine, Tool
- Small Lathes
- Tapping Clusters
- Pipe Threaders
- Spindle Heads

Printing
- Small Feeders
- Batchers
- Stackers
- Small Press Drives

Agricultural Equipment
- Grain Dryers
- Irrigation Equipment
- Mills
- Grinders

Construction Equipment
- Concrete Saws
- Utility Trucks
- Asphalt Sealers
- Sewer Rodders
- Conveyors
- Hoists
- Sweepers

Miscellaneous
- Airplane Tows
- Special winches for airline equipment
- Hoists
- Drives for various amusement rides
Model 6

The Model 6 transmission is designed primarily for light duty applications requiring up to 1.9 Kw [2.5 hp] output for continuous operation.

Operation

For optimum control and power, the transmissions should be operated at constant input speeds. When operating the unit under varying load conditions there can be noticeable changes in the output speed. If the output speed decreases due to increased load, the shift lever should be directed toward neutral position to increase the output torque. This produces the same result as shifting down to a lower gear with a typical mechanical transmission.

The Model 6 transmission can include a dump valve which, when actuated, enables the vehicle to be pushed with the engine off. Caution: Motor speed must not exceed 350 RPM when the valve is actuated.

Drive

A belt drive is preferred, with the sheave diameter 102 mm [4 in.] or less. Be sure to locate the belt over the input shaft bearing because excessive side loading can cause problems. Follow the belt manufacturer’s recommendation for belt tension to transmit a maximum of 3 Kw [4 hp]. The unit can be driven direct with a flexible coupling between an engine or motor and the input shaft of the transmission. Be sure the two shafts are in alignment.

Cooling

Proper cooling is essential to both performance and life of the transmission. The recommended maximum oil operating temperature is 82°C [180°F]. In order to provide adequate cooling, an 200 mm [8 in.] diameter fan should be used on the input side. If properly designed and installed, the fan will effectively cool the transmission up to approximately four input horsepower.

Fluid

See Bulletin 3-401 for recommended fluids. The standard factory fill is premium hydraulic fluid having a viscosity equivalent to SAE 20W20.

Options

- Wide Band Neutral
- Dump Valve
Internal Features Model 6

Performance Data Models 6 and 7

**Displacement (Theoretical)**
- Pump (Variable) ............... 0 - 7.6 cm³/r [0 - .465 in³/r]
- Motor (Fixed) ..................... 12.6 cm³/r [.767 in³/r]

**Speed**
- Input (Maximum) .................... 3600 RPM
- Output ................................ 0 – 2150 RPM

**Kw/Horsepower, Input (Max.)**
- @ 3600 RPM .......................... 3 Kw [4 HP]

**Torque, Output**
- Continuous .......................... 14 Nm [120 lb-in]
- Intermittent ......................... 20 Nm [180 lb-in]
- Peak .................................. 27 Nm [240 lb-in]

**Operating Temperature (Max. Cont.)** 82°C [180°F]

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**Reservoir**

**Ball Piston Hydraulic Pump (Variable Displacement)**

**Cam Ring** (for Varying Pump Displacement and Direction of Flow)

**Input Shaft**

**Output Shaft**

**Ball Piston Hydraulic Motor (Fixed Displacement)**

**Wide Band Neutral Optional**

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**Output Torque Nm [lb-in]**

<table>
<thead>
<tr>
<th>Output Torque Nm [lb-in]</th>
<th>Output Torque vs. Output Speed</th>
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<tbody>
<tr>
<td>27 [240]</td>
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</tr>
<tr>
<td>24 [210]</td>
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<tr>
<td>20 [180]</td>
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**Intermittent Use Only**

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**Input Speed — 3600 RPM Temperature — 77 - 82°C [170 - 180°F]**
Internal Features Model 7

The Model 7 Transmission is an expansion of the light duty product line. The Transmission is a result of product refinements to the Model 6 Transmission. Most significant among these refinements is reduction in noise levels generated by various duty cycle situations at high torque or load conditions.

The addition of the Model 7 to the light duty product line allows the option of having a choice of transmissions. If driveline requirements tend to indicate the need for an optimum performing, quiet operating system, the Model 7 will prove to be the proper selection.

Internal design changes provide control stability and quieter performance. The dampening pistons, shown in the picture above, provide the rigidity that is required by external control mechanisms while reducing noise levels.
Flow Diagram
Model 6 and 7

This diagram shows flow of fluid through an internal closed loop between the pump and the motor. The flow is directed by the pump to the motor and then back to the pump. Because of leakage, the amount of fluid driven back by the motor is slightly less than that required by the pump. Check valves on the inlet side of the pump are open to the reservoir enabling the pump to draw fluid as needed.

Speed control is achieved by changing the amount of oil delivered by the variable displacement pump to the fixed displacement motor by moving the control lever.

Dimensions
Model 6 and 7

Max. recommended control angle 13°

for optional output rotation

(steps must be provided by customer, on linkage).

Max. recommended control angle 13°

for optional output rotation

(steps must be provided by customer, on linkage).
Model 11 Transmission

The Model 11 Transmission is designed primarily for applications with engines rated at 7.5-15 Kw [10-20 hp] at maximum speed of 3600 RPM or electric motors up to 7.5 Kw [10 hp] at 3600 RPM.

Operation

For optimum control and power, the transmission should be operated at constant input speeds. When operating the unit under varying load conditions, there will be noticeable changes in the output speed. If the output speed decreases due to increased load, the shift lever should be directed toward neutral position to increase the output torque. This produces the same result as shifting down to a lower gear with a typical mechanical transmission.

Drive

The input drive for the Model 11 should be in line with the engine or motor and coupled with either universal joints or elastomeric couplings capable of correcting for any slight misalignments. Special model 11 transmissions can be belt driven.

Cooling

Proper cooling is essential to both performance and life of the transmission. The recommended maximum oil operating temperature is 82° C [180° F]. An 200 mm [8 in.] diameter fan, customer supplied, must be attached to the coupling at the input shaft to blow air across the finned cover.

The Model 11 Transmission is available in both sump cooled and reservoir cooled models. Cooling is dependent on a customer supplied fan and cast fins in the aluminum cover for all reservoir cooled units. Sump cooled units use an axle or auxiliary gear housing in addition to the fan and cast fins for cooling.

An external cooling unit or heat exchanger can be added if necessary to keep the operating temperature under the maximum.

Fluid

See Bulletin 3-401 for Recommended fluids. The preferred fluid viscosity is the same as that specified by SAE 20 W20.
Internal Features
Model 11
Transmission

Performance Data

Displacement (Theoretical)
- Pump (Variable) .............. 0 - 18,9 cm³/r [0 - 1.15 in³/r]
- Motor (Fixed) .................. 34,3 cm³/r [2.09 in³/r]

Speed
- Input (Maximum) ...................... 3600 RPM
- Output ........................................ 0 - 1950 RPM

Kw/Horsepower, Input (Max.)
- @3600 RPM ......................... 15 Kw [20 HP]

Torque, Output
- Continuous ...................... 31 Nm [360 lb-in]
- Intermittent ...................... 61 Nm [540 lb-in]
- Peak ................................. 81 Nm [720 lb-in]

Operating Temperature (Max. Cont.) ........... 82° C [180° F]

Output Torque vs. Output Speed

Intermittent Use Only

Intake Shaft
Acceleration Valves
Radial Ball Piston Pump
Radial Ball Piston Motor
Output Shaft
Dampening Pistons
(Aids in Quieting Unit Operation)
Control Shaft
(Controls Pump Output Speed and Direction of Rotation)
**Model 11 Transmission**

**System**
The flow diagrams show the flow of oil through the unit. Speed control is achieved by changing the amount of oil delivered by the variable displacement pump by rotating the control shaft. Check valves on the inlet side of the pump enable the pump to receive charge pump flow as needed to make up for internal leakage.

**Charge Pump**
The charge pump performs five functions:
1. Maintains pressure 2-3 bar [30-50 PSI] on the low pressure side of the circuit to supercharge the variable displacement pump.
2. Supplies oil lost due to internal leakage to the circuit.
3. Provides a means of moving the hydraulic fluid through a filter and cooler when needed to maintain fluid cleanliness and temperature.
4. Provides a source of auxiliary hydraulic power for secondary operations such as a hydraulic cylinder used to power attachments on vehicles. (If a cylinder is used, be sure it is a double acting type.)
5. A charge pump option is available with a ball bearing input which is recommended for overhung loads such as pulleys, sprockets, etc.

**Filter**
An external filter, customer supplied, is also required and should be the last component in the charge pump discharge line before the pump. It should have a rating of 10 microns or less and be capable of filtering up to 17 L/min [4.5 GPM].

The filtered fluid then flows into the pump, past one of the check valves and into the low pressure circuit. Excess oil not needed for the system make-up is relieved into the pump case past the low pressure relief valve.

**Dimensions Model 11 Transmission**

- **Charge Pump Return Port**
  - Straight Thread –6 Port O-ring Boss (for 3/8 inch nominal tubing OD) per SAE J514 spec.
  - Dimension: 103.1 [4.06]

- **Charge Pump Intake Port**
  - Straight Thread –10 Port O-ring Boss (for 5/8 inch nominal tubing OD) per SAE J514 Spec.
  - Dimension: 76.2 [3.00]

- **Case Drain Port**
  - Straight Thread –10 Port O-ring Boss (for 5/8 inch nominal tubing OD) per SAE J514 Spec.
  - Dimension: 93.68 [3.688]

- **Control Shaft**
  - Diameter: 10.4 [0.41] Dia. Thru for 3/8 in. Dia. Bolts (4) Torque to 40 Nm [31 lb-ft]

**Auxiliary Circuit**
If an auxiliary circuit is used, the fluid flows from the charge pump to a valve in the auxiliary circuit. This valve should be an open center type and have an internal pressure relief valve set at no more than 35 bar [500 PSI] (55 bar [800 PSI] optional). At this pressure, the flow will be approximately 5.7 L/min [1.5 GPM] with an input speed of 3600 RPM and an oil viscosity of 10 cSt [60 SUS].

**Acceleration Valves**
Acceleration valves are available on models for applications where gradual acceleration from neutral is desirable. The valves are open in neutral position. The valve in the side of the circuit being used closes gradually as the pressure increases, cushioning load acceleration. On deceleration when pressure is decreased below a certain point the valve opens, bypassing the pump flow.

**Options**
- Wide Band Neutral
- Neutral Detent
- Internal Charge Inlet
- Dump Valve
- Heavy Duty Package
- Internal Charge Inlet
Flow Diagrams
Model 11

Sump cooled gear box, axle housing, etc. (shown with optional acceleration valves) uses flow thru output bearing with no shaft seal.

If the sump oil level can fall below the output shaft center line, then the optional motor body with case drain hole and sealed output shaft should be chosen.

Reservoir cooled models (shown with optional acceleration valves) uses sealed output bearing and shaft seal.
Model 11 Pump

The Eaton Model 11 radial ball piston pump uses the same pumping element used in the Eaton Model 11 hydrostatic transmission. Over a quarter million of these transmissions have been produced and shipped to the field over the years, earning the Model 11 a reputation for the highest quality and reliability. And like all of our Hydraulics Division products, the Model 11 Pump is covered by Eaton’s three year warranty.

The Model 11 pump is the ideal choice for applications requiring variable flow, in both directions, up to 66.2 L/min [17.5 GPM]. With an input speed capability of 3600 RPM and the integrity to handle 15 Kw [20 HP], the Model 11 pump, in combination with Eaton’s Char-Lynn motors, is the perfect match for many different types of mobile equipment as well as a wide array of industrial applications.
**Model 11 Pump Performance and Specifications**

**Unit Ratings**

- **Maximum Input Speed**: Not to exceed 3600 RPM
- **Maximum Input Power**: @ 3600 RPM 15 kw [20 HP]
- **Displacement (Theoretical)**: Variable 0 - 18.9 cm³/r [0 - 1.15 in³/r]
- **Maximum Operating Pressure**: 155.2 bar [2250 PSI] Peak
- **Normal Charge Pump Flow and Pressure**: 15 L/min [4.0 GPM] at 7.6 bar [110 PSI] and 3600 RPM.
- **Charge Pump Flow and Pressure Available to Auxiliary Circuit**: 5.7 l/min [1.5 GPM] 34 bar [500 PSI] (55 bar [800 PSI] optional)
- **Unit Dry Weight**: 9.5 kg [21 lb.]  

**Operating Conditions**

- **Filtration**: A 10 micron (nominal) rated filter is required for filtration of fluid supplied to the return fitting. Filter cartridge must be capable of withstanding 10.3 bar [150 PSI] internal pressure.
- **Case Pressure**: Case Pressure Should Not Exceed: 0.8 bar [12 PSI] Intermittent, 0.5 bar [7 PSI] Continuous.
- **Fluids**: see Bulletin 3-401 for recommended fluids and cleanliness. The preferred fluid viscosity is the same as that specified by SAE 20W-20.
- **Charge Pump Inlet Pressure**: Maximum continuous inlet vacuum at charge pump intake under normal operating conditions is 254 mm [10 inches Hg] at sea level.
- **Maximum Oil Temp**: 82°C [180°F]
  - Oil viscosity range of 10 cSt [60 SUS] minimum to 22000 cSt [100,000 SUS] maximum (cold start only).

**Options**

- Acceleration Valves
- Neutral Detent
- Wide Band Neutral
- High Rate Charge Relief
- Dump Valve
- Heavy Duty Package

For any deviation from these specifications, consult your Eaton Hydraulics Division representative.
Dimensions
Model 11 Pump

Charge Pump Intake Port
Straight Thread –10 Port O-ring Boss (for 5/8 inch nominal tubing OD) per SAE J514 Spec.

Max. recommended control angle 14° for flow from port A for CW input rotation (stops must be provided by customer, on linkage).

Charge Pump Discharge Port
Straight Thread –6 Port O-ring Boss (for 3/8 inch nominal tubing OD) per SAE J514 Spec.

Max. recommended control angle 14° for flow from port B for CW input rotation (stops must be provided by customer, on linkage).

Case Drain Port
Straight Thread –10 Port O-ring Boss (for 5/8 inch nominal tubing OD) per SAE J514 Spec.

Charge Return Port
Straight Thread –6 Port O-ring Boss (for 3/8 inch nominal tubing OD) per SAE J514 Spec.

Port A
Straight Thread –10 Port O-ring Boss (for 5/8 inch nominal tubing OD) per SAE J514 Spec.

Port B
Straight Thread –10 Port O-ring Boss (for 5/8 inch nominal tubing OD) per SAE J514 Spec.

1/8 x 5/8 Woodruff Key (#5) Provided by Customer

1/2-13 UNC 2A Thread
12.7 [0.50] Min. Full Thread
Max. Hold Down Torque of 32.6 Nm [24 lb-ft]

1/2-13 UNC 2A Thread
Max. Hold Down Torque of 32.6 Nm [24 lb-ft]

Mounting Surface

6.86 [0.27]

153.26 [6.034]

124.7 [4.91]

51.8 [2.04]

101.6 [4.00] Max.

101.6 [4.00]

41.02 [1.615]

21.6 [0.85]

83.19 [3.275]

188.0 [7.40] Charge Pump with Bushing

207.8 [8.18] Charge Pump with Ball Bearing

27.9 [1.10]

27.9 [1.10]

2 Places

87.4 [3.44]

152.4 [6.00]

87.4

152.4

128,75/124,58

Taper Per Meter
1.546/1.495

Taper Per Foot

1.72/1.34

[0.068/0.053]

22.4/19.8

[0.88/0.78]

12,7 [0.50]

147.8 [5.82]

1/8 x 5/8 Woodruff Key (#5) Provided by Customer

19,063/19,037

[.7505/.7495] Dia.

1,72/1.34

[0.068/0.053]

18,8/17,3

[.74/.68]

155,4 [6.12]

1/2-13 UNC 2A Thread
12.7 [0.50] Min. Full Thread
Max. Hold Down Torque of 32.6 Nm [24 lb-ft]

10,4 [0.41] Dia. Thru for 3/8 inch Dia. Bolts (4) Torque to 40 Nm [31 lb-ft]

50,8 [2.00]

72,4 [2.85]

28,7 [1.130]

28,7 [1.130]

147,8 [5.82]

128,75/124,58

Taper Per Meter
1.546/1.495

Taper Per Foot

1.72/1.34

[0.068/0.053]

22.4/19.8

[0.88/0.78]

12,7 [0.50]

147.8 [5.82]

1/8 x 5/8 Woodruff Key (#5) Provided by Customer

19,063/19,037

[.7505/.7495] Dia.
Light Duty Hydrostatic

Dimensions — Input Shafts
Model 11 Transmission
Model 11 Pump

- 3/16 x 3/4 Woodruff Key (#9) Provided by Customer
- 1/4-20 UNC 2B Thread 12.7 [.50] Min. Full Thread
- 19,037/19,025 [.7495/.7490] Dia.

Charge Pump with Ball Bearing

- 3/16 x 5/8 Woodruff Key (#61) Provided by Customer
- 5/16-18 UNC Thread 19.0 [.75] Min. Full Thread
- 1/8 x 5/8 Woodruff Key (#5) Provided by Customer
- Involute Spline Flat Root Side Fit 12 Tooth 20/40 Pitch
- 1/4-20 UNC x 12.7 [.50] Dp.
- Sump Oil Return (Thru Bearing)
- 1.52 [.060] x 15.01/14.86 [.591/.585] Dia. Groove
- 4.8/2.8 [.19/.11] 22.48 [.885]

Dimensions — Output Shafts
Model 11 Transmission

- 1/4-20 UNC x 12.7 [.50] Dp.
- 18.56/18.31 [.731/.721]
- 1.52 [.060] x 16.05/15.87 [.632/.625] Dia. Groove
- 4.8/2.8 [.19/.11] 22.48 [.885]
Model 7 Pump

The Eaton Model 7 radial ball piston pump uses the same pumping element used in the Eaton Model 7 hydrostatic transmission, and like all of our Hydraulics Division products, the Model 7 Pump is covered by Eaton’s three year warranty.

The Model 7 pump, a smaller unit than the Model 11, is also an ideal choice for applications requiring variable flow in both directions. Up to 27.4 L/min [7.2 GPM], with an input speed capability of 3600 RPM and the integrity to handle 3 Kw [4 HP], the Model 7 pump, in combination with Eaton’s Char-Lynn motors, is the perfect match for many different types of mobile equipment as well as a wide array of industrial applications.

Unit Ratings

Maximum Input Speed
Not to exceed 3600 RPM

Displacement (Theoretical)
Variable 0 - 7.62 cm³/r [0 - .465 in³/r]

Maximum Operating Pressure
155.2 bar [2250 PSI] Peak
120.7 bar [1750 PSI] Intermittent
86.2 bar [1250 PSI] Continuous

Unit Dry Weight
7.5 kg [16.5 lb.]

Operating Conditions

Case Pressure
Case Pressure Should Not Exceed:
0.8 bar [12 PSI] Intermittent.
0.5 bar [7 PSI] Continuous.

Fluids
See Bulletin 3-401 for recommended fluids and cleanliness. Model 720 pump is factory filled with fluid having a viscosity equivalent to SAE 20W20.

Maximum Oil Temp of 82°C [180°F]. Oil viscosity range of 10 cSt [60 SUS] minimum to 22000 cSt [100,000 SUS] maximum (cold start only).

For any deviation from these specifications, consult your Eaton Hydraulics Division representative.

Options

• Wide Band Neutral
• Dump Valve

Output Flow vs. Pressure @ Full Stroke

3600 RPM

Flow l/min [GPM]

Pressure bar [PSI]

Input Torque vs. Pressure @ Full Stroke

Torque Nm [in-lb]

Pressure bar [PSI]

Input Speed
3600 RPM
3000 RPM
2400 RPM
1800 RPM
Dimensions
Model 7 Pump

- **Input Rotation Optional**
- **Port “E” Intake from Reservoir or Optional Expansion Tank**
  - Straight Thread –10 Port O-ring Boss (for 5/8 inch nominal tubing OD) per SAE J514 Spec.
  - 1/8 x 1/2 Woodruff Key (#3) Provided by Customer
  - Mounting Surface 13.46 [0.53]

- **Port “C” Case Drain**
  - Straight Thread –6 Port O-ring Boss (for 3/8 inch nominal tubing OD) per SAE J514 Spec.

- **Port “B” Case Drain**
  - Straight Thread –8 Port O-ring Boss (for 1/2 inch nominal tubing OD) per SAE J514 Spec.

Max. recommended control angle 13° for flow from port A for CW input rotation (stops must be provided by customer, on linkage).

Max. recommended control angle 13° for flow from port B for CW input rotation (stops must be provided by customer, on linkage).

**Schematic for Pump with Dump Valve Option**
## Model 6 Transmissions

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Input Rotation</th>
<th>Reservoir</th>
<th>Dump Valve</th>
<th>Output Rotation</th>
<th>Gear</th>
<th>Comments</th>
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*When Control Shaft is Rotated CW
## Model 7 Transmissions

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<th>Reservoir</th>
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<th>Output Rotation</th>
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</tr>
<tr>
<td>700-007</td>
<td>CW</td>
<td>Reservoir</td>
<td>Yes</td>
<td>CCW</td>
<td>12T</td>
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</tr>
<tr>
<td>700-008</td>
<td>CCW</td>
<td>Cover Plug</td>
<td>Yes</td>
<td>CCW *</td>
<td>12T</td>
<td>Motor Body Rotated 180°</td>
</tr>
<tr>
<td>700-011</td>
<td>CCW</td>
<td>Reservoir</td>
<td>Yes</td>
<td>CCW *</td>
<td>None</td>
<td>Motor Body Rotated 180°</td>
</tr>
<tr>
<td>700-012</td>
<td>CW</td>
<td>5/16 I.D. Hose Adapter</td>
<td>Yes</td>
<td>CCW</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>700-014</td>
<td>CCW</td>
<td>Reservoir</td>
<td>Yes</td>
<td>CCW *</td>
<td>12T</td>
<td>Motor Body Rotated 180°</td>
</tr>
<tr>
<td>700-015</td>
<td>CCW</td>
<td>Cover Plug</td>
<td>No</td>
<td>CCW *</td>
<td>None</td>
<td>Special Features</td>
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<tr>
<td>700-016</td>
<td>CW</td>
<td>5/16 I.D. Hose Adapter</td>
<td>Yes</td>
<td>CW *</td>
<td>None</td>
<td>Motor Body Rotated 180°</td>
</tr>
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<td>CCW</td>
<td>Reservoir</td>
<td>Yes</td>
<td>CW</td>
<td>None</td>
<td>Special Features</td>
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<tr>
<td>700-024</td>
<td>CCW</td>
<td>Reservoir w/Diaphragm</td>
<td>Yes</td>
<td>CCW</td>
<td>None</td>
<td>Motor Body Rotated 180° 1/4-20 Tap</td>
</tr>
<tr>
<td>700-025</td>
<td>CCW</td>
<td>Reservoir w/Diaphragm</td>
<td>Yes</td>
<td>CW</td>
<td>13T</td>
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</tr>
<tr>
<td>700-033</td>
<td>CCW</td>
<td>Reservoir</td>
<td>No</td>
<td>CW</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>700-034</td>
<td>CW</td>
<td>Reservoir</td>
<td>No</td>
<td>CW *</td>
<td>None</td>
<td>Motor Body Rotated 180°</td>
</tr>
<tr>
<td>700-036</td>
<td>CW</td>
<td>Reservoir</td>
<td>Yes</td>
<td>CW *</td>
<td>12T</td>
<td>Motor Body Rotated 180°</td>
</tr>
<tr>
<td>700-037</td>
<td>CW</td>
<td>Reservoir w/Diaphragm</td>
<td>Yes</td>
<td>CW *</td>
<td>12T</td>
<td>Motor Body Rotated 180° Output Shaft w/ 1/4-20 Tap</td>
</tr>
<tr>
<td>700-039</td>
<td>CW</td>
<td>Reservoir</td>
<td>Yes</td>
<td>CCW</td>
<td>None</td>
<td>Wide Band Neutral</td>
</tr>
<tr>
<td>700-040</td>
<td>CCW</td>
<td>Reservoir</td>
<td>Yes</td>
<td>CW</td>
<td>12T</td>
<td>Wide Band Neutral</td>
</tr>
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* When Control Shaft is Rotated CW
## Model 10 Transmissions

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Input Rotation</th>
<th>Input Shaft Support</th>
<th>Charge Pump Pressure</th>
<th>Charge Valve Pressure</th>
<th>Acceleration Valves</th>
<th>Cover Conn.</th>
<th>Output Shaft</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1001-018</td>
<td>CCW</td>
<td>Bush.</td>
<td>500</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>3/8 ID Hose</td>
<td>Sealed Keyed Port Plate</td>
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</table>

## Model 11 Transmissions

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Input Rotation</th>
<th>Input Shaft Support</th>
<th>Charge Pump Pressure</th>
<th>Charge Valve Pressure</th>
<th>Acceleration Valves</th>
<th>Cover Conn.</th>
<th>Output Shaft</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100-000</td>
<td>CW</td>
<td>Bush.</td>
<td>500</td>
<td>None</td>
<td>None</td>
<td>Flow</td>
<td>Thru</td>
<td>12T</td>
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<tr>
<td>1100-004</td>
<td>CW</td>
<td>Bush.</td>
<td>500</td>
<td>None</td>
<td>None</td>
<td>7/8-14 O-Ring</td>
<td>Sealed Keyed</td>
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<tr>
<td>1100-005</td>
<td>CCW</td>
<td>Bush.</td>
<td>500</td>
<td>None</td>
<td>None</td>
<td>7/8-14 O-Ring</td>
<td>Sealed Keyed</td>
<td></td>
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## Model 11 Pumps

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Input Rotation</th>
<th>Input Shaft Support</th>
<th>Charge Pump Pressure</th>
<th>Charge Valve Pressure</th>
<th>Acceleration Valves</th>
<th>Cover Conn.</th>
<th>Pressure Return Ports</th>
<th>Output Flow</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1120-016</td>
<td>CW</td>
<td>Bush.</td>
<td>800</td>
<td>None</td>
<td>None</td>
<td>7/8-14 O-Ring</td>
<td>Port A</td>
<td></td>
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<tr>
<td>1120-024</td>
<td>CW</td>
<td>Bush.</td>
<td>800</td>
<td>None</td>
<td>None</td>
<td>3/4-16 O-Ring</td>
<td>Port A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1120-026</td>
<td>CCW</td>
<td>Bush.</td>
<td>500</td>
<td>None</td>
<td>None</td>
<td>7/8-14 O-Ring</td>
<td>Port B</td>
<td></td>
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<tr>
<td>1120-029</td>
<td>CCW</td>
<td>Bush.</td>
<td>500</td>
<td>None</td>
<td>None</td>
<td>3/4-16 O-Ring</td>
<td>Port B</td>
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</tr>
<tr>
<td>1120-033</td>
<td>CW</td>
<td>Bush.</td>
<td>500</td>
<td>None</td>
<td>None</td>
<td>7/8-14 O-Ring</td>
<td>Top</td>
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</tr>
<tr>
<td>1120-035</td>
<td>CW</td>
<td>Bush.</td>
<td>800</td>
<td>None</td>
<td>None</td>
<td>3/4-16 O-Ring</td>
<td>Top</td>
<td>Dump Valve</td>
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</tr>
<tr>
<td>1120-040</td>
<td>CCW</td>
<td>Bush.</td>
<td>800</td>
<td>None</td>
<td>None</td>
<td>7/8-14 O-Ring</td>
<td>Top</td>
<td>Dump Valve</td>
<td>Hi Rate RV Spring</td>
</tr>
<tr>
<td>1120-045</td>
<td>CCW</td>
<td>Bush.</td>
<td>800</td>
<td>None</td>
<td>None</td>
<td>3/4-16 O-Ring</td>
<td>Top</td>
<td>Hi Rate RV Spring, Rustello</td>
<td></td>
</tr>
</tbody>
</table>
## Model 7 Pumps

**Keyed Input Shaft**

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Input Rotation</th>
<th>Input Shaft Support</th>
<th>Input Shaft</th>
<th>Control Shaft Rotation</th>
<th>Output Flow Port</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>720-000</td>
<td>CW</td>
<td>Brg.</td>
<td>Keyed</td>
<td>CW</td>
<td>A</td>
<td>Dump Valve</td>
</tr>
<tr>
<td>720-001</td>
<td>CCW</td>
<td>Brg.</td>
<td>Keyed</td>
<td>CW</td>
<td>B</td>
<td>Dump Valve</td>
</tr>
<tr>
<td>720-002</td>
<td>CW</td>
<td>Brg.</td>
<td>Keyed</td>
<td>CW</td>
<td>A</td>
<td>Dump Valve, Reservoir</td>
</tr>
<tr>
<td>720-003</td>
<td>CCW</td>
<td>Brg.</td>
<td>Keyed</td>
<td>CW</td>
<td>B</td>
<td>Dump Valve, Reservoir w/Diaphragm</td>
</tr>
</tbody>
</table>

Information contained in this catalog is accurate as of the publication date and is subject to change without notice. Performance values are typical values. Customers are responsible for selecting products for their applications using normal engineering methods.