PUMPS & MOTORS

Prince Manufacturing Corporation
North Sioux City, South Dakota

INDEX

The Hand Pumps, PM-HP-30B, PM-HP-20B, PM-HP-15B, PM-HP-10B and PM-HP-5B, Are In The Cylinder Section On Page C20.

PLEASE NOTE: Parts Manuals For All Standard Prince Pumps Are Available On The Prince Web Site At www.princehyd.com

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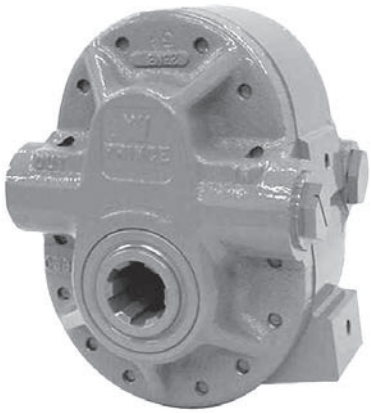
PRINCE PTO HYDRAULIC PUMPS
Up to 40 gallons per minute and up to 2250 psi

UNIQUE FEATURES:
- Self-adjusting wear plates on both sides of the gears.
- Proper size hose adapters are provided for inlet ports.
- Two outlet ports are provided with a NPT adapter for one port and a plug to seal unused port.
- Center section available in high strength aluminum alloy for std. duty cycle or in high strength cast iron for high duty cycle use.

IDEAL FOR USE WITH.....
- Tractor front end loaders
- Pull-type cotton pickers
- Cotton balers (module builders)



- Tractors imported without integral hydraulics
- Landscape equipment

PLUS STANDARD FEATURES:
- Reliable
- Efficient
- Roller Bearings
- Run fitted body
- Internally splined drive shaft.
- High-tensile cast iron end plates.
- Slips onto tractor PTO shaft (no gear box required).
- Two-bolt installation on farm tractors of all sizes.

- Rotary mowers
- Street Sweepers
- Back hoes

MODEL FEATURES

ALUMINUM CENTER HOUSING
- Standard duty cycle
- Reduced weight
- Smaller housing

CAST IRON CENTER HOUSING
- High duty cycle
- Use in circuits with motors
- Better at higher temperatures
- Increased wear resistance

REAR PORTED
- Higher flows
- Simplified hose connections
- Higher flows at reduced engine rpm as compared to other PTO pumps

Prince PTO pumps are specifically designed for PTO drive operation on all sizes of farm tractors. No additional gear box is required. Pumps are mounted by sliding the internally splined pump onto the PTO splined shaft and restraining rotation with a torque arm. See page P6 for the PTO pump torque arm kit.

- **SELF ADJUSTING WEAR PLATES**
  Prince PTO pumps have self-adjusting wear plates that seal around the two unequal size gears. These plates, activated by internal fluid pressure, offset wear or expansion.

- **FILTRATION**
  The pump must be used in a clean system with clean oil. The fluid cleanliness should meet the ISO 4406 17/14 level. As a minimum, 10 micron filtration is recommended.

- **HYDRAULIC FLUID**
  A good quality mineral base hydraulic fluid with a viscosity in the 70-250 SUS range at operating temperature is recommended.

- **OPERATING TEMPERATURE**
  Oil operating temperature should not exceed 180°F. If it does, the reservoir may be too small or a heat exchanger may be needed.

- **SHAFT SPEEDS**
  Prince PTO pumps are designed to operate at up to 110% of standard PTO shaft speeds. Standard speeds are 540 rpm for the 6 tooth shaft and 1000 rpm for the 21 tooth shaft.

- **CLOSE RUNNING CLEARANCE FOR HIGH FLOW RATE**
  Another feature that contributes to the excellent and long-lived efficiency of the PTO-Series pump is the minimum clearance between the gears and the center housing. Each pump is assembled with zero clearance between the housing and the tips of the gear teeth, then test run until the teeth establish a proper wear path in the housing. The result is a much tighter clearance than found in traditional pumps.

- **PRESSURE RATING**
  Pumps are designed for 2250 PSI max. relief valve setting. A relief valve, external to the pump, must be provided in the system.

- **PORTS**
  All pumps are provided with an inlet port adapter (SAE O-ring boss to hose barb) and outlet port adapter (SAE O-ring boss to female pipe thread) sized appropriately for the ports and required line sizes. A steel plug is provided for the second outlet port.

- **RESERVOIR**
  As a guideline, a reservoir size in gallons should equal the pump output in gallons per minute. A larger reservoir and/or an oil cooler may be needed for high duty cycle applications.

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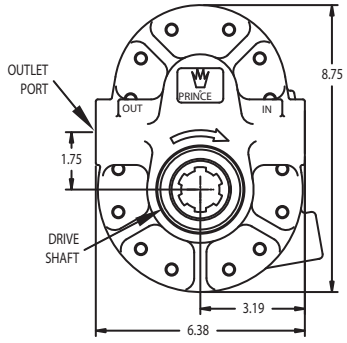
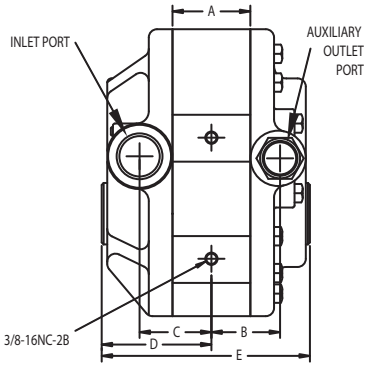
ALUMINUM CENTER HOUSING PTO PUMPS

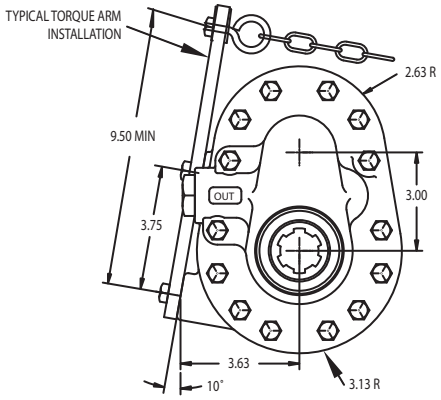
DIMENSIONAL DATA

PUMP MODEL	ACTUAL DISPLACEMENT	A	B	C	D	E	INLET PORTS	OUTLET PORTS [3]	RECOMMENDED HOSE SIZES	DRIVE SHAFT REQUIRED	SHIP WT. (LB)
HC-PTO-1A	9.9 CI/REV	2.37	2.09	2.19	3.35	6.35	#16 SAE [1]	#12 SAE	1 1/4" IN, 3/4 " OUT	1 3/8 DIA. 6 TOOTH	40
HC-PTO-9A	7.8 CI/REV	2.00	1.91	2.00	3.16	5.97	#16 SAE [1]	#12 SAE	1 1/4" IN, 3/4 " OUT	1 3/8 DIA. 6 TOOTH	38
HC-PTO-2A	5.7 CI/REV	1.62	1.72	1.81	2.97	5.60	#16 SAE [2]	#12 SAE	1" IN, 1/2 "OUT	1 3/8 DIA. 6 TOOTH	36
HC-PTO-3A	5.7 CI/REV	1.62	1.72	1.81	2.97	5.60	#16 SAE [1]	#12 SAE	1 1/4" IN, 3/4 " OUT	1 3/8 DIA. 21 TOOTH	36
HC-PTO-7A	3.6 CI/REV	1.26	1.54	1.63	2.78	5.23	#16 SAE [2]	#12 SAE	1" IN, 1/2 "OUT	1 3/8 DIA. 6 TOOTH	33
HC-PTO-8A	3.6 CI/REV	1.26	1.54	1.63	2.78	5.23	#16 SAE	#12 SAE	1 1/4" IN, 3/4" OUT	1 3/8 DIA. 21 TOOTH	33

1. Barbed adapter for 1 1/4" hose included. 270011013
2. Barbed adapter for 1 " hose included. 270011017
3. Female pipe adaptor for 3/4" NPT included. 500204011







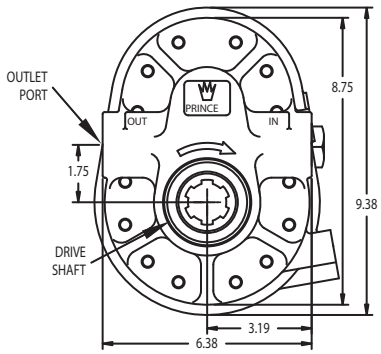
Seal kit No. for all models: PMCK-PTO-1A

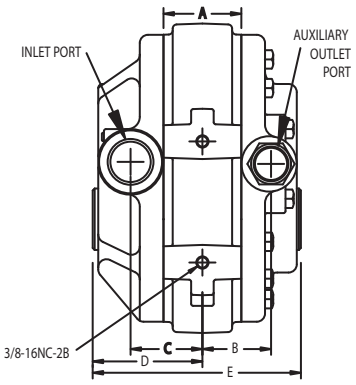
CAST IRON CENTER HOUSING PTO PUMPS

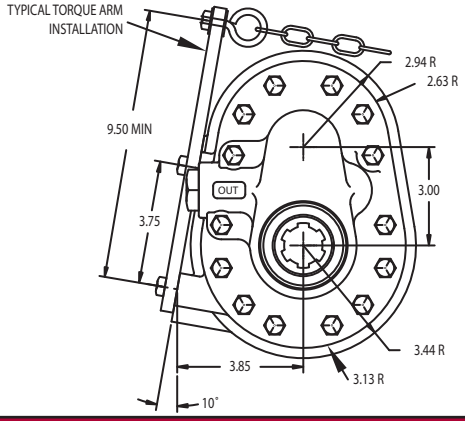
DIMENSIONAL DATA

PUMP MODEL	ACTUAL DISPLACEMENT	A	B	C	D	E	INLET PORTS	OUTLET PORTS [3]	RECOMMENDED HOSE SIZES	DRIVE SHAFT REQUIRED	SHIP WT. (LB)
HC-PTO-1AC	9.9 CI/REV	2.37	2.09	2.19	3.35	6.35	#16 SAE [1]	#12 SAE	1 1/4" IN, 3/4 " OUT	1 3/8 DIA. 6 TOOTH	54
HC-PTO-2AC	5.7 CI/REV	1.62	1.72	1.81	2.97	5.60	#16 SAE [2]	#12 SAE	1" IN, 1/2 "OUT	1 3/8 DIA. 6 TOOTH	44
HC-PTO-3AC	5.7 CI/REV	1.62	1.72	1.81	2.97	5.60	#16 SAE [1]	#12 SAE	1 1/4" IN, 3/4 " OUT	1 3/8 DIA. 21 TOOTH	44
HC-PTO-8AC	3.6 CI/REV	1.26	1.54	1.63	2.78	5.23	#16 SAE	#12 SAE	1 1/4" IN, 3/4 " OUT	1 3/8 DIA. 21 TOOTH	42

1. Barbed adapter for 1 1/4" hose included. 270011013
2. Barbed adapter for 1 " hose included. 270011017
3. Female pipe adaptor for 3/4" NPT included. 500204011







Seal kit No. for all models: PMCK-PTO-1A

PERFORMANCE DATA

		500 PSI		1000 PSI		1500 PSI		2000 PSI	
PUMP MODEL	RPM	INPUT HP	GPM OUTPUT	INPUT HP	GPM OUTPUT	INPUT HP	GPM OUTPUT	INPUT HP	GPM OUTPUT
HC-PTO-1A & HC-PTO-1AC	540	8.4	21.4	16.1	21.0	23.8	21.0	32.1	21.0
HC-PTO-9A	540	7.1	17.2	13.6	17.0	20.4	16.9	27.4	17.1
HC-PTO-2A & HC-PTO-2AC	540	4.9	12.2	9.3	11.9	13.8	11.6	18.1	11.4
HC-PTO-3A & HC-PTO-3AC	1000	9.3	23.4	17.4	23.0	25.9	22.6	34.3	22.4
HC-PTO-7A	540	2.9	7.6	5.9	7.2	8.8	7.2	11.9	7.1
HC-PTO-8A & HC-PTO-8AC	1000	5.5	14.4	11.0	13.8	16.5	13.5	22.6	13.5

NOTE: Performance values are average values. Individual pump performance may vary. Performance based on 140 SUS oil at 120° F.

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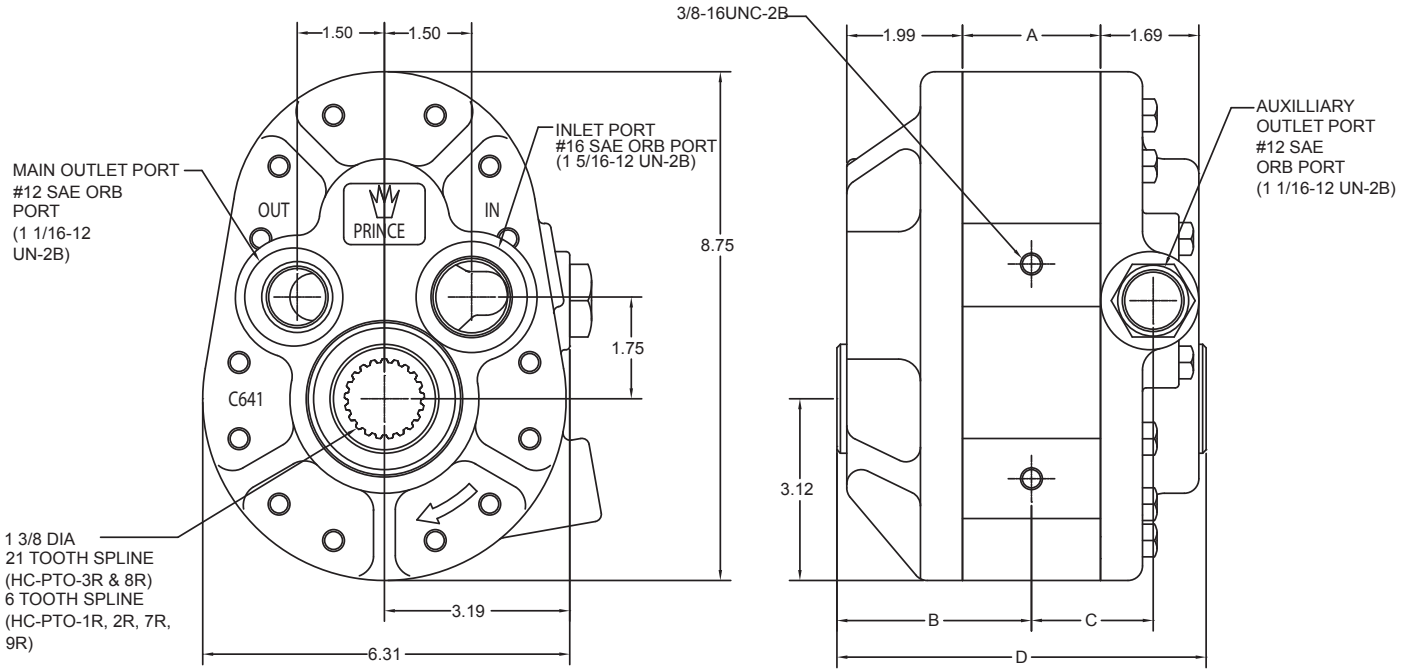
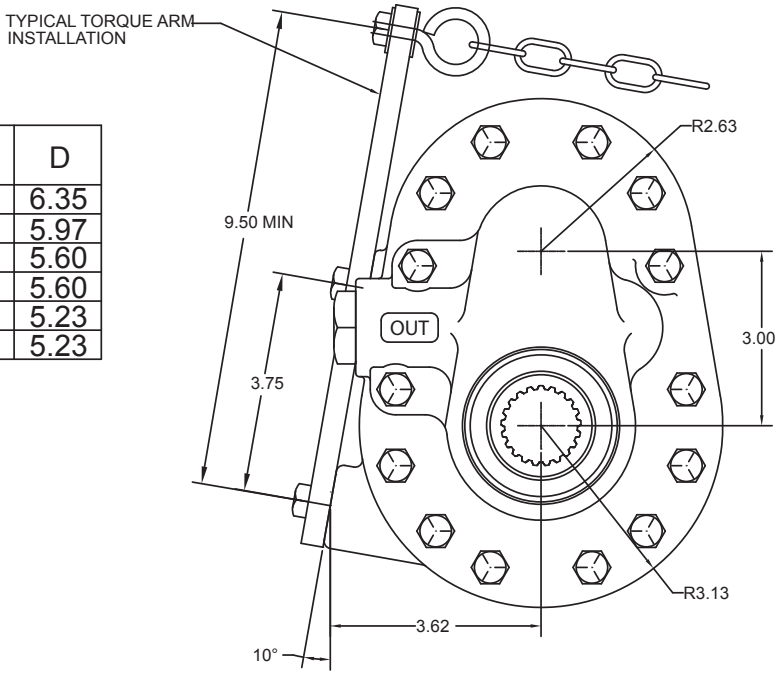
CATP 4-10-11-01

SEE PAGE 25 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

ALUMINUM CENTER HOUSING REAR PORT PTO PUMP



MODEL NUMBER	A	B	C	D
HC-PTO-1R	2.37	3.35	2.09	6.35
HC-PTO-9R	2.00	3.16	1.91	5.97
HC-PTO-2R	1.62	2.97	1.72	5.60
HC-PTO-3R	1.62	2.97	1.72	5.60
HC-PTO-7R	1.26	2.78	1.54	5.23
HC-PTO-8R	1.26	2.78	1.54	5.23



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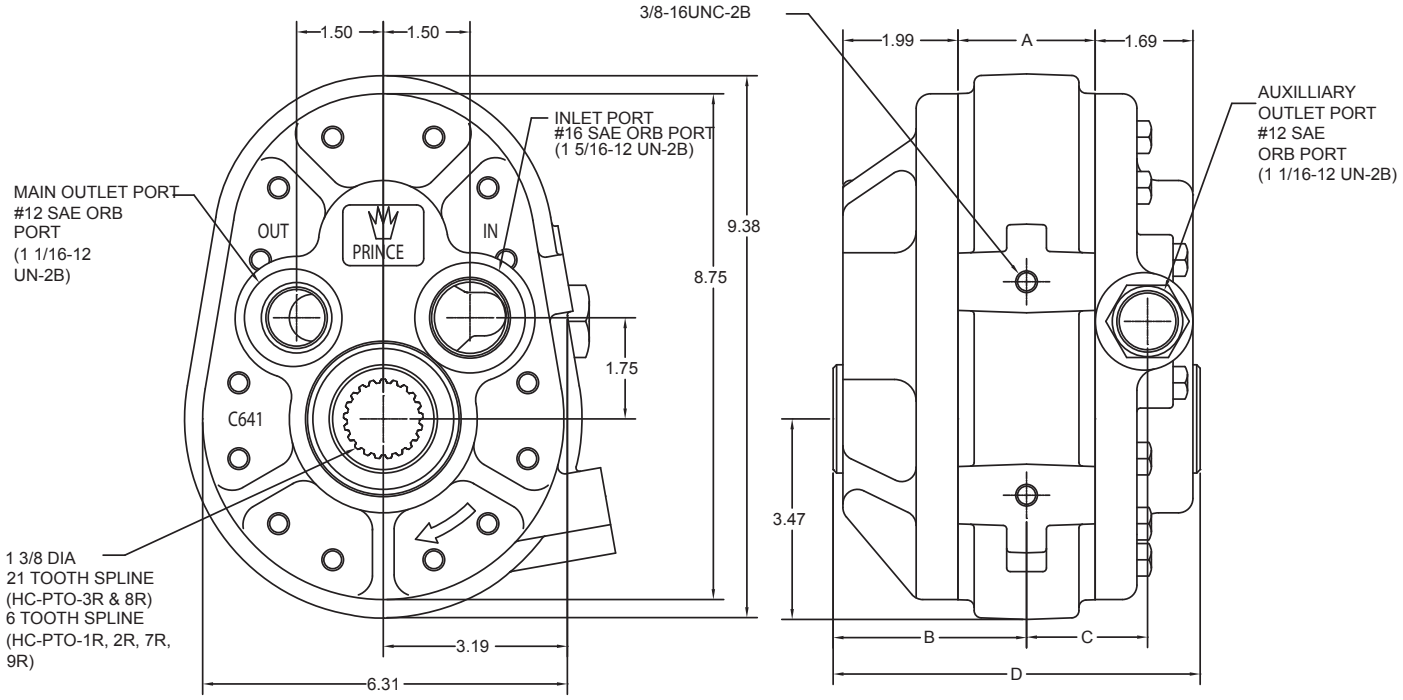
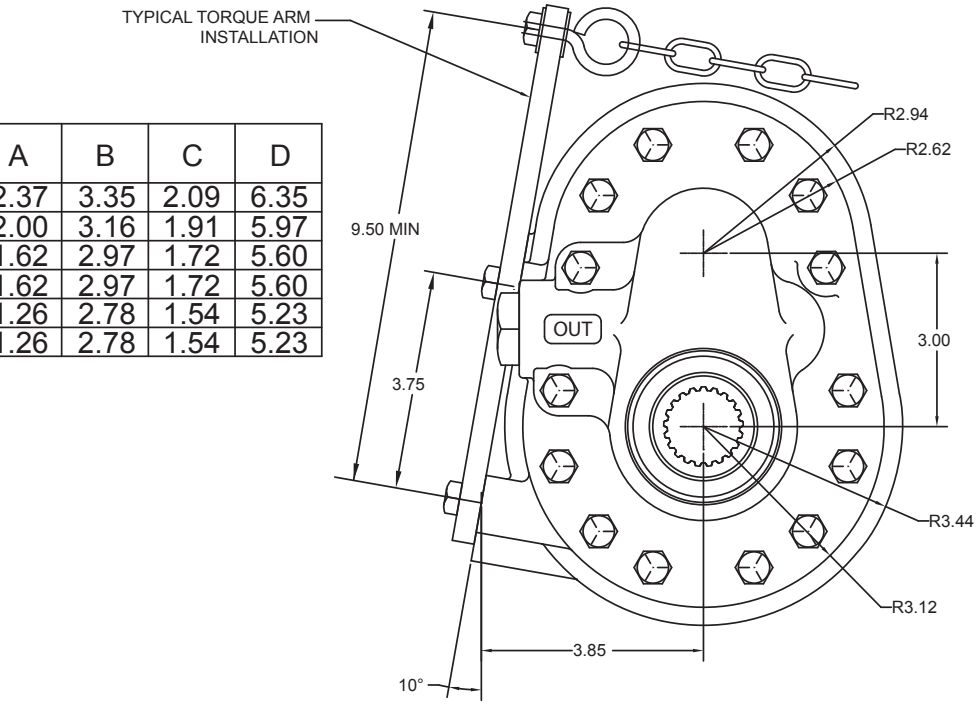
CAST IRON CENTER HOUSING REAR PORT PTO PUMP





MODEL NUMBER	A	B	C	D
HC-PTO-1RC	2.37	3.35	2.09	6.35
HC-PTO-9RC	2.00	3.16	1.91	5.97
HC-PTO-2RC	1.62	2.97	1.72	5.60
HC-PTO-3RC	1.62	2.97	1.72	5.60
HC-PTO-7RC	1.26	2.78	1.54	5.23
HC-PTO-8RC	1.26	2.78	1.54	5.23

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SEE PAGE 25 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

REAR PORTED PTO PUMPS

PERFORMANCE DATA

PUMP MODEL	RPM	500 PSI HP INPUT	500 PSI GPM OUTPUT	1000 PSI HP INPUT	1000 PSI GPM OUTPUT	1500 PSI HP INPUT	1500 PSI GPM OUTPUT	2000 PSI HP INPUT	2000 PSI GPM OUTPUT
HC-P-K11 OR HC-P-K11C	1000	15.5	40.7	29.4	40.1	43.4	40.0	58.8	40.0
	540	8.4	21.4	16.1	21.0	23.8	21.0	32.1	21.0

NOTE: Performance values are average values. Individual pump performance may vary. Performance based on 140 SUS oil at 120° F.

SPECIFICATIONS

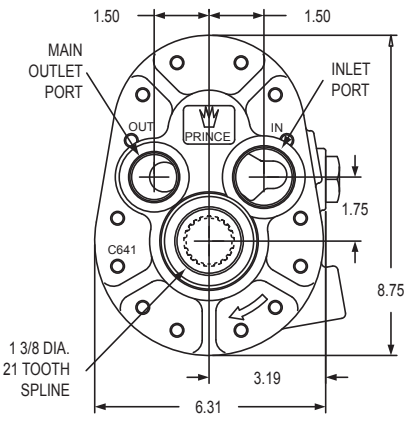
PUMP MODEL	ACTUAL DISP.	INLET PORT	MAIN OUTLET PORT	AUXILIARY OUTLET PORT	INLET ADAPTER	OUTLET ADAPTER	SHIP WT. (LB)
HC-P-K11 OR HC-P-K11C	9.9 CI/REV	#20 SAE O-RING (1 5/8-12UN-2B)	#16 SAE O-RING (1 5/16-12UN-2B)	#12 SAE O-RING (1 1/16-12UN-2B)	#20 SAE TO 2" HOSE BARB	#16 SAE TO 1" FEMALE PIPE	40 OR 54

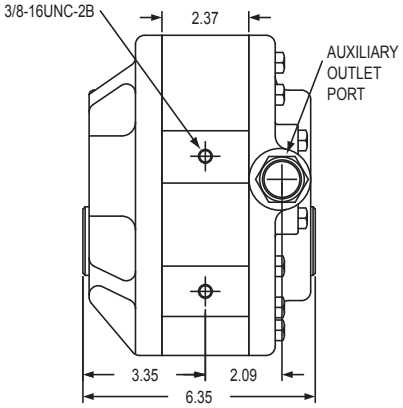
SPECIAL NOTE: Recommended hose sizes for the HC-P-K11 and HC-P-K11C are 2" for the inlet line and 1" for the outlet line.

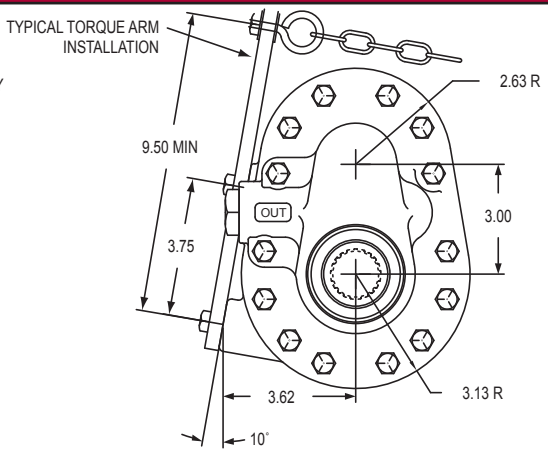
Seal kit No. for the HC-P-K11 and HC-P-K11C is: PMCK-PTO-1A.
HC-P-K11 and HC-P-K11C pumps available with 1 3/8 diameter 21 tooth spline drive only.

HC-P-K26 same as HC-P-K11 except 1 3/8"- dia. 6 tooth spline. HC-P-K26C same as HCP-K11C except 1 3/8" dia. 6 tooth spline. For use at 540 RPM.

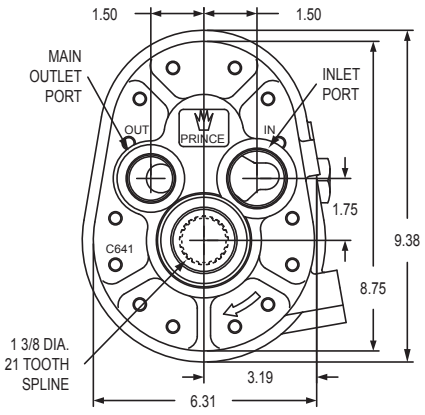
ALUMINUM CENTER HOUSING (HC-P-K11)

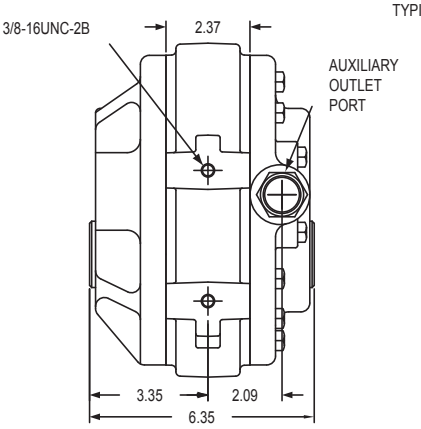


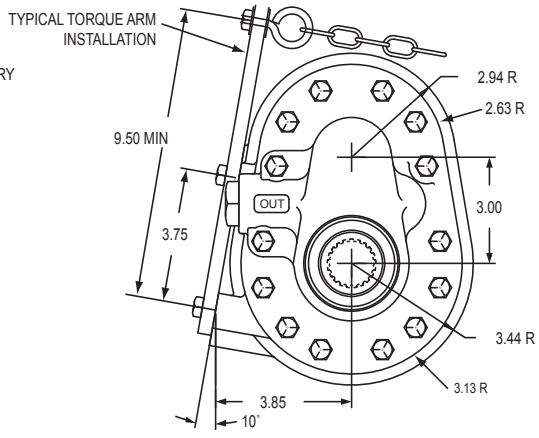




CAST IRON CENTER HOUSING (HC-P-K11C)







PUMPS AND MOTORS

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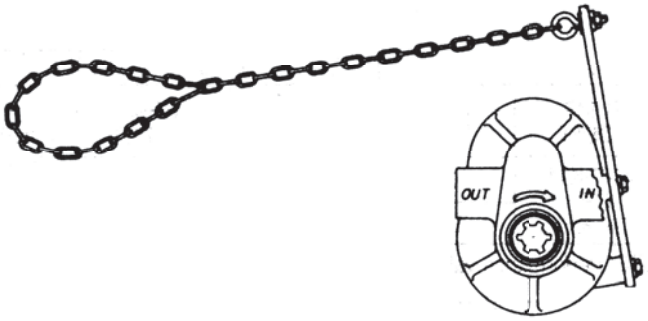
SEE PAGE 25 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

PUMP TORQUE ARM KIT

The 180900877 torque arm kit was designed to simplify Prince PTO pump installation by eliminating the need to fabricate a custom torque arm. Items included in the kit are:

1-Torque arm
2-3/8-16 mounting bolts
1-Eye bolt/chain assembly

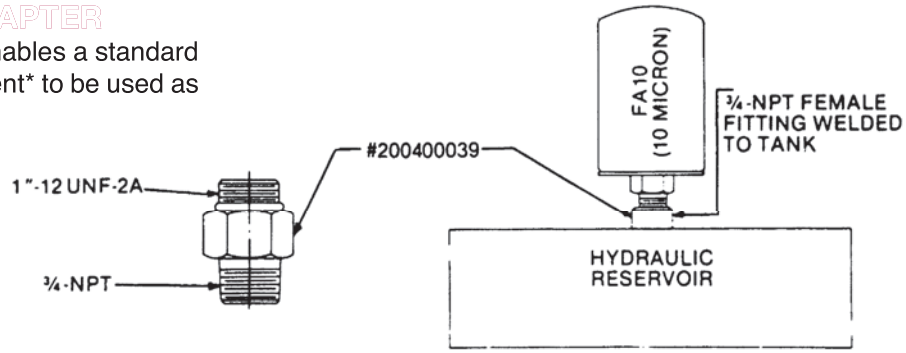
NOTE THAT TORQUE ARM KIT NO. 180900877 FITS ALL MODEL PTO PUMPS



RESERVOIR BREATHER ADAPTER

The 200400039 breather adapter enables a standard Prince 10 micron spin-on filter element* to be used as a reservoir breather.

*Part Number FA10



FITTINGS AND ADAPTERS

MODEL NUMBER	DESCRIPTION	CONFIGURATION
500204013	#16 SAE (1 5/16-12) Male, 1 1/4-NPTF Female	Fig. 1
500204011	#12 SAE (1 1/16-12) Male, 3/4-NPTF Female	Fig. 1
270011014	1 1/4-NPTF Male, 1 1/4 Hose Barb	Fig. 2
270011015	1" NPTF Male, 1" Hose Barb	Fig. 2
270011013	#16 SAE (1 5/16-12) Male, 1 1/4 Hose Barb	Fig. 3
270011017	#16 SAE (1 5/16-12) Male, 1 Hose Barb	Fig. 3
270011046	#20 SAE (1 5/8-12) Male, 2 Hose Barb	Fig. 3
500204012	#16 SAE (1 5/16-12) Male, 1-NPTF Female	Fig. 1

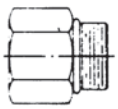
FIG. 1 

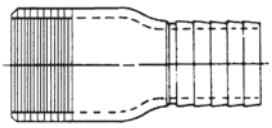
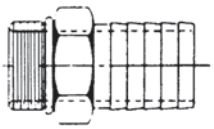
FIG. 2 

FIG. 3 

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SEE PAGE 25 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SP SERIES HYDRAULIC GEAR PUMP

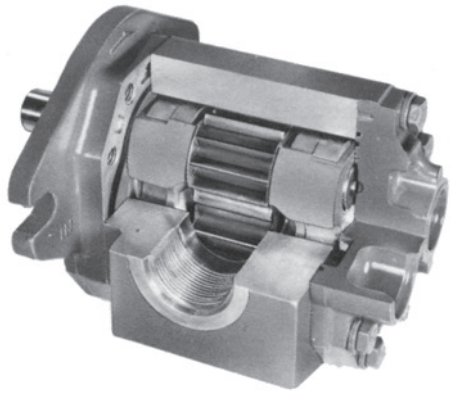
OUTSTANDING FEATURES

- **Patented Non-Symmetrical Gears** The adoption of non-symmetrical gears insures greater power per unit volume compared with pumps of conventional design. The compact gear compartment has enabled high-pressure operation. The increased number of gear teeth has reduced the flow pulsation and minimized the noise.

U.S.A.	Patent No.	3817117	
U.K.	Patent No.	1400577	
French	Patent No.	7230448	
German	Patent No.	7231801	Others: Pending

- **Bearings** PTFE composite bearings are used due to the ability to handle heavy loads, low shaft speeds, and high levels of contamination. Engineering tests on the PTFE bearings indicate they will withstand bearing loads over twice as high as conventional steel backed aluminum bearings used in many pumps. The PTFE resin layer will absorb a high degree of contamination with out damage to the pump. Also since the PTFE layer is self lubricating, contamination from bearing wear in high load situations (when no oil film is present) is reduced. The side benefit from reduced friction under all conditions is a reduced consumption of power.
- **Gears and drive shaft** are hardened alloy steel of one piece construction.
- **Special gear design:** Non-symmetrical gear insures low noise and compactness.
- **Highest Quality Workmanship.**
- **Pressures Up To 3000 P.S.I.**
- **Dependable service:** Balanced pressure loading insures small dispersion, good durability and maintains high performance.
- **Extremely Efficient.**
- **Perfect alignment:** "Through bore" design provides perfect alignment of pump element and assures even bearing load.
- **With the aluminum alloy casing,** the SP Series features light weight and easy handling.
- **Double pumps:** Available in SP20, SP25 and SP25/SP20 Combinations.
- **Maximum speed** from 3000 to 4000 RPM using SAE 10W oil.
- **Displacement covers** .400 in^3/rev. to 3.869 in^3/rev.
- **Inlet pressure:** Pump inlet should not exceed 5 in. of mercury vacuum or 14 P.S.I. positive pressure.
- **Ports:** SAE straight thread O-ring boss for SP20 & SP25. Other Ports available - consult factory. (Taper pipe threads not available.
- **Working oil:** A mineral based oil with additives to resist corrosion, oxidation, and foaming is recommended. Viscosity at any running condition should be 60 SUS minimum and 250 SUS maximum. 180° F is the maximum recommended system operating temperature.
- **Filtration:** Per ISO cleanliness code level 17/14. As a minimum, 10 micron filtration is recommended.

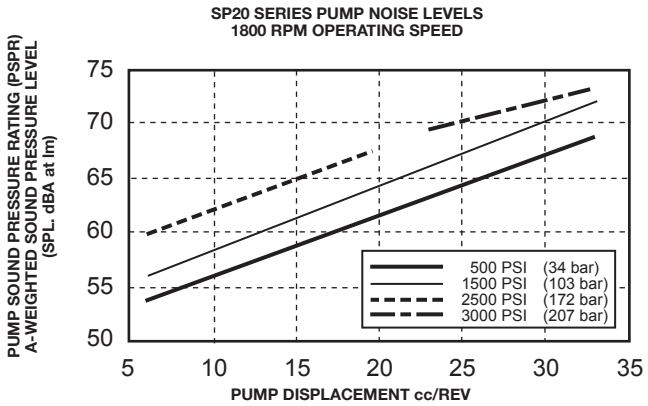
INTERNAL COMPONENTS BREAKDOWN

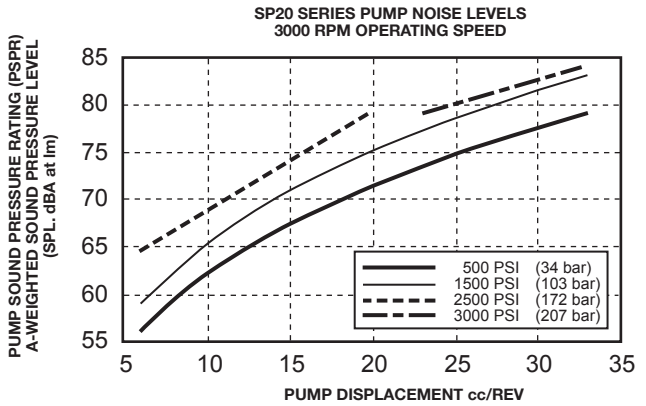


SP20 SERIES HYDRAULIC PUMPS AND NOISE GENERATION

The accompanying graphs show the typical Pump Sound Pressure Ratings (PSPR, A-weighted Sound Pressure Levels) for the SP20 Series Hydraulic Pumps. The Pump Sound Pressure Ratings (PSPR) shown below in the graphs were computed and determined using Sound Intensity Analysis Methods. Sound Intensity Analysis provides the most accurate and reliable data for predicting and comparing a Pump Sound Pressure Rating (A-weighted Sound Pressure Level), for a pump exposed to various operating and environmental conditions.

Pumps tested below in the graphs were tested as defined by **ANSI/B93.71M**, (Hydraulic fluid power-Pumps-Test code for the determination of airborne noise levels) in a semi-anechoic room. For free-field conditions (i.e. such as a noise source located above the ground in a open area), pump sound pressure ratings (A-weight Sound Pressure Levels) may be estimated by subtracting 3dB(A)from the values shown on the graphs.





Pump acoustical data was determined in accordance with ANSI/B93.71M. Hydraulic fluid power-Pumps-Test code for the determination of airborne noise levels

PUMPS AND MOTORS

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SP20 SERIES SAE "A" FLANGE PUMP

New Updated Design

- More Port Options
- More Shaft Options
- Lower Price
- Contact your sales representative for more information

The SP20B pump now utilizes self-lubricating thrust blocks that eliminate the need for separate wear plates. They are made from a high strength aluminum alloy with exceptional anti-galling properties. This new thrust block design also incorporates advanced bearings designed specifically for high pressure hydraulic pumps. This new bearing features a robust fluoropolymer PTFE wear surface that yields unsurpassed load carrying capabilities and cavitation resistance even at low speeds and moderate levels of contamination. Also, since the PTFE resin layer is self-lubricating, contamination from bearing wear in high load situations (when no oil film is present) is reduced. This new thrust block design combined with these advanced bearing results in lower friction and less internal oil loss resulting in higher pump efficiencies.

MODEL CODE

SP20B 14 A 9 H 2–R

SERIES NO

DISPLACEMENT CODE (CC/REV)

PORT LOCATION
A-SIDE INLET AND OUTLET
C-BOTH SIDE AND REAR W/STEEL PLUGS
D-REAR INLET AND OUTLET
E-BOTH SIDE AND REAR W/PLASTIC PLUGS

PORT TYPE
9-STANDARD PORTS SAE PER CHART BELOW
OPTIONAL PORTS CONSULT FACTORY SIDE PORT ONLY
8-METRIC O-RING
7-BSPP
6-SAE SPLIT FLANGE 16-33 CC ONLY
5-METRIC SPLIT FLANGE 16-33 CC ONLY

ROTATION (FACING END OF SHAFT)
L-COUNTER CLOCKWISE
R-CLOCKWISE DRIVE SHAFT

DRIVE SHAFT
9-SAE 9 TOOTH 16/32 SPLINE
2-SAE 5/8" STRAIGHT KEYED
3-11 TOOTH 16/32 SPLINE*
4-3/4" STRAIGHT KEYED*
5 -SAE 10 TOOTH 16/32 SPLINE

MOUNTING
H-SAE "A" 2 BOLT

*REQUIRED FOR DISPLACEMENT CODES 30 AND 33

SPECIFICATIONS

MODEL NUMBER	DISP. IN³/REV	RATED PRESSURE (PSI)	MAX° RPM	A	B	INLET PORT			OUTLET PORT			WT. (LB.)
						SAE SIZE		FULL THREAD DEPTH	SAE SIZE		FULL THREAD DEPTH	
						SIDE	REAR		SIDE	REAR		
SP20B06	.400	3000	4000	1.79	4.22	7/8-14 UN-2B	1 5/16-12 UN-2B	5/8"	3/4-16 UN-2B	1/16-12 UN-2B	9/16"	5.0
SP20B08	.499	3000	4000	1.83	4.30	1 1/16-12 UN-2B		3/4"	7/8-14 UNF-2B		5/8"	5.1
SP20B09	.589	3000	4000	1.87	4.38							5.3
SP20B11	.677	3000	4000	1.91	4.46							5.5
SP20B14	.860	3000	4000	1.99	4.62							5.7
SP20B16	.976	3000	4000	2.04	4.71		1 5/16-12 UN-2B			1 1/16-12 UN-2B		6.0
SP20B20	1.220	3000	3500	2.15	4.93	1 5/16-12 UN-2B		3/4"	1 1/16-12 UN-2B		3/4"	6.2
SP20B23	1.403	2500	3500	2.23	5.09							6.4
SP20B27	1.654	2500	3500	2.34	5.31							6.6
SP20B30	1.881	2500	3500	2.41	5.46							7.1
SP20B33	2.014	2500	3500	2.49	5.62							7.6

°Max. RPM for side ported models. Rear ported models should be restricted to 21 gpm. Standard Seal Kit for all SP20 Models is Prince Part No. PMCK-SP20.

PUMPS AND MOTORS

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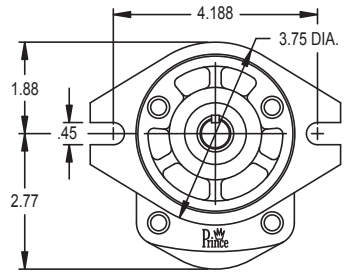
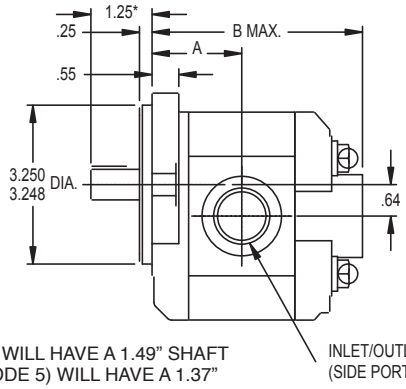
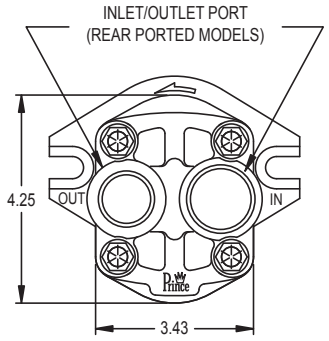
CATP 10-10-11-01

SEE PAGE 25 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

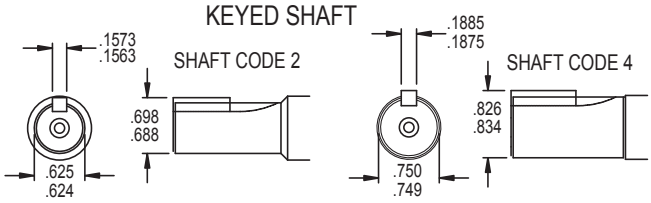
SP20 SERIES DIMENSIONAL DATA







*NOTE 11 TOOTH SPLINED SHAFT (SHAFT CODE 3) WILL HAVE A 1.49" SHAFT EXTENSION. 10 TOOTH SPLINED SHAFT (SHAFT CODE 5) WILL HAVE A 1.37" SHAFT EXTENSION.



SPLINED SHAFT

SHAFT CODE 9	SHAFT CODE 5	SHAFT CODE 3
9 TOOTH	10 TOOTH	11 TOOTH
16/32 DP	16/32 DP	16/32 DP
30° PA	30° PA	30° PA
FLAT ROOT SIDE FIT	FLAT ROOT SIDE FIT	FLAT ROOT SIDE FIT

TYPICAL PERFORMANCE DATA

		RPM								PRESSURE
MODEL		500	1000	1500	2000	2500	3000	3500	4000	(PSI)
SP20B06	FLOW (GPM)	.78	1.62	2.48	3.35	4.24	5.10	5.98	6.92	
	INPUT HORSE POWER	1.85	3.77	5.66	7.57	9.45	11.13	13.06	14.80	
SP20B08	FLOW (GPM)	.88	1.91	2.97	4.04	5.10	6.16	7.27	8.33	
	INPUT HORSE POWER	2.23	4.38	6.53	8.83	11.13	13.57	16.17	18.69	
SP20B09	FLOW (GPM)	1.03	2.30	3.52	4.75	5.97	7.19	8.46	9.74	
	INPUT HORSE POWER	2.61	5.03	7.54	10.14	12.84	15.54	18.43	21.31	
SP20B11	FLOW (GPM)	1.27	2.74	4.16	5.63	7.05	8.51	9.98	11.40	3000
	INPUT HORSE POWER	2.98	5.77	8.75	11.63	14.80	17.87	21.12	24.38	
SP20B14	FLOW (GPM)	1.61	3.36	5.19	7.01	8.91	10.74	12.56	14.39	
	INPUT HORSE POWER	3.68	7.09	10.51	14.19	18.00	21.68	25.49	29.43	
SP20B16	FLOW (GPM)	1.80	3.82	5.87	7.93	9.98	12.11	14.24	16.22	
	INPUT HORSE POWER	4.01	7.86	11.87	15.87	20.17	24.33	28.78	34.12	
SP20B20	FLOW (GPM)	2.35	4.92	7.49	10.05	12.70	15.26	17.76		
	INPUT HORSE POWER	5.21	9.98	14.89	20.10	25.16	30.52	35.73		
SP20B23	FLOW (GPM)	2.80	5.72	8.73	11.60	14.68	17.61	20.55		
	INPUT HORSE POWER	5.06	9.68	14.44	19.21	24.27	29.48	34.54		
SP20B27	FLOW (GPM)	3.30	6.90	10.47	13.90	17.52	20.94	24.46		
	INPUT HORSE POWER	5.98	11.59	17.20	23.00	28.98	34.78	41.13		2500
SP20B30	FLOW (GPM)	3.85	7.78	11.47	15.36	19.22	23.03	26.86		
	INPUT HORSE POWER	6.40	12.56	18.38	24.64	30.93	37.59	43.80		
SP20B33	FLOW (GPM)	4.13	8.47	12.60	16.86	21.11	25.26	29.52		
	INPUT HORSE POWER	7.14	13.40	19.98	27.04	33.90	41.05	47.89		

Typical Performance Data Based on 140 SUS Oil at 120° F

PUMPS AND MOTORS

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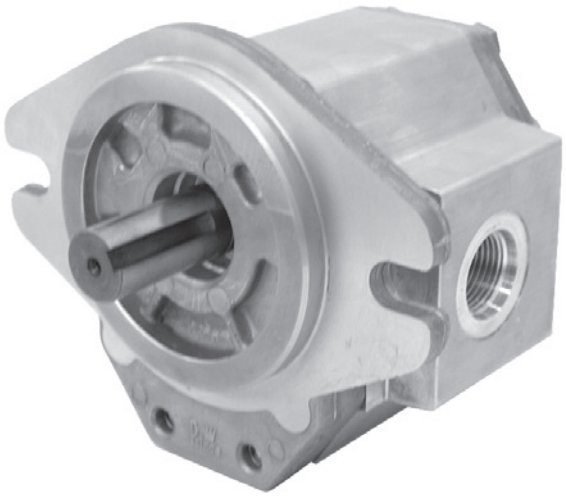
SEE PAGE 25 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SP25 SERIES SAE "B" FLANGE PUMP



MODEL CODE

SP25A 38 A 9 H 1-R X

SERIES NO — SP25A

DISPLACEMENT CODE (CC/REV) — 38

PORT LOCATION — A

- A-SIDE INLET AND OUTLET
- D-REAR INLET AND OUTLET
- C-BOTH SIDE AND REAR INLET AND OUTLET, STEEL PLUGS
- E-BOTH SIDE AND REAR INLET AND OUTLET, PLASTIC PLUGS

PORT TYPE — 9

- 9-STANDARD PER CHART

MOUNTING — H

- H-SAE "B" 2 BOLT

DRIVE SHAFT — 1

- 1-SAE 13 TOOTH 16/32 SPLINE
- 2-SAE 7/8" STRAIGHT KEYED

ROTATION (FACING END OF SHAFT) — R

- L-COUNTER CLOCKWISE
- R-CLOCKWISE

SHAFT SEAL TYPE — X

- OMIT FOR STANDARD BUNA-N
- H-MEDIUM PRESSURE BUNA-N

SPECIFICATIONS

MODEL NUMBER	DISP. IN³/REV (PSI)	RATED PRESSURE	MAX° RPM	A	B	INLET PORT			OUTLET PORT			WT. (LB.)
						SAE SIZE		FULL THREAD DEPTH	SAE SIZE		FULL THREAD DEPTH	
						SIDE	REAR		SIDE	REAR		
SP25A19	1.141	3000	3000	2.49	5.50	1 5/16-12 UN-2B	1 5/16-12 UN-2B	3/4"	1 1/16-12 UN-2B	1 1/16-12 UN-2B	3/4"	10.4
SP25A22	1.349	3000	3000	2.55	5.62							10.6
SP25A27	1.660	3000	3000	2.64	5.79							11.0
SP25A32	2.008	3000	3000	2.74	5.99	1 5/8-12 UN-2B			1 5/16-12 UN-2B			12.4
SP25A38	2.318	3000	3000	2.83	6.17							13.5
SP25A44	2.697	3000	3000	2.94	6.38							13.9
SP25A52	3.179	2500	3000	3.07	6.66							14.4
SP25A63	3.869	2500	3000	3.27	7.05	1 7/8-12						15.4

°Max. RPM for side ported models. Rear ported models should be restricted to 25 GPM due to limitation on the inlet port size. Standard Seal Kit for all SP25 Models is Prince Part No. PMCK-SP25.

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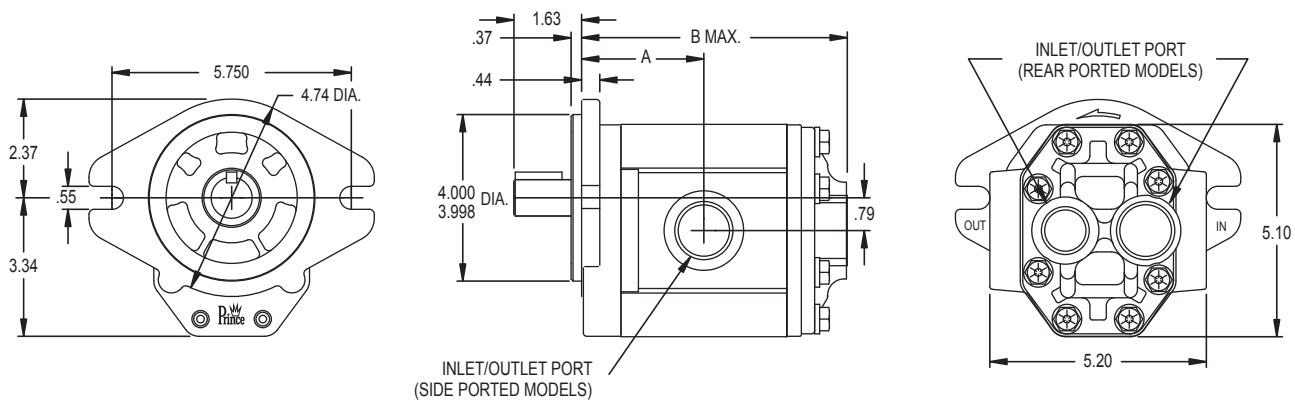
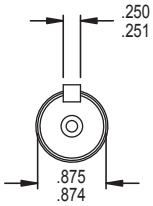
CATP 12-10-11-01

SEE PAGE 25 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

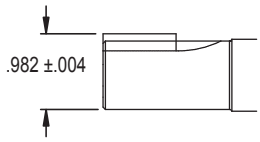
SP25 SERIES DIMENSIONAL DATA





KEYED SHAFT

SHAFT CODE 2



SPLINED SHAFT

SHAFT CODE 1

13 TOOTH
16/32 DP
30° PA
FLAT ROOT SIDE FIT

TYPICAL PERFORMANCE DATA

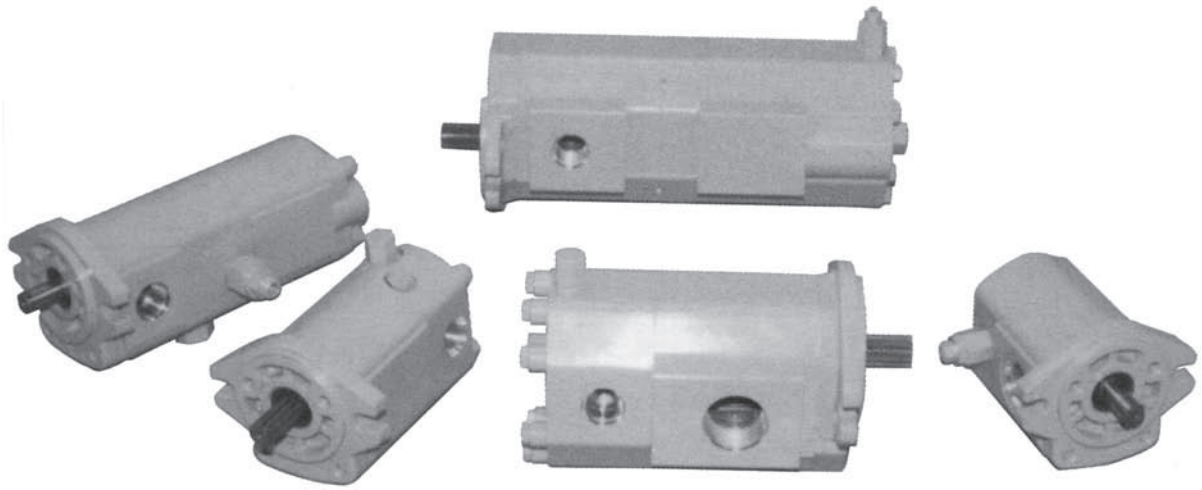
MODEL		RPM 500	1000	1500	2000	2500	3000	PRESSURE (PSI)
SP25A19	FLOW (GPM)	2.09	4.55	6.90	9.39	11.89	14.24	3000
	INPUT HORSE POWER	4.65	9.31	13.96	18.70	23.45	28.29	
SP25A22	FLOW (GPM)	2.64	5.28	8.22	11.08	13.94	16.81	
	INPUT HORSE POWER	5.58	10.98	16.38	21.96	27.36	33.31	
SP25A27	FLOW (GPM)	3.33	6.75	10.27	13.70	17.22	20.74	
	INPUT HORSE POWER	6.99	13.48	20.22	26.97	33.96	40.95	
SP25A32	FLOW (GPM)	3.91	8.22	12.43	16.73	21.14	25.44	
	INPUT HORSE POWER	8.24	15.98	24.22	32.46	40.95	49.94	
SP25A38	FLOW (GPM)	4.26	9.10	14.09	19.08	24.07	28.77	
	INPUT HORSE POWER	8.56	18.24	27.54	36.85	46.90	56.57	
SP25A44	FLOW (GPM)	4.99	10.86	16.44	22.16	27.89	33.61	
	INPUT HORSE POWER	10.42	21.22	32.01	43.18	54.71	66.25	
SP25A52	FLOW (GPM)	6.16	12.92	19.67	26.42	33.17	39.63	2500
	INPUT HORSE POWER	11.17	21.96	32.38	43.55	55.09	67.00	
SP25A63	FLOW (GPM)	7.52	15.60	23.86	31.93	40.00	48.08	
	INPUT HORSE POWER	14.14	26.43	39.45	52.85	66.62	80.77	

Typical Performance Data Based on 140 SUS Oil at 120° F.

PUMPS AND MOTORS

SEE PAGE 25 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SP PUMP INTEGRAL VALVING OPTIONS



PRINCE SP PUMPS WITH INTEGRAL VALVING FEATURE EXTRUDED ALUMINUM REAR COVERS. THE EXTRUDED REAR COVERS ALLOW EXCEPTIONAL FLEXIBILITY FOR INCORPORATING DIFFERENT VALVING AND PORTING OPTIONS. PRINCE'S USE OF COMPUTER CONTROLLED MACHINING CENTERS IN THE MANUFACTURING PROCESS ALLOW EITHER STANDARD OR CUSTOM DESIGNS TO BE MADE IN BOTH SMALL AND LARGE QUANTITIES.

- **PRIORITY FLOW DIVIDER PUMPS**
  Priority flow divider pumps split the flow between a priority port and an excess flow port. The flow is initially directed to the priority port until the priority setting is satisfied. At that time any additional flow is directed to the excess flow port. Priority divider pumps are typically used in steering circuits, brake circuits or any circuit where a primary flow needs to be satisfied first.

- **RELIEF VALVES**
  Various styles and configurations of relief valves can be provided in the rear cover. The relief return flow can be either ported external to the pump or internally ported back to the inlet. Caution must be used so that the duration of the internally ported flow does not cause excessive heat build up.

- **CUSTOM DESIGN VALVE PACKAGES**
  Prince Manufacturing offers custom designed integral valve packages. Configurations are developed based on customer specifications.

- **SOLENOID VALVES**
  Various configurations of controlling pump flow by using solenoid cartridge valves are available.

- **SPECIAL REAR PORTING**
  A wide variety of port types as well as port locations can be accommodated with the extruded rear cover.

- **DOUBLE PUMP CONFIGURATIONS**
  Integral valve configurations can easily be integrated into double pump configurations. Valves in the rear cover typically control flow from the rear pump section, however valves can also be incorporated into the center section of the double pump for additional control options.

- **HIGH-LO PUMPS (Horse power limiting pumps)**
  A high-lo configuration is available based on the SP20 series pump. The typical configuration provides 28 gpm low pressure flow and 7 gpm high pressure flow (at 3500 rpm). Typical horsepower requirements are 19 hp at 3000 psi and 3500 rpm.

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NORTH SIOUX CITY, SD 57049-7000
TELEPHONE: 605-235-1220
FAX: 605-235-1082

SP20P SERIES - PRIORITY FLOW DIVIDER PUMPS
MODEL CODE

SP20PB 23 K 185 H 2 R

SERIES NO.

DISPLACEMENT CODE (CC/REV)

PRIORITY FLOW +
- G - 1.5 GPM PRIORITY FLOW
- H - 2.0 GPM PRIORITY FLOW
- J - 2.5 GPM PRIORITY FLOW
- K - 3.0 GPM PRIORITY FLOW
- L - 3.5 GPM PRIORITY FLOW
- M - 4.0 GPM PRIORITY FLOW
- N - 4.5 GPM PRIORITY FLOW
- P - 5.0 GPM PRIORITY FLOW

PRIORITY FLOW RELIEF SETTING

THE THREE DIGIT CODE REPRESENTS RELIEF VALVE SETTING DIVIDED BY 10. FOR INSTANCE A CODE NUMBER OF 185 REPRESENTS A RELIEF SETTING OF 1850 PSI. (RELIEF SETTING MUST BE BETWEEN 1000 AND 2250 PSI.)

MOUNTING
- H-SAE "A" 2 BOLT

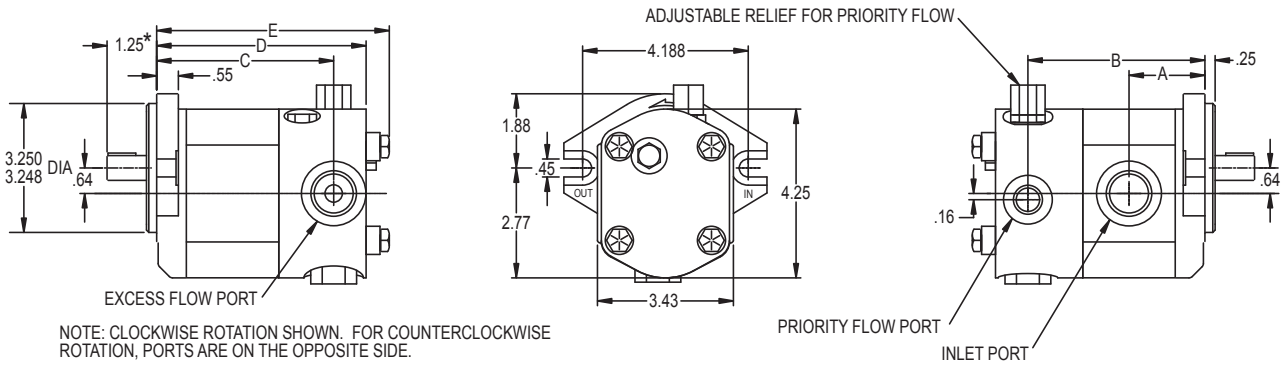
DRIVE SHAFT
- 9-SAE 9 TOOTH 16/32 SPLINE
- 2-SAE 5/8" STRAIGHT KEYED
- 3-11 TOOTH 16/32 SPLINE
- 4-3/4" STRAIGHT KEYED
- 5-SAE 10 TOOTH 16/32 SPLINE

ROTATION (FACING END OF SHAFT)
- L-COUNTER CLOCKWISE
- R-CLOCKWISE

+ FOR PRIORITY FLOWS AND RELIEF SETTINGS NOT INDICATED, CONTACT FACTORY.

⁰ FOR DISPLACEMENT CODES 08 THROUGH 27, SHAFT CODES 2 AND 9 ARE STANDARD. FOR DISPLACEMENT CODES 30 AND 33, SHAFT CODES 3 AND 4 ARE STANDARD. PUMPS WITH NONSTANDARD SHAFT CODES ARE AVAILABLE IN MINIMUM QUANTITIES.

SP20P SERIES DIMENSIONAL DATA



NOTE: CLOCKWISE ROTATION SHOWN. FOR COUNTERCLOCKWISE ROTATION, PORTS ARE ON THE OPPOSITE SIDE.

* 11 TOOTH SPLINED SHAFT (SHAFT CODE 3) WILL HAVE A 1.49" SHAFT EXTENSION.

SPECIFICATIONS

MODEL NUMBER	DISP. IN³/REV	RATED PRESSURE PSI	MAX RPM	A	B	C	D	E	INLET PORT SIZE	EXCESS FLOW PORT SIZE	PRIORITY FLOW PORT SIZE	WT. (LB.)
SP20PB06	.400	3000	4000	1.79	4.22	4.22	5.04	5.36	7/8-14 UN-2B 5/8" FULL THREAD DEPTH	1 1/16-12 UN-2B 3/4" FULL THREAD DEPTH	9/16-18 UNF-2B 3/4" FULL THREAD DEPTH	6.7
SP20PB08	.499	3000	4000	1.83	4.30	4.30	5.12	5.82	1 1/16-12 UN-2B 3/4" FULL THREAD DEPTH			6.8
SP20PB09	.589	3000	4000	1.87	4.38	4.38	5.20	5.80				7.0
SP20PB11	.677	3000	4000	1.91	4.46	4.46	5.28	5.88				7.2
SP20PB14	.860	3000	4000	1.99	4.62	4.62	5.44	5.81				7.4
SP20PB16	.976	3000	4000	2.04	4.72	4.72	5.53	5.84				7.7
SP20PB20	1.220	3000	3500	2.15	4.93	4.93	5.75	6.35	1 5/16-12 UN-2B 3/4" FULL THREAD DEPTH			7.9
SP20PB23	1.403	2500	3500	2.23	5.09	5.09	5.91	6.28				8.1
SP20PB27	1.654	2500	3500	2.34	5.31	5.31	6.12	6.82				8.3
SP20PB30	1.881	2500	3000	2.41	5.46	5.46	6.28	6.88				8.8
SP20PB33	2.014	2500	3000	2.49	5.62	5.62	6.44	6.81				9.3

FOR PUMP PERFORMANCE DATA AND DIMENSIONAL DATA, REFER TO THE SP20B PUMP SECTION Standard Seal Kit for all SP20B Models is Prince Part No. PMCK-SP20.

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SEE PAGE 26 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SP25P SERIES - PRIORITY FLOW DIVIDER PUMPS
MODEL CODE

SP25P 52 J 185 H 2 R

SERIES NO.

DISPLACEMENT CODE (CC/REV)

PRIORITY FLOW +

G - 1.5 GPM PRIORITY FLOW
H - 2.0 GPM PRIORITY FLOW
J - 2.5 GPM PRIORITY FLOW
K - 3.0 GPM PRIORITY FLOW
L - 3.5 GPM PRIORITY FLOW
M - 4.0 GPM PRIORITY FLOW
N - 4.5 GPM PRIORITY FLOW
P - 5.0 GPM PRIORITY FLOW

PRIORITY FLOW RELIEF SETTING +

THE THREE DIGIT CODE REPRESENTS RELIEF VALVE SETTING DIVIDED BY 10. FOR INSTANCE A CODE NUMBER OF 185 REPRESENTS A FULL FLOW RELIEF SETTING OF 1850 PSI. (RELIEF SETTING MUST BE BETWEEN 1000 AND 2250 PSI.)

MOUNTING

H-SAE "B" 2 BOLT

DRIVE SHAFT

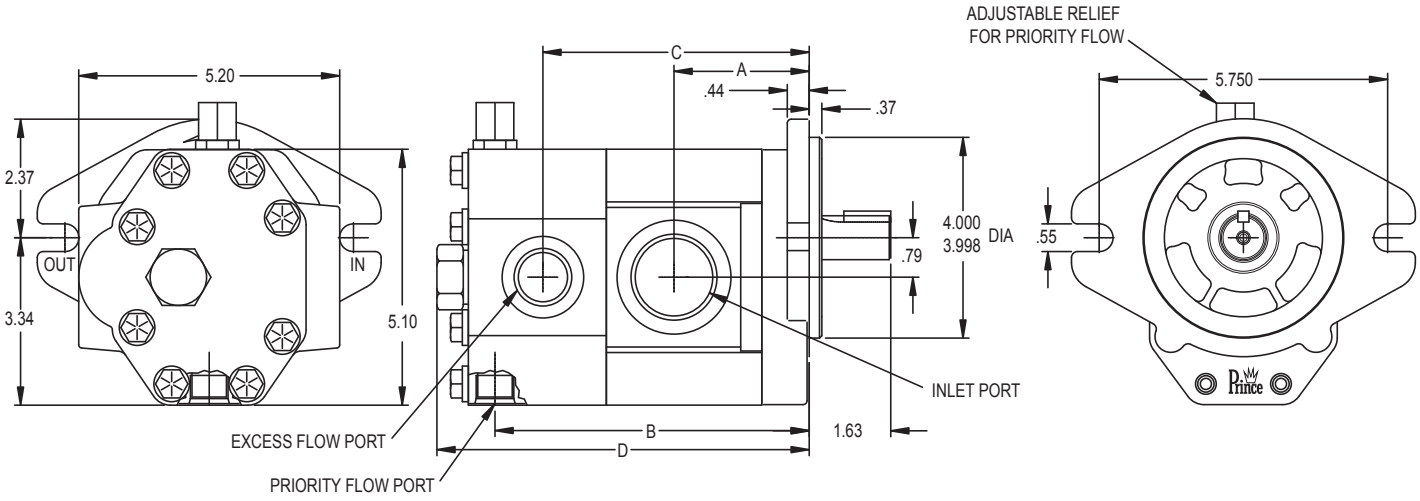
1-SAE 13 TOOTH 16/32 SPLINE
2-SAE 7/8" STRAIGHT KEYED

ROTATION (FACING END OF SHAFT)

L-COUNTERCLOCKWISE
R-CLOCKWISE

+ FOR PRIORITY FLOWS AND RELIEF SETTINGS NOT INDICATED, CONTACT FACTORY.

SP25P SERIES DIMENSIONAL DATA



RIGHT HAND ROTATION SHOWN. FOR LEFT HAND ROTATION, INLET AND EXCESS FLOW PORTS GO TO THE OPPOSITE SIDE OF THE PUMP, PRIORITY FLOW PORT GOES FROM THE BOTTOM TO THE TOP OF THE PUMP.

SPECIFICATIONS

MODEL NUMBER	DISP. IN³REV	RATED PRESSURE	MAX. RPM	A	B	C	D	INLET PORT SIZE		EXCESS FLOW PORT SIZE	PRIORITY FLOW PORT SIZE	WT. (LB.)
SP25P19	1.141	3000	3000	2.49	6.26	5.32	7.42	1 5/16-12 UN-2B	3/4" FULL THREAD DEPTH	1 1/16-12 UN-2B	3/4-16 UN-2B	14.7
SP25P22	1.349	3000	3000	2.55	6.38	5.44	7.54					14.9
SP25P27	1.660	3000	3000	2.64	6.56	5.62	7.71					15.3
SP25P32	2.008	3000	3000	2.74	6.75	5.82	7.91	1 5/8-12 UN-2B		3/4" FULL THREAD DEPTH	9/16" FULL THREAD DEPTH	16.7
SP25P38	2.318	3000	3000	2.83	6.93	5.99	8.09					17.8
SP25P44	2.697	3000	3000	2.94	7.15	6.21	8.30					18.2
SP25P52	3.179	2500	2500	3.07	7.42	6.49	8.58					18.7
SP25P63	3.869	2500	2100	3.27	7.82	6.88	8.97	1 7/8-12				19.7

FOR PUMP PERFORMANCE DATA AND SHAFT DIMENSIONAL DATA, REFER TO THE SP25A PUMP SECTION.
Standard Seal Kit for all SP25 Models is Prince Part No. PMCK-SP25.

PUMPS AND MOTORS

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CATP 16-10-11-01

SEE PAGE 26 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SPHL1 HI-LO PUMP SERIES
MODEL CODE

SPHL1B 0616 H 2 R

SERIES NO.

DISPLACEMENT CODE (^{CC}/REV)

06 16 (CC/REV)
08 23 (CC/REV)

MOUNTING

H-SAE "A" 2 BOLT
TIME FACTORY SETTING FOR THE SHIFTING SEQUENCE CARTRIDGE IS SET FOR 500 PS. SHIFTING SEQUENCE CARTRIDGE IS ADJUSTABLE.

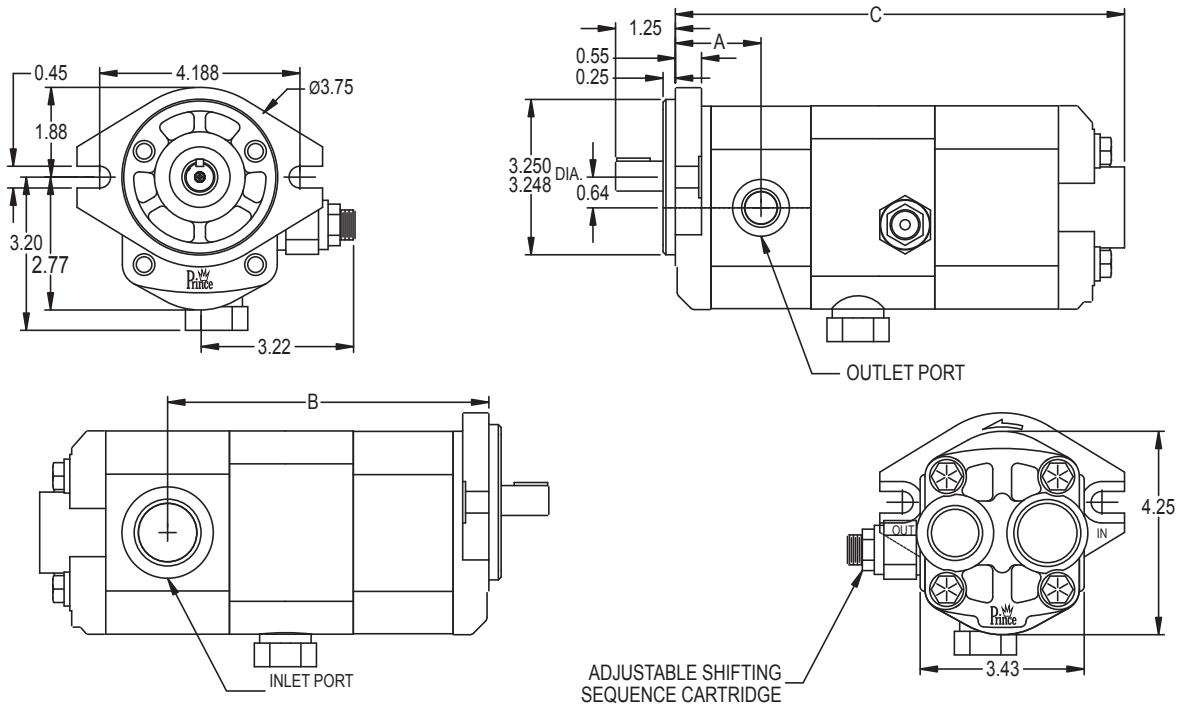
ROTATION (FACING END OF SHAFT)

L-COUNTERCLOCKWISE
R-CLOCKWISE

DRIVE SHAFT

9-SAE 9 TOOTH 16/32 SPLINE
2-SAE 5/8" STRAIGHT KEYED

SPHL1 DIMENSIONAL DATA



NOTE: CLOCKWISE ROTATION SHOWN. FOR COUNTERCLOCKWISE ROTATION, PORTS ARE ON THE OPPOSITE SIDES.

SPECIFICATIONS

MODEL NUMBER	FRONT DISP. IN^3/REV.	REAR DISP. IN^3/REV.	RATED PRESSURE	MAX RPM	A	B	C	INLET PORT SIZE	OUTLET PORT SIZE	FULL THREAD DEPTH	WT. (LB.)
SPHL1B0616	.400	.976	3000	3600	1.79	6.72	9.39	1 5/16-12 UN-2B	3/4-16 UN-2B	3/4"	14.4
SPHL1B0823	.499	1.403	3000	3600	1.83	6.99	9.85		1 1/16-12 UN-2B		14.7

PERFORMANCE

PUMP	RPM	HIGH FLOW (GPM)	LOW FLOW (GPM)	RECOMMENDED INPUT HORSEPOWER FOR 3000 PSI MAXIMUM WORKING PRESSURE
SPHL1B0616	1800	10.51	2.98	7.8
	3600	21.01	6.00	16.0
SPHL1B0823	1800	14.40	3.70	10.0
	3600	28.52	7.51	22.0

***NOTE:**
PLEASE CONSULT FACTORY FOR HORSEPOWER REQUIREMENTS OF DIFFERENT WORKING AND SHIFT PRESSURES.

Seal Kit for SPHL1 is Prince Part No. PMCK-SPHL1

PUMPS AND MOTORS

SEE PAGE 26 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SPD2 DOUBLE PUMPS

SPD2 as shown from rear

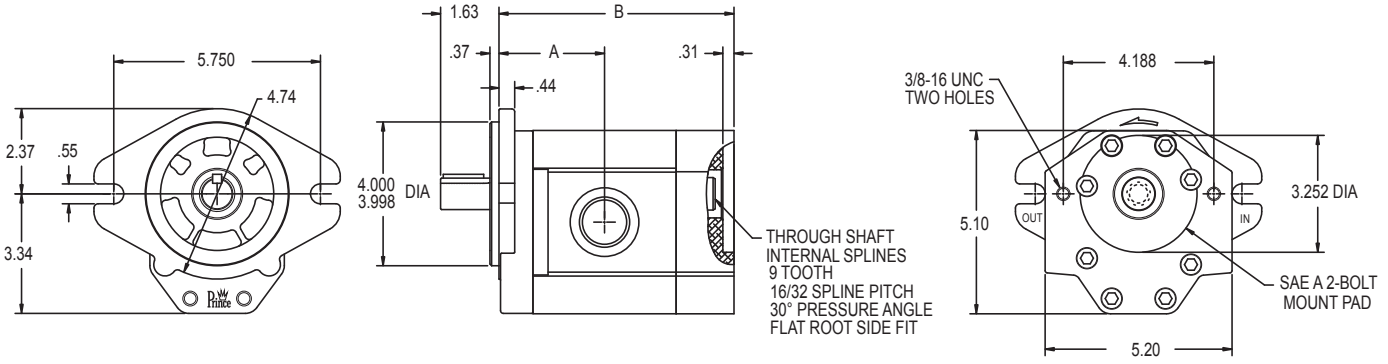
The SPD2 series of pumps are special SP-25A series pumps with through shafts. The through shafts have 9 tooth internal splines at the rear and the pump's rear cover has an integral SAE A-2 bolt mount pad. For double pump operation, a standard SAE A-2 bolt-splined shaft pump can be directly mounted on the rear on the SPD2. Typical performance of the pump is the same as indicated for the SP-25A series pump.

MODEL NO. CODING

SPD2 27 A 9 H 1 – L

- **BASIC MODEL NO.**
- **DISPLACEMENT CODE:** (see chart)
- **PORT LOCATION:** A: SIDE–INLET AND OUTLET
- **PORT TYPE:** STANDARD–AS INDICATED
- **ROTATION (Facing End of Shaft)** L: COUNTER CLOCKWISE R: CLOCKWISE
- **DRIVE SHAFT: (SEE SP-25A series for specifications)** 1: SAE 13 TOOTH 16/32 SPLINE 2: SAE 7/8 STRAIGHT KEYED
- **MOUNTING:** H: 2 BOLT "B" FLANGE

SPECIFICATIONS



SPD2 THROUGH SHAFT PUMPS (PLUG-IN STYLE DOUBLE PUMPS)

MODEL NUMBER & DISPLACEMENT CODE	DISP. IN³/REV	RATED* PRESSURE (PSI)	MAX RPM	A (IN)	B (IN)	INLET PORT SIZE°	OUTLET PORT SIZE°	WT. (LB.)
SPD219	1.141	3000	3000	2.49	5.65	1 5/16-12	1 1/16-12	12.9
SPD222	1.349	3000	3000	2.55	5.77	1 5/16-12	1 1/16-12	13.1
SPD227	1.660	3000	3000	2.64	5.95	1 5/16-12	1 1/16-12	13.5
SPD232	2.008	3000	3000	2.74	6.15	1 5/8-12	1 5/16-12	13.9
SPD238	2.318	3000	3000	2.83	6.32	1 5/8-12	1 5/16-12	14.4
SPD244	2.697	3000	3000	2.94	6.54	1 5/8-12	1 5/16-12	14.9
SPD252	3.179	2500	3000	3.07	6.81	1 5/8-12	1 5/16-12	15.7
SPD263	3.869	2500	3000	3.27	7.21	1 7/8-12	1 5/16-12	16.4

° Standard ports as indicated are UN-2B straight thread 0-Ring boss ports. Optional sizes and configurations are available. Consult factory. *Maximum operating pressure may be decreased depending on the displacement and operating pressure of the rear pump. The combination must conform to the following equation PF X DF + PR X DR < 13200 where PF and PR are the operation pressures (psi) and DF and DR are the displacements (in³/rev) for the front and rear pumps respectively.

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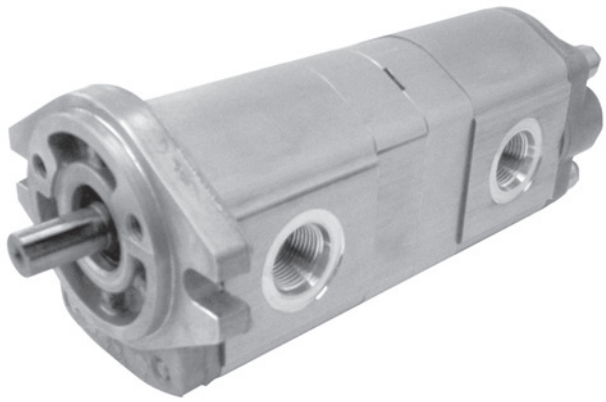
SEE PAGE 27 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SPD1 DOUBLE PUMPS

The SPD1 series of double pumps consists of two SP20B pump sections. The typical performance of each section and the features of the pump are the same as indicated for the SP20B series of pumps.



SPD1 DOUBLE PUMPS

SPD1B 16 09 - 1 H 9 L

BASIC MODEL NO.

FRONT PUMP (SHAFT END) Displacement Code (see chart)

REAR PUMP DISPLACEMENT CODE (SEE CHART)

INLET CODE:
1: COMMON INLET (NO REAR INLET)
2: SEPARATE INLET (INLETS-BOTH SECTIONS)

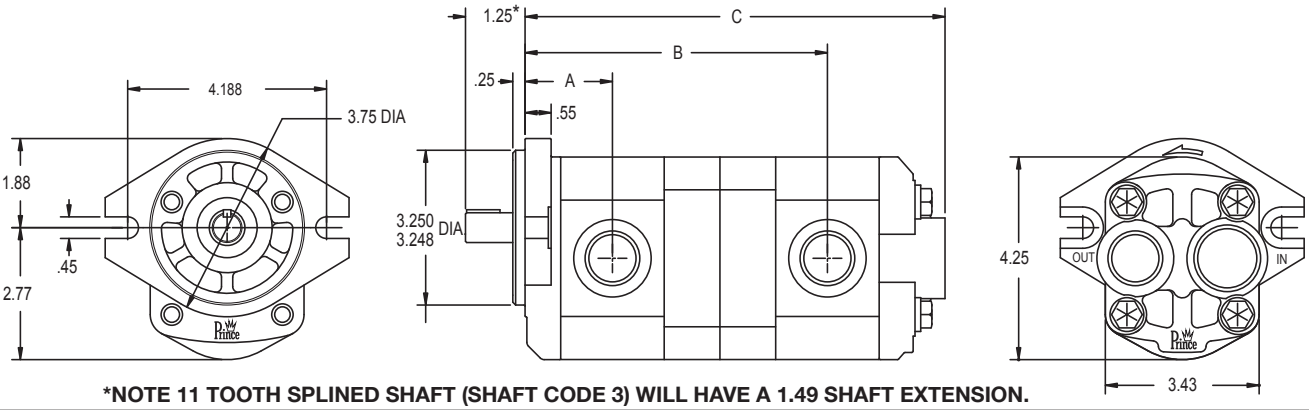
MOUNTING:
H: 2 BOLT "A" FLANGE

Drive Shaft Code:*
9: SAE 9 TOOTH 16/32 SPLINE
2: SAE 5/8" STRAIGHT KEYED
3 - 11 TOOTH 16/32 SPLINE
4 - 3/4 STRAIGHT KEYED

ROTATION: (FACING END OF SHAFT)
L: COUNTER CLOCKWISE
R: CLOCKWISE

*Pumps with nonstandard shafts available in minimum quantities.

SPD1 DOUBLE PUMPS



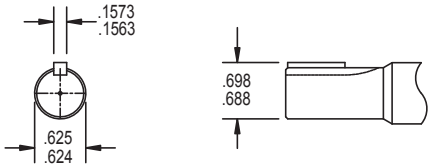
***NOTE 11 TOOTH SPLINED SHAFT (SHAFT CODE 3) WILL HAVE A 1.49 SHAFT EXTENSION.**

SPLINED SHAFT SPECIFICATIONS

SHAFT CODE 9
9 Tooth
16/32 DP
30⁰ PA
Flat Root Side Fit

SHAFT CODE 3
11 Tooth
16/32 DP
30⁰ PA
Flat Root Side Fit

KEYED SHAFT SPECIFICATIONS



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SEE PAGE 26 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SPD1 SERIES DOUBLE PUMPS

BASIC MODEL NUMBER & DISPLACEMENT CODES	DISPLACEMENT		MAXIMUM PRESSURE For 9 tooth & 5/8" shaft (for 11 tooth and 3/4" see formula below)		MAXIMUM SPEED RPM	OUTLET PORT[0] SAE SIZE		INLET PORT SAE SIZE[0] SEPARATE INLET PUMP		INLET PORT SAE SIZE COMMON INLET PUMP		PUMP DIMENSIONS			WT. (L.B.)
	FRONT CU IN/REV	REAR CU IN/REV	FRONT PSI	REAR PSI		FRONT PUMP	REAR PUMP	FRONT PUMP	REAR PUMP	FRONT PUMP	REAR PUMP	A IN.	B IN.	C IN.	
SPD1B 08 08	0.499	0.499	3000	3000	3500	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 1/16-12	NONE	1.83	6.35	8.81	11.6
SPDIB 09 08	0.589	0.499	3000	3000	3500	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 1/16-12	NONE	1.87	6.43	8.89	11.8
SPD1B 09 09	0.589	0.589	3000	3000	3500	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 1/16-12	NONE	1.87	6.46	8.97	12.0
SPD1B 11 08	0.677	0.499	3000	3000	3500+	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 1/16-12	NONE	1.91	6.50	8.97	12.0
SPD1B 11 09	0.677	0.589	3000	3000	3500+	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 1/16-12	NONE	1.91	6.54	9.05	12.2
SPD1B 11 11	0.677	0.677	3000	3000	3500+	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 1/16-12	NONE	1.91	6.58	9.13	12.4
SPD1B 14 08	0.860	0.499	3000	3000	3500	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 5/16-12	NONE	1.99	6.66	9.13	12.2
SPD1B 14 09	0.860	0.589	2800*	2800*	3500	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 5/16-12	NONE	1.99	6.70	9.21	12.4
SPD1B 14 11	0.860	0.677	2600*	2800*	3500	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 5/16-12	NONE	1.99	6.74	9.29	12.6
SPD1B 14 14	0.860	0.860	2400*	2400*	3500	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 5/16-12	NONE	1.99	6.82	9.44	12.8
SPD1B 16 08	0.976	0.499	2800*	2800*	3500	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 5/16-12	NONE	2.04	6.76	9.23	12.5
SPD1B 16 09	0.976	0.589	2600*	2600*	3500	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 5/16-12	NONE	2.04	6.80	9.30	12.7
SPD1B 16 11	0.976	0.677	2400*	2600*	3500	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 5/16-12	NONE	2.04	6.84	9.38	12.9
SPD1B 16 14	0.976	0.860	2200*	2400*	3500	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 5/16-12	NONE	2.04	6.92	9.54	13.1
SPD1B 16 16	0.976	0.976	2000*	2200*	3500+	7/8-14	7/8-14	1 1/16-12	1 1/16-12	1 5/16-12	NONE	2.04	6.97	9.64	13.4
SPD1B 20 08	1.220	0.499	2400*	2400*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/16-12	NONE	2.15	6.98	9.44	12.7
SPD1B 20 09	1.220	0.589	2200*	2400*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/16-12	NONE	2.15	7.02	9.52	12.9
SPD1B 20 11	1.220	0.677	2200*	2200*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/16-12	NONE	2.15	7.06	9.60	13.1
SPD1B 20 14	1.220	0.860	2000*	2000*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/16-12	NONE	2.15	7.13	9.76	13.3
SPD1B 20 16	1.220	0.976	1800*	2000*	3500+	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/16-12	NONE	2.15	7.18	9.86	13.6
SPD1B 20 20	1.220	1.220	1600*	1800*	3500+	1 1/16-12	1 1/16-12	1 5/16-12	1 5/16-12	1 5/16-12	NONE	2.15	7.29	10.07	13.8
SPD1B 23 08	1.403	0.499	2200*	2200*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/8-12	NONE	2.23	7.13	9.60	12.9
SPD1B 23 09	1.403	0.589	2000*	2200*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/8-12	NONE	2.23	7.17	9.68	13.1
SPD1B 23 11	1.403	0.677	2000*	2000*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/8-12	NONE	2.23	7.21	9.76	13.3
SPD1B 23 14	1.403	0.860	1800*	2000*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/8-12	NONE	2.23	7.29	9.92	13.5
SPD1B 23 16	1.403	0.976	1800*	1800*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/8-12	NONE	2.23	7.34	10.01	13.8
SPD1B 23 20	1.403	1.220	1600*	1600*	3500+	1 1/16-12	1 1/16-12	1 5/16-12	15/16-12	1 5/8-12	NONE	2.23	7.45	10.23	14.0
SPD1B 23 23	1.403	1.403	1400*	1600*	3500+	1 1/16-12	1 1/16-12	1 5/16-12	1 5/16-12	1 5/8-12	NONE	2.23	7.53	10.39	14.2
SPD1B 27 08	1.654	0.499	1800*	2000*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/8-12	NONE	2.34	7.35	9.82	13.1
SPD1B 27 09	1.654	0.589	1800*	2000*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/8-12	NONE	2.34	7.39	9.90	13.3
SPD1B 27 11	1.654	0.677	1800*	1800*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/8-12	NONE	2.34	7.43	9.97	13.5
SPD1B 27 14	1.654	0.860	1600*	1800*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/8-12	NONE	2.34	7.51	10.13	13.7
SPD1B 27 16	1.654	0.976	1600*	1600*	3500	1 1/16-12	7/8-14	1 5/16-12	1 1/16-12	1 5/8-12	NONE	2.34	7.56	10.23	14.0
SPD1B 27 20	1.654	1.220	1400*	1600*	3500+	1 1/16-12	1 1/16-12	1 5/16-12	1 5/16-12	1 5/8-12	NONE	2.34	7.67	10.45	14.2
SPD1B 27 23	1.654	1.403	1400*	1400*	3500+	1 1/16-12	1 1/16-12	1 5/16-12	1 5/16-12	1 5/8-12	NONE	2.34	7.74	10.60	14.4
SPD1B 27 27	1.654	1.654	1200*	1400*	3500+	1 1/16-12	1 1/16-12	1 5/16-12	1 5/16-12	1 5/8-12	NONE	2.34	7.85	10.82	14.6

[0] Standard ports as indicated arc UN-2B straight thread 0-Ring boss ports. Optional sizes and configurations are available. Consult factory.

* Different pressure and shaft combinations may be used if required provided they conform to the following equations PF x DF + PR x DR < 4150 for 9 tooth & 5/8" shafts (6250 for 11 tooth & 3/4" shafts) where PF and PR are the operating pressures (psi) and DF and DR are the displacements (cu in/rev) for the front and rear pumps respectively (maximum pressures are 3000 psi for displacement codes 8 -20 and 2500 psi for displacement codes 23 - 27).

+ Common inlet pumps require a reduction in maximum rpm. Consult factory.

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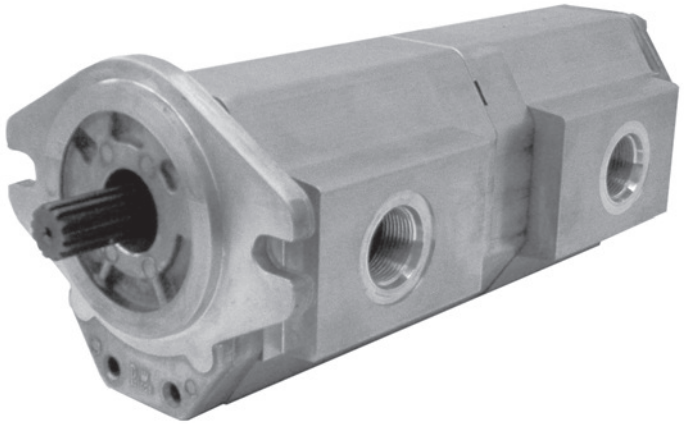
SEE PAGE 26 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SPD3 DOUBLE PUMPS



The SPD3 series of double pumps consists of two SP-25A pump sections. The typical performance of each section and the features of the pump are the same as indicated for the SP-25A series of pumps.

MODEL NO. CODING

SPD3 44 22 - 1 H 1 L

BASIC MODEL NO.

FRONT PUMP (SHAFT END) DISPLACEMENT CODE (SEE CHART)

REAR PUMP DISPLACEMENT CODE (SEE CHART)

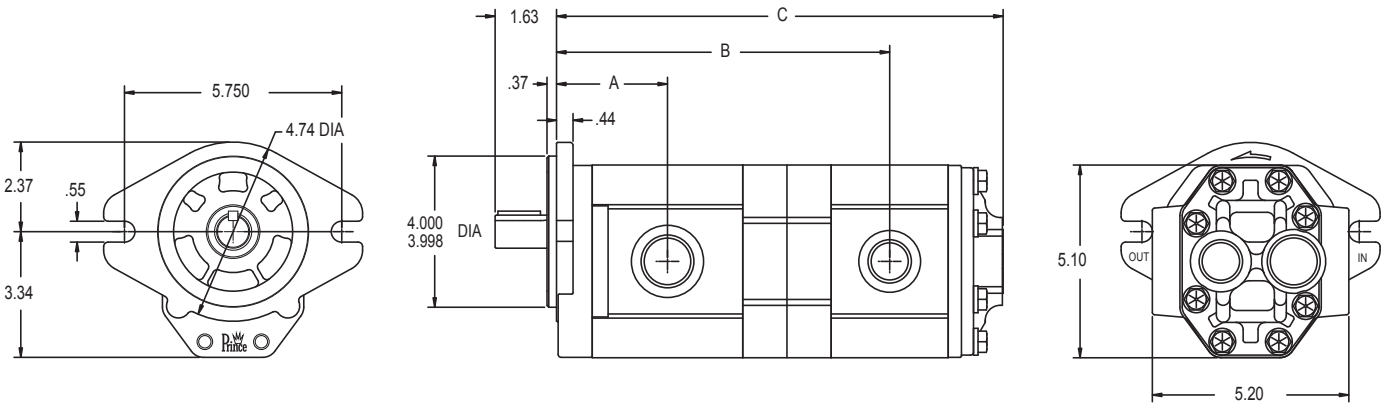
ROTATION: (FACING END OF SHAFT)
- L: COUNTER CLOCKWISE
- R: CLOCKWISE

Drive Shaft Code:
- 1: SAE 13 TOOTH 16/32 SPLINE
- 2: SAE 7/8" STRAIGHT KEYED

MOUNTING:
- H: 2 BOLT "B" FLANGE

INLET CODE:
- 1: COMMON INLET (NO REAR INLET)
- 2: SEPARATE INLET (INLETS-BOTH SECTIONS)

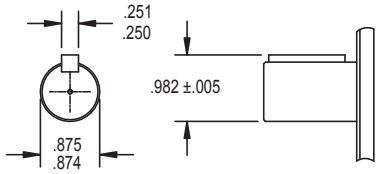
DIMENSIONS



SPLINED SHAFT SPECIFICATIONS

Per SAE Specifications
- 13 Tooth
- 16/32 Spline Pitch
- 30 Degree Pressure Angle
- Flat Root Side Fit

KEYED SHAFT SPECIFICATIONS



PUMPS AND MOTORS

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SEE PAGE 27 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SPD3 SERIES DOUBLE PUMPS

BASIC MODEL NUMBER & DISPLACEMENT CODES	DISPLACEMENT		MAXIMUM PRESSURE		MAXIMUM SPEED RPM	OUTLET PORT[o] SAE SIZE		INLET PORT SAE SIZE[o] SEPARATE INLET PUMP		INLET PORT SAE SIZE[o] COMMON INLET PUMP		PUMP DIMENSIONS			WT. (L.B.)
	FRONT CU IN/REV	REAR CU IN/REV	FRONT PSI	REAR PSI		FRONT PUMP	REAR PUMP	FRONT PUMP	REAR PUMP	FRONT PUMP	REAR PUMP	A IN.	B IN.	C IN.	
SPD3 19 19	1.141	1.141	3000	3000	3000	1 1/16-12	1 1/16-12	1 5/16-12	1 5/16-12	1 5/8-12	NONE	2.49	7.93	10.93	23.3
SPD3 22 19	1.349	1.141	3000	3000	3000	1 1/16-12	1 1/16-12	1 5/16-12	1 5/16-12	1 5/8-12	NONE	2.55	8.05	11.05	23.5
SPD3 22 22	1.349	1.349	3000	3000	3000	1 1/16-12	1 1/16-12	1 5/16-12	1 5/16-12	1 5/8-12	NONE	2.55	8.11	11.17	23.7
SPD3 27 19	1.660	1.141	3000	3000	3000	1 1/16-12	1 1/16-12	1 5/16-12	1 5/16-12	1 5/8-12	NONE	2.64	8.23	11.23	23.9
SPD3 27 22	1.660	1.349	3000	3000	3000	1 1/16-12	1 1/16-12	1 5/16-12	1 5/16-12	1 5/8-12	NONE	2.64	8.29	11.35	24.1
SPD3 27 27	1.660	1.660	3000	3000	3000	1 1/16-12	1 1/16-12	1 5/16-12	1 5/16-12	1 5/8-12	NONE	2.64	8.37	11.52	24.5
SPD3 32 19	2.008	1.141	3000	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	2.74	8.42	11.42	24.3
SPD3 32 22	2.008	1.349	3000	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	2.74	8.48	11.54	24.5
SPD3 32 27	2.008	1.660	3000	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	2.74	8.57	11.72	24.9
SPD3 32 32	2.008	2.008	3000	3000	3000	1 5/16-12	1 5/16-12	1 5/8-12	1 5/8-12	1 7/8-12	NONE	2.74	8.67	11.92	25.3
SPD3 38 19	2.318	1.141	3000	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	2.83	8.60	11.60	24.8
SPD3 38 22	2.318	1.349	3000	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	2.83	8.66	11.72	25.0
SPD3 38 27	2.318	1.660	3000	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	2.83	8.75	11.90	25.4
SPD3 38 32	2.318	2.008	3000	3000	3000	1 5/16-12	1 5/16-12	1 5/8-12	1 5/8-12	1 7/8-12	NONE	2.83	8.85	12.09	25.8
SPD3 38 38	2.318	2.318	3000	2700*	3000	1 5/16-12	1 5/16-12	1 5/8-12	1 5/8-12	17/8-12	NONE	2.83	8.94	12.27	26.3
SPD3 44 19	2.697	1.141	3000	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	2.94	8.82	11.82	25.3
SPD3 44 22	2.697	1.349	3000	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	2.94	8.88	11.94	25.5
SPD3 44 27	2.697	1.660	3000	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	2.94	8.96	12.11	25.9
SPD3 44 32	2.697	2.008	2900*	2700*	3000	1 5/16-12	1 5/16-12	1 5/8-12	1 5/8-12	1 7/8-12	NONE	2.94	9.06	12.31	26.3
SPD3 44 38	2.697	2.318	2800*	2500*	3000+	1 5/16-12	1 5/16-12	1 5/8-12	1 5/8-12	1 7/8-12	NONE	2.94	9.15	12.49	26.8
SPD3 44 44	2.697	2.697	2600*	2300*	3000+	1 5/16-12	1 5/16-12	1 5/8-12	1 5/8-12	1 7/8-12	NONE	2.94	9.26	12.70	27.3
SPD3 52 19	3.179	1.141	2500	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	3.07	9.09	12.09	26.1
SPD3 52 22	3.179	1.349	2500	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	3.07	9.15	12.21	26.3
SPD 52 27	3.179	1.660	2500	3000	3000	1 5/16-12	1 1/16-12	1 5/8-12	1 5/16-12	1 7/8-12	NONE	3.07	9.24	12.39	26.7
SPD3 52 32	3.179	2.008	2500*	2500*	3000	1 5/16-12	1 5/16-12	1 5/8-12	1 5/8-12	1 7/8-12	NONE	3.07	9.34	12.59	27.1
SPD3 52 38	3.179	2.318	2300*	2500*	3000+	1 5/16-12	1 5/16-12	1 5/8-12	1 5/8-12	1 7/8-12	NONE	3.07	9.43	12.76	27.6
SPD3 52 44	3.179	2.697	2100*	2400*	3000+	1 5/16-12	1 5/16-12	1 5/8-12	15/8-12	1 7/8-12	NONE	3.07	9.54	12.98	28.1
SPD3 52 52	3.179	3.179	2000*	2100*	3000+	1 5/16-12	1 5/16-12	15/8-12	1 5/8-12	1 7/8-12	NONE	3.07	9.67	13.26	28.9
SPD3 63 19	3.869	1.141	2500*	2900*	3000	1 5/16-12	1 1/16-12	1 7/8-12	1 5/16-12	1 7/8-12	NONE	3.27	9.49	12.49	26.8
SPD3 63 22	3.869	1.349	2500*	2500*	3000	1 5/16-12	1 1/16-12	1 7/8-12	1 5/16-12	1 7/8-12	NONE	3.27	9.55	12.61	27.0
SPD3 63 27	3.869	1.660	2300*	2500*	3000	1 5/16-12	1 1/16-12	1 7/8-12	1 5/16-12	1 7/8-12	NONE	3.27	9.63	12.78	27.4
SPD3 63 32	3.869	2.008	2100*	2500*	3000+	1 5/16-12	1 5/16-12	1 7/8-12	1 5/8-12	1 7/8-12	NONE	3.27	9.73	12.98	27.8
SPD3 63 38	3.869	2.318	2000*	2300*	3000+	1 5/16-12	1 5/16-12	1 7/8-12	1 5/8-12	1 7/8-12	NONE	3.27	9.82	13.16	28.3
SPD3 63 44	3.869	2.697	1900*	2100*	3000+	1 5/16-12	1 5/16-12	1 7/8-12	1 5/8-12	1 7/8-12	NONE	3.27	9.93	13.37	28.8
SPD3 63 52	3.869	3.179	1700*	2000*	3000+	1 5/16-12	1 5/16-12	17/8-12	1 5/8-12	1 7/8-12	NONE	3.27	10.07	13.65	29.6
SPD3 63 63	3.869	3.869	1500*	1800*	3000+	1 5/16-12	1 5/16-12	1 7/8-12	1 7/8-12	1 7/8-12	NONE	3.27	10.26	14.04	3.03

[o] Standard ports as indicated are UN-2B straight thread 0-Ring boss ports. Optional sizes and configurations are available. Consult factory.

* Different pressure combinations may be used if required provided they conform to the following equation PF x DF + PR x DR < 13200 where PF and PR are the operating pressures (psi) and DF and DR are the displacements (cu in/rev) for the front and rear pumps respectively (maximum pressures are 3000 psi for displacement codes 19 - 44 and 2500 psi for displacement codes 52 - 63). Consult factory.

+ Common inlet pumps require a reduction in maximum rpm. Consult factory.

CATP 22-10-11-01

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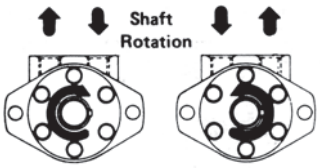
SEE PAGE 27 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

CMM SERIES GEROTOR MOTOR – LOW SPEED – HIGH TORQUE



The Prince CMM Series of high-torque, low speed motors incorporates the orbiting gerotor principle for dependable operation over a wide range of applications. Although dimensionally small, this motor is capable of providing considerable power over a wide speed range and is instantly reversible by simply reversing the direction of the hydraulic fluid flow. The needs of many applications requiring high starting, stall and running torque combined with slow speed are met by this motor.

Feature

- Fully reversible simply by reversing the direction of hydraulic fluid flow.
- Alternative port positioning for versatility of installation. (see next page).
- Optional shaft configurations. (see next page).
- Modular construction for economical servicing and repair, also permits special adaptations.

Filtration

10 micron or finer. (Per ISO cleanliness code level 17/14.

Ordering Code □ □ □ □ □

MOTOR TYPE:
CMM

MOTOR SIZE:
50
100
200
300
400

MOUNTING:
2 Hole Flange – 2
4 Hole Flange – 4

SHAFT TYPE:
Standard 1* Key R

PORTS:
P – 1/2 NPTF (Standard)

APPLICATIONS

Use the CMM Series for light to medium duty applications such as grain augers and elevators, salt and sand spreaders, car wash and sweeper brushes, conveyors, winches, scissor lifts, and many other. To assure optimum motor life, run motor for approximately one hour at 30% of rated pressure before application of full load.

CROSS REFERENCE

CHARLYNN "H" Series

DANFOSS "DH" Series

It is not recommended to operate at a condition requiring both maximum torque and speed. Splined shafts are recommended in application operating at above 2500 in-lbs. continuous torque or under conditions of frequent reversal.

ADM	DISPLACEMENT CC/REV	DISPLACEMENT CU.IN/REV	MAXIMUM PRESSURE PSI CONT	MAXIMUM PRESSURE PSI INT⁰	MAXIMUM PRESSURE Kgf/CM² CONT	MAXIMUM PRESSURE Kgf/CM² INT⁰	MAXIMUM SPEED RPM CONT	MAXIMUM SPEED RPM INT⁰	WT.*
50	49.1	3.0	1400	2200	98	153	800	1000	12.8
100	99.6	6.1	1300	2000	91	139	600	750	13.4
200	199.2	12.2	1200	1800	84	125	300	400	14.5
300	293.2	17.9	1000	1600	70	111	200	250	15.5
400	398.4	24.4	900	1300	63	90	125	160	16.7

Maximum Axial Thrust Load on Shaft 1000 lbs.

⁰Intermittent operation = 10% Operation of every minute

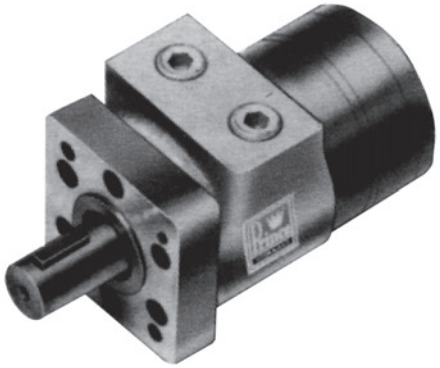
TEMP: NORMAL OPERATING 80⁰ F TO 140⁰ F, MAX 185⁰ F

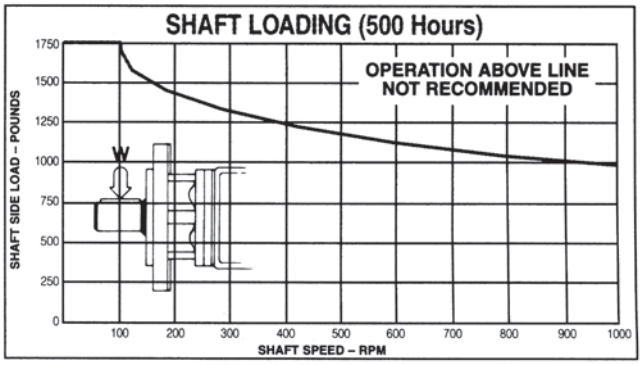
Maximum inlet pressure 2,500 psi for motors in series

Maximum back pressure 1,000 psi

OIL: Mineral based hydraulic fluid 100-200 SUS @ operating temperature.

CMM SERIES





PUMPS AND MOTORS

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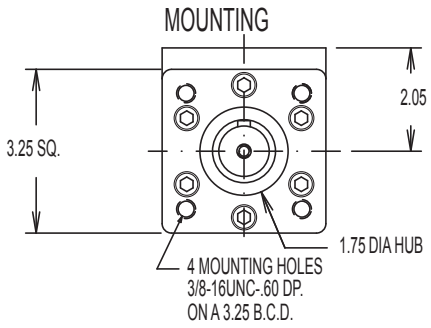
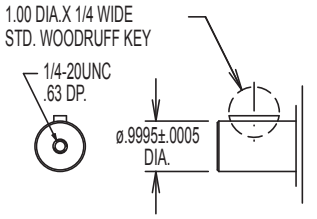
SEE PAGE 28 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

MOUNTING DIMENSIONS CMM



4 BOLT FLANGE

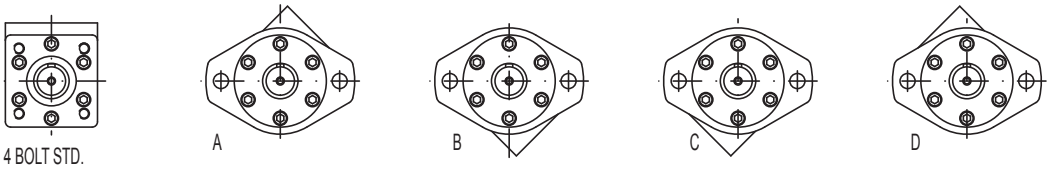
* NOTE: MOUNTING DIMENSIONS ARE THE SAME FOR THE CMM.



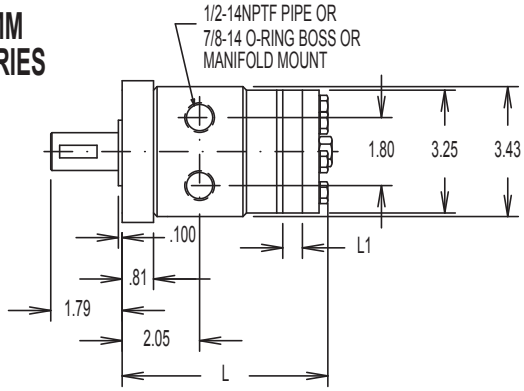
STRAIGHT KEYED SHAFT

STD.

PORT POSITIONS



CMM SERIES



CMM	50	100	200	300	400
L	5.14	5.40	5.89	6.39	6.89
L1	.250	.520	1.00	1.50	2.00

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Performance Data

346
280

Colored number on top = TORQUE (in-lbs)
Black number on bottom = SPEED (RPM)

GREATEST EFFICIENCY
HIGH EFFICIENCY

CMM 50

3.0 Cu. In. REV — ΔPSI

GPM	200	400	600	800	1000	1200	1400	Peak
2	69 149	139 143	209 137	279 131	349 125	419 119	489 113	787 63
4	66 304	136 298	206 292	276 286	346 280	416 274	486 268	784 218
6	62 459	132 453	202 447	272 441	342 435	412 429	482 423	780 373
8	55 614	125 608	195 602	265 596	335 590	405 584	475 578	775 529
10	47 769	117 763	187 757	257 751	327 745	397 739	467 733	768 684
12	37 924	107 918	177 912	247 906	317 900	387 894	457 888	758 839

CMM 100

6.07 Cu. In. REV — ΔPSI

GPM	200	400	600	800	1000	1200	Peak
2	144 72	292 68	440 64	588 60	736 56	884 52	1437 30
4	138 147	286 143	434 139	582 135	730 131	878 127	1431 105
6	130 222	278 219	426 216	574 213	722 210	870 207	1423 185
8	119 300	267 297	415 294	563 291	711 288	859 285	1412 263
10	104 375	252 372	400 369	548 366	696 363	844 360	1397 368
12	85 452	233 449	381 446	529 443	677 440	825 437	1378 415
14	64 528	212 525	360 522	508 519	656 516	804 513	1357 491

CMM 200

12.15 Cu. In. REV — ΔPSI

GPM	200	400	600	800	1000	Peak
2	283 35	563 32	843 29	1123 26	1403 23	
4	273 74	553 71	833 68	1113 65	1393 62	2305 45
6	258 112	538 109	818 106	1098 103	1378 100	2290 83
8	237 149	517 146	797 143	1077 140	1357 137	2269 120
10	209 187	489 184	769 181	1049 178	1329 175	2241 158
12	180 225	460 223	640 220	920 217	1200 214	2112 197
14	136 264	416 261	696 258	976 255	1256 252	2168 235

CMM 300

17.9 Cu. In. REV — ΔPSI

GPM	200	400	600	800	Peak
2	426 23	856 21	1286 18	1716 16	1350
4	413 49	843 46	1273 44	1703 41	2890 27
6	392 75	822 72	1252 70	1682 67	2865 53
8	362 101	791 98	1222 95	1652 93	2830 79
10	324 126	754 124	1184 121	1614 119	2785 105
12	277 152	707 150	1137 147	1567 144	2735 131
14	222 178	652 175	1082 173	1512 170	2680 157

CMM 400

24.4 Cu. In. REV — ΔPSI

GPM	200	400	600	800	Peak
2	565 16	1136 14	1707 12	2279 10	1200
4	549 36	1120 33	1691 31	2262 29	3392 20
6	520 55	1091 53	1663 51	2229 48	3371 39
8	481 74	1053 73	1624 70	2195 68	3335 59
10	430 94	1002 91	1573 89	2144 86	3274 77
12	368 113	939 11	1511 108	2082 106	3213 97
14	296 132	867 130	1438 127	2009 125	3147 116

Δ PSI – is the actual pressure difference between the inlet and outlet ports.
A SITUATION OF SIMULTANEOUS PEAK TORQUE AND MAXIMUM RPM SHOULD NOT BE ALLOWED TO OCCUR.
Splined shafts are recommended in applications that operate at torques higher than 2500 in-lbs. Operating motors at both low rpm (10-20 depending on disp) and low torque may result in rpm fluctuations during operation.
To calculate horsepower from chart data use formula:

$$\text{HP (out)} = \frac{\text{RPM} \times \text{TORQUE (in-lbs)}}{63025}$$

ADM SERIES HYDRAULIC MOTOR CROSS REFERENCE

	SHAFT	PORTS	MOTOR BRAND	DISPLACEMENT CU. IN./REV. 2.9	6.1	11.7	17.5	23.4
4 BOLT FLANGE MOUNTING	WOODRUFF KEYED	1/2 " NPT	PRINCE CHARLYN H DANFOSS DH	CMM50-4RP 101-1001 151-2121	CMM100-4RP 101-1003 151-2123	CMM200-4RP 101-1005 151-2126	CMM300-4RP 101-1007 151-2128	CMM400-4RP 101-1008 151-2129

NOTE: THE CROSS REFERENCE INFORMATION IN THIS CHART IS TO BE USED ONLY AS A REFERENCE FOR GUIDELINE PURPOSES ONLY. AFTER SELECTING A MODEL FROM ABOVE, REVIEW THE MOTOR SPECIFICATIONS TO DETERMINE COMPATIBILITY WITH SPECIFIC APPLICATION.

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