Hydraulics

Eaton®

Light Duty Hydrostatic

11-04-880
EN-0900

Hydrostatic Transmissions — Models 6, 7, and 11
Ball Piston Pumps — Models 7 and 11

We Manufacture

Solutions

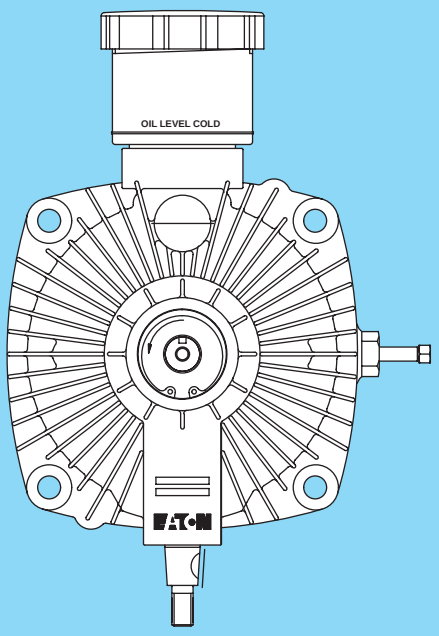
Solutions

Eaton Model 6, 7, and 11 Hydrostatic Transmissions

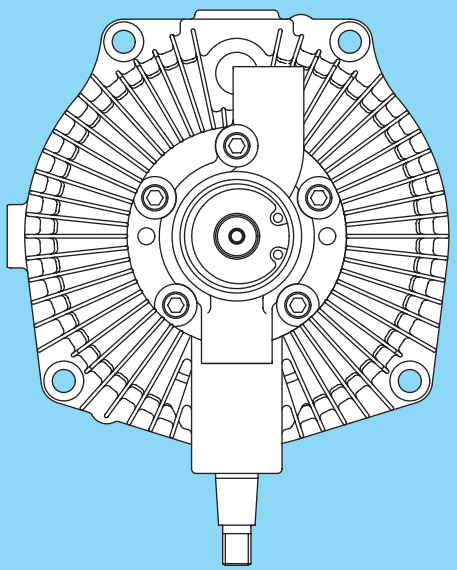
The Eaton Light Duty Hydrostatic Transmission consists of a variable displacement radial ball piston hydraulic pump, a fixed displacement radial ball piston hydraulic motor and a system of valves, all contained in one housing. It can be used in many different types of applications where variable output 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.

Model 6
Model 7



Model 11

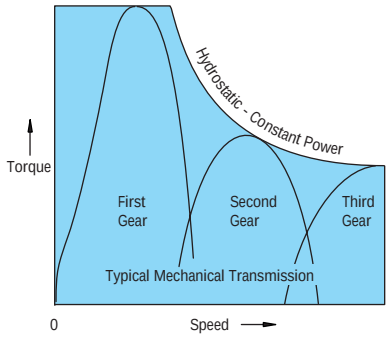


Smooth Performance

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.

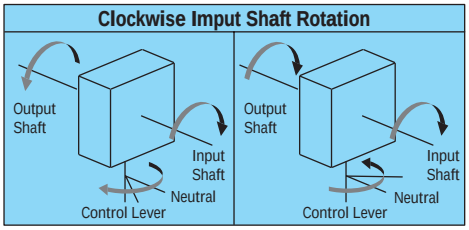


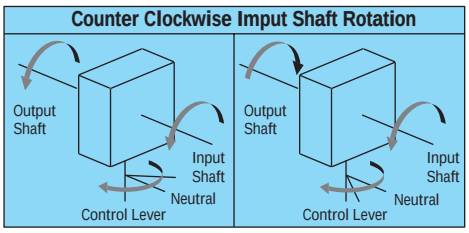
Simplified Operation

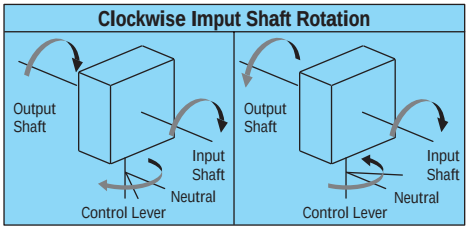
A single control lever connected to the pump section controls both speed and direction of the transmission output shaft. Infinite speed control is achieved by varying the displacement ratios between the pump and motor. Moving the control lever from neutral to forward produces one direction of output 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.

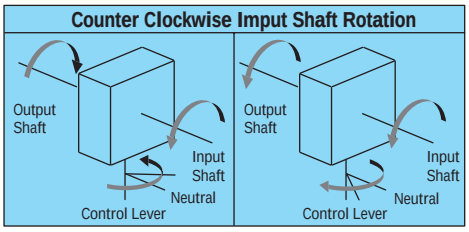
*Axle available through Peerless Axle Division, Tecumseh Prod. Corp., Clinton, Michigan.

Direction Control









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

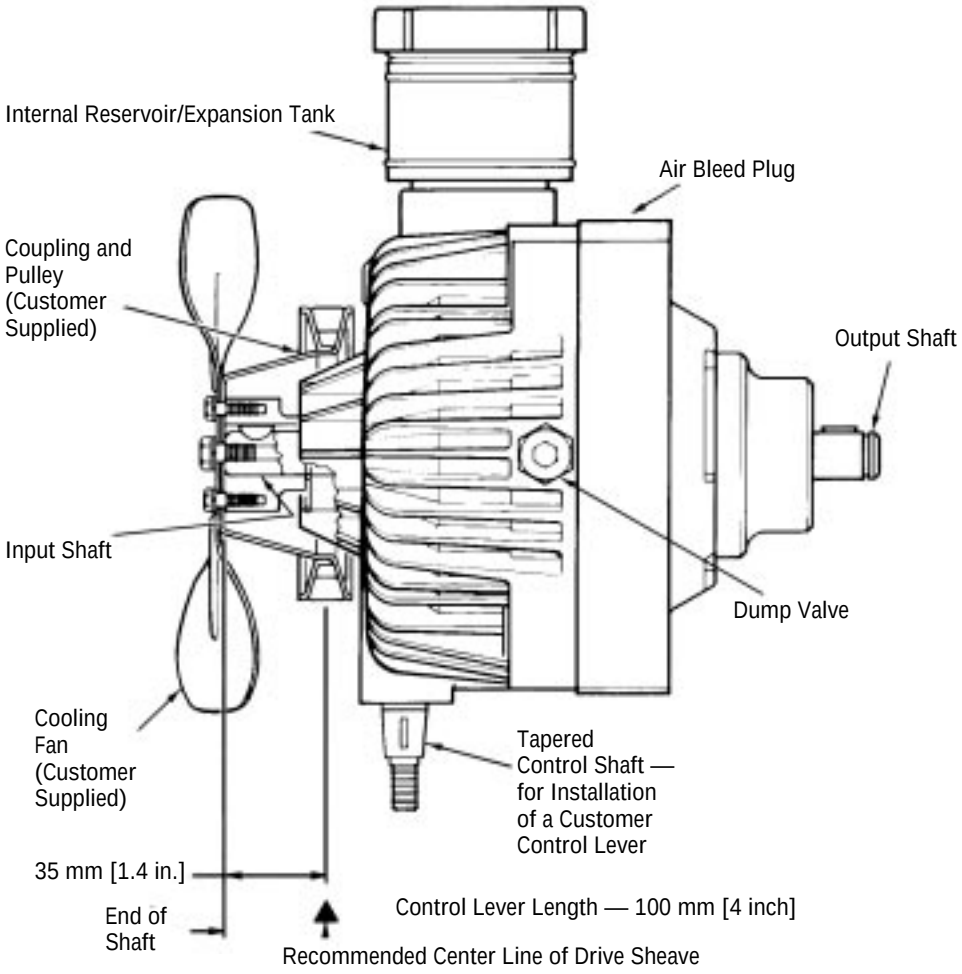
Construction Equipment

- 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



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.

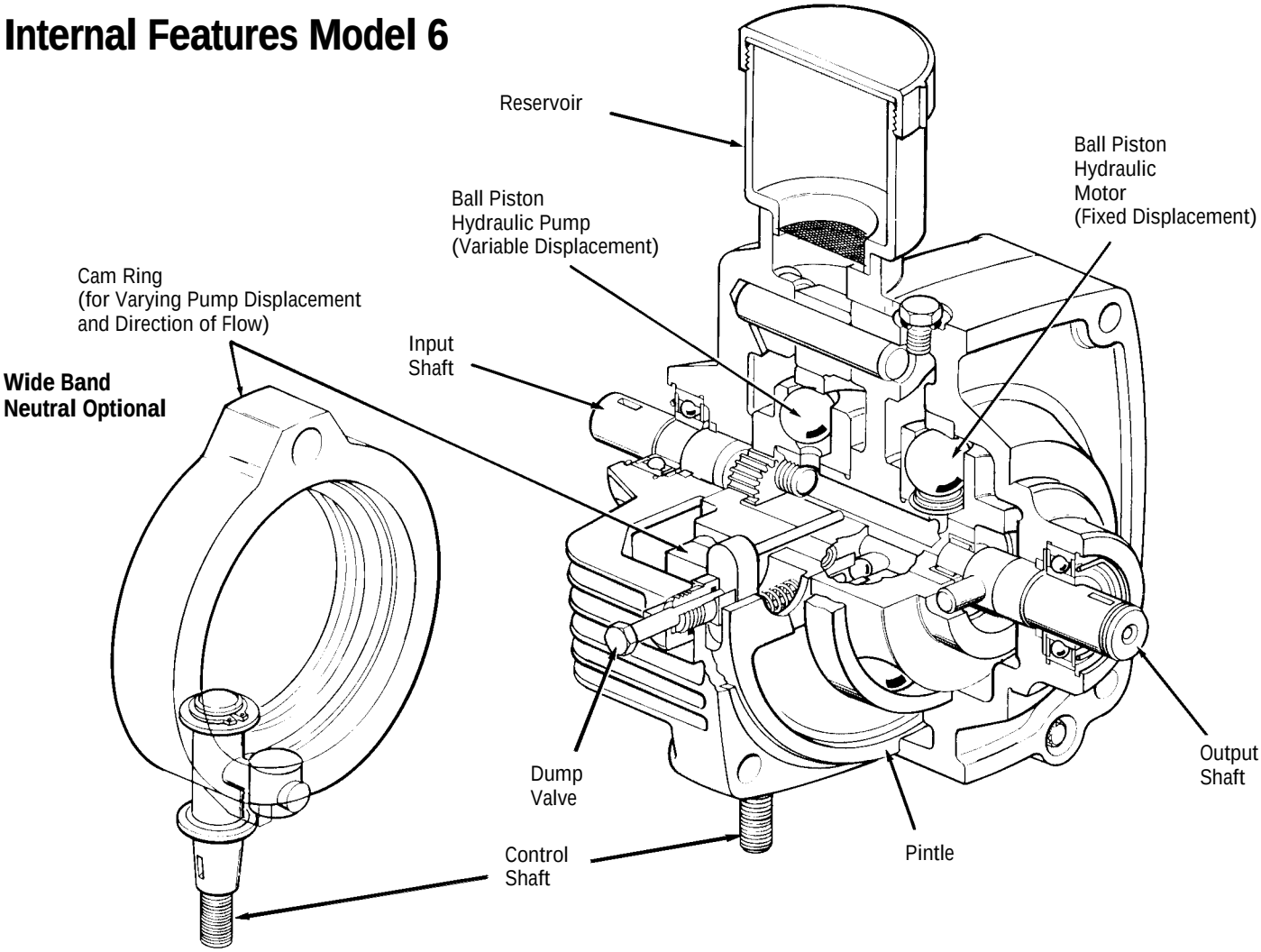
Fluid

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

Options

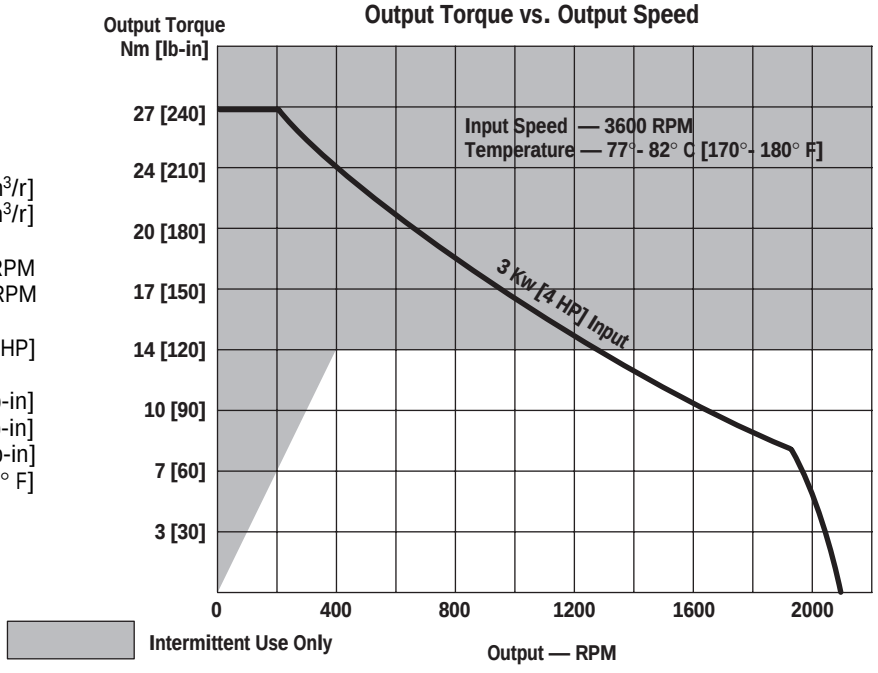
- Wide Band Neutral
- Dump Valve

Internal Features Model 6

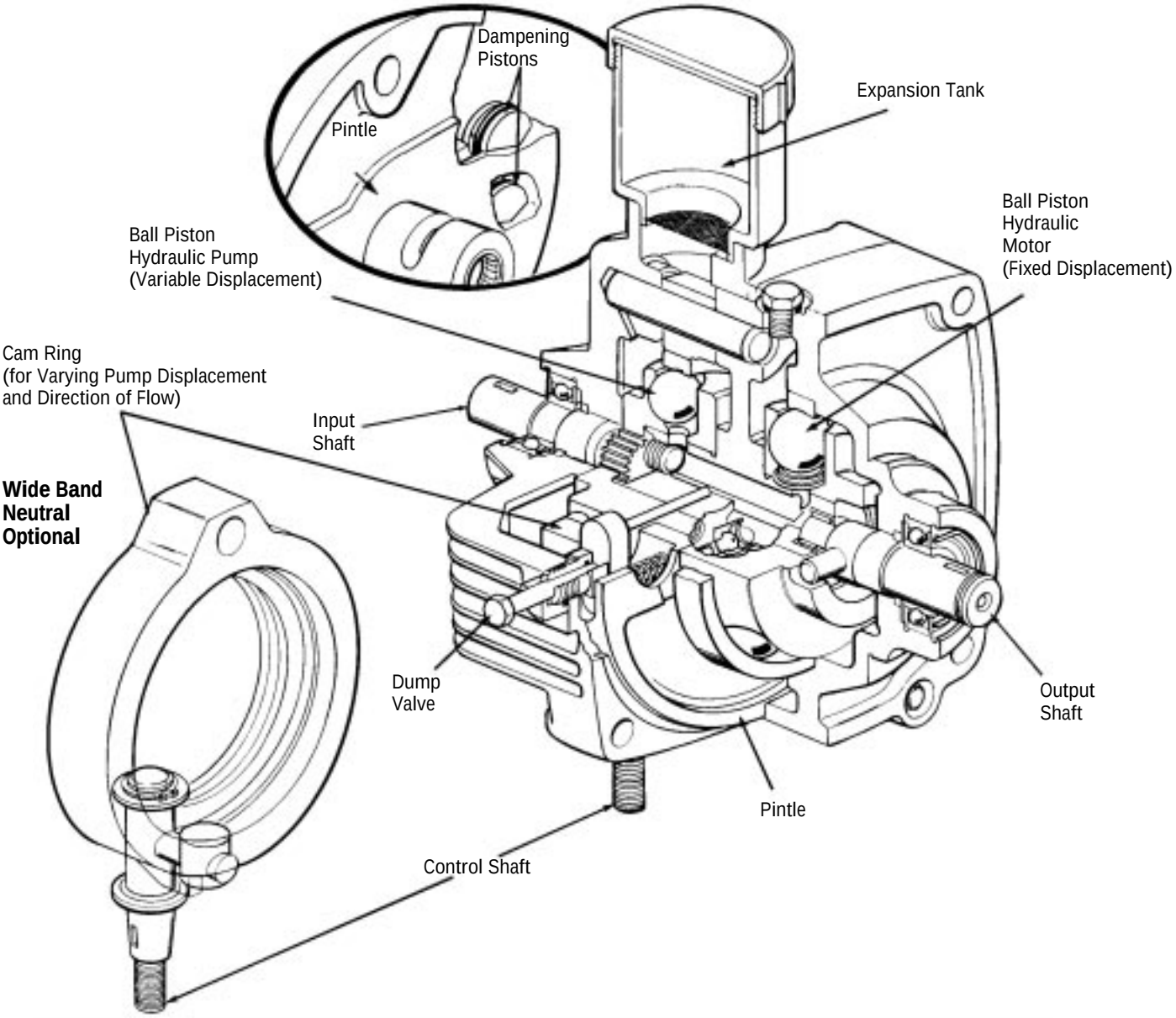


Performance Data Models 6 and 7

Displacement (Theoretical)
Pump (Variable) ..... 0 - 7,6 cm^3/r [0 - .465 in^3/r]
Motor (Fixed) ..... 12,6 cm^3/r [.767 in^3/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]



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.

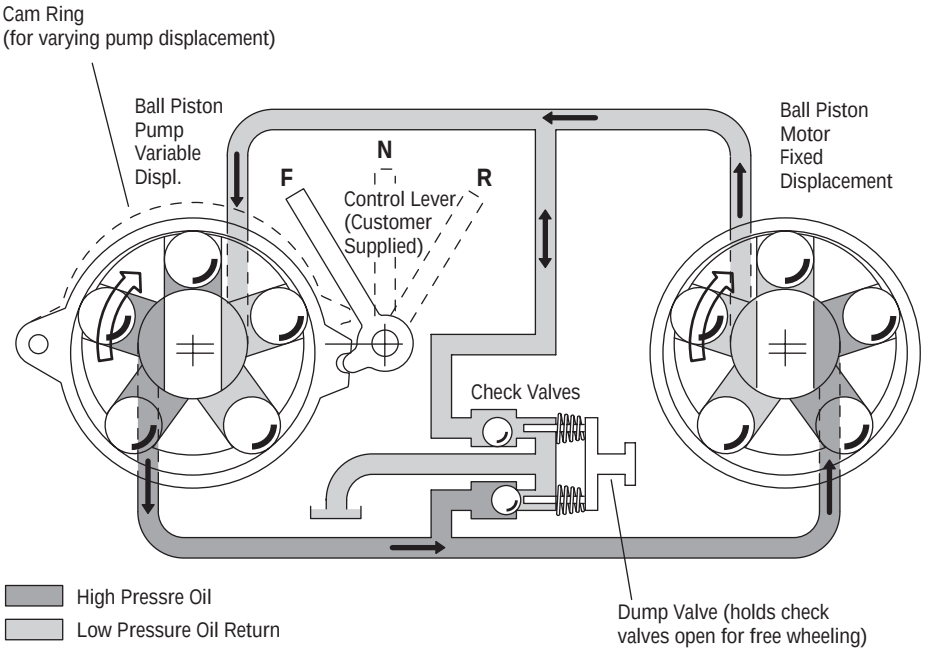
The addition of the Model 7 to the light duty product line allows the option of having a choice of transmissions. If driveline requirements tend to indicate the need for an optimum performing, quiet operating system, the Model 7 will prove to be the proper selection.

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.

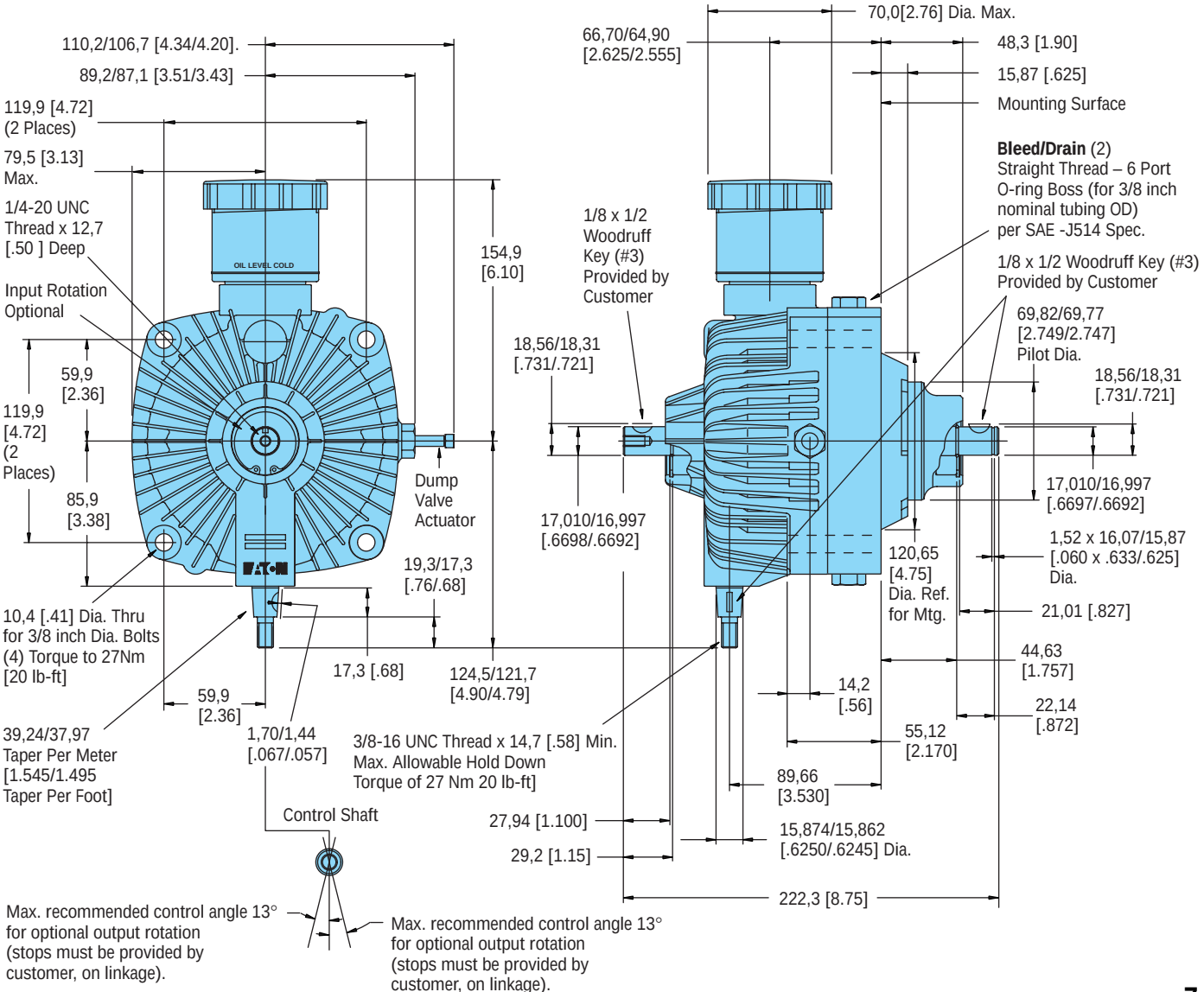
Flow Diagram Model 6 and 7

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.

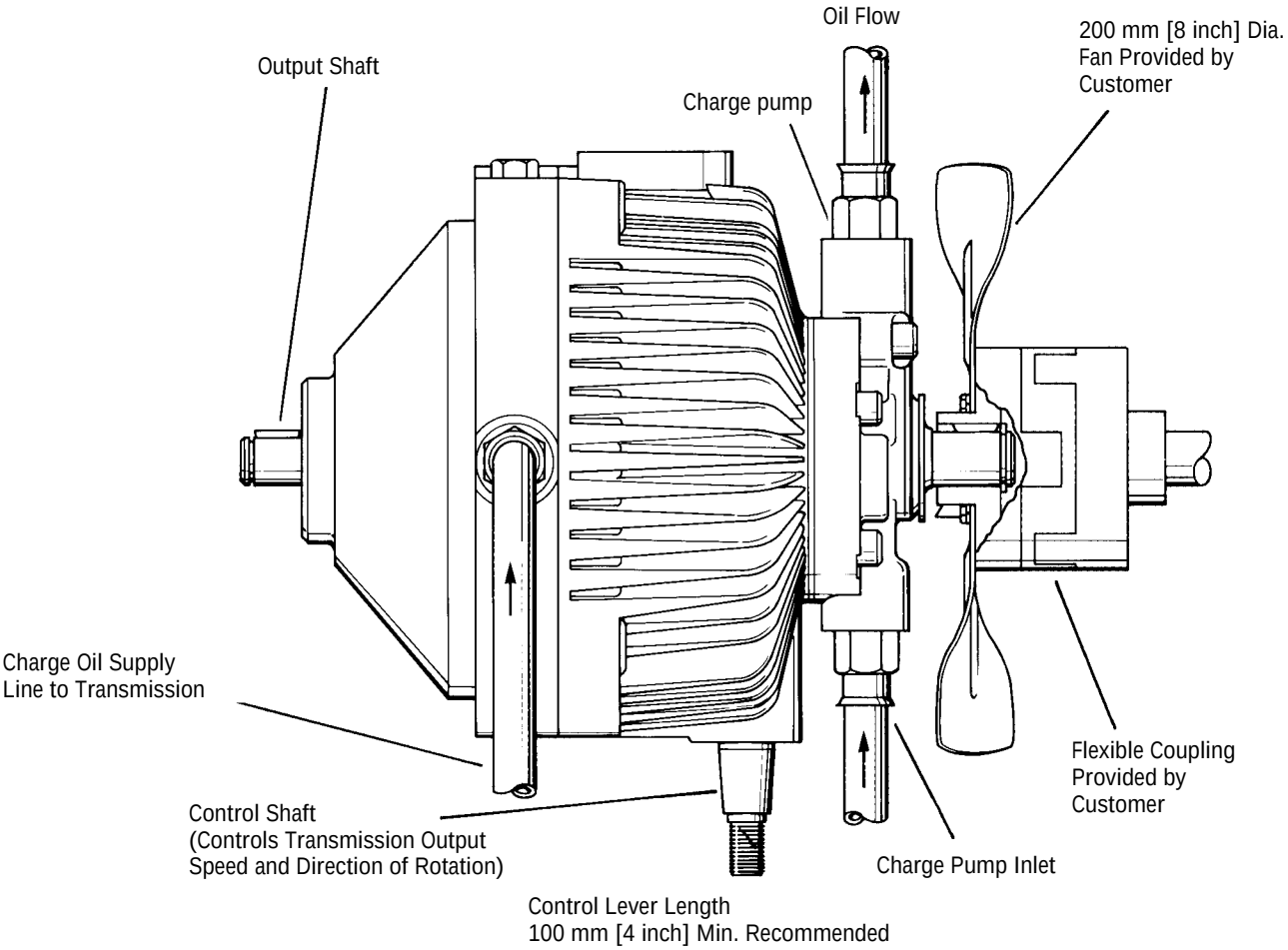
Speed control is achieved by changing the amount of oil delivered by the variable displacement pump to the fixed displacement motor by moving the control lever.



Dimensions Model 6 and 7



Model 11 Transmission



Model 11 Transmission

The Model 11 Transmission is designed primarly 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.

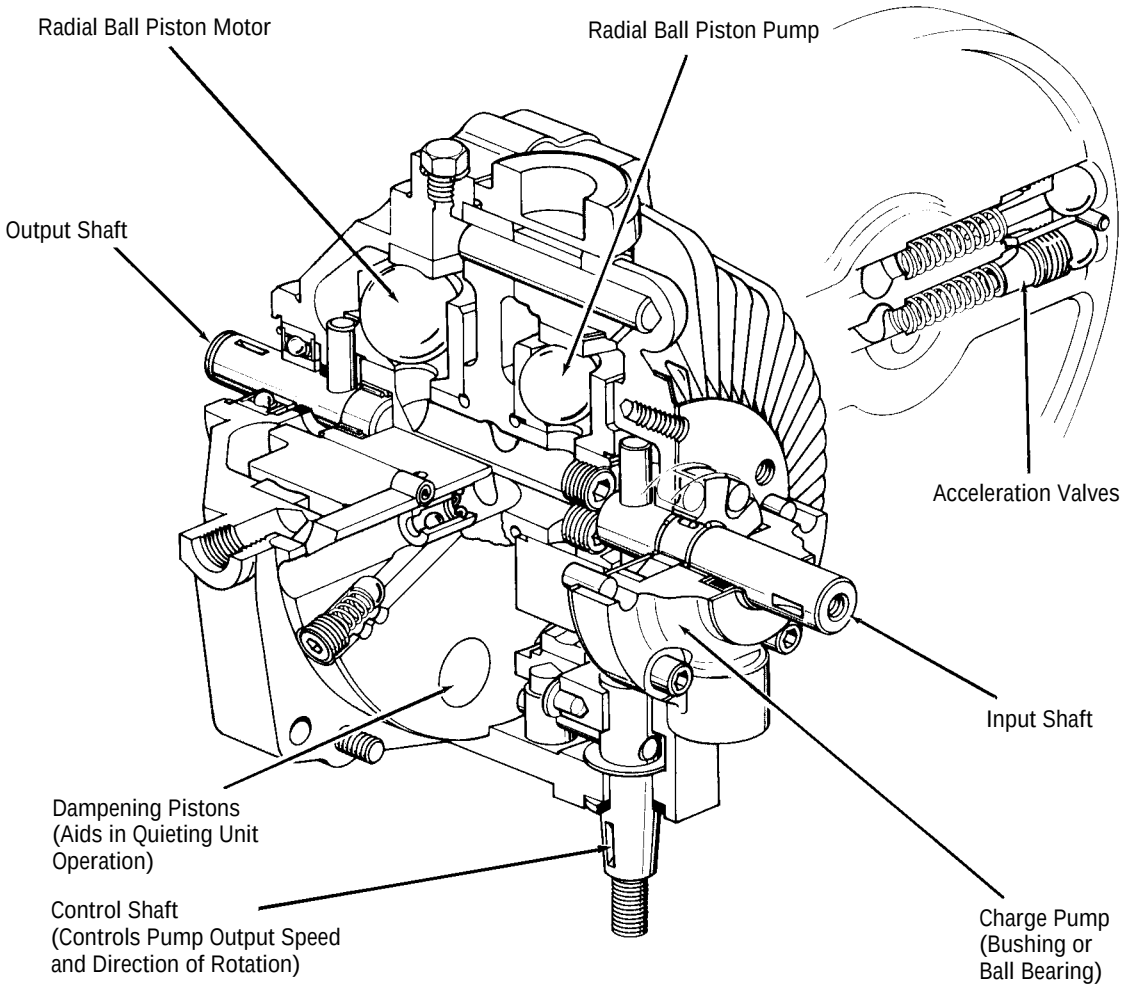
The Model 11 Transmission is available in both sump cooled and reservoir cooled models. Cooling is dependent on a customer supplied fan and cast fins in the aluminum cover for all reservoir cooled units. Sump cooled units use an axle or auxiliary gear housing in addition to the fan and cast fins for 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 cm^3/r [0 - 1.15 in^3/r]
Motor (Fixed) ..... 34,3 cm^3/r [2.09 in^3/r]

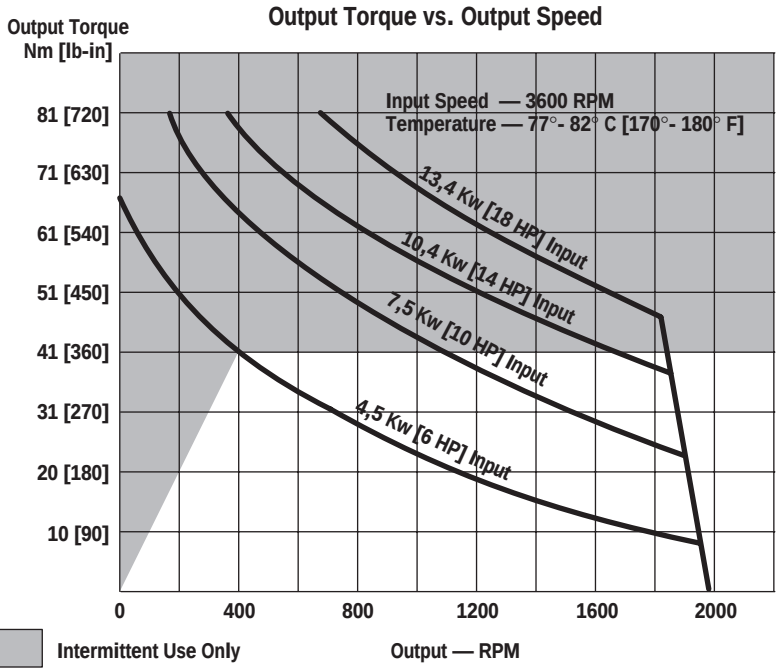
Speed
Input (Maximum) ..... 3600 RPM
Output ..... 0 - 1950 RPM

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]



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.

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].

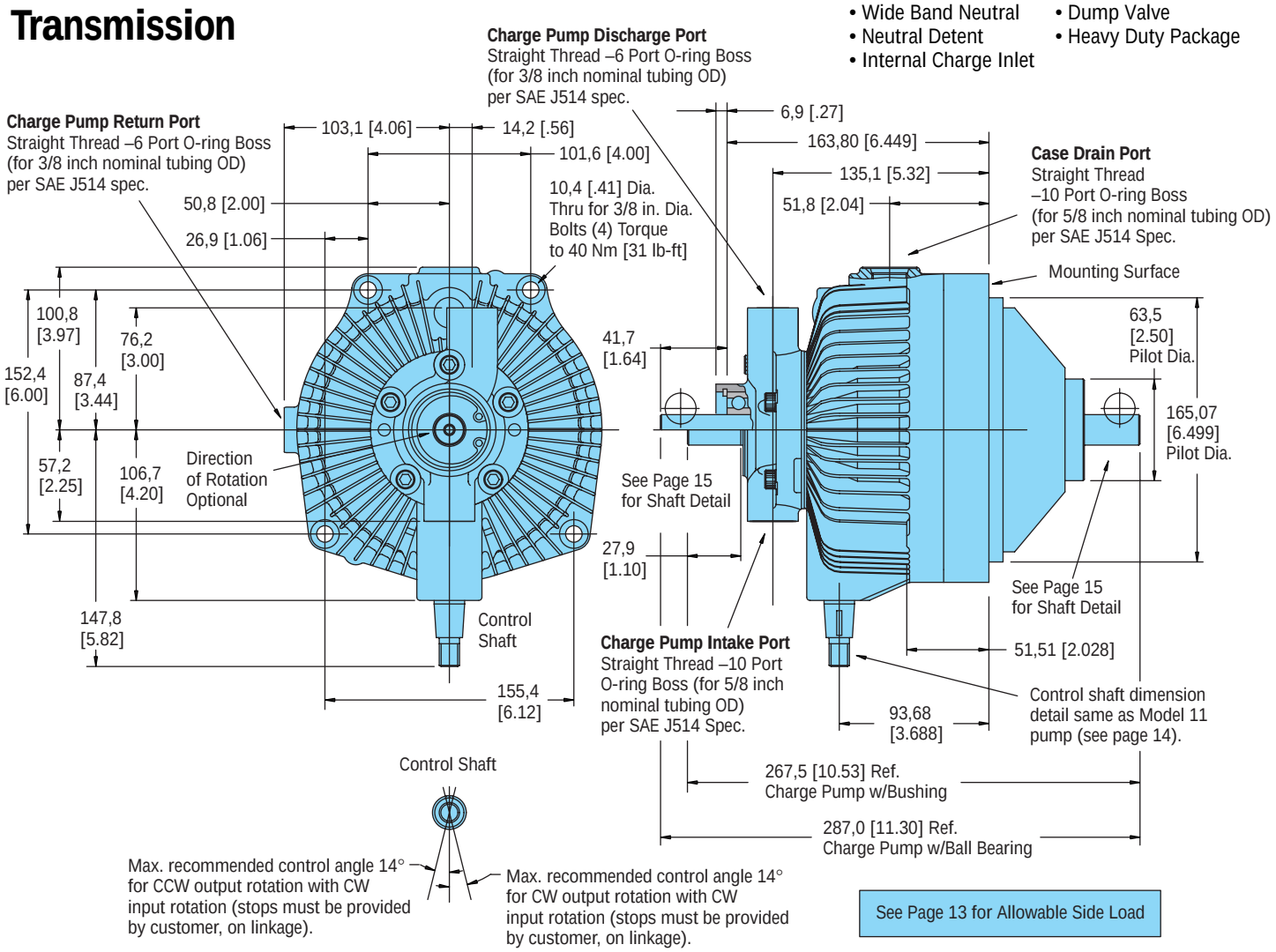
Acceleration Valves

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

Dimensions Model 11 Transmission

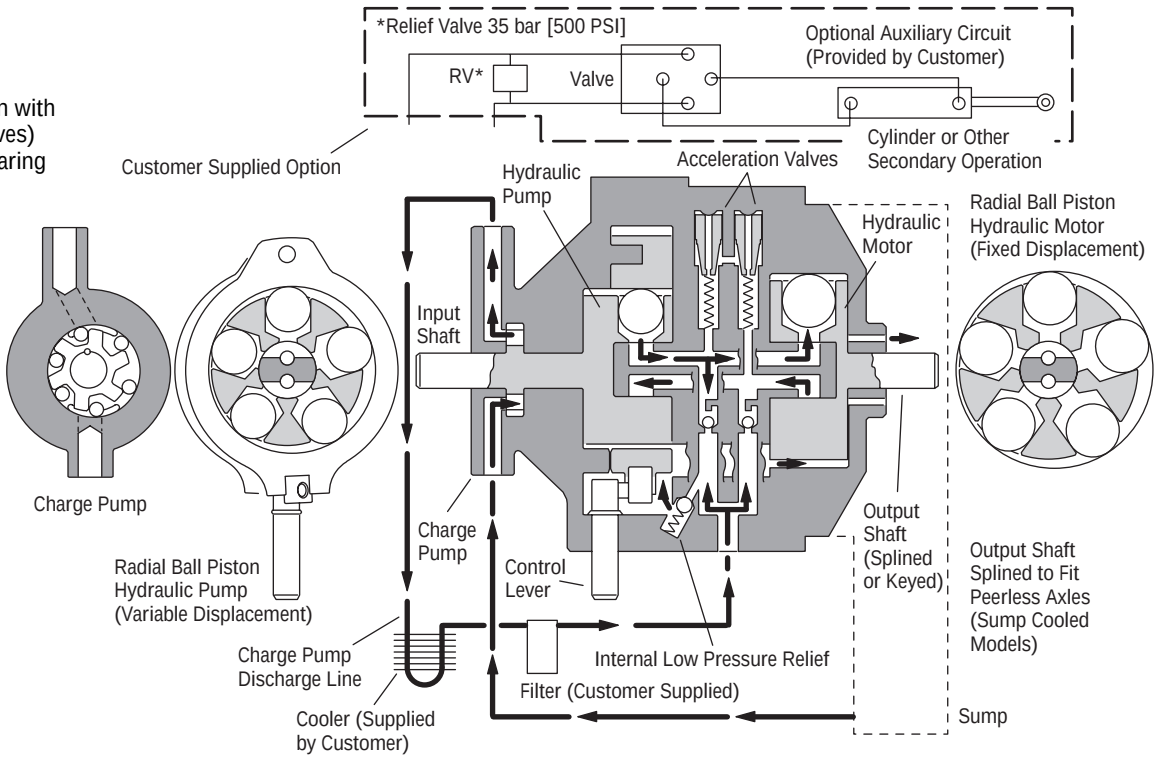


See Page 13 for Allowable Side Load

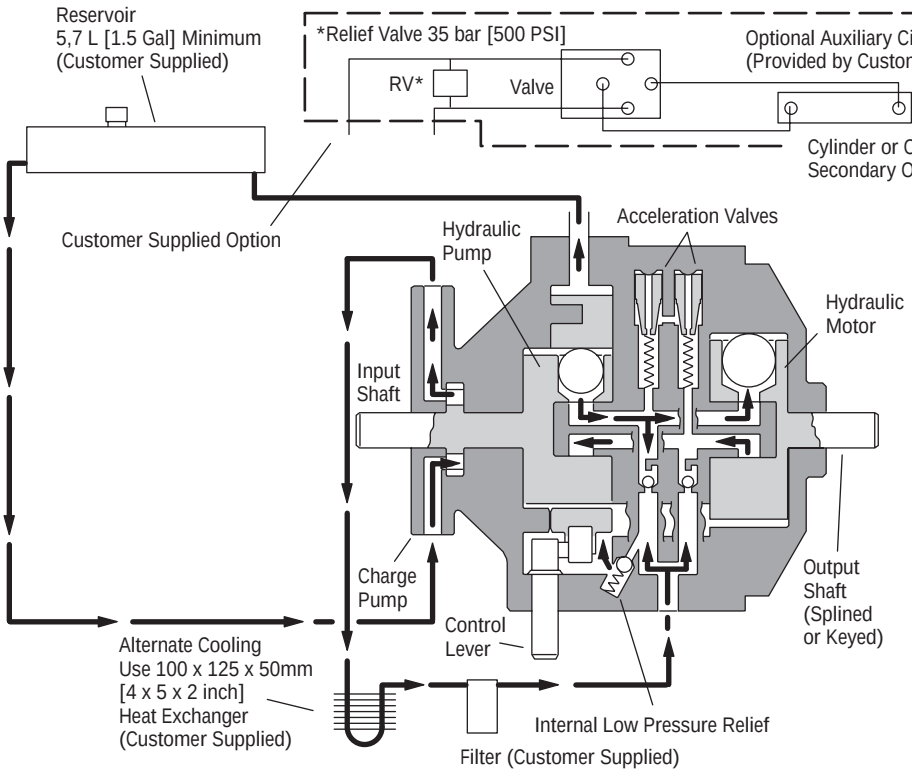
Flow Diagrams
Model 11

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.



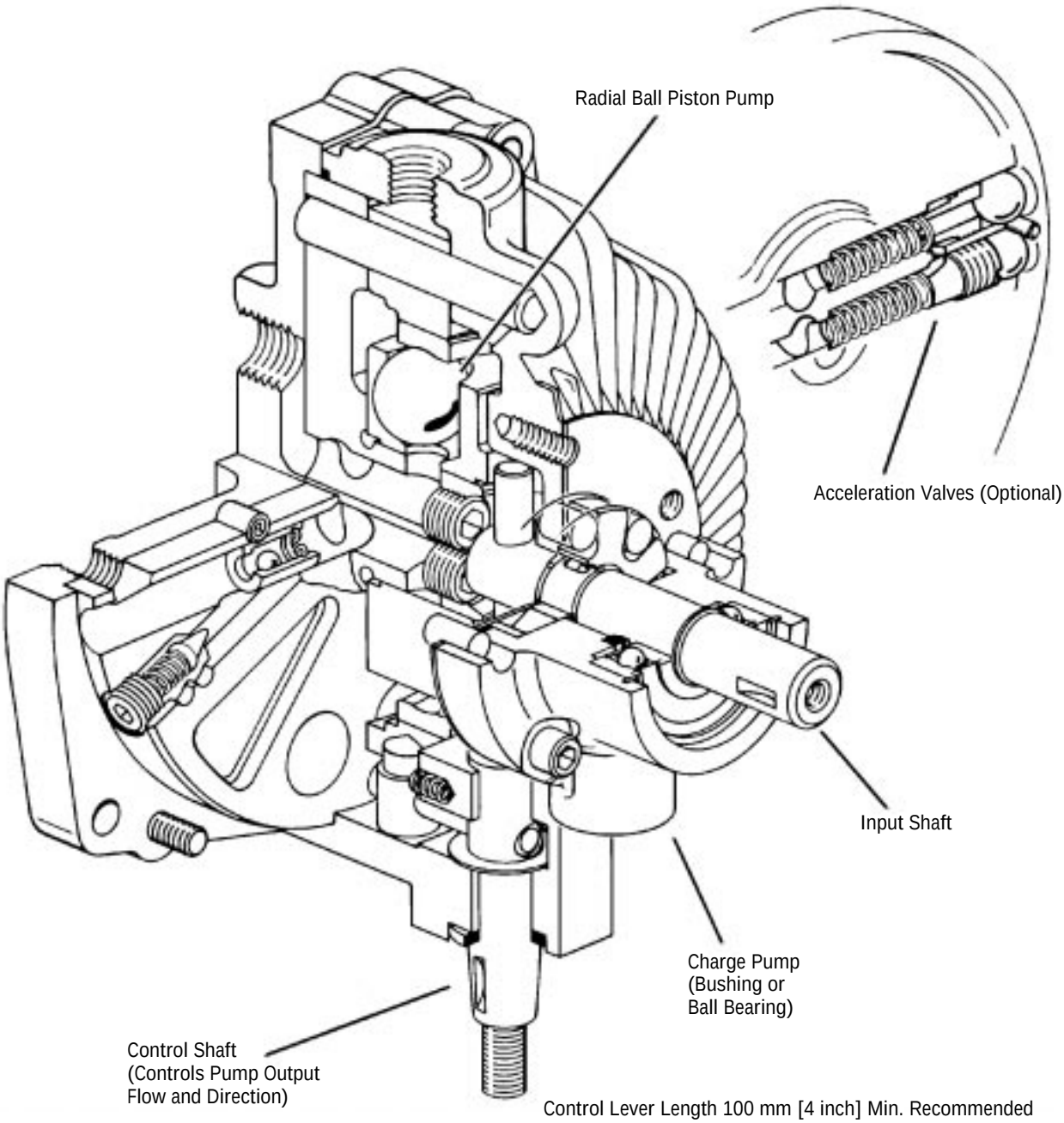
Reservoir cooled models (shown with optional acceleration valves) uses sealed output bearing and shaft seal.



Model 11 Pump

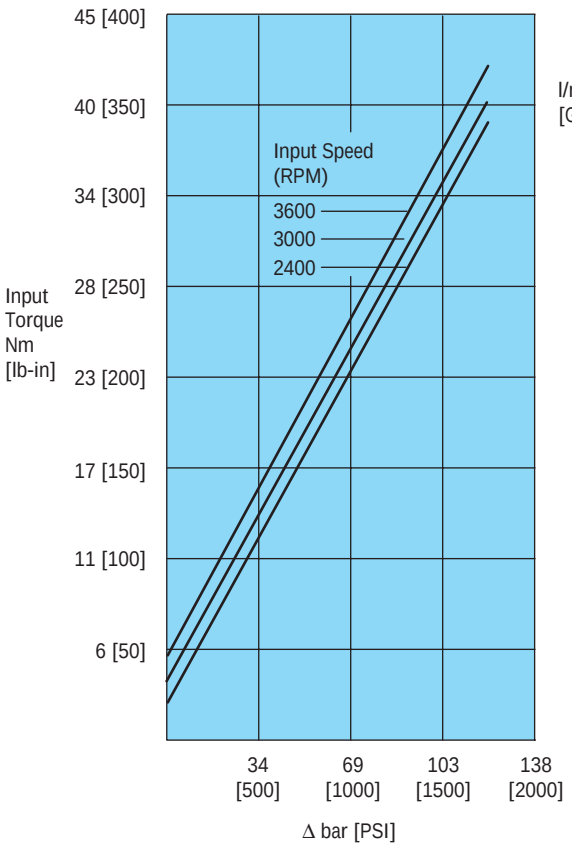
The Eaton Model 11 radial ball piston pump uses the same pumping element used in the Eaton Model 11 hydrostatic transmission. Over a quarter million of these transmissions have been produced and shipped to the field over the years, earning the Model 11 a reputation for the highest quality and reliability. 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.

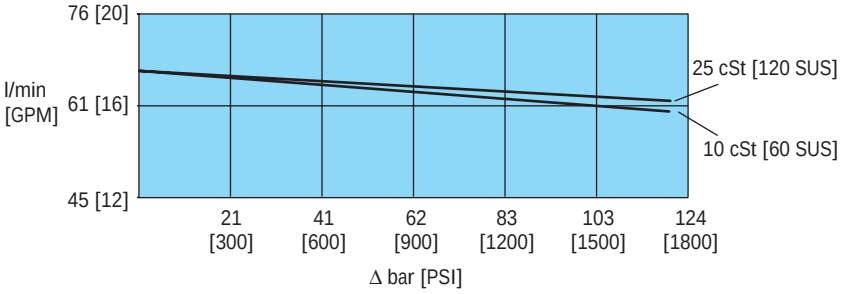


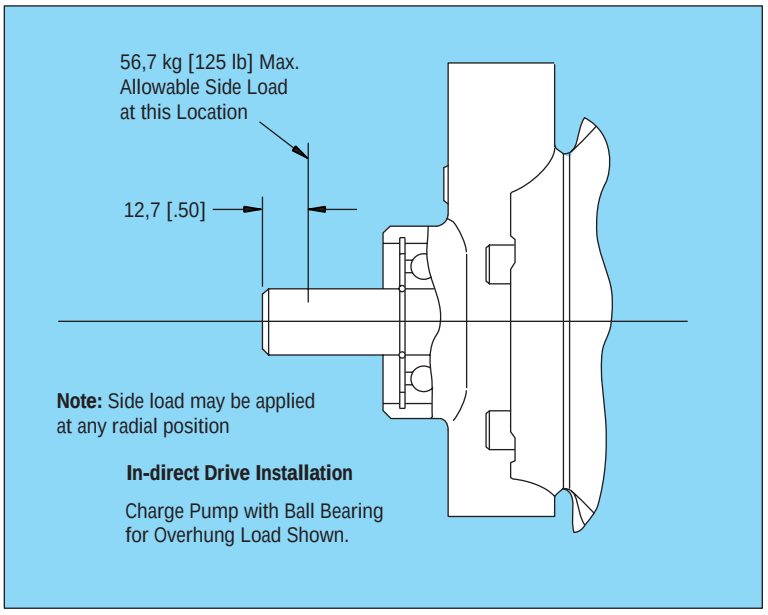
Model 11 Pump Performance and Specifications

Input Torque vs. Pressure @ Full Stroke



Output Flow vs. Pressure @ Full Stroke, 3600 RPM





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 cm^3/r [0 - 1.15 in^3/r]

Maximum Operating Pressure
155,2 bar [2250 PSI] Peak
120,7 bar [1750 PSI] Intermittent
86,2 Bar [1250 PSI] Continuous

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 Auxillary 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 of 82° C [180° F]

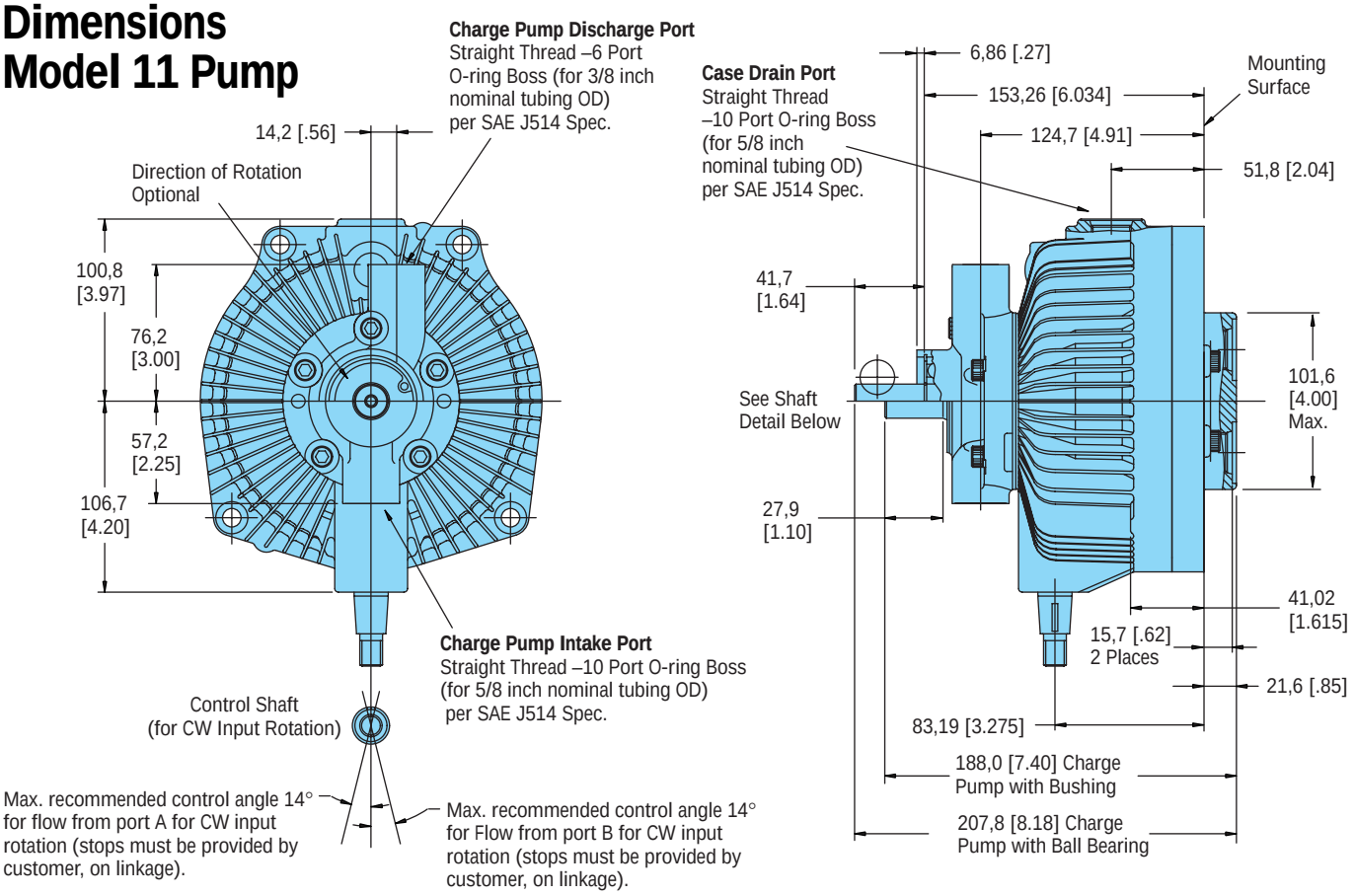
Oil viscosity range of 10 cSt [60 SUS]minimum to 22000 cSt [100,000 SUS] maximum (cold start only).

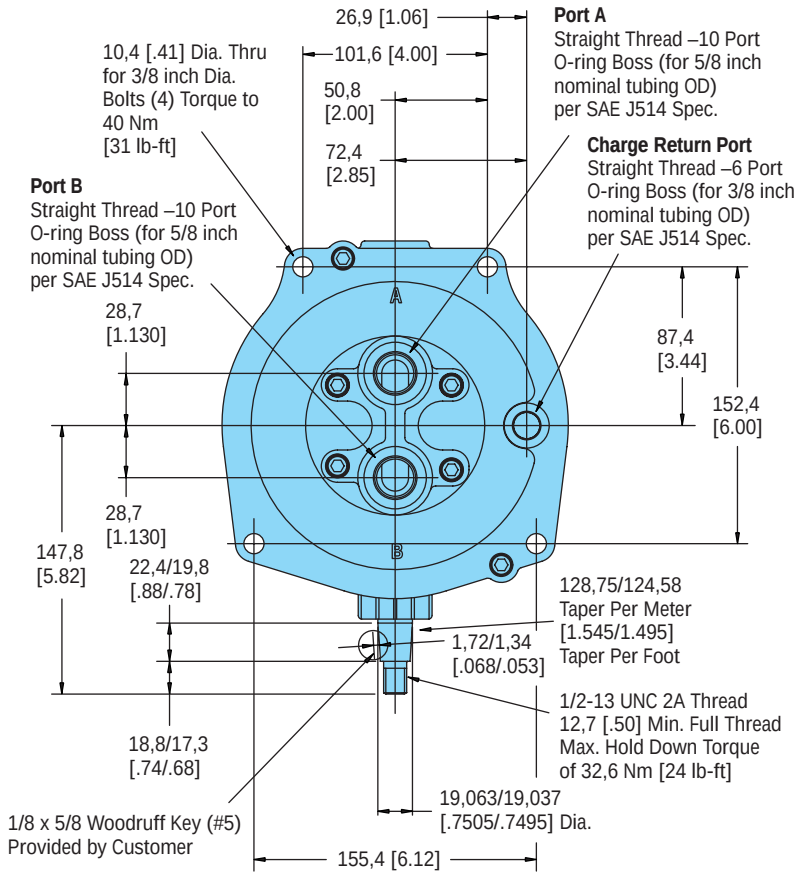
Options

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

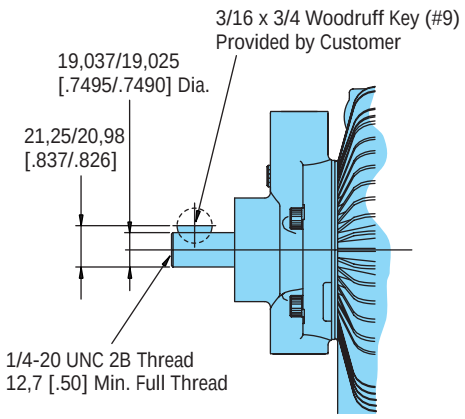
For any deviation from these specifications, consult your Eaton Hydraulics Division representative.

Dimensions
Model 11 Pump

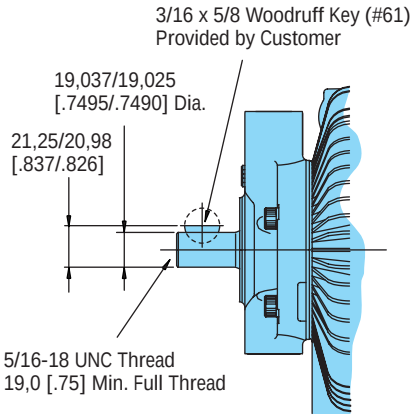




Dimensions — Input Shafts
Model 11 Transmission
Model 11 Pump

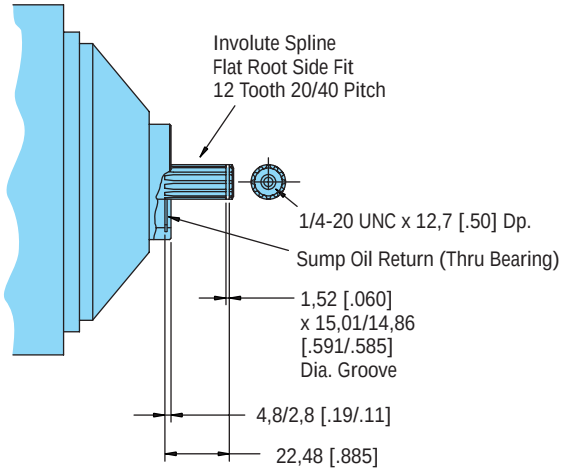


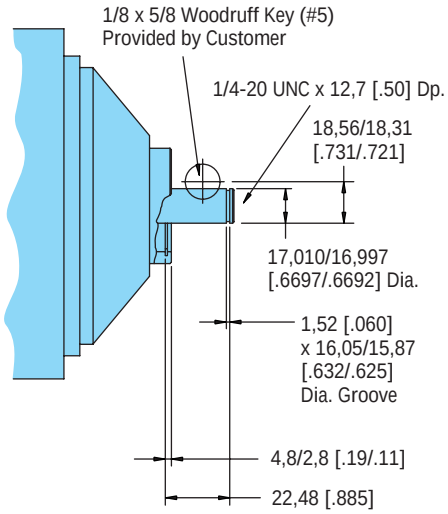
Charge Pump with Ball Bearing



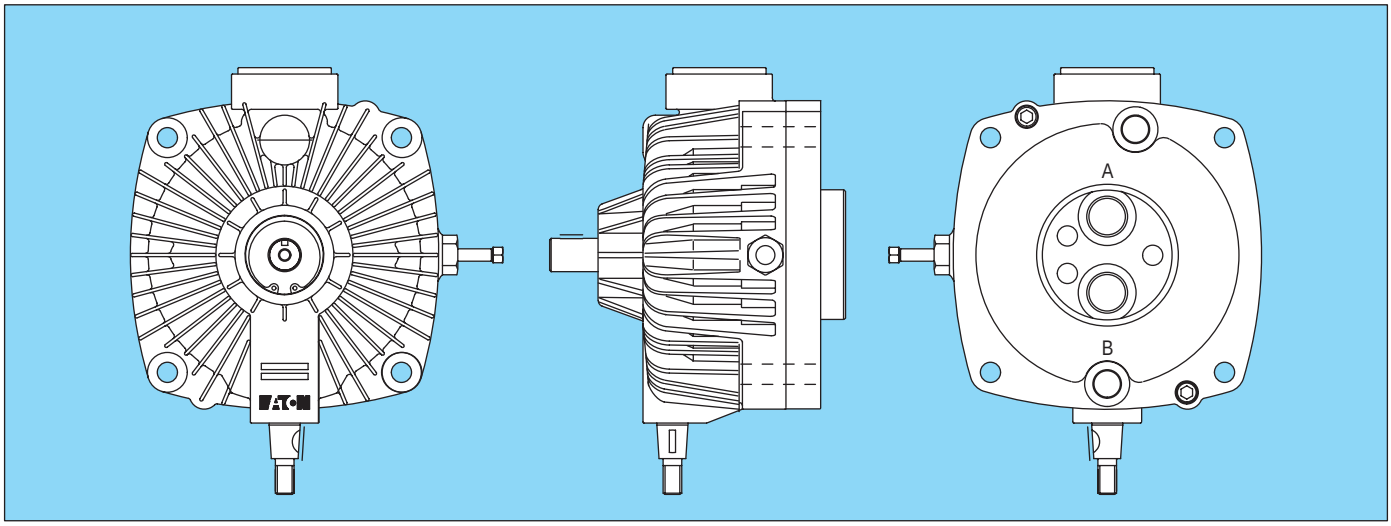
Charge Pump with Bushing

Dimensions — Output Shafts
Model 11 Transmission





Model 7 Pump



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 cm^3/r [0 - .465 in^3/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.

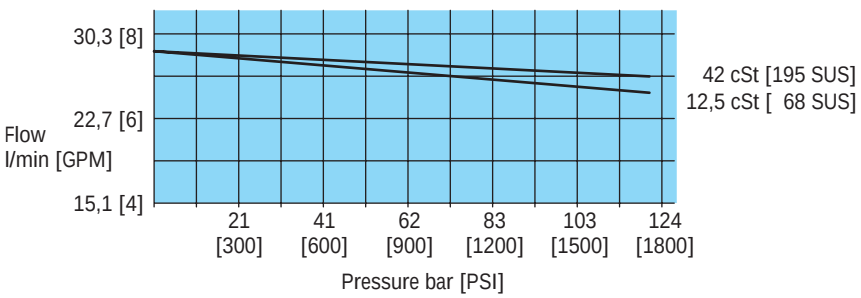
Maximum Oil Temp of 82° C [180° F].
Oil viscosity range of 10 cSt [60 SUS]minimum to 22000 cSt [100,000 SUS]maximum (cold start only).

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

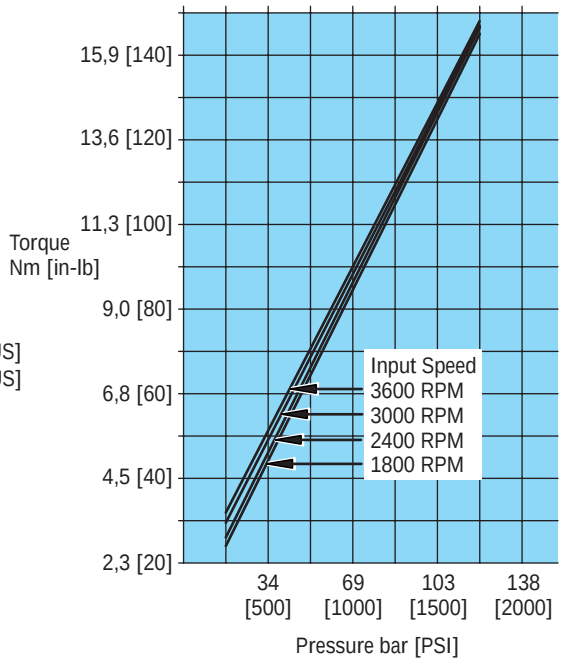
Options

- Wide Band Neutral
- Dump Valve

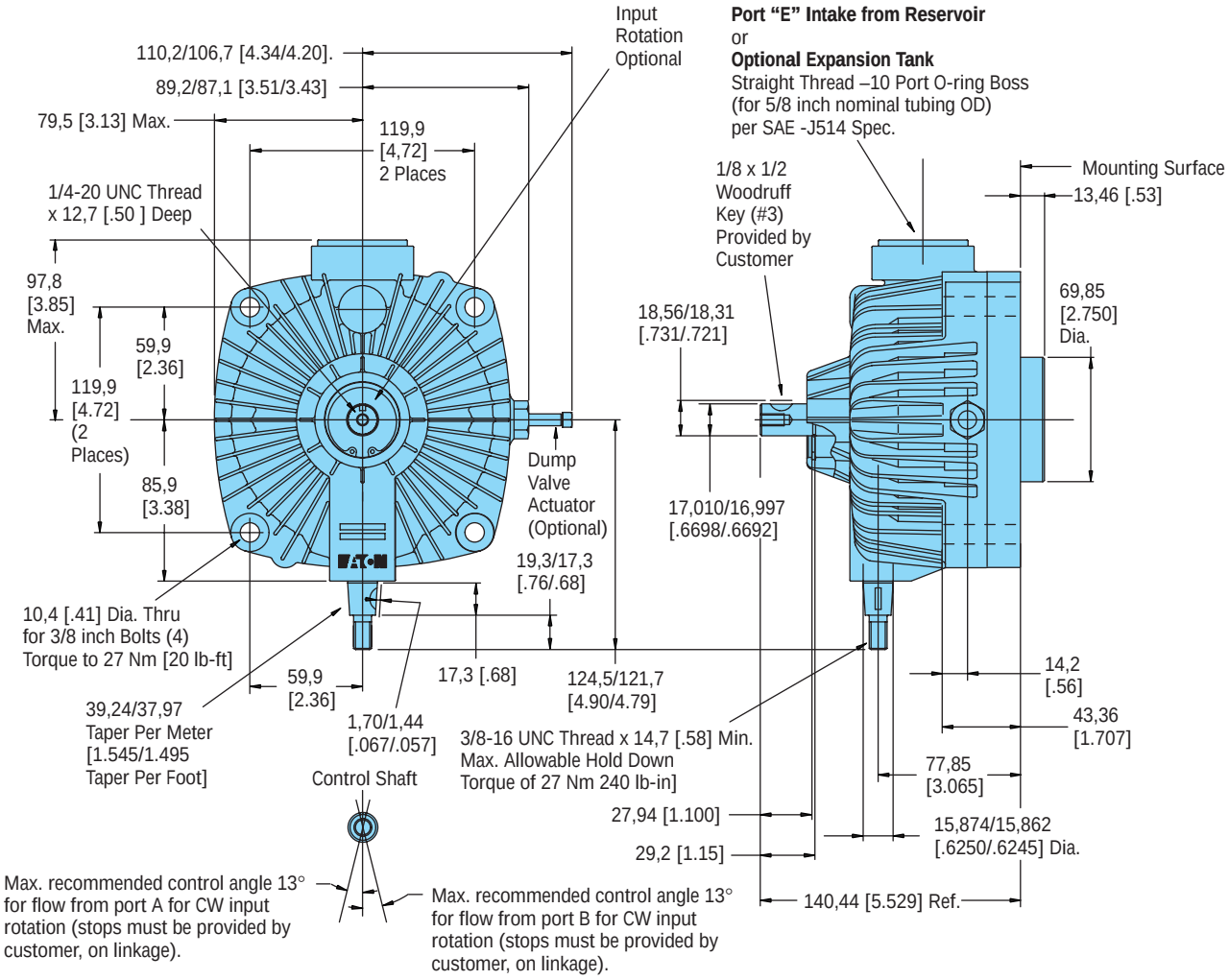
Output Flow vs. Pressure @ Full Stroke
3600 RPM

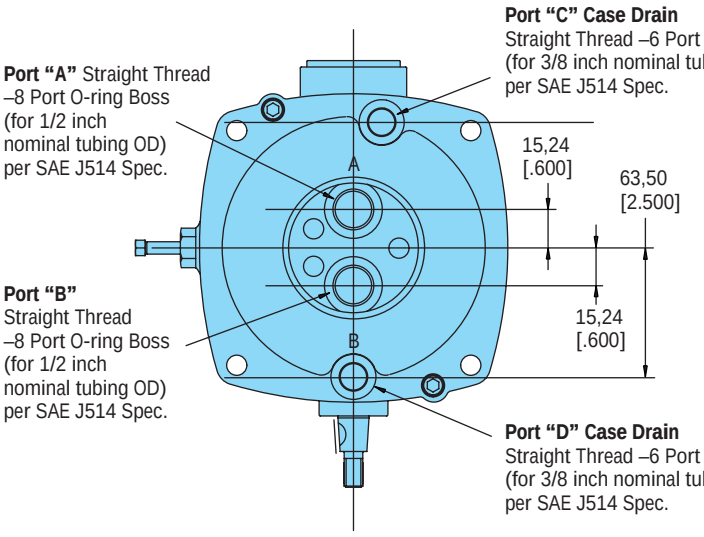


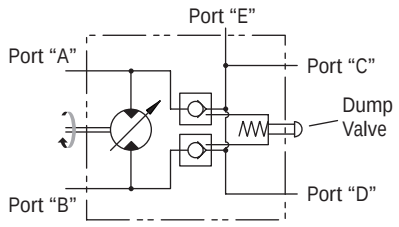
Input Torque vs. Pressure @ Full Stroke



Dimensions
Model 7 Pump







Schematic for Pump with Dump Valve Option

Model 6 Transmissions

Product Number	Input Rotation	Reservoir	Dump Valve	Output Rotation	Gear	Comments
600-000	CCW	5/16 ID Hose Adapter	No	CW	12T	
600-002	CCW	Reservoir	No	CW	12T	
600-003	CCW	5/16 I.D. Hose Adapter	Yes	CW	12T	
600-004	CCW	Reservoir	No	CW	None	
600-005	CCW	Reservoir	Yes	CW	13T	
600-006	CW	Reservoir	Yes	CCW	13T	
600-013	CW	Reservoir	No	CCW	12T	
600-014	CW	Reservoir	Yes	CW *	None	Motor Body Rotated 180°
600-015	CW	5/16 I.D. Hose	No	CCW	None	
600-018	CCW	5/16 I.D. Hose Adapter	Yes	CW	None	
600-020	CCW	Reservoir	Yes	CW	12T	
600-021	CW	Reservoir	Yes	CCW	None	
600-022	CCW	Reservoir	Yes	CW	None	
600-024	CCW	Reservoir	Yes	CW	12T	
600-026	CW	5/16 I.D. Hose Adapter	Yes	CCW	None	
600-027	CCW	5/16 I.D. Hose Adapter	No	*CCW	None	Motor Body Rotated 180°
600-028	CCW	Reservoir	No	*CCW	None	Motor Body Rotated 180°

*When Control Shaft is Rotated CW

Model 7 Transmissions

Product Number	Input Rotation	Reservoir	Dump Valve	Output Rotation	Gear	Comments
700-000	CW	Reservoir	Yes	CW *	None	Motor Body Rotated 180°
700-001	CCW	Reservoir	Yes	CW	None	
700-002	CCW	Reservoir	Yes	CW	12T	
700-003	CW	Reservoir	Yes	CCW	None	
700-004	CW	Reservoir	No	CCW	None	
700-005	CCW	5/16 I.D. Hose Adapter	Yes	CW	None	
700-006	CCW	5/16 I.D. Hose Adapter	Yes	CW	13T	No Screen in Adapter
700-007	CW	Reservoir	Yes	CCW	12T	
700-008	CCW	Cover Plug	Yes	CCW*	12T	Motor Body Rotated 180°
700-009	CCW	Reservoir	Yes	CW	13T	
700-011	CCW	Reservoir	Yes	CCW *	None	Motor Body Rotated 180°
700-012	CW	5/16 I.D. Hose Adapter	Yes	CCW	None	
700-014	CCW	Reservoir	Yes	CCW *	12T	Motor Body Rotated 180°
700-015	CCW	Cover Plug	No	CCW*	None	Special Features
700-016	CW	5/16 I.D. Hose Adapter	Yes	CW *	None	Motor Body Rotated 180°
700-017	CCW	5/16 I.D. Hose Adapter	Yes	CCW *	None	Motor Body Rotated 180°
700-018	CCW	5/16 I.D. Hose Adapter	Yes	CW	12T	
700-019	CCW	5/16 I.D. Hose Adapter	Yes	CCW *	12T	Motor Body Rotated 180°
700-020	CW	Reservoir	Yes	CCW	13T	
700-021	CCW	5/16 I.D. Hose Adapter	No	CW	None	
700-023	CCW	Reservoir	Yes	CW	None	Special Features
700-024	CCW	Reservoir w/Diaphragm	Yes	CCW	None	Motor Body Rotated 180° 1/4-20 Tap
700-025	CCW	Reservoir w/Diaphragm	Yes	CW	13T	

Model 7 Transmissions

(Model 7 Transmission Continued)

Product Number	Input Rotation	Reservoir	Dump Valve	Output Rotation	Gear	Comments
700-027	CCW	Reservoir w/Diaphragm	Yes	CW	None	Output Shaft 1/4-20 Tap
700-030	CCW	Cover Plug	Yes	CW	13T	
700-031	CW	Reservoir w/Diaphragm	Yes	CCW	None	Special Features
700-032	CCW	Reservoir w/Diaphragm	Yes	CCW*	None	Special Features Mtr. Body Rot. 180°
700-033	CCW	Reservoir	No	CW	None	
700-034	CW	Reservoir	No	CW*	None	Motor Body Rotated Rotated 180°
700-036	CW	Reservoir	Yes	CW*	12T	Motor Body Rotated Rotated 180°
700-037	CW	Reservoir w/Diaphragm	Yes	CW*	12T	Mtr. Body Rot. 180° Output Shaft w/ 1/4-20 Tap
700-039	CW	Reservoir	Yes	CCW	None	Wide Band Neutral
700-040	CCW	Reservoir	Yes	CW	12T	Wide Band Neutral

* When Control Shaft is Rotated CW

Model 10 Transmissions

Product Number	Input Rotation	Input Shaft	Input Shaft Support	Charge Pump Pressure	Charge Pump Inlet	Acceleration Valves Top	Acceleration Valves Bottom	Cover Conn.	Output Bearing	Output Shaft	Comments
1001-018	CCW	Keyed	Bush.	500	None	None	None	3/8 ID Hose	Sealed	Keyed	Port Plate

Model 11 Transmissions

Product Number	Input Rotation	Input Shaft	Input Shaft Support	Charge Pump Pressure	Charge Pump Inlet	Acceleration Valves Top	Acceleration Valves Bottom	Cover Conn.	Output Bearing	Output Shaft	Comments
1100-000	CW	Keyed	Bush.	500	7/8-14 O-Ring	LR	LR	None	Flow Thru	12T 20/40P	
1100-002	CW	Keyed	Bush.	500	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	Sealed	Keyed	
1100-003	CCW	Keyed	Bush.	500	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	Sealed	Keyed	
1100-004	CW	Keyed	Brg.	500	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	Sealed	Keyed	
1100-005	CCW	Keyed	Brg.	500	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	Sealed	Keyed	
1100-006	CW	Keyed	Bush.	800	5/8-90# Fittings	LR	LR	None	Flow Thru	12T 20/40P	
1100-009	CW	Keyed	Brg.	800	5/8-90# Fitting	None	None	None	Flow Thru	12T 20/40P	
1100-011	CCW	Keyed	Bush.	500	7/8-14 O-Ring	LR	HR	None	Flow Thru	12T 20/40P	

Model 11 Transmissions

(Model 11 Transmission Continued)

Product Number	Input Rotation	Input Shaft	Shaft Support	Pump Pressure	Input Pump Inlet	Charge Valves Top	Charge Valves Bottom	Acceleration Cover Conn.	Output Bearing	Output Shaft	Comments
1100-013	CCW	Keyed	Brg.	500	None	LR	HR	7/8-14 O-Ring	Sealed	Keyed	w/Port Plate
1100-014	CCW	Keyed	Bush.	800	7/8-14 O-Ring	LR	LR	None	Flow Thru	12T 20/40P	
1100-016	CW	Keyed	Brg.	500	5/8-90# Fitting	None	None	None	Flow Thru	12T 20/40P	
1100-018	CW	Keyed	Bush.	500	7/8-14 O-Ring	None	None	None	Flow Thru	12T 20/40P	
1100-022	CCW	Keyed	Brg.	800	5/8-90# Fitting	LR	LR	None	Flow Thru	12T 20/40P	
1100-024	CCW	Keyed	Brg	500	7/8-14 O-Ring	LR	HR	7/8-14 O-Ring	Sealed	Keyed	
1100-027	CCW	Keyed	Brg.	500	O-Ring	LR	LR	O-Ring	Sealed	12T 20/40P	
1100-029	CCW	Keyed	Brg.	800	7/8-14 O-Ring	LR	LR	None	Flow Thru	12T 20/40P	
1100-030	CCW	Keyed	Bush.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	Sealed	12T 20/40P	
1100-031	CCW	11T 16/32P	Bush.	800	7/8-14 O-Ring	LR	LR	None	Flow Thru	12T 20/40P	1/4-20 Tapped
1100-032	CCW	Keyed	Brg.	800	5/8-90# Fitting	LR	LR	None	Flow Thru	12T 20/40P	
1100-033	CW	Keyed	Brg.	800	5/8-90# Fitting	LR	LR	None	Flow Thru	12T 20/40P	
1100-034	CCW	Keyed	Brg.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	Sealed	12T 20/40P	
1100-035	CCW	Keyed	Brg.	800	5/8-90# Fitting	None	None	None	Flow Thru	12T 20/40P	
1100-036	CW	Keyed	Brg.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	Sealed	12T 20/40P	
1100-037	CCW	Keyed	Bush.	500	7/8-14 O-Ring	LR	LR	None	Flow Thru	12T 20/40P	
1100-038	CW	Keyed	Brg.	500	7/8-14 O-Ring	None	None	7/8-14 O-Ring	Sealed	Keyed	
1100-041	CCW	Keyed	Bush.	500	7/8-14 O-Ring	LR	LR	None	Flow Thru	12T 20/40P	
1100-042	CW	Keyed	Bush.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	Sealed	12T 20/40P	
1100-043	CCW	Keyed	Bush.	800	7/8-14 O-Ring	None	None	None	Flow Thru	12T 20/40P	
1100-045	CCW	Keyed	Bush.	800	5/8-90# Fitting	LR	LR	None	Flow Thru	12T 20/40P	
1100-046	CCW	Keyed	Bush.	500	7/8-14 Fitting	LR	LR	None	Flow Thru	12T 20/40P	
1100-047	CCW	Keyed	Brg.	800	5/8-90# Fitting	LR	LR	7/8-14 O-Ring	Sealed	12T 20/40P	
1100-048	CCW	Keyed	Brg.	800	7/8-14 O-Ring	None	None	None	Flow Thru	12T 20/40P	
1100-049	CCW	Keyed	Brg.	500	7/8-14 O-Ring	LR	LR	None	Flow Thru	12T 20/40P	5/16-18 Tapped

Model 11 Transmissions

(Model 11 Transmission Continued) Product Number	Input Rotation	Input Shaft	Shaft Support	Pump Pressure	Input Pump Inlet	Charge Valves Top	Charge Valves Bottom	Acceleration Cover Conn.	Output Bearing	Output Shaft	Comments
1100-052	CCW	Keyed	Brg.	500	7/8-14 O-Ring	HR	HR	7/8-14 O-Ring	Sealed	Keyed	
1100-053	CW	Keyed	Brg.	800	7/8-14 O-Ring	None	None	7/8-14 O-Ring	Sealed	Keyed	
1100-055	CW	Keyed	Brg.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	Sealed	Keyed	5/16-18 Tapped
1100-056	CW	Keyed	Brg.	800	90 degree -10	None	None	None	Flow Thru	12T 20/40P	Special Features
1100-057	CW	Keyed	Bush.	800	90 degree -10	LR	LR	None	Flow Thru	12T 20/40P	
1100-058	CCW	Keyed	Bush.	800	7/8-14 O-ring	LR	LR	7/8-14 O-ring	Sealed	12T 20/40P	Special Features
1100-060	CW	Keyed	Brg.	800	7/8-14 O-ring	LR	LR	7/8-14 O-ring	Sealed	12T 20/40P	Heavy Duty Pkg.
1100-061	CCW	Keyed	Brg.	800	7/8-14 O-ring	LR	LR	7/8-14 O-ring	Sealed	12T 20/40P	Heavy Duty Pkg.
1100-064	CW	Keyed	Brg.	800	7/8-14 O-ring	LR	LR	7/8-14 O-ring	Sealed	12T 20/40P	
1100-068	CCW	Keyed	Brg.	800	7/8-14 O-ring	HR	HR	7/8-14 O-ring	Sealed	Keyed	
1100-071	CW	Keyed	Brg.	500	7/8-14 O-ring	HR	HR	7/8-14 O-ring	Sealed	12T 20/40P	Hardened Output Shaft
1100-072	CW	Keyed	Brg.	800	7/8-14 O-ring	HR	HR	7/8-14 O-ring	Sealed	Keyed	

Model 11 Pumps

Keyed Input Shaft

Product Number	Input Rotation	Input Shaft Support	Charge Pump Pressure	Charge Pump Inlet	Acceleration Valves Top	Acceleration Valves Bottom	Cover Conn.	Pressure Return Ports	Output* Flow	Comments
1120-011	CCW	Bush.	800	5/8-90# Barb.Ftg	HR	LR	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	
1120-012	CCW	Brg.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	
1120-013	CW	Brg.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	
1120-014	CCW	Bush.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	
1120-015	CW	Bush.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	
1120-016	CW	Brg.	800	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	
1120-017	CCW	Brg.	800	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	
1120-018	CW	Bush.	500	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	

Model 11 Pumps

(Model 11 Pump Continued)

Keyed Input Shaft

Product Number	Input Rotation	Input Shaft Support	Charge Pump Pressure	Charge Pump Inlet	Acceleration Valves Top	Acceleration Valves Bottom	Pressure Cover Conn.	Return Ports	Output* Flow	Comments
1120-019	CCW	Brg.	500	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	
1120-020	CW	Brg.	500	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	
1120-021	CW	Bush.	800	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	
1120-022	CCW	Bush.	500	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	
1120-023	CCW	Brg.	800	7/8-14 O-Ring	HR	HR	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	
1120-024	CW	Brg.	800	7/8-14 O-Ring	HR	HR	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	
1120-025	CW	Bush.	800	7/8-14 O-Ring	HR	HR	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	
1120-026	CCW	Bush.	500	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	
1120-028	CCW	Bush.	800	5/8-90# Barb.Ftg	HR	LR	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	
1120-029	CCW	Bush.	500	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Top Port B	
1120-030	CW	Brg.	800	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	
1120-032	CCW	Brg.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	Dump Valve Heavy Duty Pkg.
1120-033	CW	Bush.	500	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	
1120-034	CW	Bush.	500	7/8-14 O-Ring	HR	HR	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port A	
1120-035	CW	Brg.	800	7/8-14 O-Ring	None	None	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	Dump Valve
1120-039	CCW	Brg.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	
1120-040	CCW	Bush.	800	5/8-90# Barb.Ftg	HR	LR	7/8-14 O-Ring	3/4-16 O-Ring	Top Port B	Dump Valve Hi Rate RV Spring
1120-041	CCW	Brg.	800	7/8-14 O-Ring	HR	HR	7/8-14 O-Ring	3/4-16 O-Ring	Top Port B	Neutral Detent
1120-042	CW	Brg.	800	7/8-14 O-Ring	HR	HR	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	Hi Rate RV Spring
1120-043	CCW	Brg.	800	7/8-14 O-Ring	HR	HR	7/8-14 O-Ring	3/4-16 O-Ring	Bottom Port B	Hi Rate RV Spring
1120-045	CCW	Brg.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	Hi Rate RV Spring, Rustello
1120-047	CW	Brg.	800	7/8-14 O-Ring	LR	LR	7/8-14 O-Ring	3/4-16 O-Ring	Top Port A	Hi Rate RV Spring

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Model 7 Pumps

Keyed Input Shaft

Product Number	Input Rotation	Input Shaft Support	Input Shaft	Control Shaft Rotation	Output Flow Port	Comments
720-000	CW	Brg.	Keyed	CW	A	Dump Valve
720-001	CCW	Brg.	Keyed	CW	B	Dump Valve
720-002	CW	Brg.	Keyed	CW	A	Dump Valve, Reservoir
720-003	CCW	Brg.	Keyed	CW	B	Dump Valve, Reservoir w/Diaphragm

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