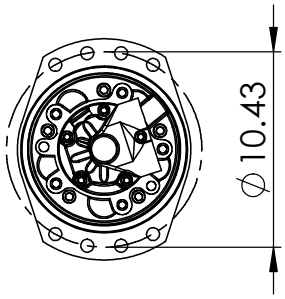
SAI Hydraulics, Inc.

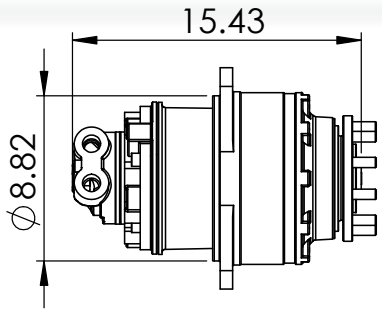
PSW SERIES WHEEL MOTORS

Technical Catalog

In Partnership With Plan-Star®

PSW36-05





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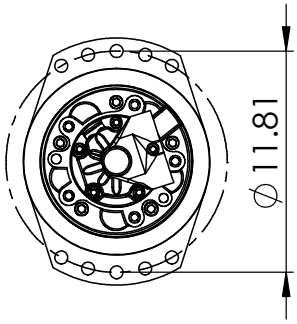

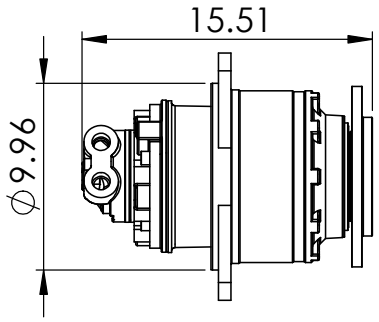

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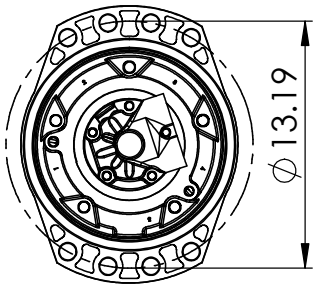

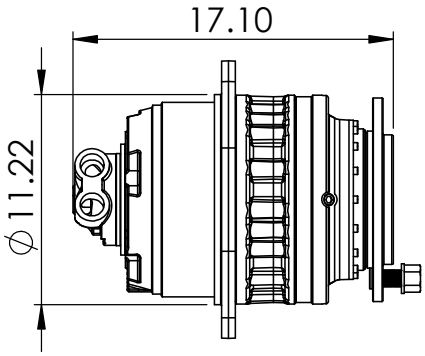

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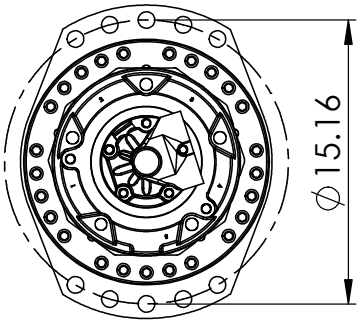

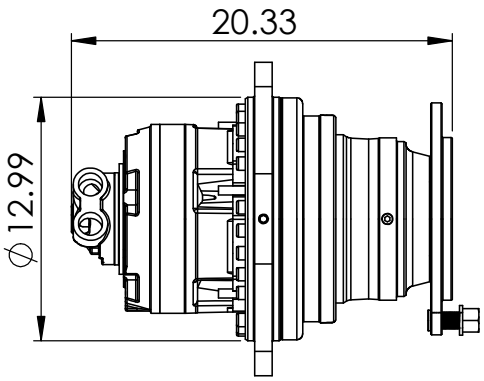

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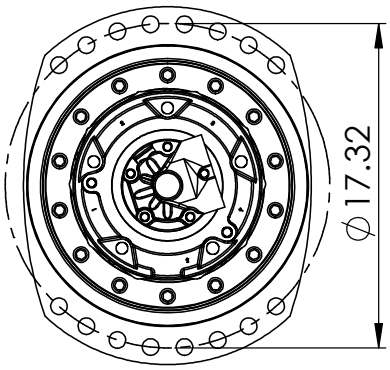
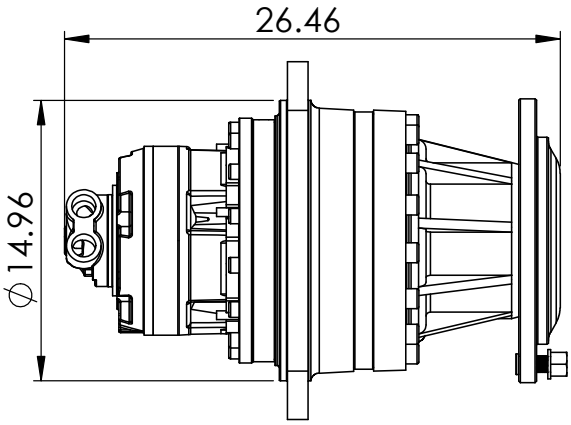




PSW SERIES WHEEL MOTORS

Technical Catalog

Design Features

Crankshaft Design Radial Piston Motors

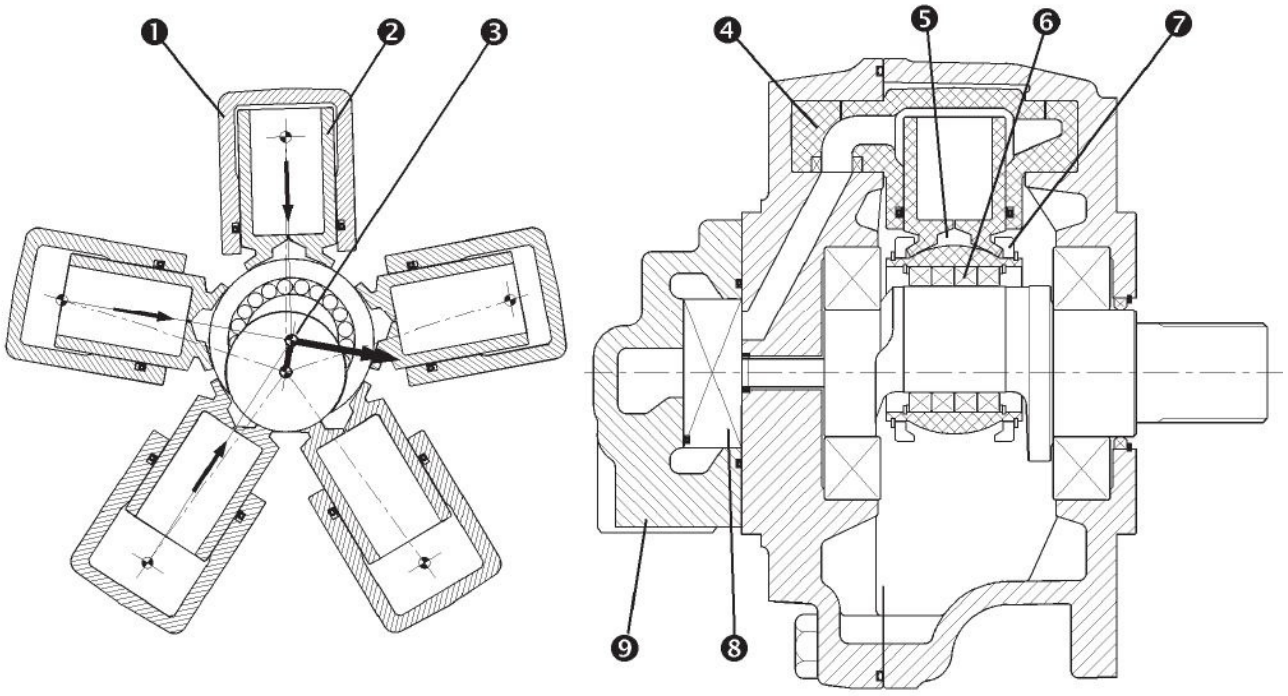
The main characteristics of this type of motor are high mechanical efficiency, especially at start-up, and high volumetric efficiency. Interchangeable parts enable motors to be built that are tailored to the customer's specific needs. A number of features distinguish SAI motors from other radial piston designs. The design of the radial motor with the crankshaft and oscillating cylinders provides very high starting torque efficiencies as well as other advantages.

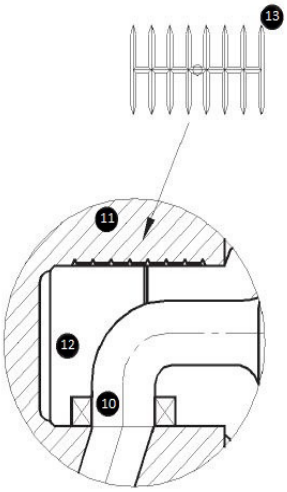
Swivelling Cylinder

The cylinder (1) remains aligned with the eccentric path of the crank (3), eliminating side loading between the cylinder and the piston (2). The articulation of the cylinder-piston assembly is achieved with large diameter trunnions (4) which ensure low specific loads.

Double Piston Support Bearing

The pistons transmit their load to the shaft via a hydrostatic bearing (5) and a central roller bearing. The hydrostatic bearing reduces metal to metal contact ensuring optimal lubrication and low friction. The roller bearing minimizes the friction between the piston foot and the spherical piston support ring, reducing heat and wear while improving starting torque and low speed operation. The mechanical efficiency of the SAI motor is typically higher than 90% at 400 bar (5800 psi).





Piston Retaining Rings

The piston retaining rings (7) ensure that the piston remains in contact with the shaft in all operating conditions, and regardless of pressure. The retaining force counteracts the separating force continuously, thus preventing lifting, tilting, or hammering of the piston during cavitation. This also helps extend the life of the motor as well as reduce the noise generated. SAI motors are extremely quiet. The noise level can be reduced further by using a back pressure of 5 - 10 bar (70 - 145 psi) on the motor. Please note that pressure lines and motor support structures can propagate or even amplify the sound from the motor.

Rotary Axial Distributor

Optimal distribution is achieved with short ducts that have wide diameters in the rotary axial distributor (8). This reduces the power loss when high flow rates are present and achieves very high volumetric efficiency. Precision machining and high performance seals provide optimal functionality thought the life of the motor as well as protecting against thermal shock. The distributor housing (9) is interchangeable, providing a wide range of pressure ratings, port sizes, and flow control options. The motors are available, on request, with a special distributor which ensures silent working conditions within wide operational ranges. Please contact the SAI Technical Department for further information.

Radial Injection Cylinder Feed

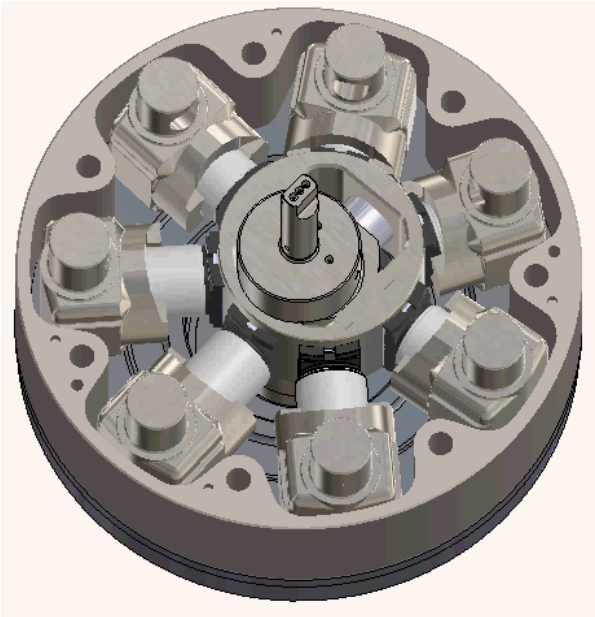
Eliminates direct hydraulic axial loading of the motor casing. The large cylinder feed channels (10) drastically reduce power loss due to drag. Stronger Castings (11) as well as internal reinforcement ribbing increase the internal and external load capacity, as well as allow for higher internal pressures when compared to previous products.

Larger Cylinder Trunnions

Larger Trunnions (12) increase the strength and stiffness of the trunnions while reducing specific loads. Larger Trunnions also allow Hydraulic balancing(13) on the trunnions reduces friction, wearing and heat generation. This enables operation using higher pressures and speeds.

Working Pressures

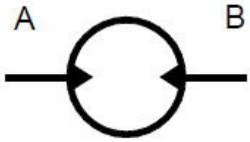
All wheel drives are rated at a nominal continuous pressure. The continuous and average working pressures should be chosen as a function of the required bearing lifetime. The peak operating pressures are given in the displacement tables. The motors may work at peak pressures not exceeding 1% per minute, no more than 10 times per hour. If operating pressures exceed this limit, permanent damage to the wheel drive unit may result.



Allowable Back Pressure

SAI motors are capable of operating with high back pressures while maintaining high efficiency, e.g. for series circuit applications. The allowable back pressures vary in function of the piston diameter and other factors. If the motors are required for an application with back pressure contact the SAI Technical Department for further details. Pressure values have to be within the values specified on the technical data sheets. Typical allowable back pressure values are:

	Port A	Port B
Continuous	3,000 psi	2,000 psi
Peak	5,000 psi	5,000 psi



Dual Displacement Motor

SAI has developed motors that can have more than one displacement, providing both low-torque/high-speed and high-torque/low-speed operation in one package. These motors have two pre- set displacements that can be chosen from a wide range to suit specific application requirements. The change of position of a directional valve changes the displacement and occurs via a pilot signal. When there is no pressure in the pilot line, the valve maintains maximum displacement. When the pressure in the pilot is between 20 and 30 bar (290 – 430 psi), the valve shifts the spool, changing the displacement to the minimum. The displacement change can occur while the motor is running.

The crankshaft eccentricity moves from maximum to minimum (and back), enabling the motor to switch displacement while running with no shock to the system. The control valves are integrated into the motor. The ratio between maximum and minimum displacement is available on all models as follows: 1:2 – 1:3 – 1:4. The minimum displacement can be set to 0 cc/rev, to allow the motor to free wheel.

Variable Displacement Motor

Over the years SAI has developed a wide range of dual and variable displacement motors while keeping the outside dimensions within the size of the fixed displacement motor series originally made by SAI. The dual and variable displacement motor technology serves a wide operational range. The same power can be utilized for both high torque/low speed and high speed/low torque applications.

With the SAI technological advances, the user can optimize the operating range of the wheel drive by adjusting the starting torque and the speed to meet the requirements of the application. The displacement adjustment can occur while the vehicle is in motion and loaded, thus eliminating the need to stop the rotation of the motor to change the displacement. Thanks to the design of the motors, SAI can, where possible, provide the motors with a minimum displacement equal to 0 cc/rev to allow for free wheeling.

Working Knowledge

The displacement change is done by varying the stroke (2 x e) of the pistons, while keeping the bore and the number of active pistons unchanged. This makes it possible to change the displacement in motion. The “reaction time”, or the time needed to change the displacement is specific for each application and SAI can supply motors with various reaction times.

Displacement

$$\text{Real Displacement} = \frac{d^2}{2} \times \pi \times nc \times e$$

$$\text{Resultant Displacement} = \left(\frac{d^2}{2} \times \pi \times nc \times e\right) \times i$$

Where:

d = cylinder bore

nc = number of cylinders

e = eccentricity (= ½ the stroke)

i = reduction ratio of the gearbox

The variable displacement motor allows the user to select any displacement between the minimum (which can be 0 cc/rev) and the maximum. The user inputs the desired displacement value though the potentiometer. The controller (CPU) compares the displacement request with the motor measured displacement and adjusts the electroproportional valve. The valve controls servos inside the motor, varying the eccentricity of the crankshaft. This will vary the stroke of the pistons, and thus the displacement. The controller can be provided so that it provides linear speed variation (input flow rate remains constant) or linear displacement variation (input pressure remains constant). Multiple motors can be controlled by the same potentiometer. Please contact the SAI Technical Department for further information.

SAI variable displacement motors are suitable for both mobile and industrial applications.
The variable displacement motor package includes:

1. Electroproportional valve driven by the controller
2. Angular sensor, used to measure the oscillation angle of the cylinders
3. Electronic controller, used for coding signals and controlling the electroproportional valve
4. Potentiometer, allows the user to set the required displacement. The control logic used by the CPU is proportional-integral-derivative (PID) type

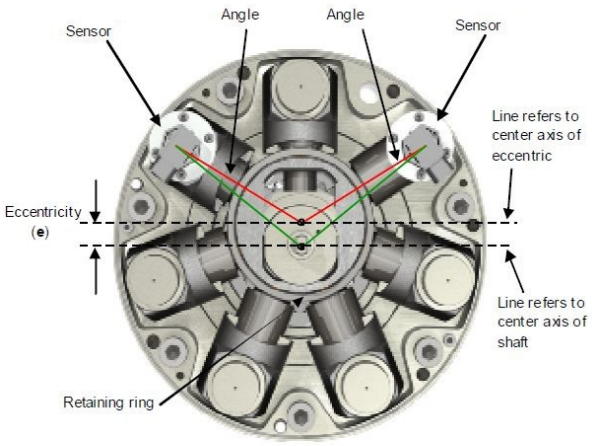


Fig.1: Schematic

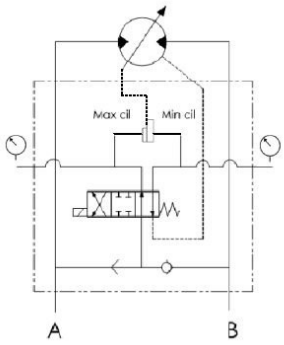
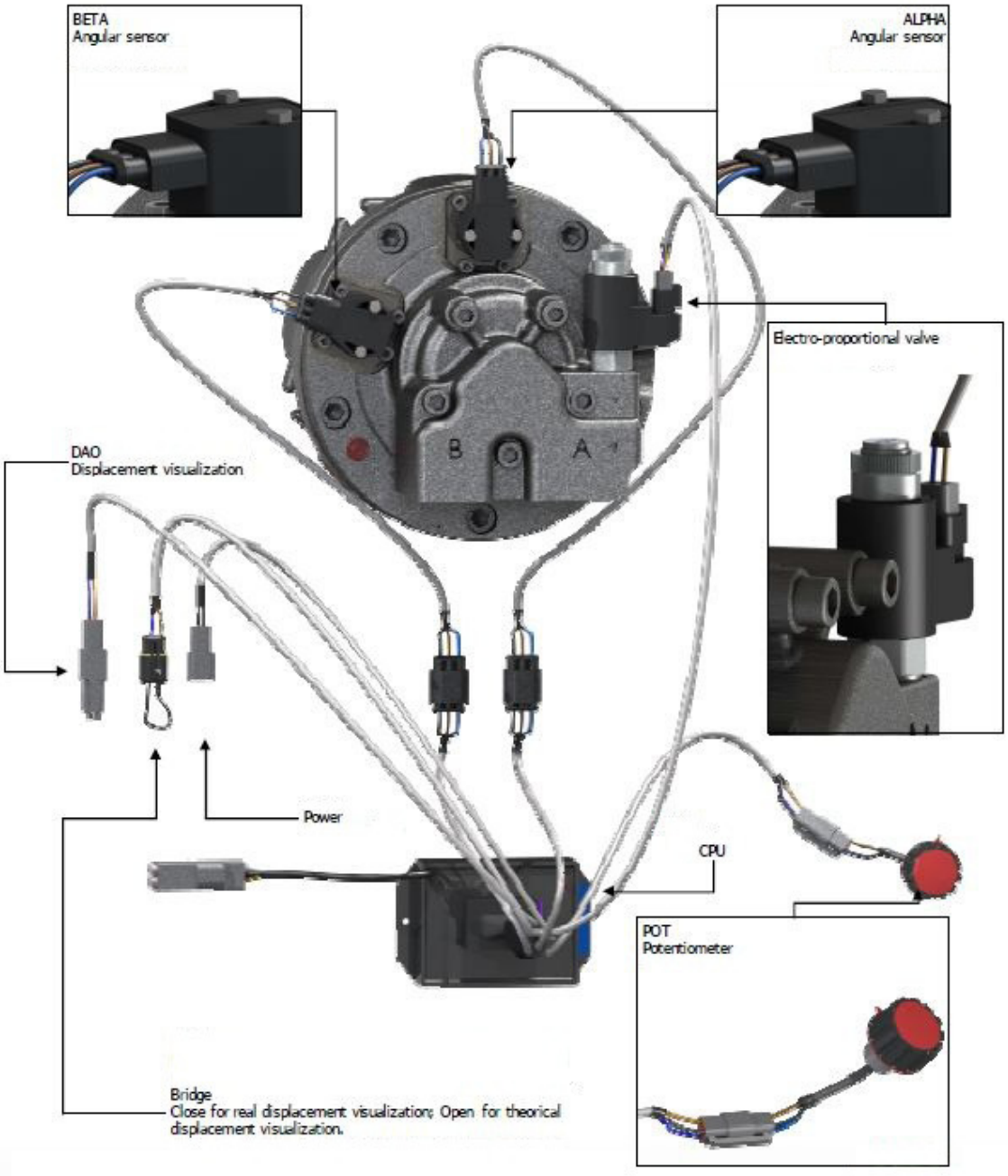


Fig.2: Hydraulic circuit

The controller provides PWM (pulse width modulated) current to the electroproportional valve and also processes input signals from potentiometers, programmable logic controllers, or other types of systems. PWM currents are factory preset and cannot be field adjusted, but can be customized for specific applications. The input/sensor connections can also be customized to fit each application. Please consult the SAI Technical department for more details. The following diagram shows a typical application.



Free Wheeling

All SAI motors can be disconnected from the hydraulic circuit and driven externally by another motor or other external forces. This feature is essential for applications where freewheeling or free fall is required, or where breakdowns may occur. A mechanical disconnect (where available) is located in the center of the wheel hub face, and when utilized, allows the wheel hub to be mechanically disconnected from the motor so that it spins freely. The following diagrams show some possible circuit configurations for motor disconnection and/or operation in free wheeling:

A) Free wheeling with oil in the circuit.

This condition is suitable only for low speeds. With the speed increase, it will be necessary to pressurize the inlet to prevent noise due to cavitation.

B) Free wheeling with air in the circuit.

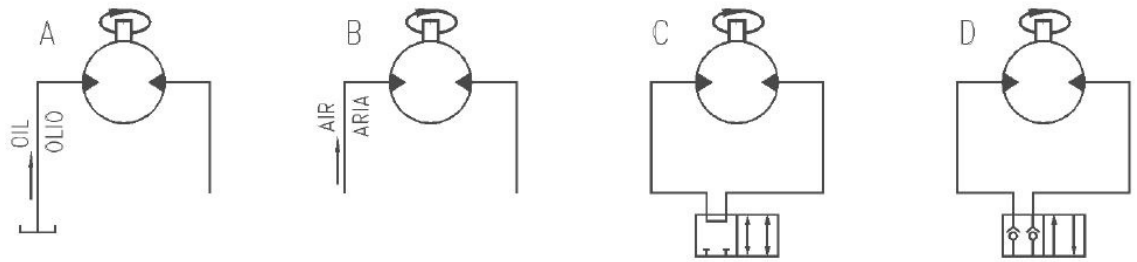
This condition is ideal for high speed free wheeling applications. Transition from/to normal operation must be done at low speed/pressure while pistons are emptying/filling with oil.

C) Short circuit free wheeling.

The motor runs with the inlet and outlet ports connected. This condition is suitable to applications that require speed control with a throttle. WARNING! Danger of overheating with use of the throttle.

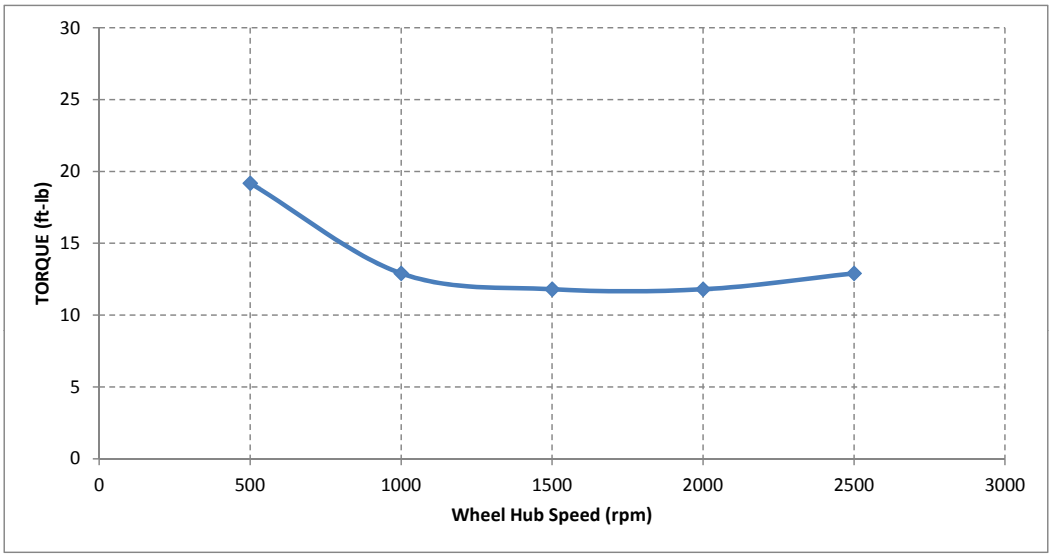
D) Vacuum free wheeling.

This is the favorable free wheeling condition for fixed displacement motors, especially for very high speeds. The check valves allow the oil to be expelled from the pistons which subsequently operate under vacuum conditions. The motors can operate in these conditions for several hours without being damaged or overheating. Torque absorption is constant with speed and is equivalent to 2 - 3 bar pressure. The transition from or to normal operation must be done at low speed and low pressure while the pistons are emptying or filling with oil.



Free Wheeling (2-Speed/Variable Motor)

Free wheeling can also be accomplished with variable displacement motors though the use of the electroproportional valves by setting the minimum displacement to 0 cu. in./rev. This stops the motor from transferring any power to the wheel hub. While freewheeling, the motor needs to be pressurized anywhere from 100 - 500 psi, depending on the wheel speed. No further oil needs to be provided to the motor. Free wheeling has minimum drag on the motor, and allows power to be utilized intelligently. The resultant drag torque generated by freewheeling is dependant on the rotational speed of the wheel. The resistant force is shown in the graph below:

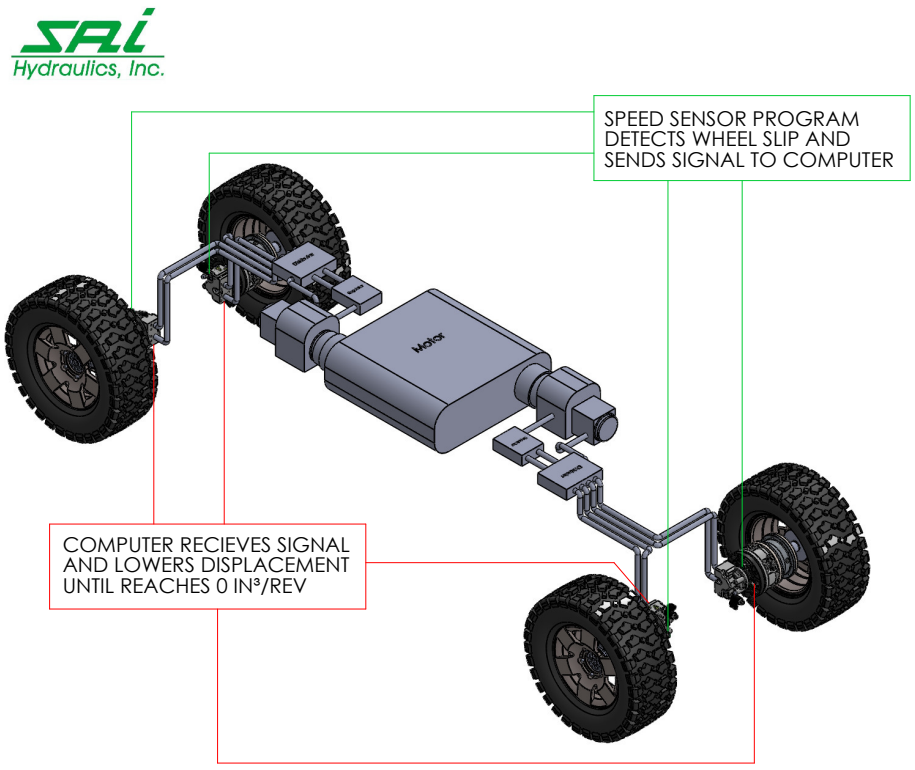


Wheel Slip

The computer of a variable displacement motor can also be configured to send a signal to the electroproportional valve in the motor, reducing the displacement to 0 cu. in./rev. for any specified trigger. The signal can be sent to one, two (either front or back) or any combination of wheels. This feature can be used in conjunction with speed sensors to detect wheel slip and transfer power from the slipping wheel to the wheels that have traction. This provides power to where it is needed, and improves system efficiency.

The computer can be configured many different ways to react to a wide variety of conditions. A typical setup is shown on the following page. The green paths are lines to speed sensors that can send a signal to the computer when they detect a wheel slip. The red paths are lines to the electroproportional valves that can take the motor displacement down to 0 cu. in./rev. when they receive a wheel slip signal from the computer.

Please note that the variable displacement motors can be controlled with any commercially available data acquisition system and controllers. The controller should provide pulse width modulated (PWM) signals. The SAI controller comes with 4 x dual-coil PWM output channels, with a PWM current output range of 100 - 500 mA. The PWM dither frequency can range from 75 - 250 Hz (100 Hz is standard). Please consult the SAI technical department for details.



Use and Maintenance

Hydraulic Fluids

SAI hydraulic motors are designed so that the hydraulic oil used to power the motor is also used to lubricate the internal parts. This reduces the maintenance required on the motor. For the choice of the hydraulic fluid, SAI suggests using high quality hydraulic mineral oil, preferably with additives for high pressure, as well as anti-corrosive, anti-wear, and anti-foaming agents. The hydraulic fluid used has to be chosen so that it is within the given viscosity and operating temperature ranges given on the following page.

Ideal viscosity: 40 cSt to 60 cSt
Allowable viscosity: 25 cSt to 60 cSt

Ideal operating temp: +30° C (+85° F) to +50°C (+120° F)
Allowable operating temp: -20° C (-4° F) to +50°C (+175° F)

These are some hydraulic oils that are recommended by SAI:

Ambient Temp.	20°C to +40°C	+40°C to +50°C	+50°C to +60°C	+60°C to +70°C
Viscosity	32	46	68	100
Texaco	RANDO	RANDO HD46	RANDO HD68	RANDO HD100
BP	HLP32	HLP46	HLP68	HLP100
ESSO	NUITO H32	NUITO H46	NUITO H68	NUITO H100
SHELL	TELLUS 37	TELLUS 46	TELLUS 68	TELLUS 100
MOBIL	DTE 24	DTE 25	DTE 26	DTE 26

SAI Wheel drive assemblies have an option to share lubricating oil between the motor and the gearbox, however SAI recommends that the gearbox have separate lubricating gear oil from the motor hydraulic oil. Below is a list of recommended gear oils:

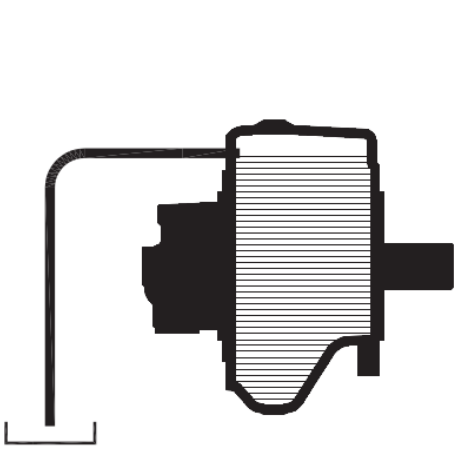
Ambient Temp.		-20°C - +5°C	+5°C - +40°C	+40°C - +65°C	+65°C - +70°C
VISCOSITY	°E/50°C	7.3	10.8 - 12.5	15 - 18	22 - 26
	ISO VG	100	150	220	320
AGIP		BLASA 100	BLASA 150	BLASA 220	BLASA 320
BP		ENEROL GR-HP 100	ENEROL GR-HP 150	ENEROL GR-HP 220	ENEROL GR-HP 320
CASTROL		ALPHA SP 100	ALPHA SP 150	ALPHA SP 220	ALPHA SP 320
CHEVRON		NL GEAR COMPUND 100	NL GEAR COMPUND 150	NL GEAR COMPUND 220	NL GEAR COMPUND 320
ELF		SPARTAN EP 100	SPARTAN EP 150	SPARTAN EP 220	SPARTAN EP 320
ESSO		REDUCTELF SP 100	REDUCTELF SP 150	REDUCTELF SP 220	REDUCTELF SP 320
FINA		GIRAN 100	GIRAN 150	GIRAN 220	GIRAN 320
IP		MELLANA 100	MELLANA 150	MELLANA 220	MELLANA 320
MOBIL		-	MOBILGEAR 629	MOBILGEAR 630	MOBILGEAR 632
SHELL		OMALA EP 100	OMALA EP 150	OMALA EP 220	OMALA EP 320
TOTAL		CARTER EP 100	CARTER EP 150	CARTER EP 220	CARTER EP 320

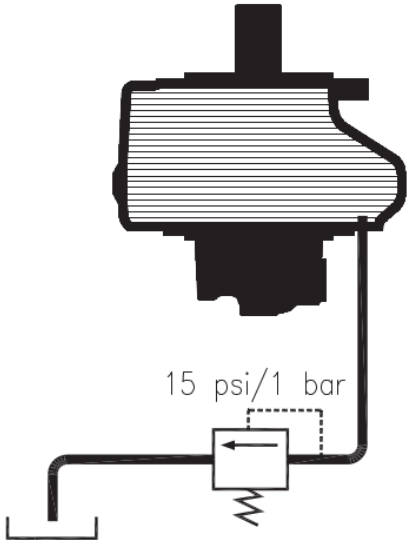
After initial startup of the motor, please verify the level of the lubricant periodically and refill as needed. The first oil change has to be made after 15 - 20 hours of operation. Subsequent oil changes must be performed after 800 - 1000 hours or one year of operation, whichever comes first.

Fire resistant fluids can be used in place of mineral oil in the motor. Synthetic fluids such as phosphate esters and polyesters have similar characteristics to mineral oils and the same temperature and viscosity ranges are applicable. These types of fluids may, however, require seals of compatible material (FKM, PTFE, ect) and are available upon request. Water based fluids such as water based emulsions and water-glycol solutions can be used, but due to the low viscosity of these fluids the lifetime of the components are reduced.

Drain line Position

The position of the drain line must be placed in such a way that there is always sufficient oil in the casing for lubrication of the shaft bearing. If the motor has to be installed with the shaft in a horizontal position, the drain line should be connected to the uppermost drain line port. If the motor is installed with the shaft in a vertical position, the motor casing has to be entirely filled with oil and the drain line has to be connected in such a way that no air can enter the motor. This is to prevent the bearing on the motor boy from working without lubrication.





Start Up

Before connecting the pipes, make sure that they are clean and that there is no rust. Before the initial startup, fill the motor and the gearbox with oil. In the shared oil versions, the motor has no shaft seal between the motor and gearbox, therefore the unit can be filled either from the drain line in the motor cover or the one in the gearbox body. The products are tested at the factory and do not require a testing period.

Filtration

SAI recommends using filters with a rating of 25 microns maximum. The preferred rating is 10 microns. SAI products have good resistance to contaminated oil; however clean oil and an efficient filtration system are important for the proper functioning and reliability of all the components in the hydraulic system. The efficiency of the filtering system is reduced as the filter elements accumulate trapped particles, therefore the filters have to be regularly inspected and replaced. it is recommended to pay close attention at the first startup of the hydraulic system or in the event of replacement of any component for damage or excessive usage. It is advisable to follow the filter manufacturer's recommendations for its life span and cleaning or substitution cycles.

Pipes and Connections

SAI recommends the use of high quality piping and connections for high pressure hydraulic applications. Please follow manufacturer's recommendations for pipe sizes. To reduce the effects for oil compressibility, use pipes with minimum possible width and diameter and maximum rigidity, do not use pipes which are smaller than the port connections. To reduce the effects of load loss avoid sharp corners, restrictions, and high flow speed. The nominal diameter ND of a pipe depends on the flow (l/min) and average speed (m/s) . the formula to calculate the minimum recommended diameter, considering a maximum speed of 6 m/s, is:

$$ND\ [mm] = 4{,}607 \times \sqrt{\frac{Q\ [l/min]}{6\ [m/s]}}$$

Where:

Q = flow

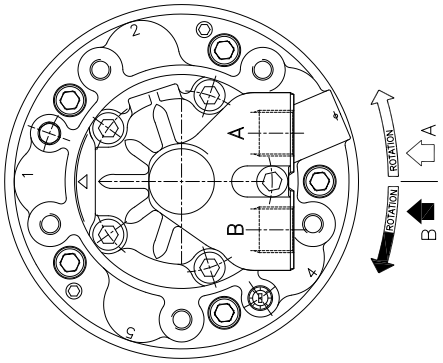
6 $[m/s]$ = v (average speed)

Distributor Cover Orientation

SAI Motors can be provided with the distributor cover assembled with the distributor arrow pointing towards any one of the five positions. To order, use assembly codes DM1, DM2, ... , DM5, etc. (DM1 = standard)

All SAI Motors are bidirectional. The direction of shaft rotation is determined by the direction of the oil flow. The standard motor configuration is set to have the input flow though port A which causes the shaft to move counterclockwise. If the input flow is though port B, the shaft will move clockwise. Please note if clockwise orientation is needed.

DM1 orientation shown



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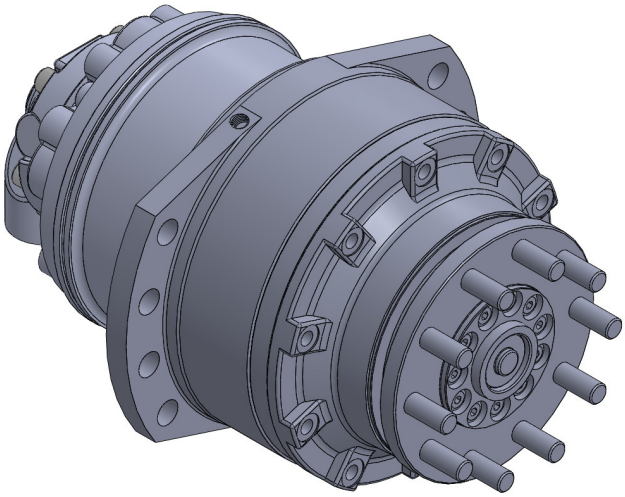


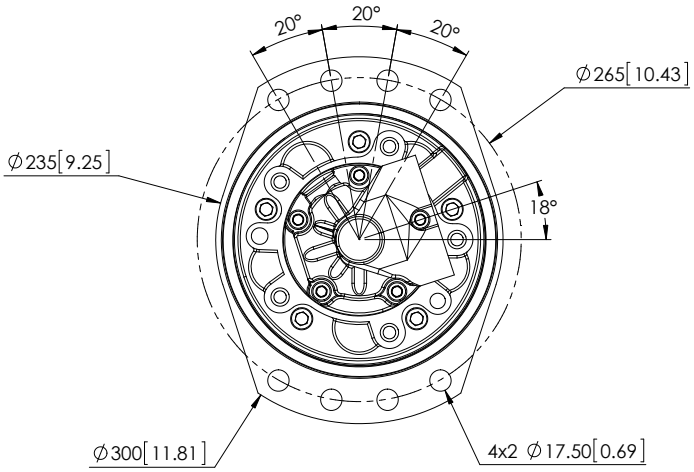
Motor: FS15
Weight: 159 lbs.
Oil: 1.4 quarts
Gearbox Case Pressure: 5 psi [3]

Nominal Displacement		400	450	500	580	650	750	850	950	1100
Displacement	in^3/rev	23.79	27.03	31.14	35.72	39.42	46.69	51.54	59.12	67.25
Torque/100 psi (Theor)	ft/lb	31.56	35.86	41.32	47.39	52.30	61.97	68.39	78.45	89.23
Motor Cont Pressure Rating [1]	psi	4500	4500	4500	4500	4500	4500	4500	4000	4000
Motor Peak Pressure Rating	psi	6000	6000	6000	6000	6000	6000	6000	5500	5200
Output Cont Torque Rating	ft/lb	3500	3500	3500	3500	3500	3500	3500	3500	3500
Output Peak Torque Rating	ft/lb	3500	3500	3500	3500	3500	3500	3500	3500	3500
Continuous Speed [2]	rpm	270	240	250	200	170	140	130	110	100
Max. speed [2]	rpm	300	280	250	220	200	180	160	140	130
Peak power	HP	60	60	60	60	60	60	60	60	60
Brake Release Pressure	psi	240	240	240	240	240	240	240	240	240
Max Brake Release Pressure	psi	600	600	600	600	600	600	600	600	600
Max Brake Holding Torque	ft-lb	3500	3500	3500	3500	3500	3500	3500	3500	3500

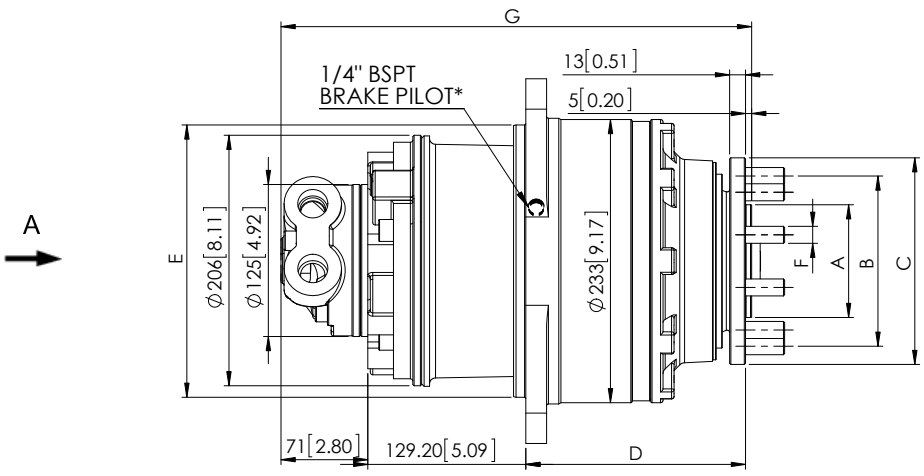
1) Continuous or average working pressure should be chosen on the motor bearing lifetime choice. **2)** Speed limitation with optional low speed distributors (eg. D31); see distributor pages section. **3)** For both separate and common oil. Consult SAI for high pressure casing.

PSW36 will be available Fall 2013

PSW36 DIMENSIONS



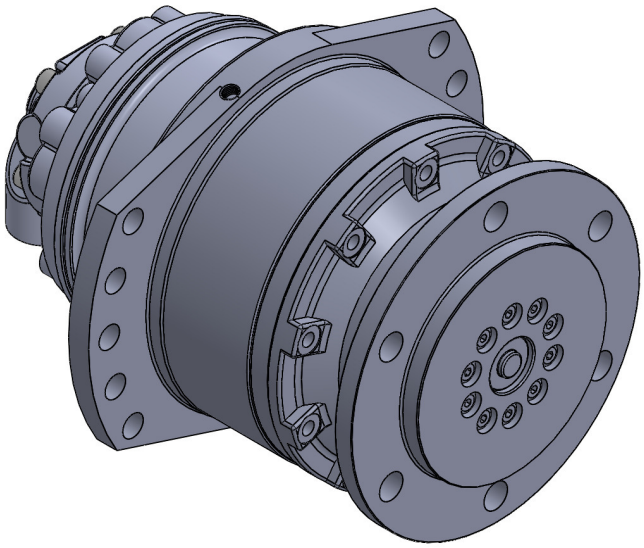
VIEW A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
With Brake	Ø 92.7 [Ø 3.65]	Ø 140 [Ø 5.51]	Ø 170 [Ø 6.69]	Ø 180 [Ø7.09]	Ø 224 [Ø 8.82]	10 x M14 x 1.5	380 [14.96]
With Brake	Ø 160.7 [Ø 6.33]	Ø 205 [Ø 8.07]	Ø 245 [Ø 9.65]	Ø 180 [Ø 7.09]	Ø 224 [Ø 8.82]	6 x M18 x 1.5	380 [14.96]
Without Brake	Ø 92.7 [Ø 3.65]	Ø 140 [Ø 5.51	Ø 170 [Ø 6.69]	Ø 180 [Ø7.09]	Ø 224 [Ø 8.82]	10 x M14 x 1.5	380 [14.96]
Without Brake	Ø 160.7 [Ø 6.33]	Ø 205 [Ø 8.07]	Ø 245 [Ø 9.65]	Ø 180 [Ø7.09]	Ø 224 [Ø 8.82]	6 x M18 x 1.5	380 [14.96]

Optional Mechanical Disconnect Available, Contact SAI Technical Department for more information.
*Brake Pilot only on motor models with internal brake.

PSW50



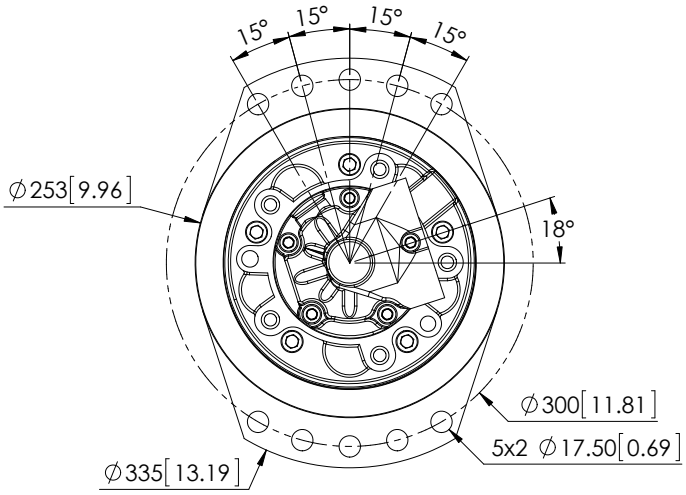
Motor: FS15
Weight: 213 lbs
Oil: 1.64 quarts
Gearbox Case Pressure: 5 psi (3)

Nominal Displacement		400	450	580	760	840	970	1100	1200
Displacement	in^3/rev	23.79	27.03	35.72	46.69	51.84	59.12	67.25	72.96
Torque/100 psi (Theor)	ft/lb	31.56	35.86	47.39	61.95	68.39	78.45	89.23	96.81
Motor Cont Pressure Rating (1)	psi	4000	4000	4000	4000	4000	4000	4000	4000
Motor Peak Pressure Rating	psi	6000	6000	6000	6000	6000	6000	6000	5500
Output Cont Torque Rating	ft/lb	4000	4000	4000	4000	4000	4000	4000	4000
Output Peak Torque Rating	ft/lb	5000	5000	5000	5000	5000	5000	5000	5000
Continuous Speed (2)	rpm	150	150	150	130	130	120	110	100
Max. speed (2)	rpm	200	200	190	190	180	180	170	160
Peak power	HP	80	80	80	80	80	80	80	80
Brake Release Pressure	psi	240	240	240	240	240	240	240	240
Max Brake Release Pressure	psi	600	600	600	600	600	600	600	600
Max Brake Holding Torque	ft-lb	5000	5000	5000	5000	5000	5000	5000	5000

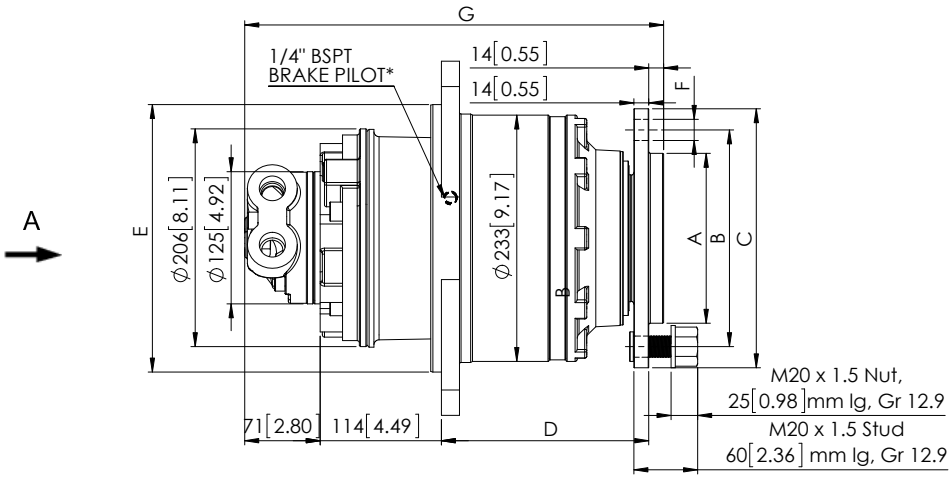
1) Continuous or average working pressure should be chosen on the motor bearing lifetime choice. **2)** Speed limitation with optional low speed distributors (eg. D31); see distributor pages section. **3)** For both separate and common oil. Consult SAI for high pressure casing.

PSW50 will be available Fall 2013

PSW50 DIMENSIONS



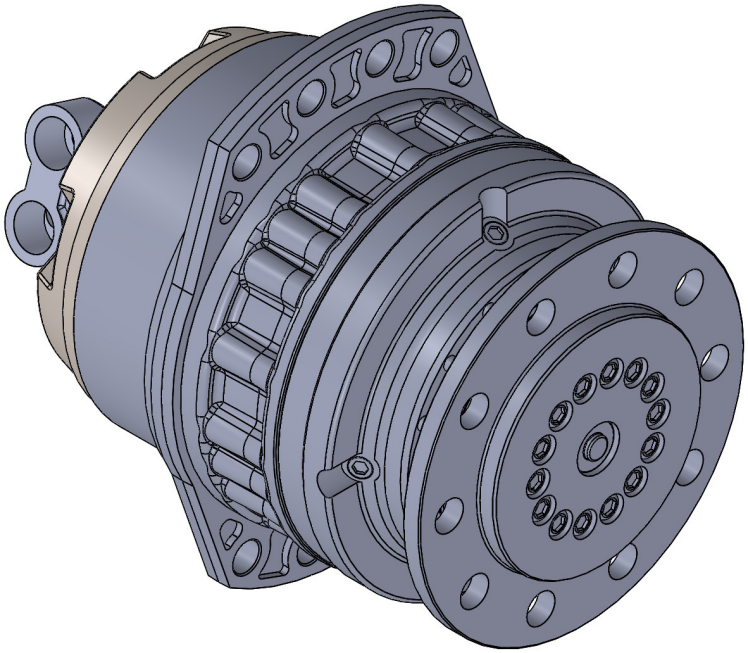
VIEW A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
With Brake	Ø 160.7 [Ø 6.33]	Ø 205 [Ø 8.07]	Ø 245 [Ø 9.65]	Ø 195 [Ø 7.68]	Ø 253 [Ø 9.96]	6 x Ø 20 [6 x Ø .79]	380 [14.96]
With Brake	Ø 175.7 [Ø 6.92]	Ø 225 [Ø 8.86]	Ø 270 [Ø 10.63]	Ø 195 [Ø 7.68]	Ø 253 [Ø 9.96]	10 x Ø 18 [10 x Ø .71]	380 [14.96]
Without Brake	Ø 160.7 [Ø 6.33]	Ø 205 [Ø 8.07]	Ø 245 [Ø 9.65]	Ø 195 [Ø 7.68]	Ø 253 [Ø 9.96]	6 x Ø 20 [6 x Ø .79]	380 [14.96]
Without Brake	Ø 175.7 [Ø 6.92]	Ø 225 [Ø 8.86]	Ø 270 [Ø 10.63]	Ø 195 [Ø 7.68]	Ø 253 [Ø 9.96]	10 x Ø 18 [10 x Ø .71]	380 [14.96]

Optional Mechanical Disconnect Available, Contact SAI Technical Department for more information.
*Brake Pilot only on motor models with internal brake.

PSW85

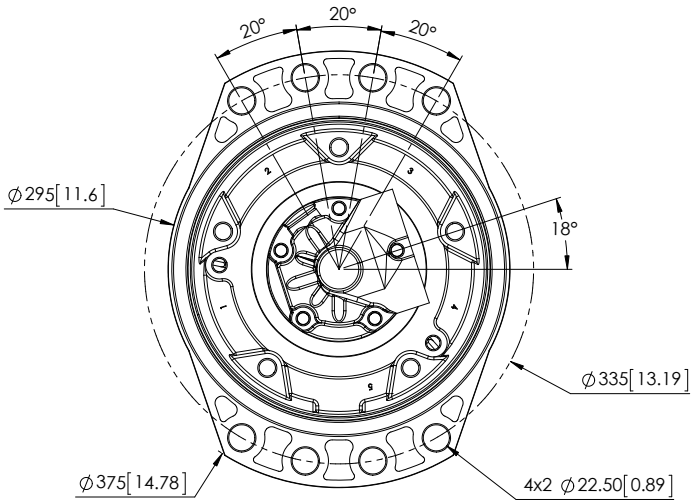


Motor: FS30
Weight:
Oil:
Gearbox Case Pressure: 5 psi [3]

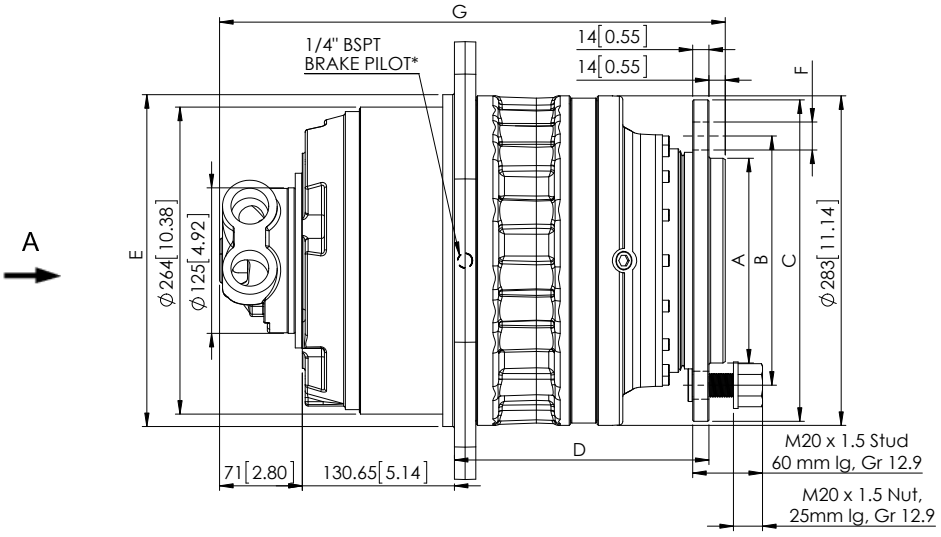
Nominal Displacement		800	880	1000	1250	1450	1600	1700	2000
Displacement	in^3/rev	47.64	53.00	61.94	74.98	89.23	96.81	104.74	121.47
Torque/100 psi (Theor)	ft/lb	62.96	70.33	82.20	99.50	118.41	128.47	138.99	161.19
Motor Cont Pressure Rating [1]	psi	3550	3550	3550	3550	3550	3550	3550	3550
Motor Peak Pressure Rating	psi	6400	5690	6040	5690	5690	5690	55690	5330
Output Cont Torque Rating	ft/lb	2235	2496	2918	3532	4203	4560	4934	5722
Output Peak Torque Rating	ft/lb	4029	4002	4965	5661	6737	7309	7908	8591
Continuous Speed [2]	rpm	240	200	150	140	120	110	100	90
Max. speed [2]	rpm	260	220	200	160	140	140	134	115
Peak power	HP	80	80	80	80	80	80	80	80
Brake Release Pressure	psi	240	240	240	240	240	240	240	240
Max Brake Release Pressure	psi	600	600	600	600	600	600	600	600
Max Brake Holding Torque	ft-lb	4029	4002	4965	5661	6737	7309	7908	8591

1) Continuous or average working pressure should be chosen on the motor bearing lifetime choice. **2)** Speed limitation with optional low speed distributors (eg. D31); see distributor pages section. **3)** For both separate and common oil. Consult SAI for high pressure casing.

PSW85 DIMENSIONS



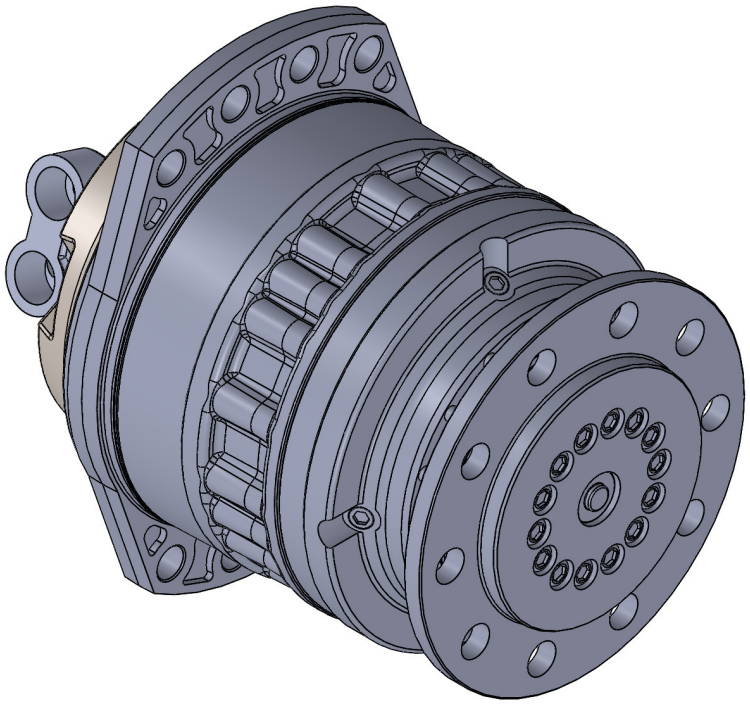
VIEW A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
With Brake	Ø 175.8 [Ø 6.92]	Ø 225 [Ø 8.86]	Ø 276 [Ø 10.87]	Ø 218.6 [Ø 8.61]	Ø 285 [Ø 9.96]	10 x Ø 24 [10 x Ø .94]	464.25 [18.27]
Without Brake	Ø 175.8 [Ø 6.92]	Ø 225 [Ø 8.86]	Ø 276 [Ø 10.87]	Ø218.6 [Ø 8.61]	Ø 285 [Ø 9.96]	10 x Ø 24 [10 x Ø .94]	464.25 [18.27]

Optional Mechanical Disconnect Available, Contact SAI Technical Department for more information.
*Brake Pilot only on motor models with internal brake.

PSW85A

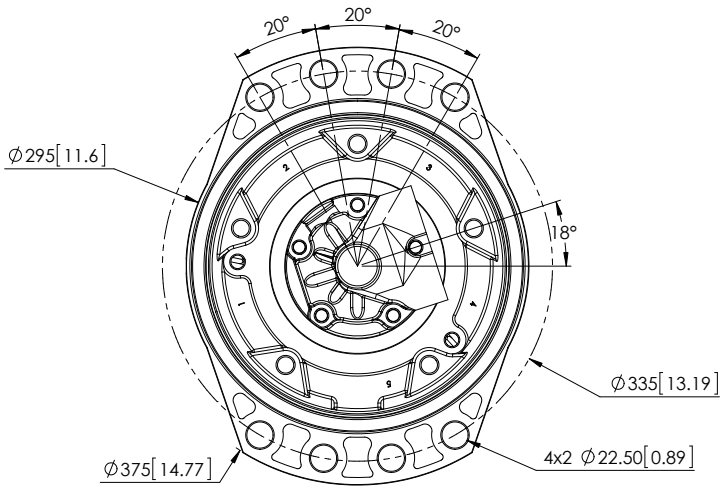


Motor: FS30
Weight:
Oil:
Gearbox Case Pressure: 5 psi [3]

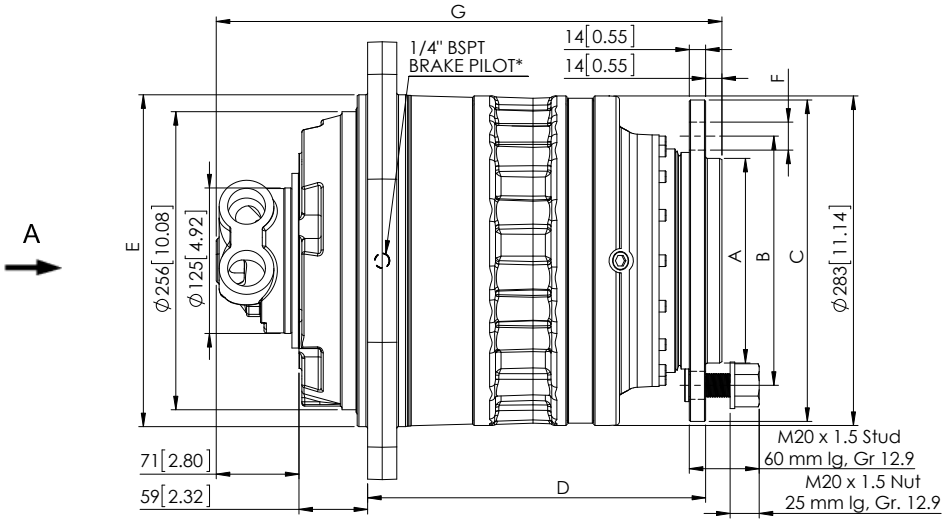
Nominal Displacement		800	880	1000	1250	1450	1600	1700	2000
Displacement	in^3/rev	47.64	53.00	61.94	74.98	89.23	96.81	104.74	121.47
Torque/100 psi (Theor)	ft/lb	62.96	70.33	82.20	99.50	118.41	128.47	138.99	161.19
Motor Cont Pressure Rating [1]	psi	3550	3550	3550	3550	3550	3550	3550	3550
Motor Peak Pressure Rating	psi	6400	5690	6040	5690	5690	5690	5690	5330
Output Cont Torque Rating	ft/lb	2235	2496	2918	3532	4203	4560	4934	5722
Output Peak Torque Rating	ft/lb	4029	4002	4965	5661	6737	7309	7908	8591
Continuous Speed [2]	rpm	240	200	150	140	120	110	100	90
Max. speed [2]	rpm	260	220	200	160	140	140	134	115
Peak power	HP	80	80	80	80	80	80	80	80
Brake Release Pressure	psi	240	240	240	240	240	240	240	240
Max Brake Release Pressure	psi	600	600	600	600	600	600	600	600
Max Brake Holding Torque	ft-lb	4029	4002	4965	5661	6737	7309	7908	8591

1) Continuous or average working pressure should be chosen on the motor bearing lifetime choice. **2)** Speed limitation with optional low speed distributors (eg. D31); see distributor pages section. **3)** For both separate and common oil. Consult SAI for high pressure casing.

PSW85A DIMENSIONS



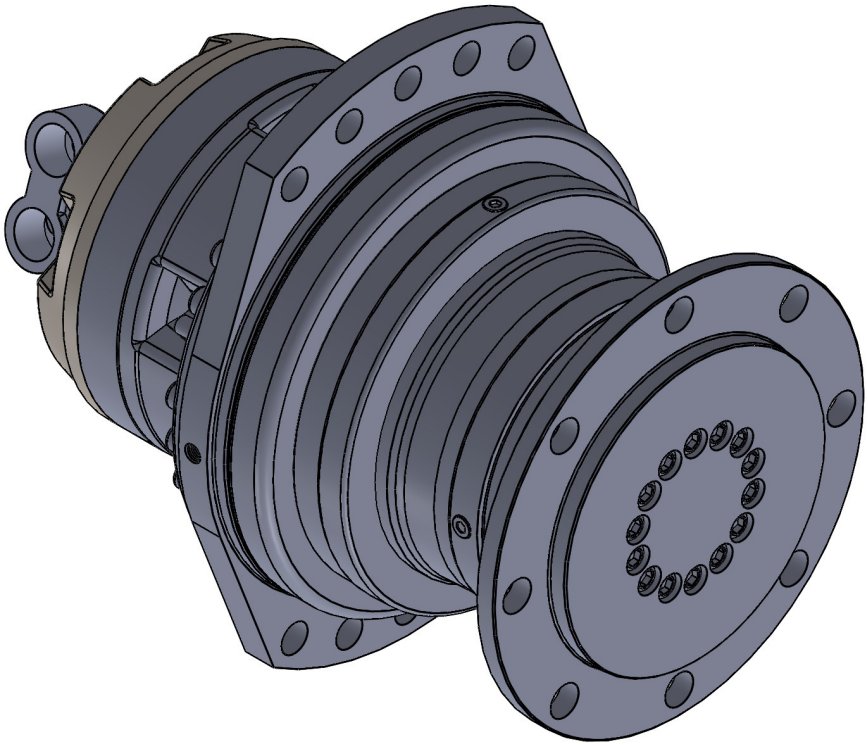
VIEW A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
Without Brake	Ø 175.8 [Ø 6.92]	Ø 225 [Ø 8.86]	Ø 276 [Ø 10.87]	Ø 290 [Ø 11.42]	Ø 285 [Ø 9.96]	10 x Ø 24 [10 x Ø .94]	464.25 [18.27]

Optional Mechanical Disconnect Available, Contact SAI Technical Department for more information.
*Brake Pilot only on motor models with internal brake.

PSW100

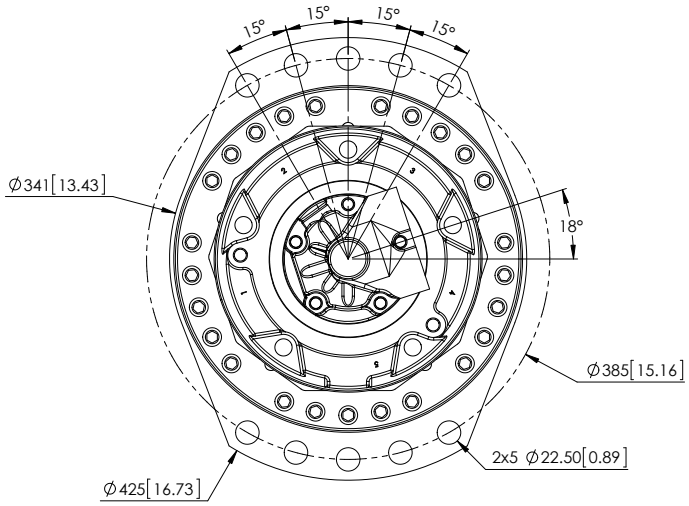


Motor: FS30
Weight:
Oil:
Gearbox Case Pressure: 5 psi [4]

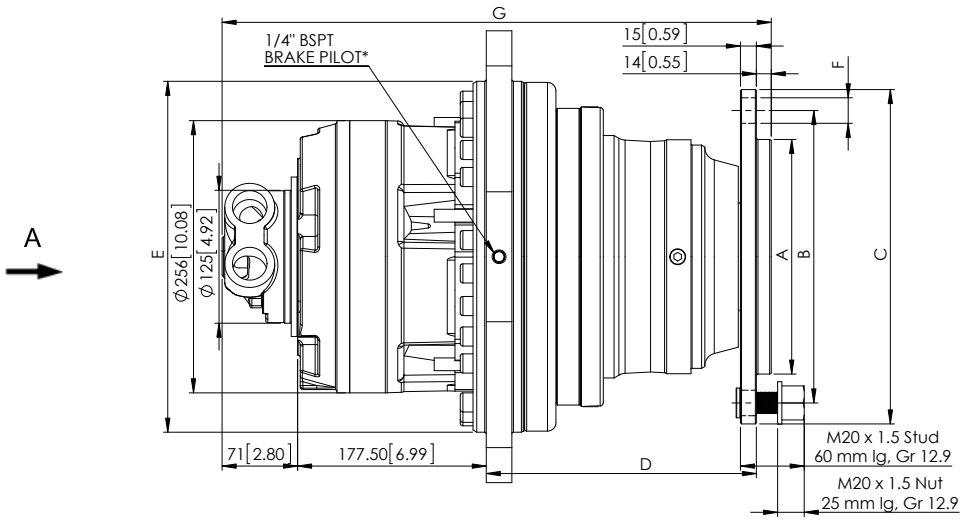
Nominal Displacement		1000	1250	1450	1600	1700	2000	2150	2500[3]	3000[3]
Displacement	in^3/rev	61.94	74.98	89.23	96.81	104.74	121.47	131.07	151.99	174.17
Torque/100 psi (Theor)	ft/lb	82.20	99.50	118.41	128.47	138.99	161.19	180.41	201.69	231.12
Motor Cont Pressure Rating [1]	psi	3550	3550	3550	3550	3550	3550	3550	3550	3550
Motor Peak Pressure Rating	psi	6040	5690	5690	5690	5690	5330	4980	5330	4980
Output Cont Torque Rating	ft/lb	2918	3532	4203	4560	4934	5722	6569	7160	8204
Output Peak Torque Rating	ft/lb	4965	5661	6737	7309	7908	8591	9216	10750	11510
Continuous Speed[2]	rpm	170	140	120	110	100	90	85	80	75
Max. speed [2]	rpm	200	160	140	140	164	115	100	90	85
Peak power	HP	80	80	80	80	80	80	80	95	95
Brake Release Pressure	psi	240	240	240	240	240	240	240	240	240
Max Brake Release Pressure	psi	600	600	600	600	600	600	600	600	600
Max Brake Holding Torque	ft-lb	4965	5661	6737	7309	7908	8591	9216	10750	11510

1) Continuous or average working pressure should be chosen on the motor bearing lifetime choice. **2)** Speed limitation with optional low speed distributors (eg. D31); see distributor pages section. **3)** Uses GM2 motor. **4)** For both separate and common oil. Consult SAI for high pressure casing.

PSW100 DIMENSIONS



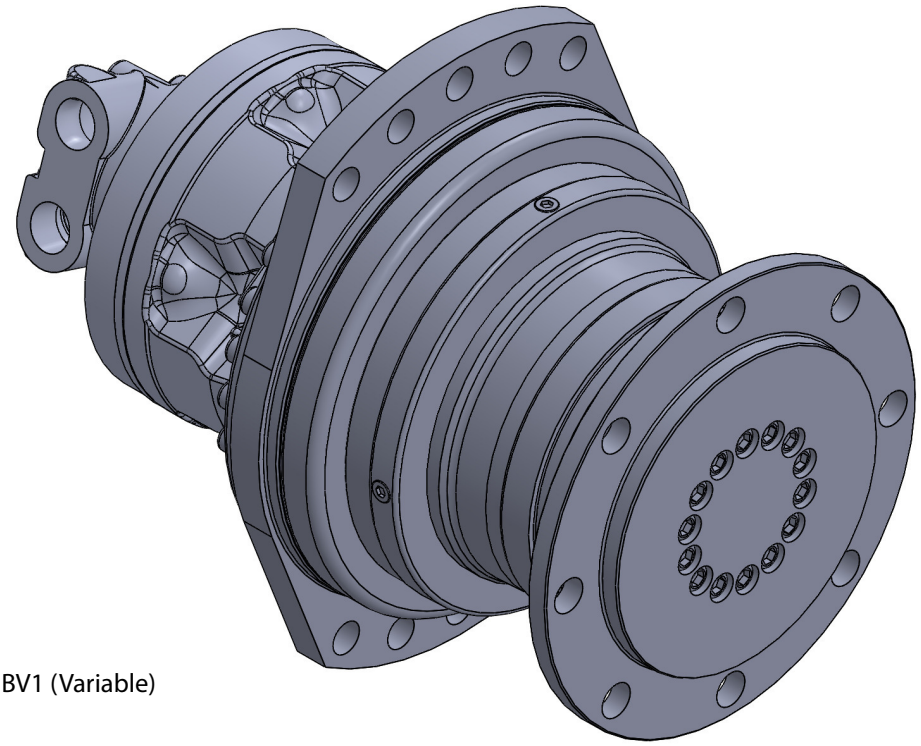
VIEW A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
With Brake	Ø 220.7 [Ø 8.69]	Ø 275 [Ø 10.83]	Ø 314 [Ø 12.36]	Ø 254 [Ø 10.00]	Ø 330 [Ø 12.99]	8 x Ø 24 [8 x Ø .94]	516.5 [20.33]
Without Brake	Ø 220.7 [Ø 8.69]	Ø 275 [Ø 10.83]	Ø 314 [Ø 12.36]	Ø 254 [Ø 10.00]	Ø 330 [Ø 12.99]	8 x Ø 24 [8 x Ø .94]	516.5 [20.33]

*Brake Pilot only on motor models with internal brake.

PSWD100/PSWV100
DUAL/VARIABLE DISPLACEMENT MOTOR

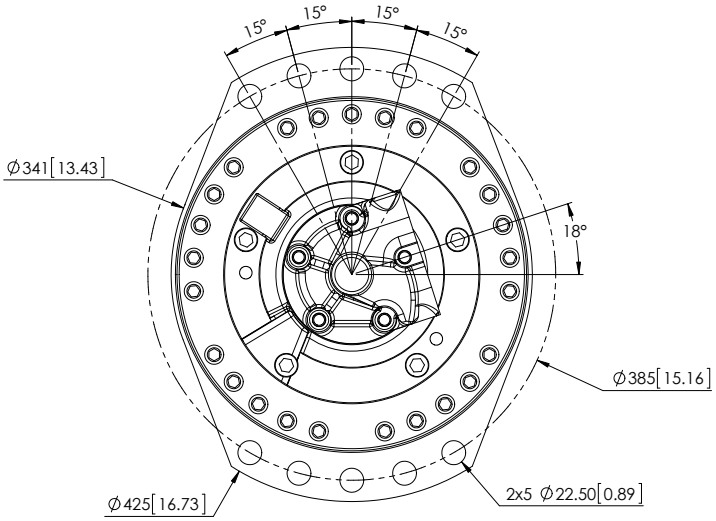


Motor: BD1 (Dual)/ BV1 (Variable)
Weight:
Oil:
Gearbox Case Pressure: 5 psi [4]

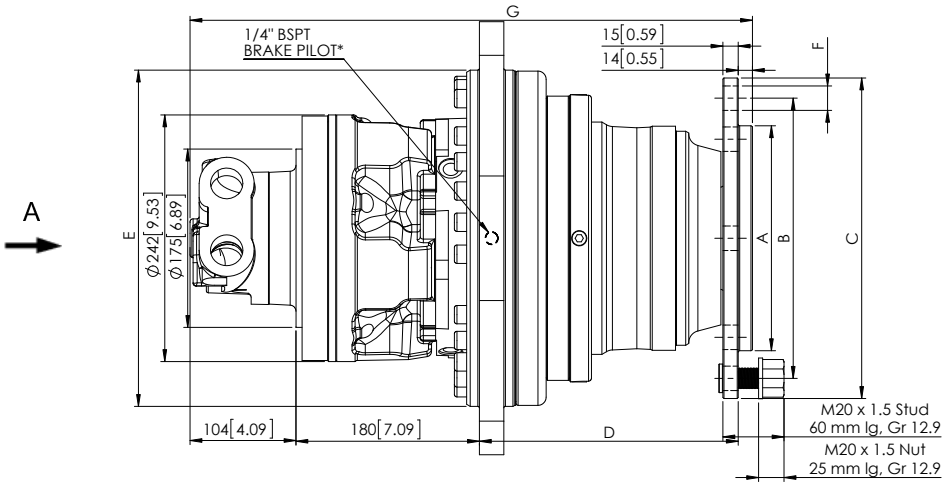
Nominal Displacement		**1000**		**1250**		**1750[3]**		**2500[3]**	
Displacement Setting		max	min	max	min	max	min	max	min
Displacement	in^3/rev	53.03	26.51	74.93	37.46	106.95	53.47	151.99	75.99
Torque/100 psi (Theor)	ft/lb	70.37	35.18	99.42	49.71	141.93	70.96	201.68	100.84
Motor Cont Pressure Rating [1]	psi	3800	3800	3600	3600	3600	3600	3600	3600
Motor Peak Pressure Rating	psi	5800	5800	5400	5400	5400	5400	5000	5000
Output Cont Torque Rating	ft/lb	2674	1337	3579	1789	5109	2554	7260	3630
Output Peak Torque Rating	ft/lb	4081	2040	5369	2584	7664	3832	10084	5042
Continuous Speed [2]	rpm	170	340	140	280	100	200	80	160
Max. speed [2]	rpm	200	400	160	320	165	330	90	180
Peak power	HP	73	73	73	73	100	100	100	100
Brake Release Pressure	psi	240	240	240	240	240	240	240	240
Max Brake Release Pressure	psi	600	600	600	600	600	600	600	600
Max Brake Holding Torque	ft-lb	4081	4081	5369	5369	7664	7664	10084	10084
Hi-Low Ratio (Dual Disp.)	1:	2, 3, 4							
Motor Pilot Pressure (Dual Disp.)	psi	20 - 30 bar (290 - 430 psi)							
Disp. Ranges (Varaible Disp.)	% max	100-25, 90-15, 75-0							

1) Continuous or average working pressure should be chosen on the motor bearing lifetime choice, **2)** Speed limitation with optional low speed distributors (eg. D31); see distributor section. **3)** Uses BD2 motor For Dual displacement, BV2 motor for variable displacement. **4)** For both separate and common oil. Consult SAI for high pressure casing.

PSWD100/PSWV100 DIMENSIONS



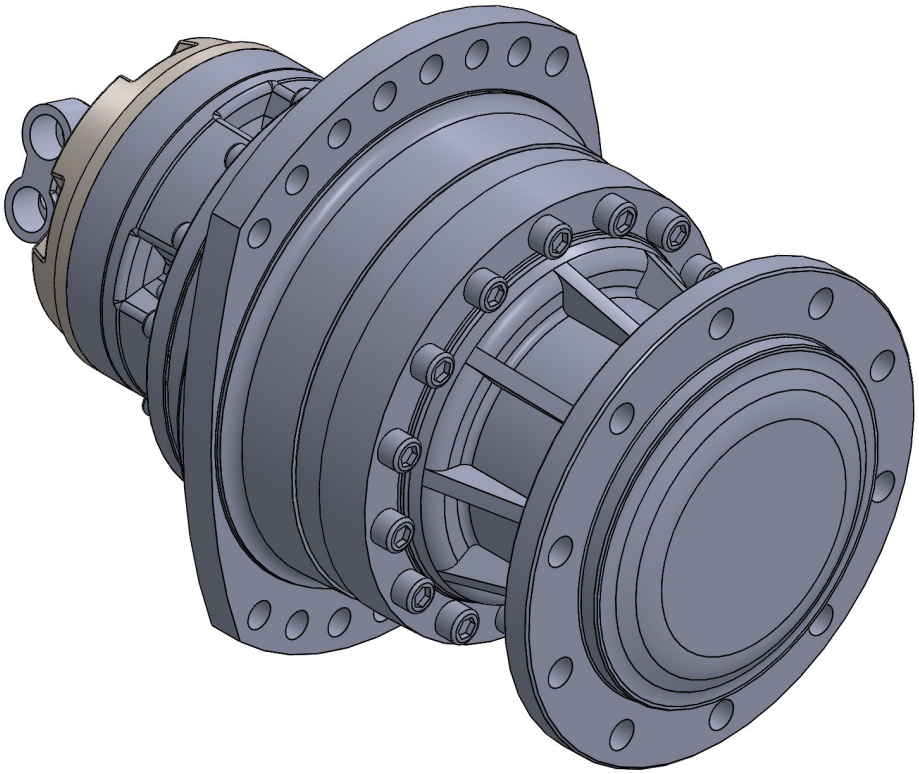
VIEW A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
With Brake	Ø 220.7 [Ø 8.69]	Ø 275 [Ø 10.83]	Ø 314 [Ø 12.36]	Ø 254 [Ø 10.00]	Ø 330 [Ø 12.99]	8 x Ø24 [8 x Ø .94]	552 [21.73]
Without Brake	Ø 220.7 [Ø 8.69]	Ø 275 [Ø 10.83]	Ø 314 [Ø 12.36]	Ø 254 [Ø 10.00]	Ø 330 [Ø 12.99]	8 x Ø 24 [8 x Ø .94]	498 [19.61]

*Brake Pilot only on motor models with internal brake

PSW200

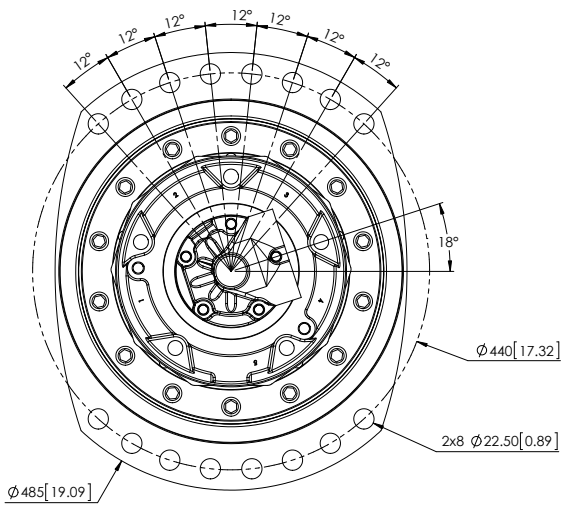


Motor: FS507
Weight:
Oil:
Gearbox Case Pressure: 5 psi [3]

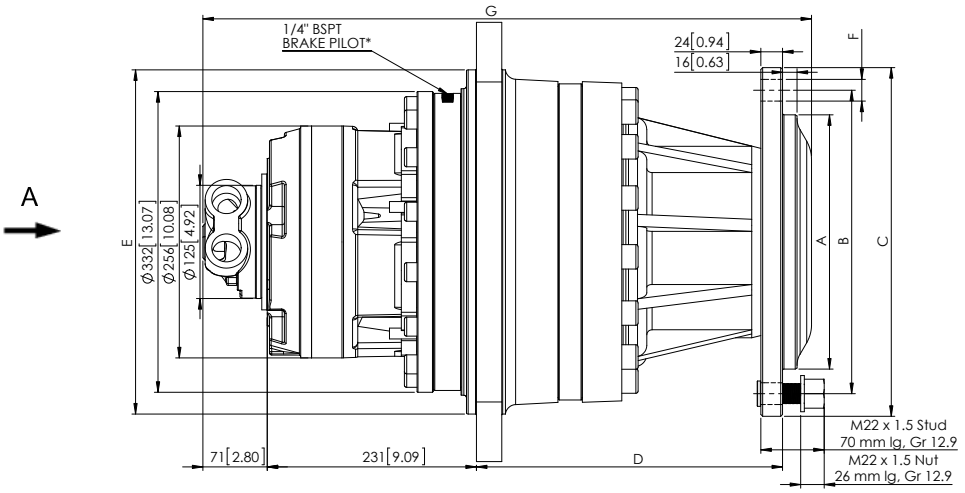
Nominal Displacement		2100	2400	2800	3200	4000
Displacement	in^3/rev	119.80	147.39	170.94	196.20	244.00
Torque/100 psi (Theor)	ft/lb	158.97	195.58	226.83	260.36	323.79
Motor Cont Pressure Rating [1]	psi	4000	4000	4000	4000	4000
Motor Peak Pressure Rating	psi	6000	5000	5000	4500	4500
Output Cont Torque Rating	ft/lb	6359	7823	9073	10414	12951
Output Peak Torque Rating	ft/lb	9538	9779	11341	11716	14570
Continuous Speed[2]	rpm	100	90	85	80	80
Max. speed [2]	rpm	140	120	100	90	70
Peak power	HP	100	100	100	100	100
Brake Release Pressure	psi	240	240	240	240	240
Max Brake Release Pressure	psi	600	600	600	600	600
Max Brake Holding Torque	ft-lb	9538	9779	11341	11716	14570

1) Continuous or average working pressure should be chosen on the motor bearing lifetime choice, **2)** Speed limitation with optional low speed distributors (eg. D31); see distributor pages section. **3)** For both separate and common oil. Consult SAI for high pressure casing.

PSW200 DIMENSIONS



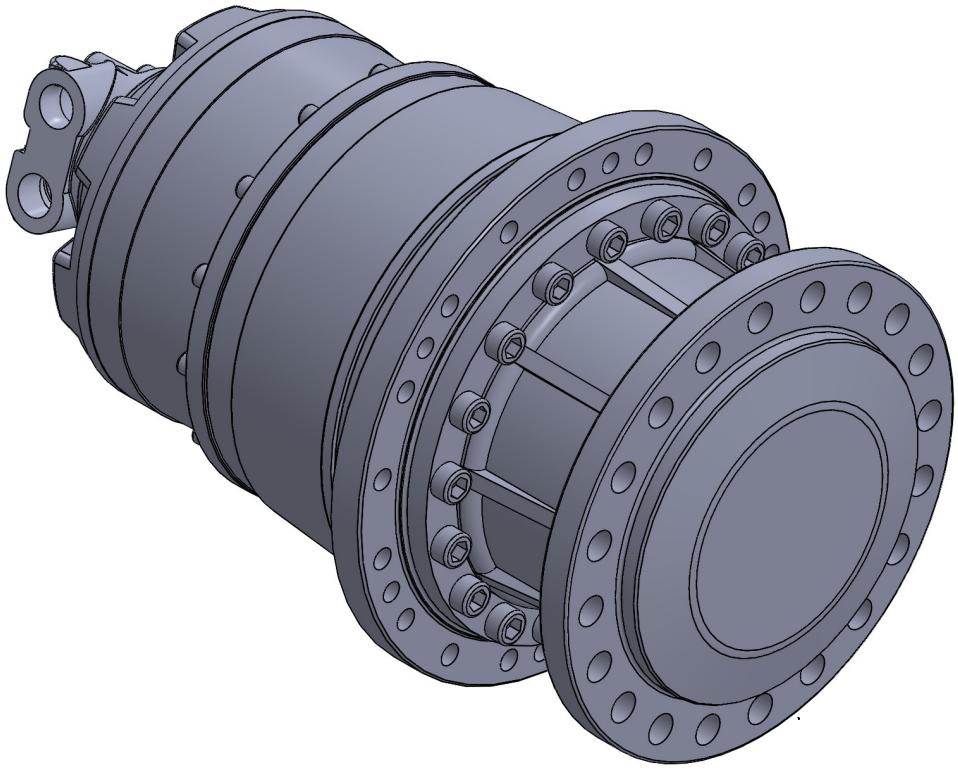
VIEW A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
With Brake	Ø 280.7 [Ø 11.05]	Ø 335 [Ø 13.19]	Ø 385 [Ø 15.16]	Ø 338 [Ø 13.31]	Ø 380 [Ø 14.94]	10 x Ø 24 [10 x Ø .94]	677 [26.65]
Without Brake	Ø 280.7 [Ø 11.05]	Ø 335 [Ø 13.19]	Ø 385 [Ø 15.16]	Ø 338 [Ø 13.31]	Ø 380 [Ø 14.94]	10 x Ø 24 [10 x Ø .94]	638 [25.11]

*Brake Pilot only on motor models with internal brake

PSW200A

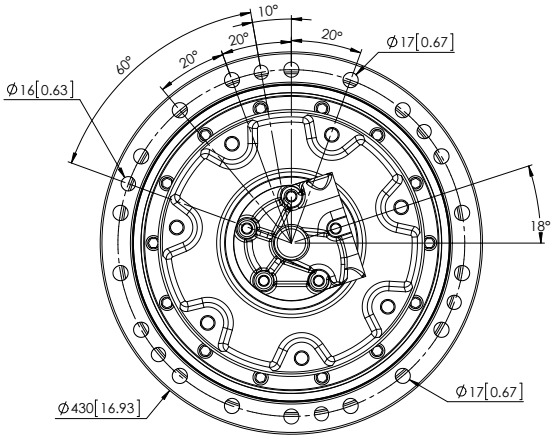


Motor: FS507
Weight:
Oil:
Gearbox Case Pressure: 5 psi (3)

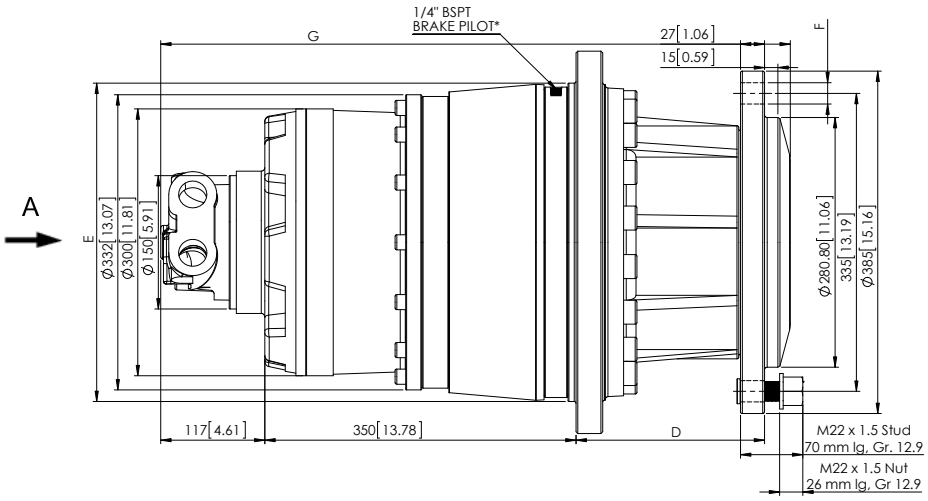
Nominal Displacement		5800	7000	8000	9500	11500
Displacement	in^3/rev	343.08	419.91	489.52	561.87	698.75
Torque/100 psi (Theor)	ft/lb	455.26	557.21	649.57	745.58	927.22
Motor Cont Pressure Rating (1)	psi	4000	4000	4000	4000	4000
Motor Peak Pressure Rating	psi	6000	5000	5000	4500	4500
Output Cont Torque Rating	ft/lb	18210	22288	25983	29823	37089
Output Peak Torque Rating	ft/lb	27315	27860	32478	33551	41725
Continuous Speed(2)	rpm	45	45	45	45	45
Max. speed (2)	rpm	95	95	95	95	95
Peak power	HP	100	100	100	100	100
Brake Release Pressure	psi	240	240	240	240	240
Max Brake Release Pressure	psi	600	600	600	600	600
Max Brake Holding Torque	ft-lb	27315	27860	32478	33551	41725

1) Continuous or average working pressure should be chosen on the motor bearing lifetime choice, **2)** Speed limitation with optional low speed distributors (eg. D31); see distributor pages section. **3)** For both separate and common oil. Consult SAI for high pressure casing.

PSW200A DIMENSIONS



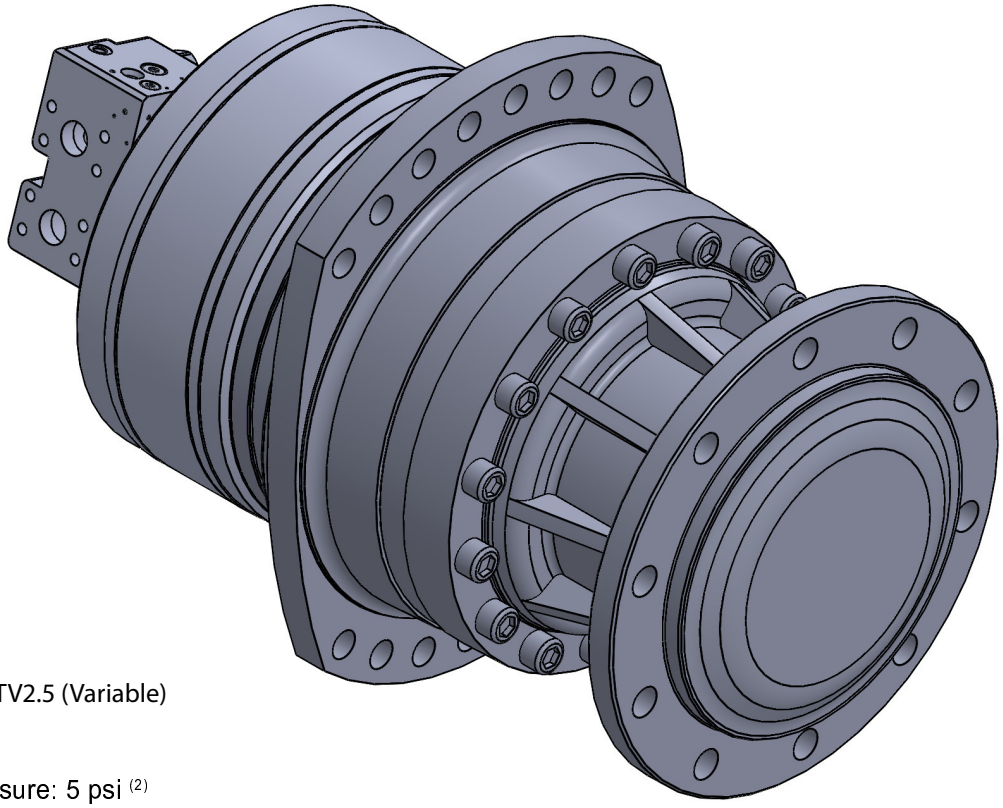
VIEW A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
With Brake	Ø 280.7 [Ø 11.05]	Ø 335 [Ø 13.19]	Ø 385 [Ø 15.16]	Ø 212 [Ø 8.35]	Ø 380 [Ø 14.94]	10 x Ø24 [10 x Ø .94]	
Without Brake	Ø 280.7 [Ø 11.05]	Ø 335 [Ø 13.19]	Ø 385 [Ø 15.16]	Ø 212 [Ø 8.35]	Ø 380 [Ø 14.94]	10 x Ø 24 [10 x Ø .94]	708 [27.87]

*Brake Pilot only on motor models with internal brake

PSWD200/PSWV200
DUAL/VARIABLE DISPLACEMENT MOTOR

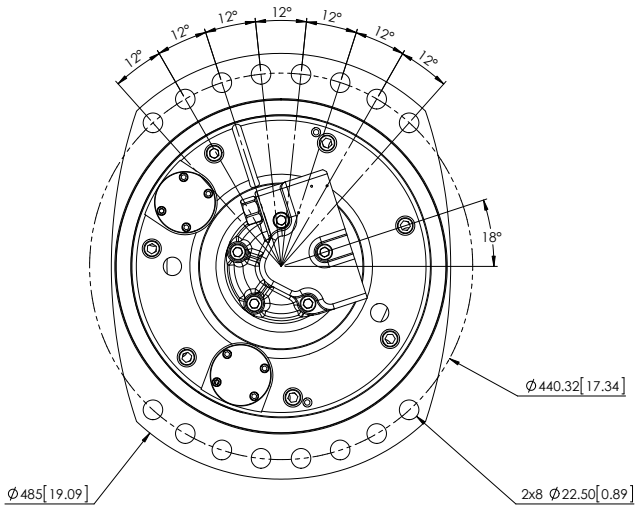


Motor: TD2.5 (Dual)/ TV2.5 (Variable)
Weight:
Oil:
Gearbox Case Pressure: 5 psi (2)

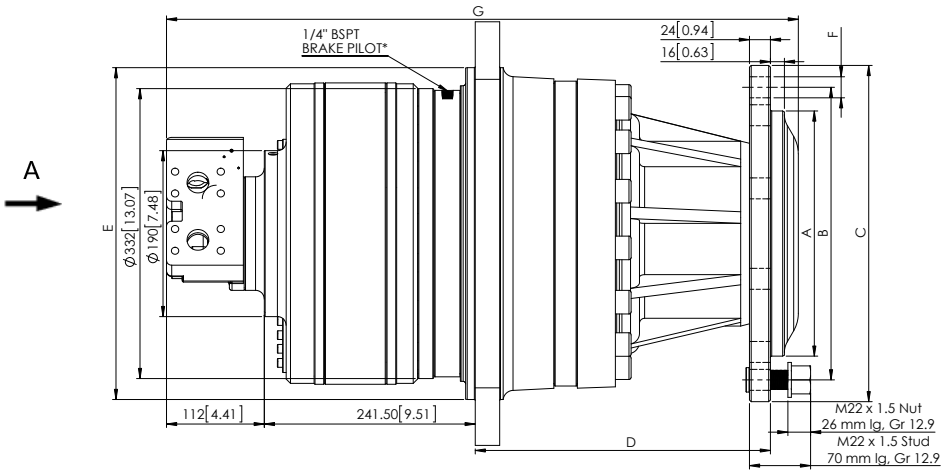
Nominal Displacement		**2500**		**3000**		**3500**		**4000**	
Displacement Setting		max	min	max	min	max	min	max	min
Displacement	in^3/rev	149.86	74.93	183.47	91.73	212.76	106.38	244.21	122.10
Torque/100 psi (Theor)	ft/lb	198.85	99.42	243.45	121.72	282.33	141.16	324.06	162.03
Motor Cont Pressure Rating (1)	psi	5000	5000	5000	5000	5000	5000	5000	5000
Motor Peak Pressure Rating	psi	5800	5800	5800	5800	5800	5800	5800	5800
Output Cont Torque Rating	ft/lb	9942	4971	12172	6086	14116	7058	16203	8101
Output Peak Torque Rating	ft/lb	11533	5766	14120	7060	16375	88187	18795	9397
Continuous Speed	rpm	100	140	95	130	90	120	70	110
Max. speed	rpm	130	150	120	140	100	130	90	120
Peak power	HP	160	160	160	160	160	160	160	160
Brake Release Pressure	psi	240	240	240	240	240	240	240	240
Max Brake Release Pressure	psi	600	600	600	600	600	600	600	600
Max Brake Holding Torque	ft-lb	11533	11533	14120	14120	16375	16375	18795	18795
Hi-Low Ratios (Dual Disp.)	1:	2, 3, 4							
Motor Pilot Pressure	psi	20 - 30 bar (290 - 430 psi)							
Disp. Ranges (Varaible Disp.)	% max	100-25, 90-15, 75-0							

1) Continuous or average working pressure should be chosen on the motor bearing lifetime choice, **2)** For both separate and common oil. Consult SAI for high pressure casing.

PSWD200/PSWV200 DIMENSIONS



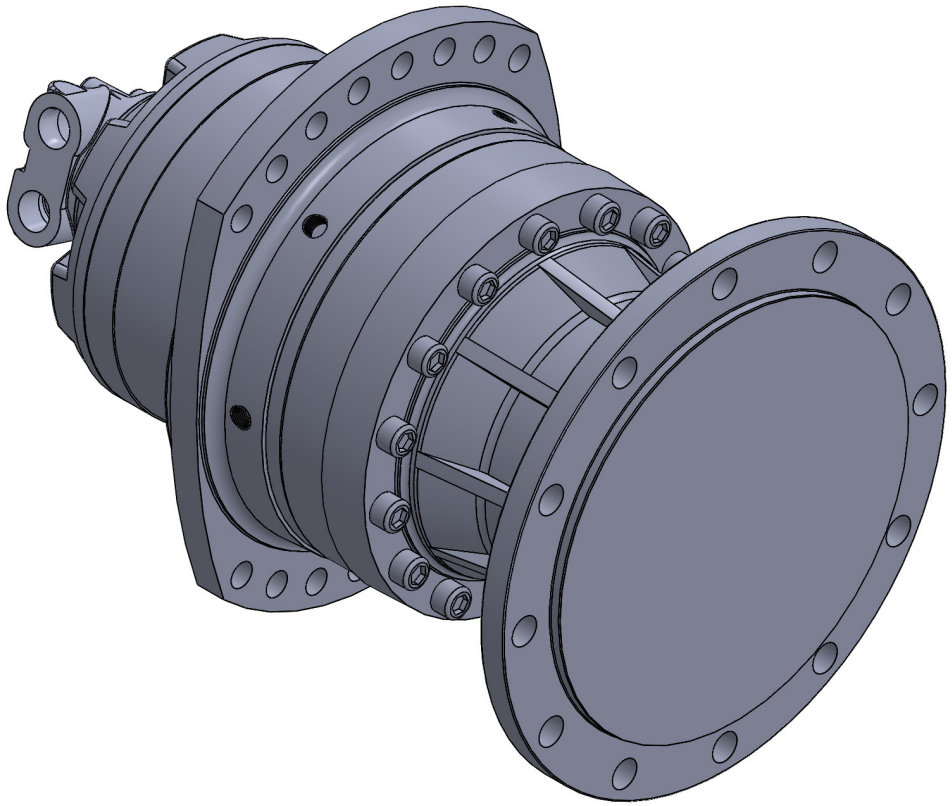
VIEW A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
With Brake	Ø 280.7 [Ø 11.05]	Ø 335 [Ø 13.19]	Ø 385 [Ø 15.16]	Ø 338 [Ø 13.31]	Ø 380 [Ø 14.94]	10 x Ø24 [10 x Ø .94]	723.5 [28.48]
Without Brake	Ø 280.7 [Ø 11.05]	Ø 335 [Ø 13.19]	Ø 385 [Ø 15.16]	Ø 338 [Ø 13.31]	Ø 380 [Ø 14.94]	10 x Ø 24 [10 x Ø .94]	687 [27.04]

*Brake Pilot only on motor models with internal brake

PSW260

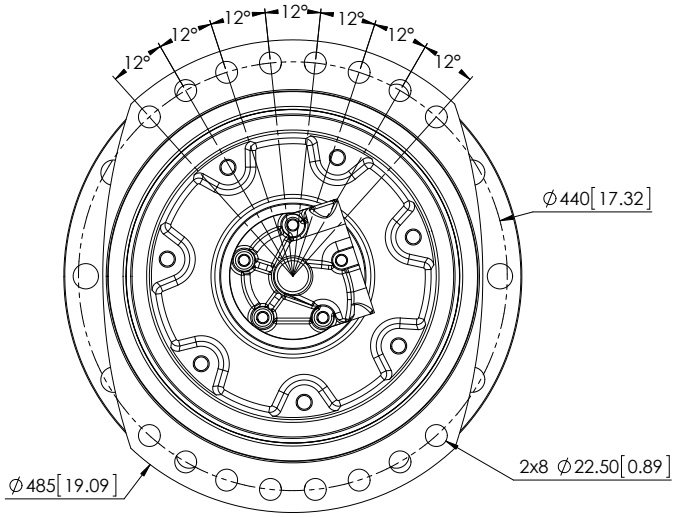


Motor: FS507
Weight:
Oil:
Gearbox Case Pressure: 5 psi [3]

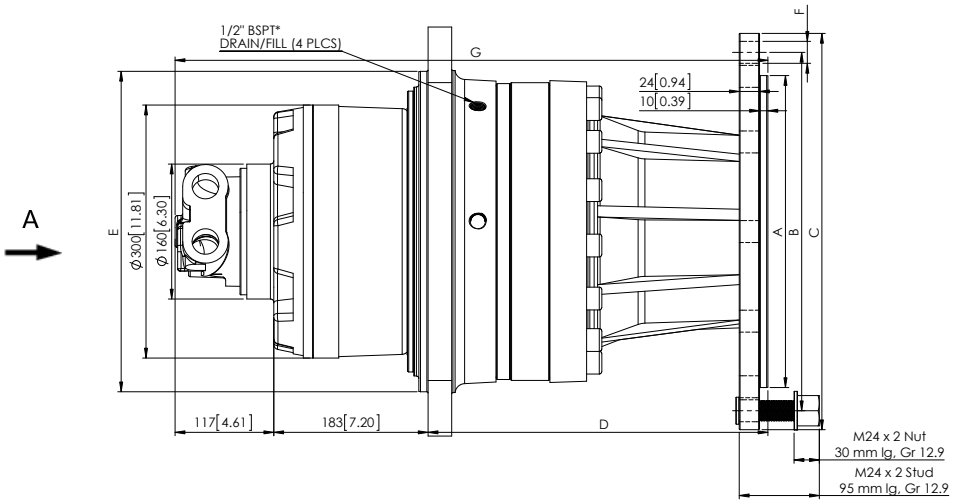
Nominal Displacement		3500	4100	4600	5000	5550	5900
Displacement	in^3/rev	213.57	249.75	281.33	302.13	340.34	359.57
Torque/100 psi (Theor)	ft/lb	283.40	331.41	373.32	400.92	451.62	477.14
Motor Cont Pressure Rating [1]	psi	4000	4000	4000	3600	3600	4000
Motor Peak Pressure Rating	psi	6000	5500	5500	6000	6000	6000
Output Cont Torque Rating	ft/lb	11336	13256	14933	14433	16258	19085
Output Peak Torque Rating	ft/lb	17004	18227	20532	23000	23000	23000
Continuous Speed[2]	rpm	80	70	65	60	50	45
Max. speed [2]	rpm	130	120	115	105	110	95
Peak power	HP	120	120	120	120	120	120
Brake Release Pressure	psi	240	240	240	240	240	240
Max Brake Release Pressure	psi	600	600	600	600	600	600
Max Brake Holding Torque	ft-lb	5000	5000	5000	5000	5000	5000

1) Continuous or average working pressure should be chosen on the motor bearing lifetime choice, **2)** Speed limitation with optional low speed distributors (eg. D31); see distributor pages section. **3)** For both separate and common oil. Consult SAI for high pressure casing.

PSW260 DIMENSIONS



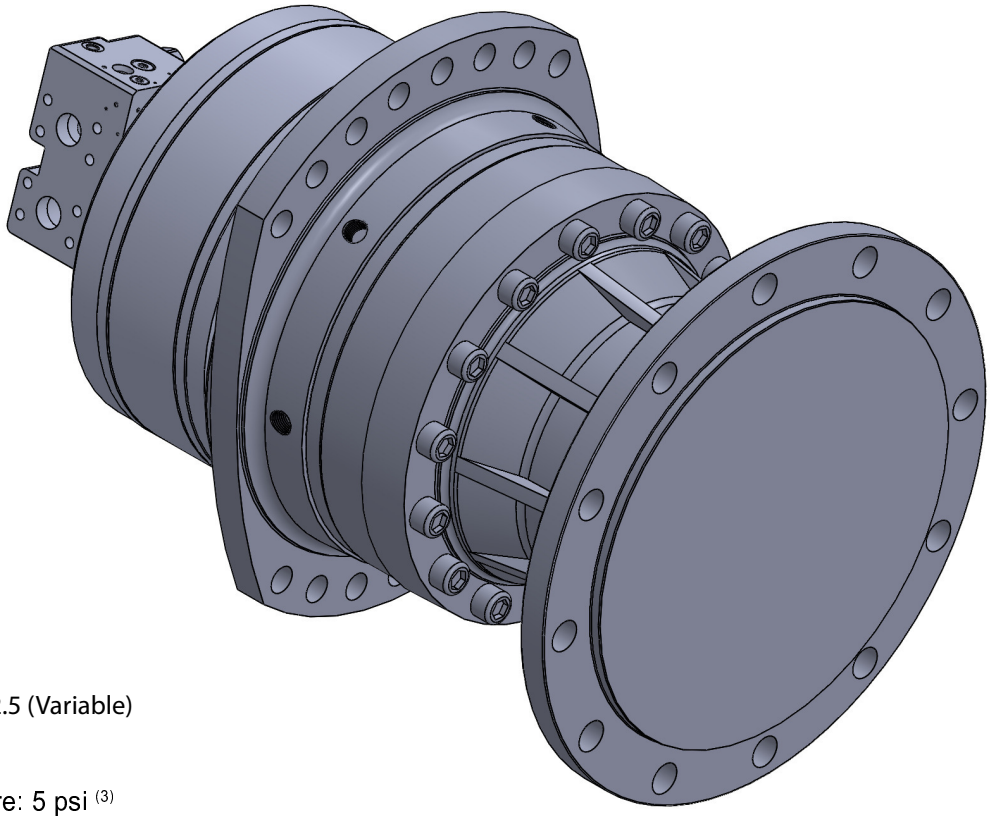
VIEW A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
With Brake	Ø 370 [Ø 14.57	Ø 425 [Ø 16.73]	Ø 472 [Ø 18.58]	Ø 393 [Ø 15.47]	Ø 380 [Ø 14.94]	12 x Ø26 [12xØ1.02]	703 [27.67]
Without Brake	Ø 370 [Ø 14.57	Ø 425 [Ø 16.73]	Ø 472 [Ø 18.58]	Ø 393 [Ø 15.47]	Ø 380 [Ø 14.94]	12 x Ø26 [12xØ1.02]	703 [27.67]

*Brake Pilot only on motor models with internal brake

PSWD260/PSWV260
DUAL/VARIABLE DISPLACEMENT MOTOR

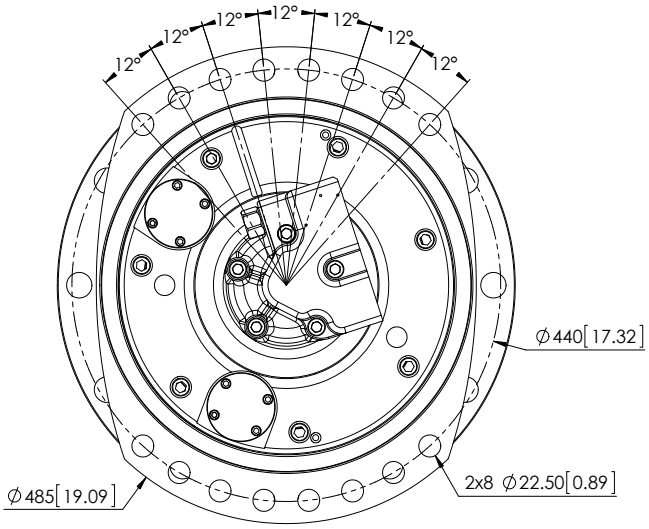


Motor: TD2.5 (Dual)/ TV2.5 (Variable)
Weight:
Oil:
Gearbox Case Pressure: 5 psi (3)

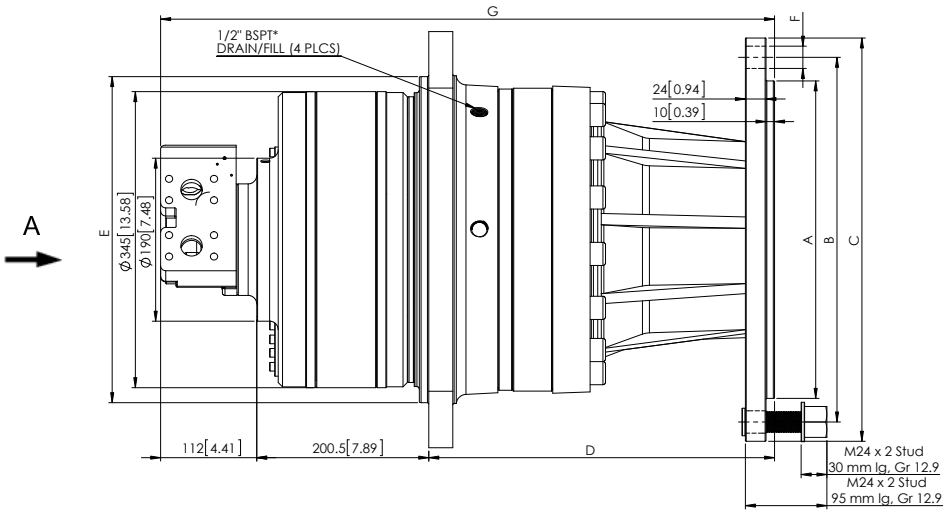
Nominal Displacement		**3500**		**4000**		**4500**		**4900**	
Displacement Setting		max	min	max	min	max	min	max	min
Displacement	in^3/rev	212.76	106.38	244.21	122.10	274.58	137.29	296.41	148.20
Torque/100 psi (Theor)	ft/lb	252.33	141.16	324.06	162.03	364.35	182.17	393.33	196.66
Motor Cont Pressure Rating (1)	psi	5000	5000	5000	5000	5000	5000	5000	5000
Motor Peak Pressure Rating	psi	5800	5800	5800	5800	5800	5800	5800	5800
Output Cont Torque Rating	ft/lb	14116	7058	16203	8101	21132	10566	22813	11406
Output Peak Torque Rating	ft/lb	16375	8187	18795	9397	21132	10566	22813	11406
Continuous Speed (2)	rpm	120	180	110	160	100	140	90	120
Max. speed (2)	rpm	150	200	110	180	120	160	100	140
Peak power	HP	160	160	160	160	160	160	160	160
Brake Release Pressure	psi	240	240	240	240	240	240	240	240
Max Brake Release Pressure	psi	600	600	600	600	600	600	600	600
Max Brake Holding Torque	ft-lb	16375	16375	18795	18795	21132	21132	22813	22813
Hi-Low Ratios (Dual Disp.)	1:	2, 3, 4							
Motor Pilot Pressure	psi	20 - 30 bar (290 - 430 psi)							
Disp. Ranges (Varaible Disp.)	% max	100-25, 90-15, 75-0							

1) Continuous or average working pressure should be chosen on the motor bearing lifetime choice, **2)** Speed limitation with optional low speed distributors (eg. D31); see distributor section. **3)** For both separate and common oil. Consult SAI for high pressure casing.

PSWD260/PSWV260 DIMENSIONS



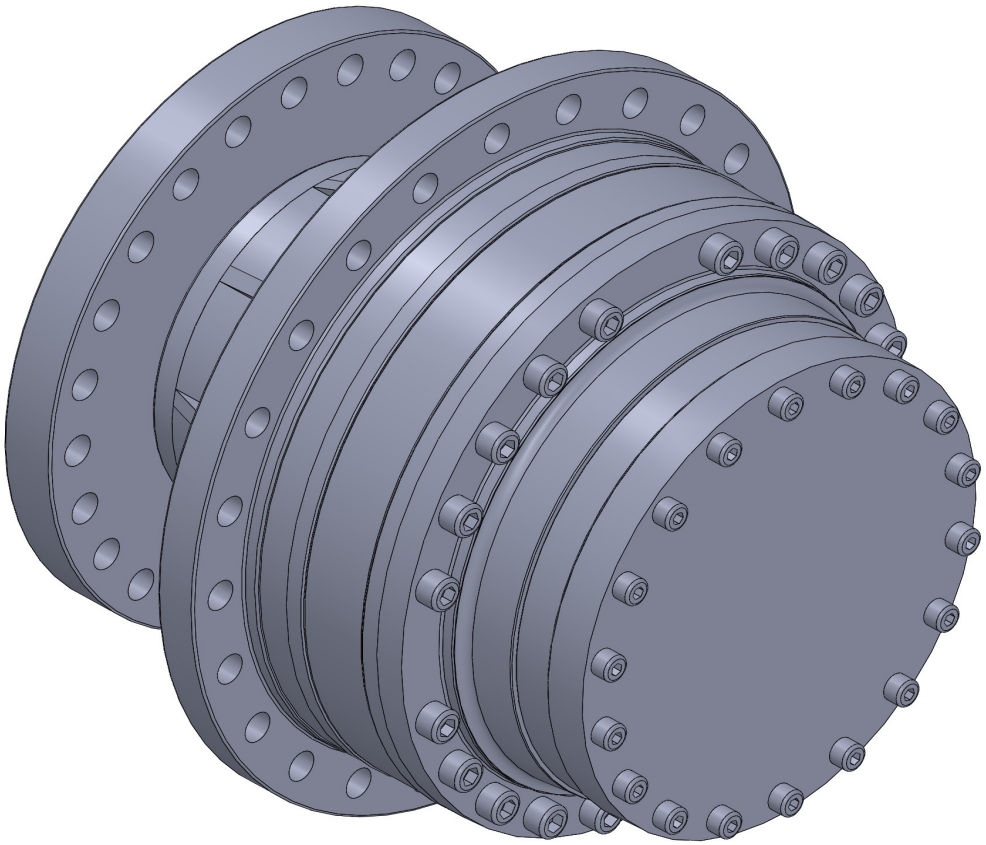
VIEW A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
With Brake	Ø 370 [Ø 14.57	Ø 425 [Ø 16.73]	Ø 472 [Ø 18.58]	Ø 393 [Ø 15.47]	Ø 380 [Ø 14.94]	12 x Ø26 [12xØ1.02]	715.5 [28.16]
Without Brake	Ø 370 [Ø 14.57	Ø 425 [Ø 16.73]	Ø 472 [Ø 18.58]	Ø 393 [Ø 15.47]	Ø 380 [Ø 14.94]	12 x Ø26 [12xØ1.02]	715.5 [28.16]

*Brake Pilot only on motor models with internal brake

PSW710/1100/1300

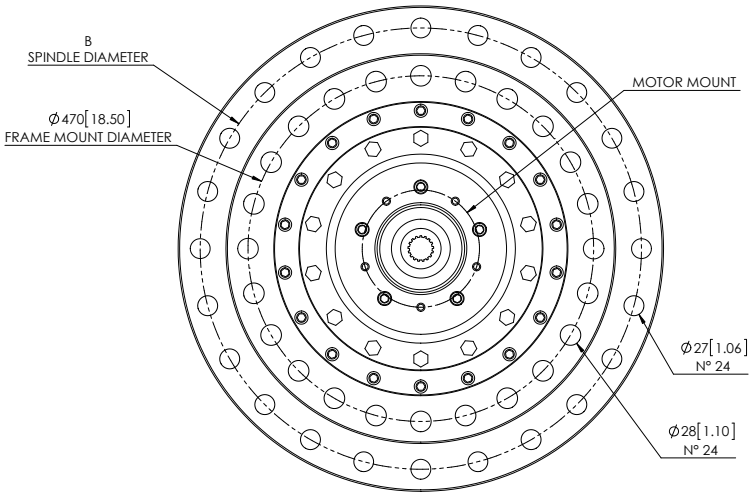


Weight:
Oil:
Gearbox Case Pressure: 5 psi [1]

Series		710	1100	1300
Available Gear Ratios	1:	21, 80, 95	21, 80, 90	21, 80, 90
		105, 130	105, 120	105, 133
Output Peak Torque Rating	ft/lb	100,000	140,000	158,000
Max Input speed	rpm	3000	3000	3000
Brake Release Pressure	psi	240	240	240
Max Brake Release Pressure	psi	600	600	600
Max Holding Torque	ft-lb		Full Gearbox Torque	
Available Motors [Disp. Range]	in^3/rev		FS15 [75 - 250]	
			FS30 [150 - 500]	
			FS507 [200 - 650]	
			TD/TV1.5 [40 - 400]	
			TD/TV2.5 [270 - 800]	
			TD/TV3.5 [450 -1200]	
			Axial/Bent Axis Motors [2]	

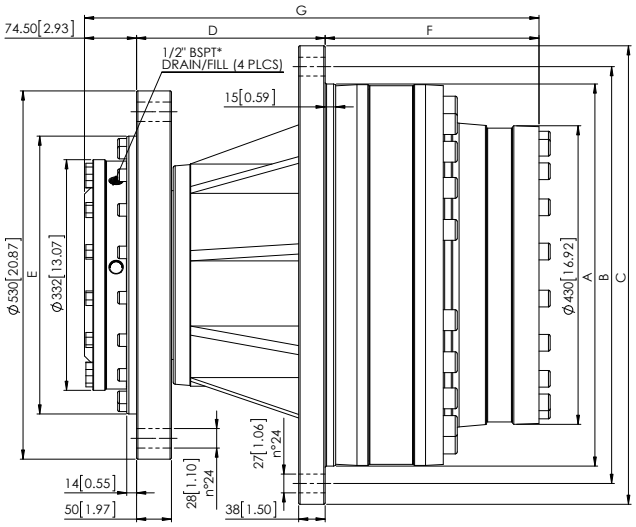
1) For both separate and common oil. Consult SAI for high pressure casing. **2)** Please Contact SAI for more information.

PSW710/1100/1300 DIMENSIONS



VIEW A

A



Unit Type	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]
PSW710	Ø550 [21.65]	Ø600 [23.62]	Ø660 [25.98]	270 [10.63]	400 [15.75]	Ø305 [12.00]	650.50 [25.61]
PSW1100	Ø550 [21.65]	Ø600 [23.62]	Ø660 [25.98]	270 [10.63]	400 [15.75]	Ø436 [17.16]	781.5 [30.76]
PSW1300	Ø550 [21.65]	Ø600 [23.62]	Ø660 [25.98]	270 [10.63]	400 [15.75]	Ø436 [17.16]	781.5 [30.76]

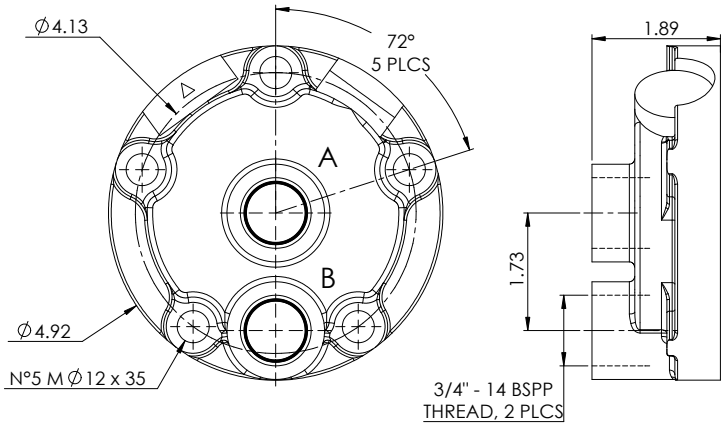
*Brake Pilot only on motor models with internal brake.

Distributors

D30A

Low flow rate distributor with axial port connections.

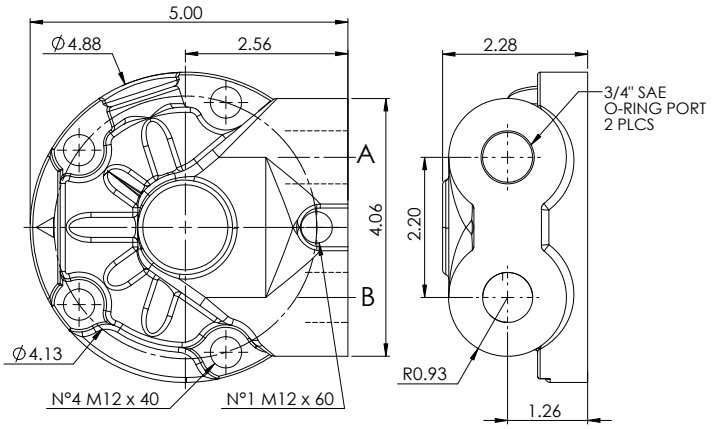
Max Continuous Pressure: 2000 psi.
Max Peak Pressure 4000 psi.
Weight: 5.5 lbs



D36A

Low flow rate distributor with -12 SAE O-ring ports

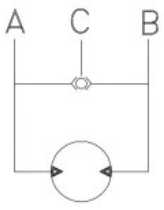
Max Continuous Pressure: 2000 psi.
Max Peak Pressure 4000 psi.
Weight: 8 lbs

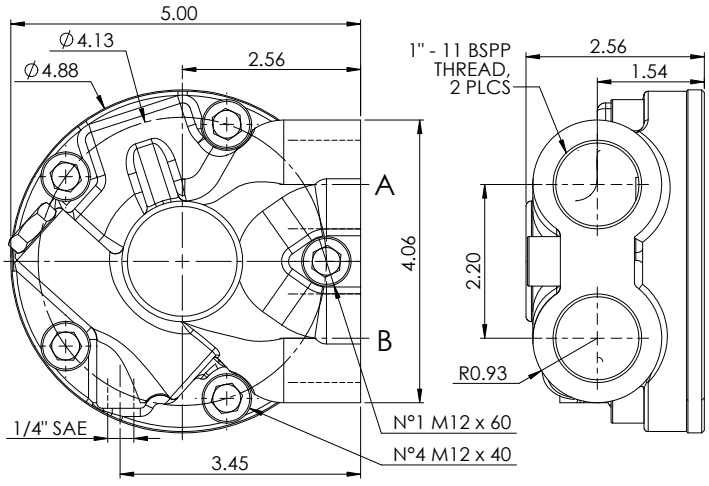


D313A

Low flow rate distributor with shuttle valve for high pressure pilot.

Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7100 psi.
Weight: 9.9 lbs

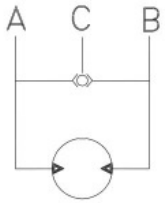


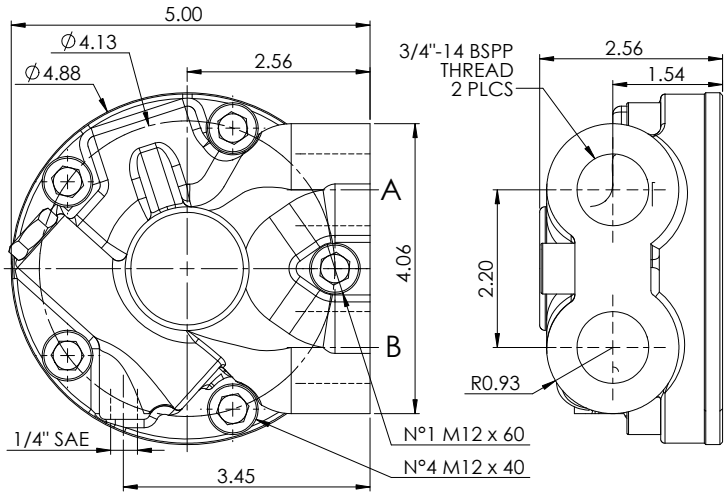


D315A

Low flow rate distributor with shuttle valve for high pressure pilot and 3/4" BSPP ports.

Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7100 psi.
Weight: 9.9 lbs

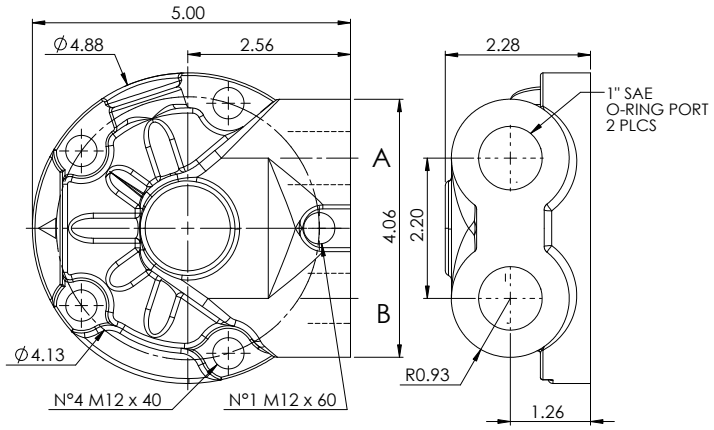




D316A

Low flow rate distributor with -16 SAE O-ring ports

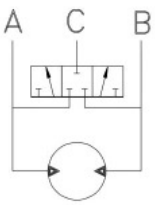
Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7000 psi.
Weight: 8 lbs

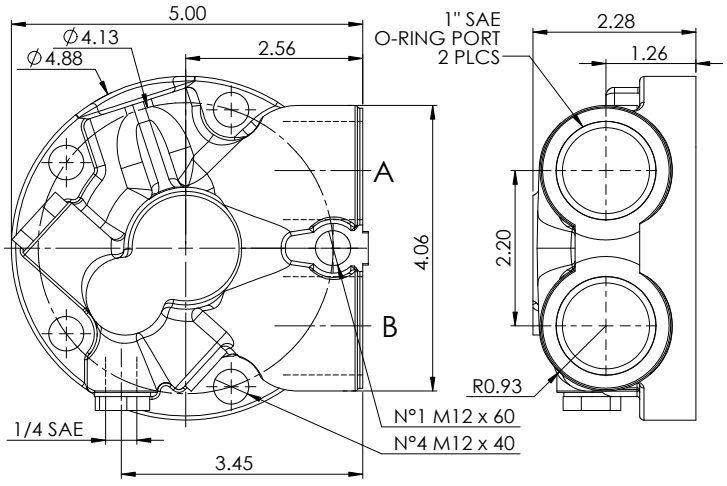


D317A

Low flow rate distributor with purge valve (5.3 gal/ min at 285 psi) and -16 SAE O-ring ports.

Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7100 psi.
Weight: 9.9 lbs

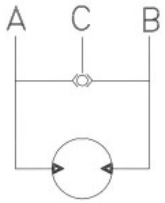


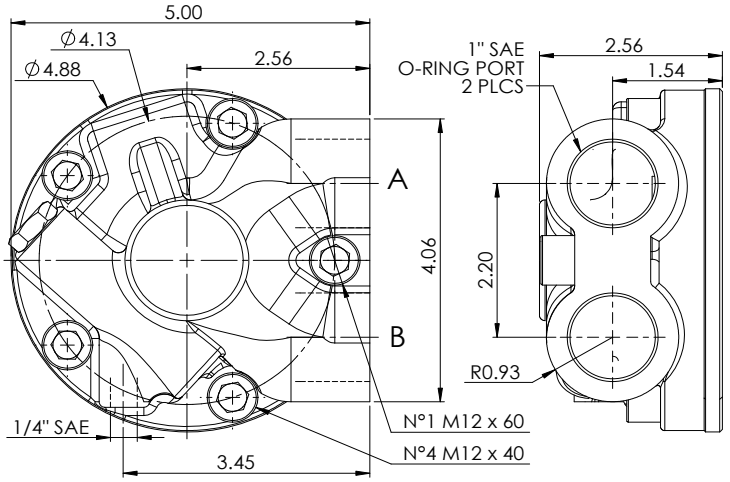


D327A

Low flow rate distributor with shuttle valve for high pressure pilot and -16 SAE O-ring ports.

Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7100 psi.
Weight: 9.9 lbs

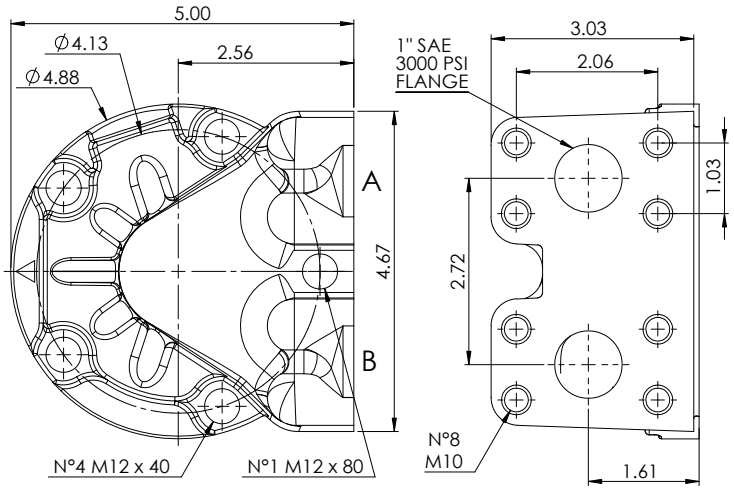




D37A

Low flow rate distributor with -16 SAE 3000 psi flanges

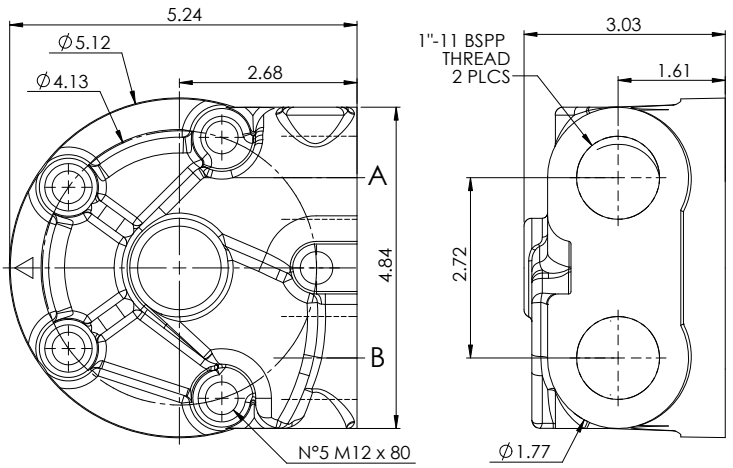
Max Continuous Pressure: 2000 psi.
Max Peak Pressure 4000 psi.
Weight: 11 lbs



D40A

High flow rate distributor for applications that require high flow rate and back pressure. With 1" BSPP ports.

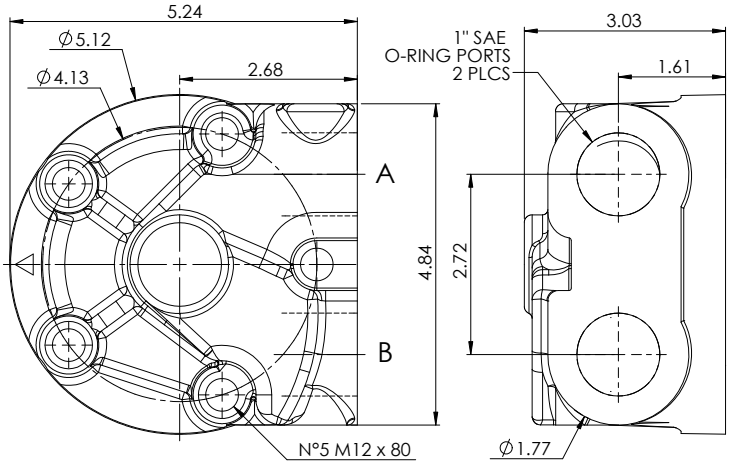
Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7100 psi.
Weight: 11 lbs



D416A

High flow rate distributor for applications that require high flow rate and back pressure. With -16 SAE O-ring ports.

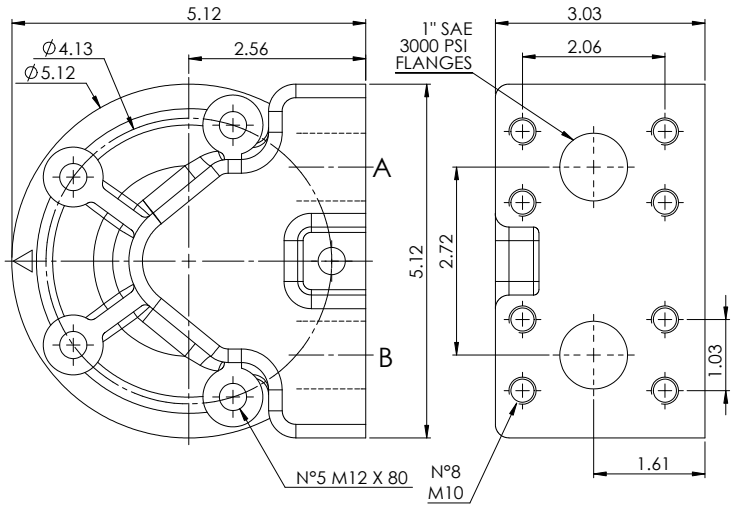
Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7100 psi.
Weight: 11 lbs



D47A

High flow rate distributor with -16 SAE 3000 psi flanges

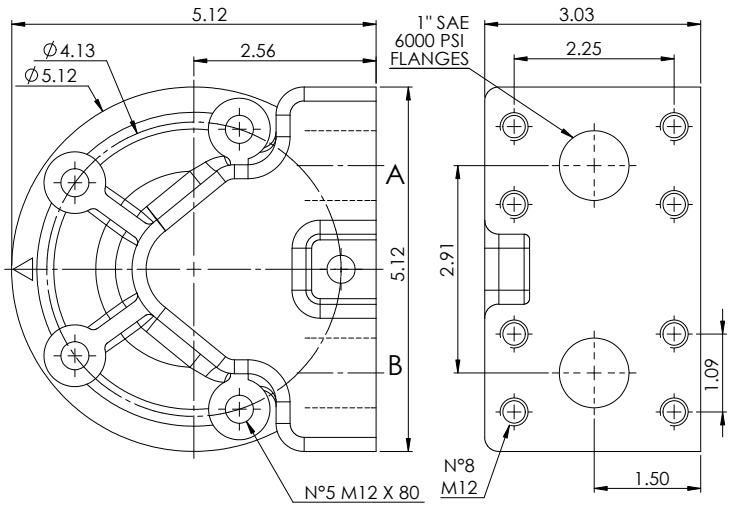
Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7100 psi.
Weight: 13 lbs



D47RA

High flow rate distributor with -16 SAE 6000 psi flanges

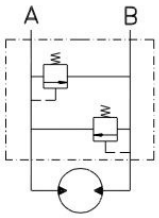
Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7100 psi.
Weight: 13 lbs

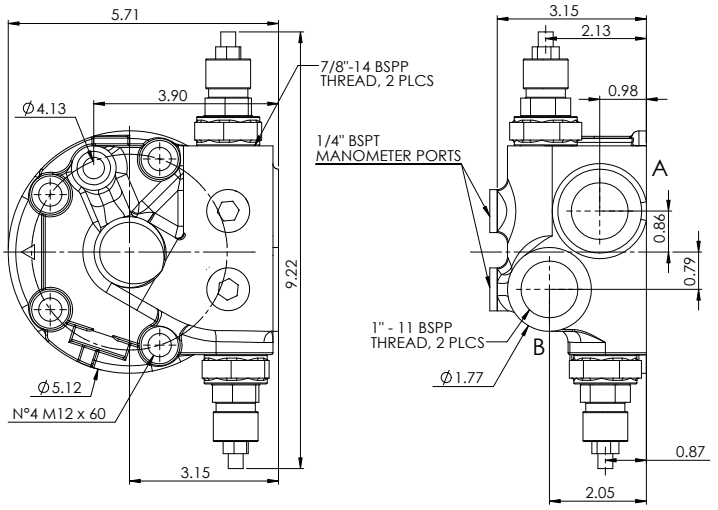


D48A

High flow rate distributor with direct acting relief valves. Variable relief setting, max 6000 psi. 50 gpm max.

Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7100 psi.
Weight: 13 lbs

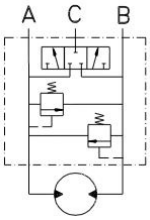


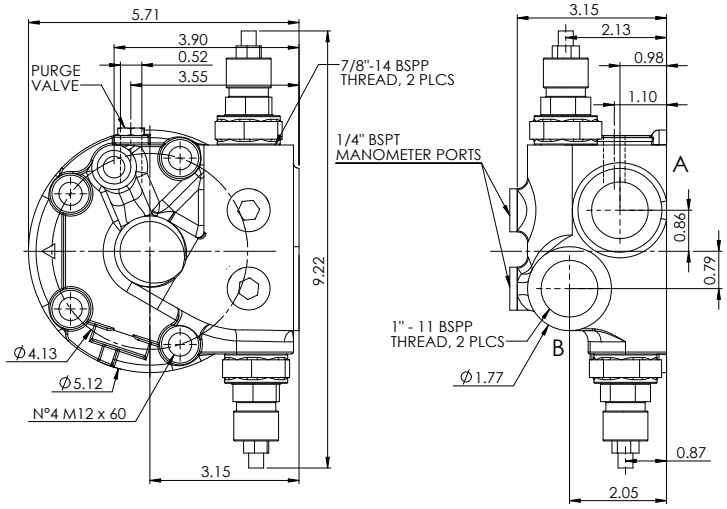


D481A

High flow rate distributor w/ direct acting relief valves and purge valve. Variable relief setting, 6000 psi max, 50 gpm max. Purge valve 5.3 gal/min at 285 psi.

Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7100 psi.
Weight: 13 lbs

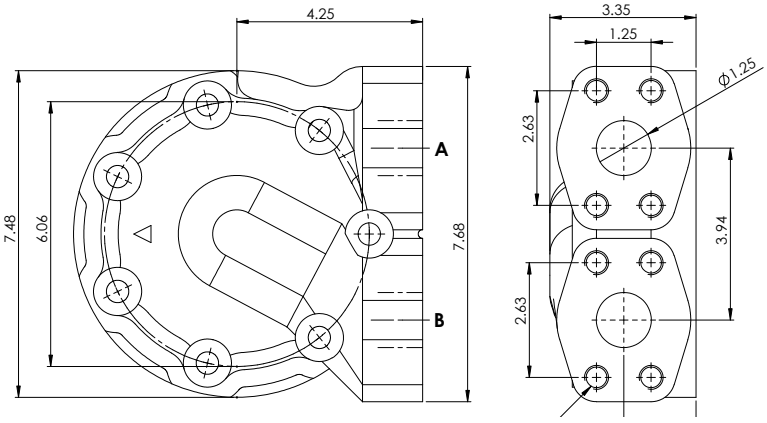


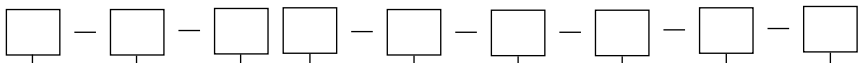


D707A

High flow rate distributor for large 7-piston motors. 1-1/4" SAE 6000 psi flanges.

Max Continuous Pressure: 3550 psi.
Max Peak Pressure 7100 psi.
Weight: 32 lbs





1. Series Code

2. Nominal Dispalcement

3. Spindle

4. Reduction Ratio

5. Motor Series

6. Distributor Code

See Distributor Section

7. Brake Option

BI - Brake Option
- - No Brake

8. Tachometer

ESS - Electronic Speed Sensor

9. Common or shared oil

E - Common Oil
O - Separate Oil

Application Worksheet

Customer information

Customer _____ Contact _____

Phone Number _____ Fax _____ Date_____

Address _____

City _____ State _____ Zip _____

Application Data

Type of Vehicle _____

Function _____ Estimated Annual Production _____

Engine Horsepower _____ Engine RPM _____

Hydraulic Motor Displacement _____ Hydraulic Motor RPM _____

Operating Pressure _____ Max Pressure _____

Gross Vehicle Weight _____ # of Drive Wheels _____

Weight Over Each Wheel: Front _____ Back _____

Rolling Radius: Front _____ Back _____

Requirements

Maximum Tractive Effort _____ Max Tractive Effort Per Wheel _____

Working Vehicle Speed _____ Max Vehicle Speed _____

Maximum Grade (%) _____ Max Vehicle Acceleration _____

Duty Cycle _____ Est. Hours/year _____

B-10 Bearing Design Life _____

Typical Operating Conditions:

Torque Level (%)_____ Time_____

Torque Level (%)_____ Time_____

Torque Level (%)_____ Time_____

Torque Level (%)_____ Time_____

Common Formulae

$$Torque\ [ft\text{-}lb] = \frac{displacement\ \left[\frac{in^3}{rev}\right] \times pressure\ [psi]}{75.36}$$

$$Torque\ [ft\text{-}lb] = specific\ torque\ \left[\frac{ft-lb}{100\ psi}\right] \times [pressure/100]$$

$$Power\ [horsepower] = \frac{torque\ [ft-lb] \times rpm}{5252}$$

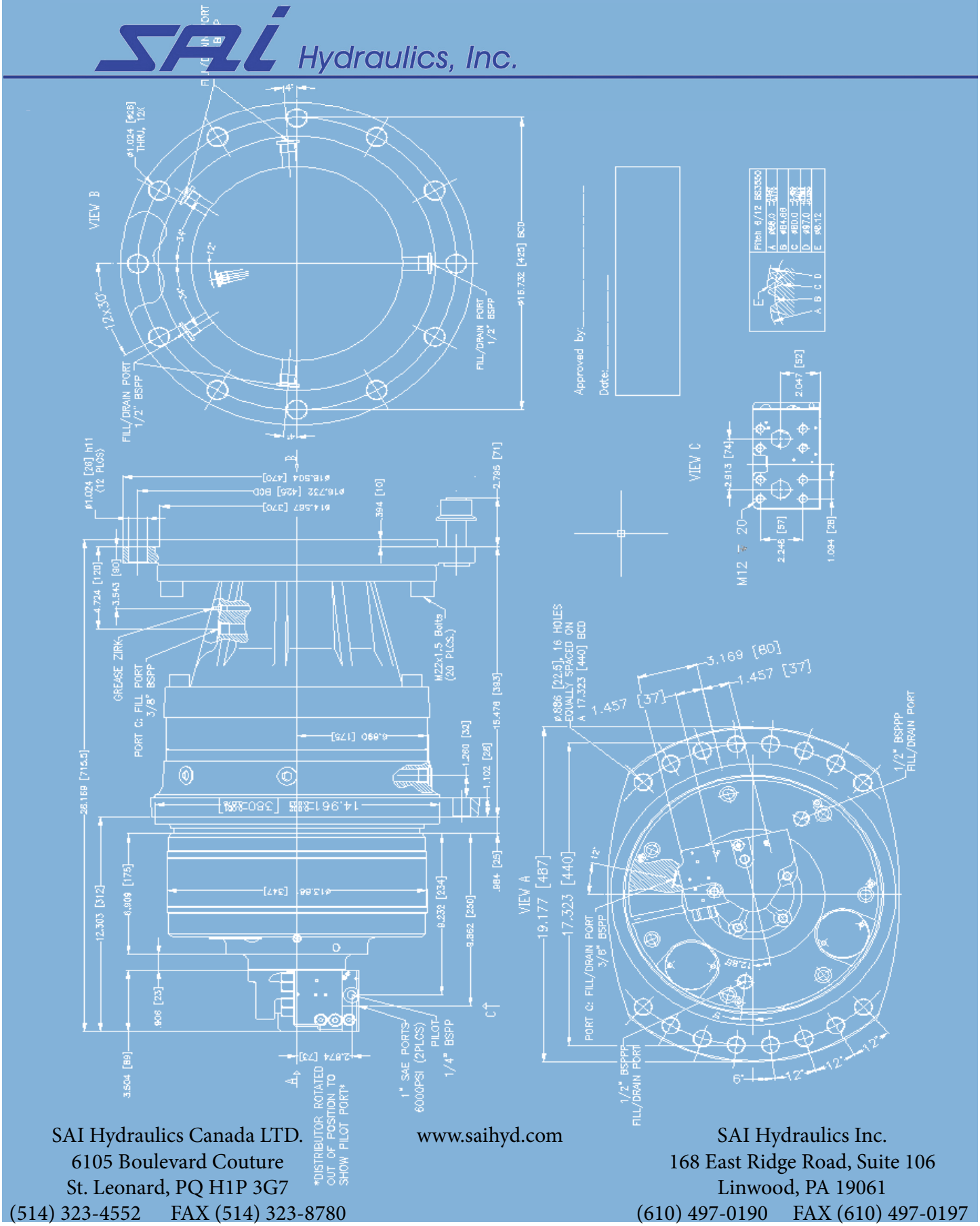
$$Displacement\ [in^3/rev] = \frac{75.36 \times torque\ [ft-lb]}{psi \times gear\ ratio}$$

$$Required\ motor\ flow\ rate\ [gal/min] = \frac{rpm \times motor\ displacement [\frac{in^3}{rev}]}{231}$$

$$Motor\ efficiency = \left(\frac{output\ horsepower}{input\ horsepower}\right) \times 100$$

$$Output\ shaft\ speed\ (rpm) = \frac{motor\ flow\ rate\ \left[\frac{gal}{min}\right] \times 231}{motor\ displacement\ \left[\frac{in^3}{rev}\right] \times gearbox\ ratio}$$

SAI Hydraulics, Inc.



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