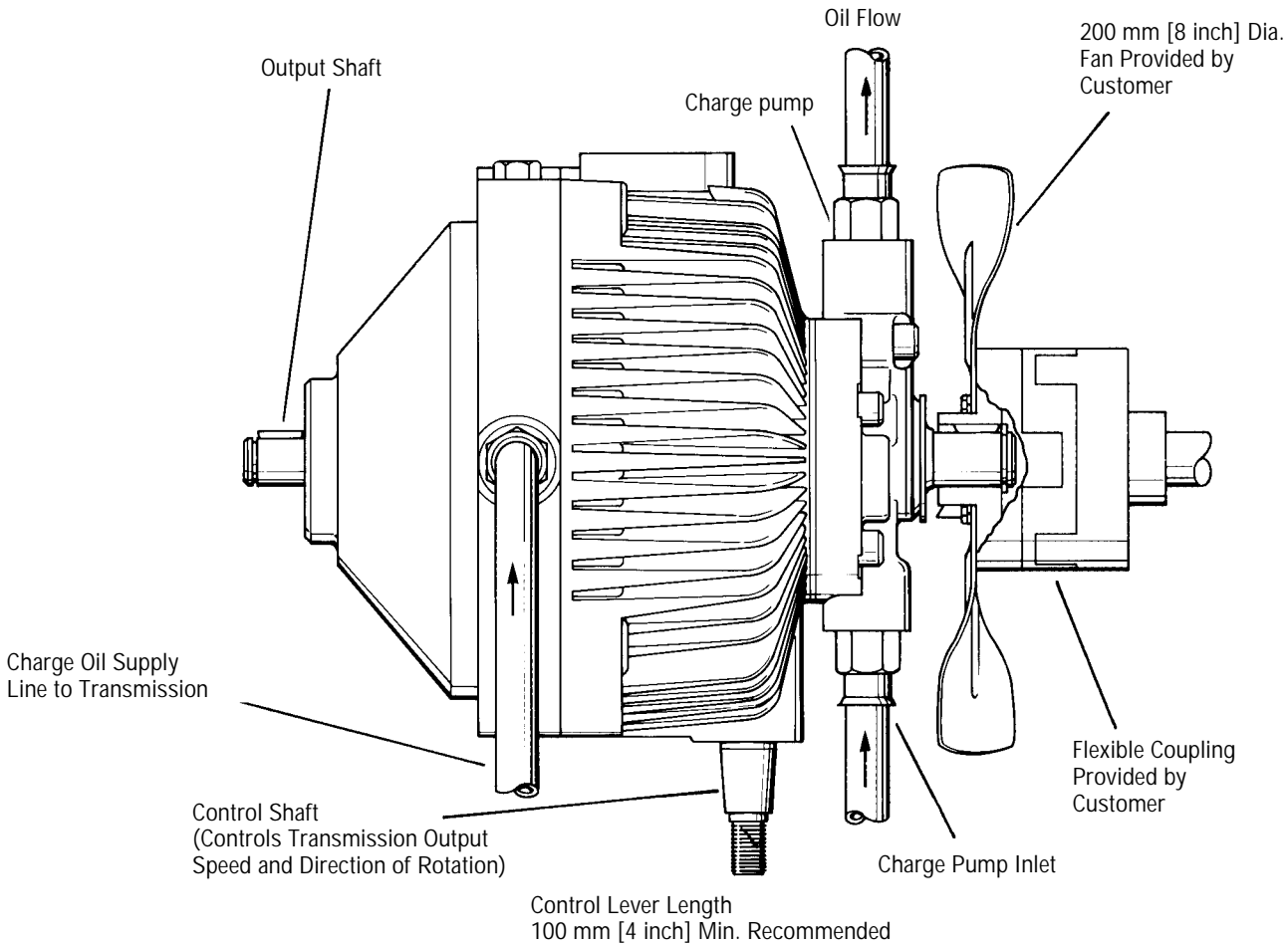


Model 11 Transmission



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.

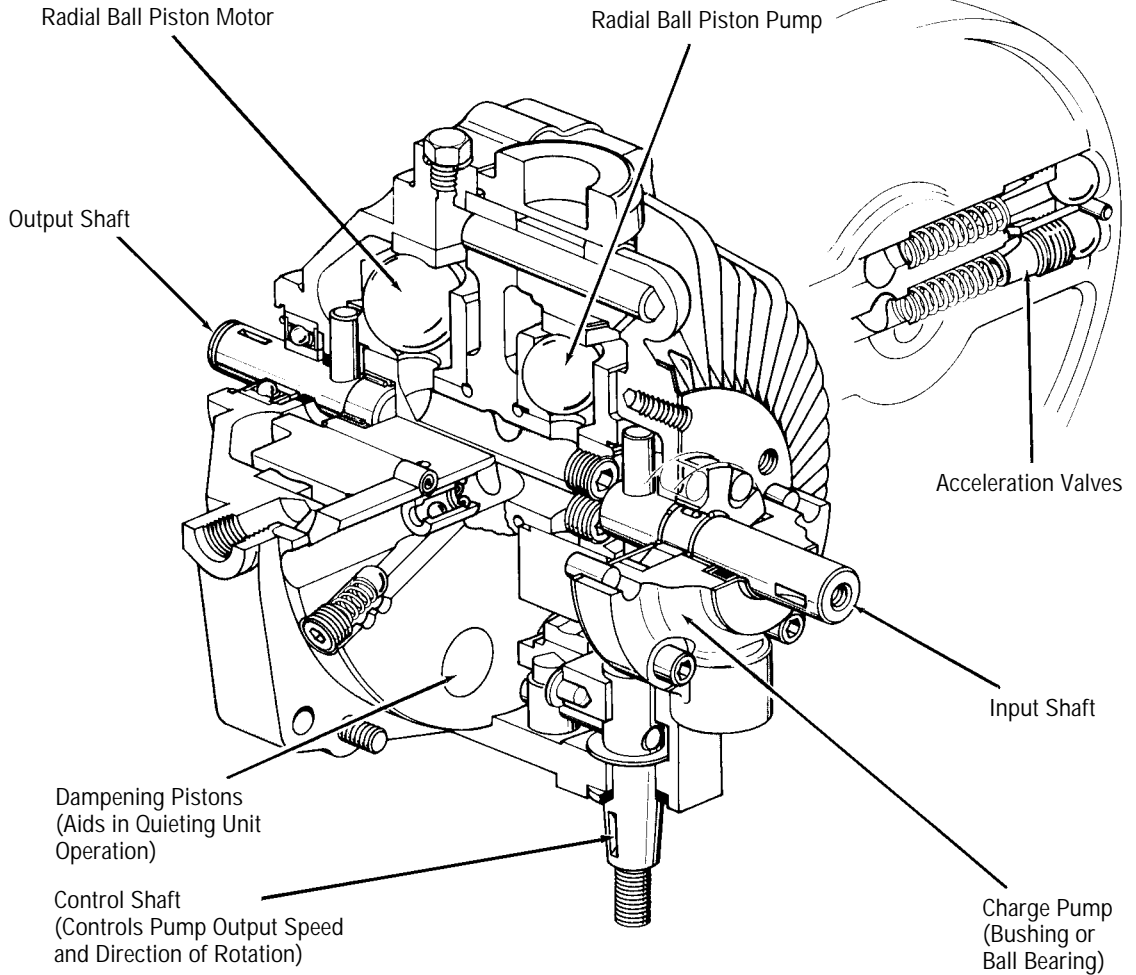
The Model 11 Transmission is available in both sump cooled and reservoir cooled models. Cooling is dependent on a customer supplied fan and cast fins in the aluminum cover for all reservoir cooled units. Sump cooled units use an axle or auxiliary gear housing in addition to the fan and cast fins for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

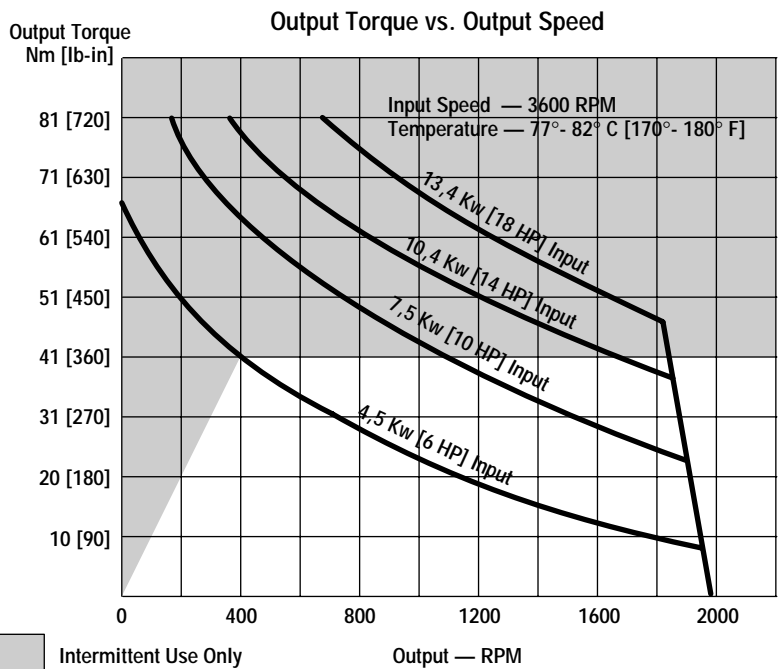
Kw/Horsepower, Input (Max.)

@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]



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].

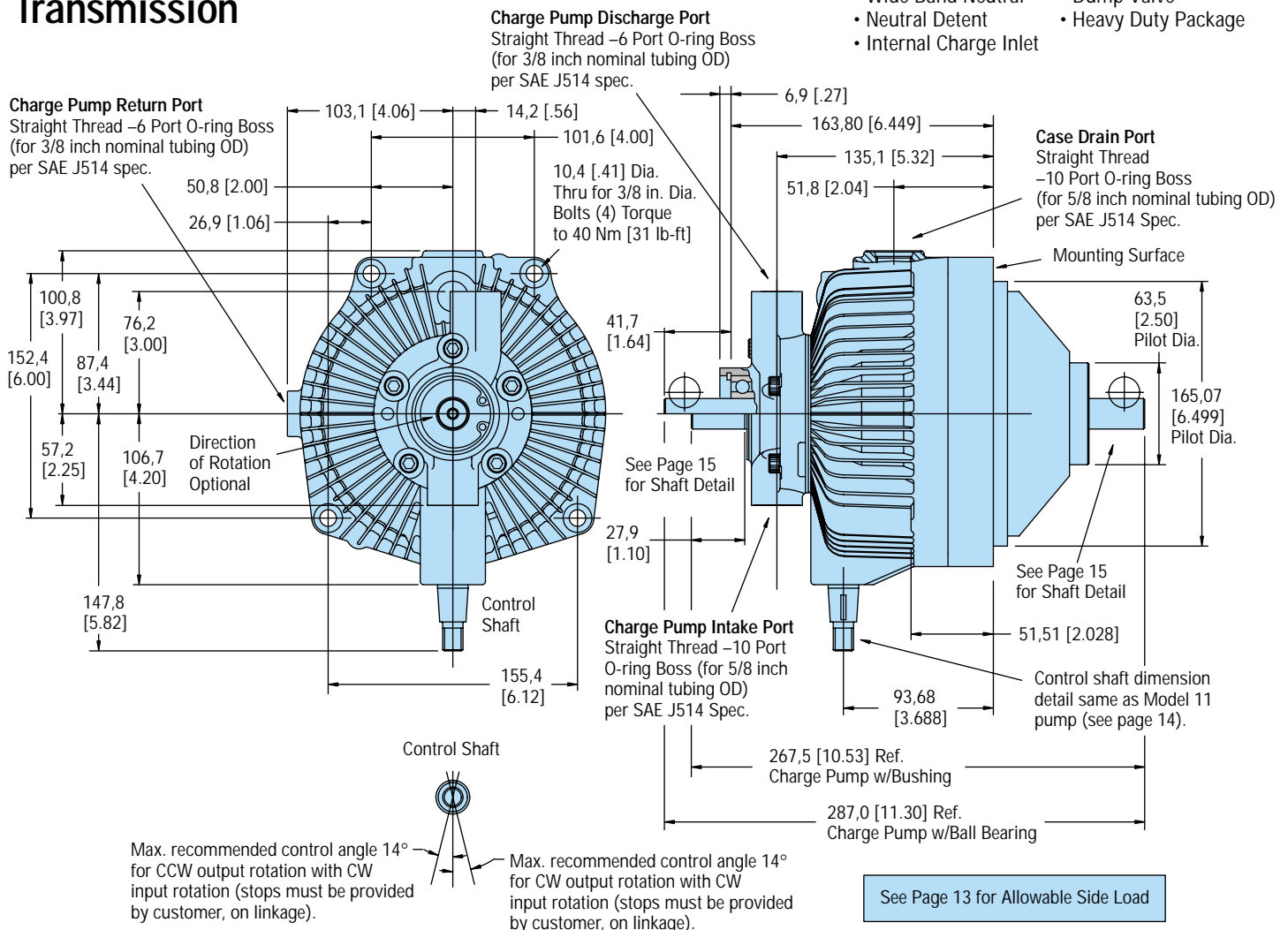
Acceleration Valves

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

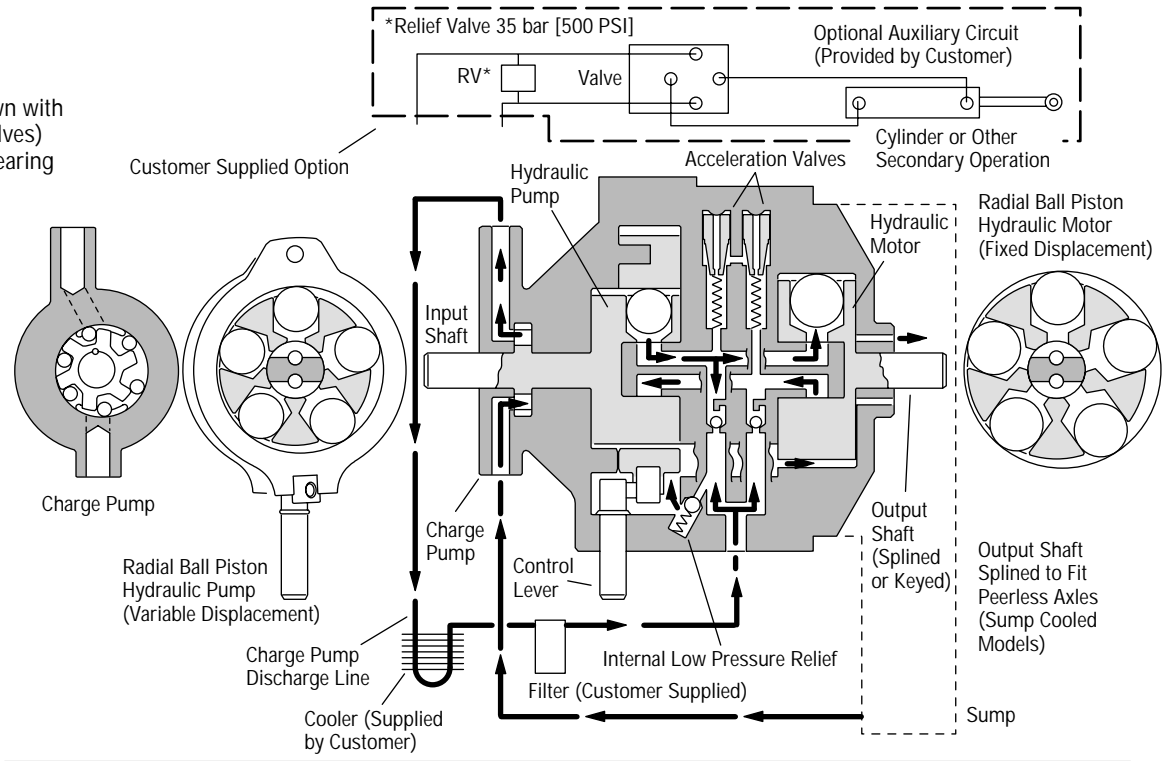


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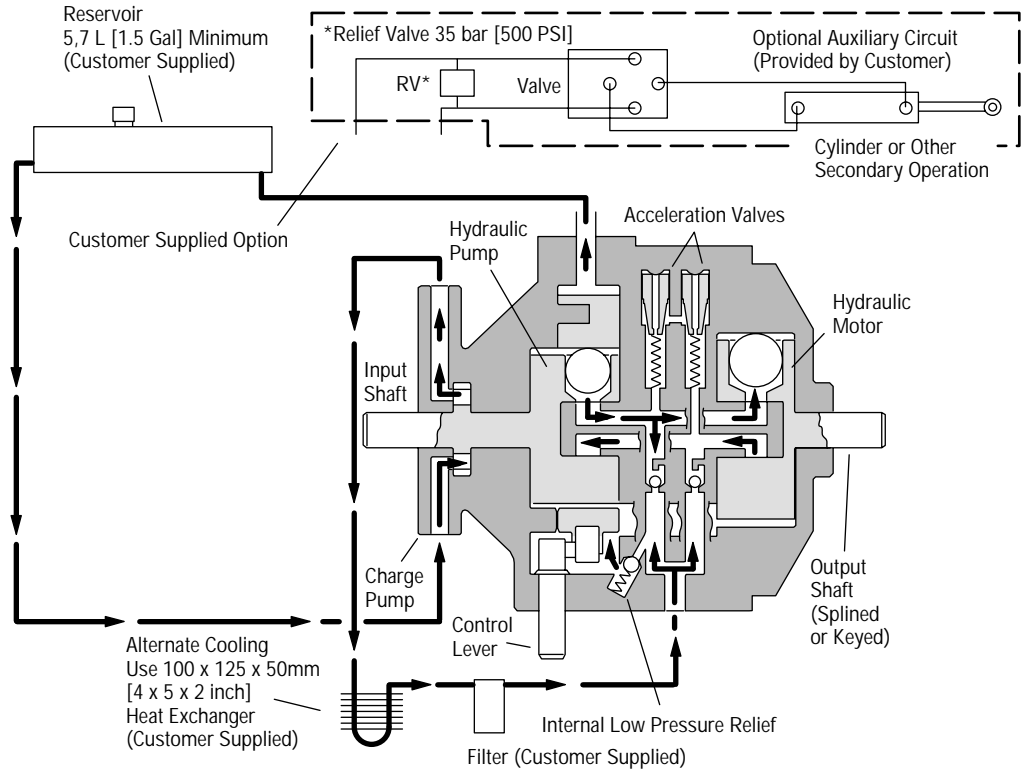
Flow Diagrams Model 11

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.



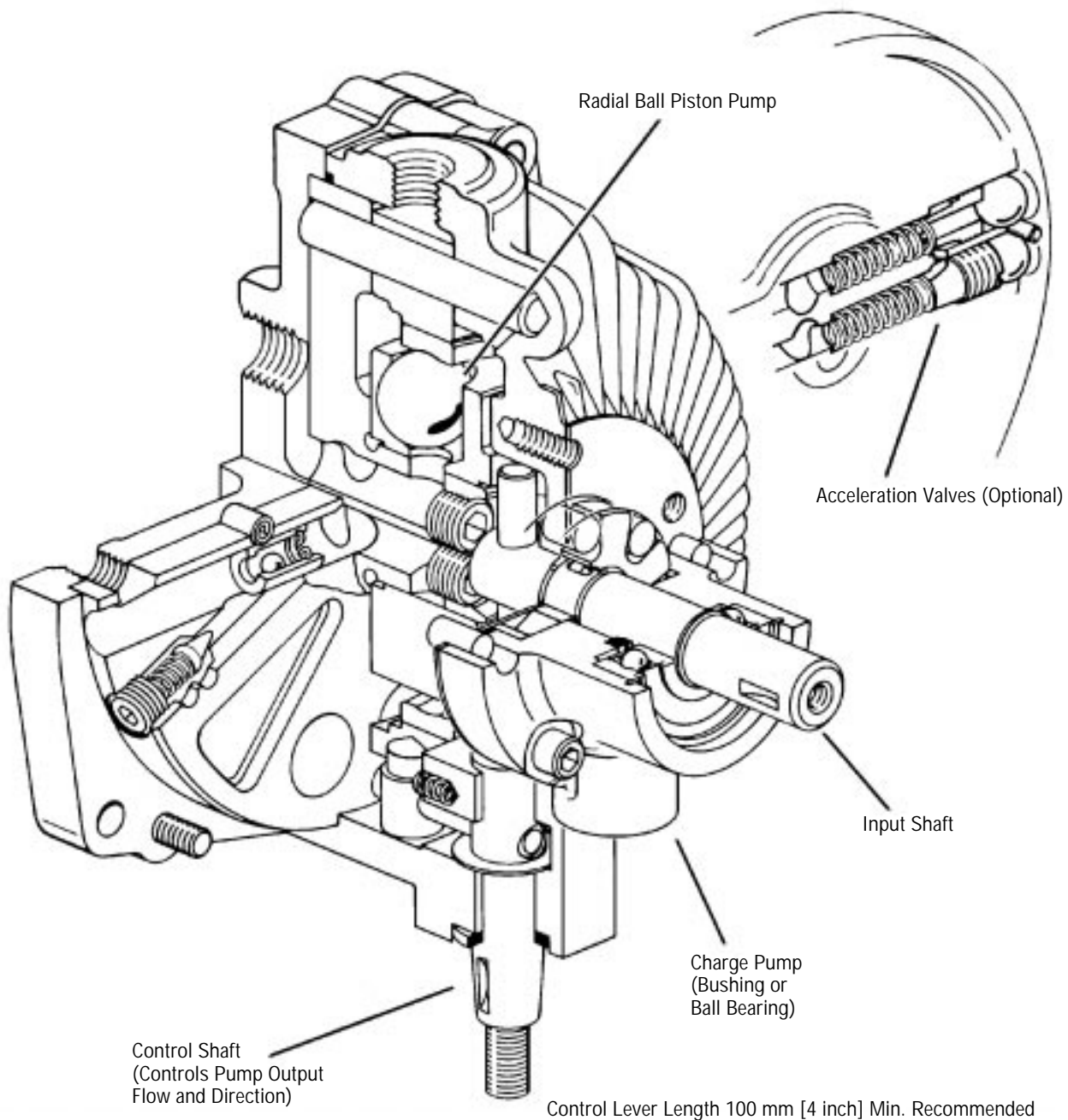
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Model 11 Pump

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.

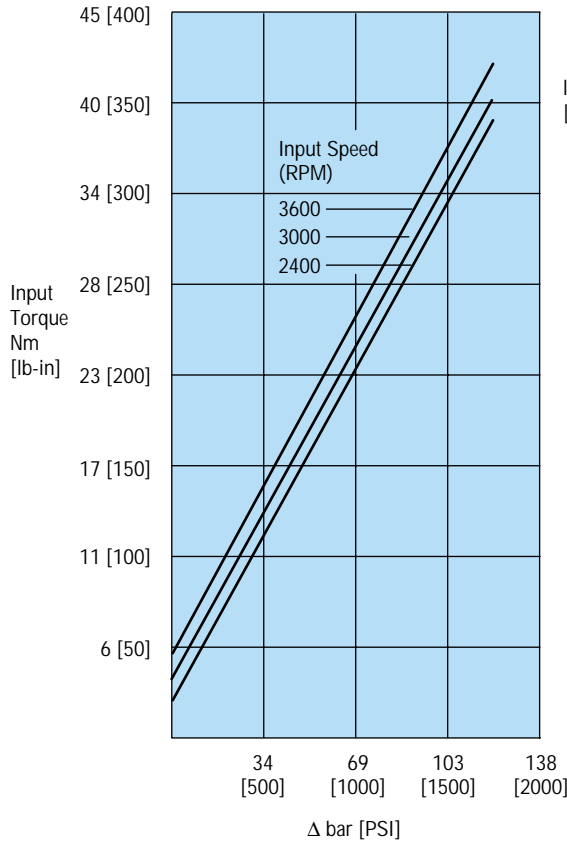
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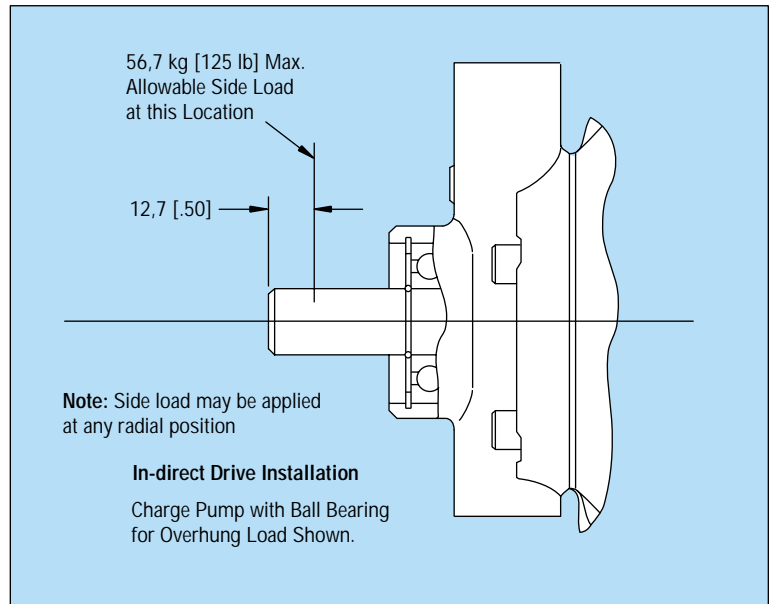
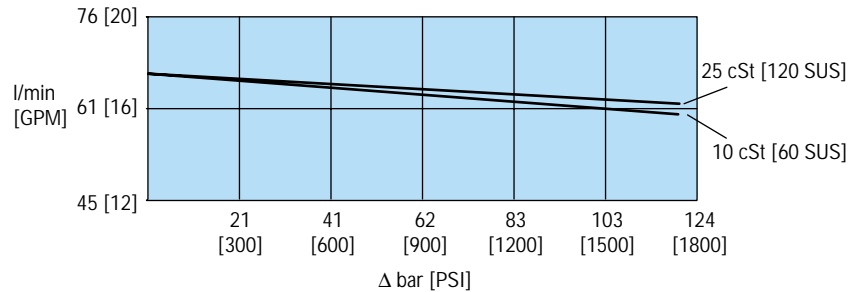
Control Lever Length 100 mm [4 inch] Min. Recommended

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 cm³/r [0 - 1.15 in³/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]

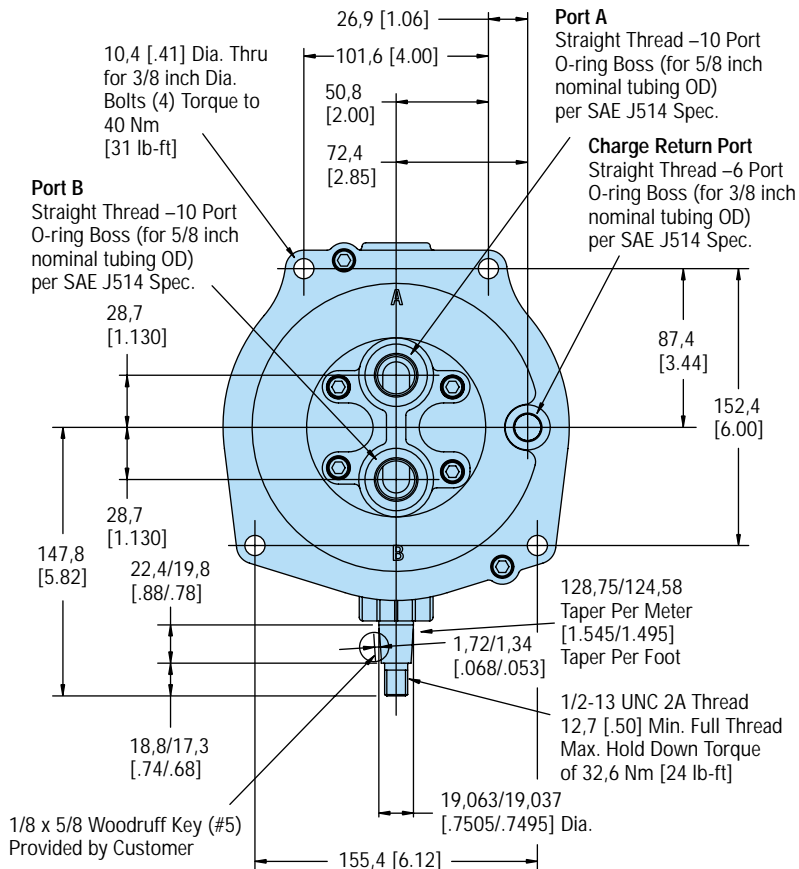
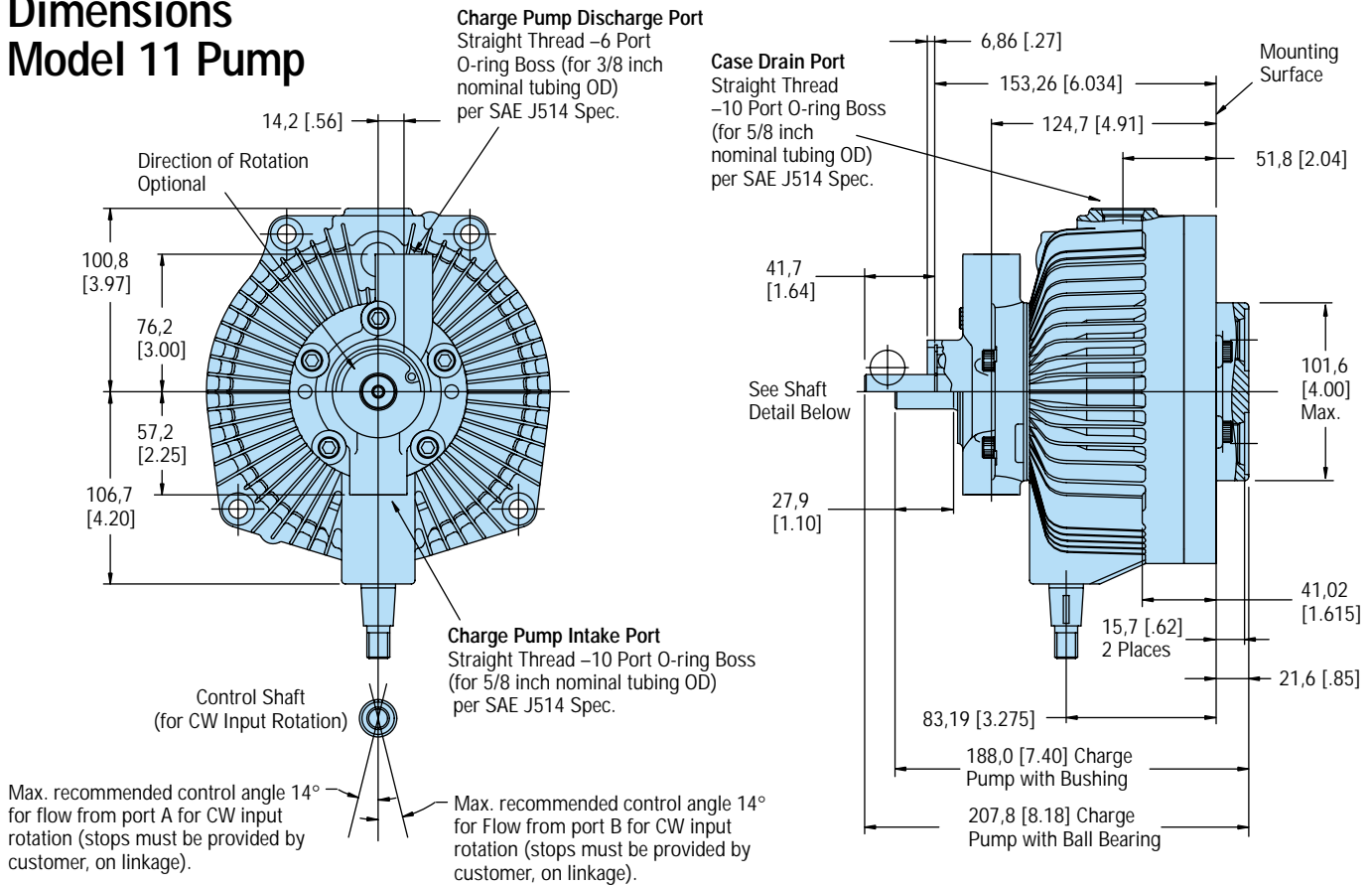
Oil viscosity range of 10 cSt [60 SUS] minimum to 22000 cSt [100,000 SUS] maximum (cold start only).

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

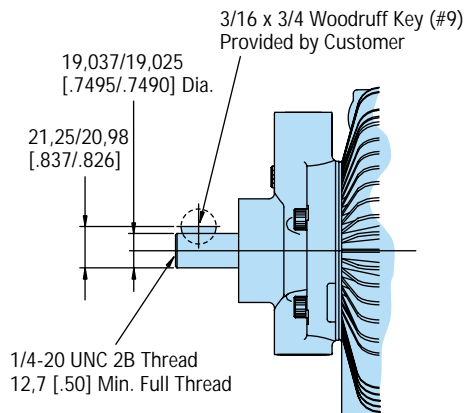


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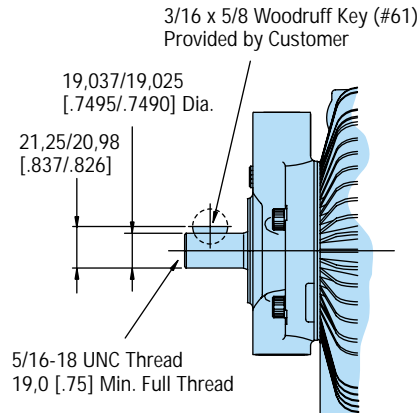
Dimensions — Input Shafts

Model 11 Transmission

Model 11 Pump



Charge Pump with Ball Bearing



Charge Pump with Bushing

Dimensions — Output Shafts

Model 11 Transmission

