

**D6 & 10-6 SERIES
AIR OPERATED
LIQUID PUMPS**

PRESSURE RATIO OLD & NEW PART NUMBERS

In the mid 1990's with the advent of a new inventory and computer system, SC Hydraulic Engineering was forced to change the part numbering system for better control and understanding.

Prior to that time, a typical part number stated the basic series number, a ratio reference number, and a suffix if there were any modifications. Typically, a call out might be 10-500-1.5 or perhaps 10-600-20BA. The biggest change, and where some confusion may occur, is in the pressure ratio model call out for the various sizes available.

The chart below can be used as an aid in determining the correct number. Take careful note to similar call outs such as .5 (now 005) and 5 (now 050). At the time of the change, it was decided that all new products would use actual pressure ratios for hydraulic section call outs. Hence, with the D5 and D6 Series the model suffix is just that. Note however, the actual physical size of the unit is identical to the 10 Series model.

Additional changes of the part numbers from the old model numbers and the new numbers are shown on the 'How to Order Table'.

10-4 SERIES			10-5 & D5 SERIES			10-6 & D6 SERIES		
HYDRAULIC SECTION MODEL			HYDRAULIC SECTION MODEL			HYDRAULIC SECTION MODEL		
OLD	NEW	RATIO	OLD	NEW	D5 / RATIO	OLD	NEW	D6 / RATIO
0.25	003	5	0.24	003	5	.35QR	003	5
0.5	005	10	0.5	005	10	.5QR	005	10
1	010	15	0.65	007	12	1	010	20
1.5	015	30	1	010	20	1.5	015	25
2	020	35	1.5	015	25	2	020	35
3	030	55	1.75	018	30	3	030	55
5	050	100	2	020	35	5	050	95
8	080	140	3	030	55	8	080	145
12.5	125	220	4	040	70	10	100	180
			4.5	045	85	15	151	240
			6	060	105	20	201	330
			8	080	140	30	301	460
			10	100	195	40	402	740
			16	160	280			
			25	250	440			
			35	350	555			

NO OTHER PUMPS OFFER ALL THESE ADVANTAGES

Simple operating principle – SC air operated hydraulic pumps operate on the simple but efficient principle of pressure intensification through the use of differential areas. Fulfilling Boyle's Law, a larger air-driven piston delivers pressure to a proportionally lesser diameter hydraulic piston, providing fluid flow at relatively higher pressures.

High output capacity and outstanding performance provided at very low cost.

Guaranteed performance – All SC Hydraulic pumps will give years of low cost, trouble free service when properly installed and maintained to manufacturer's instruction.

Wide range of operating pressures is provided by all models. For example, the D5000B55 operates efficiently when delivering from 400 to 5800 psi (see D5 Series specifications).

Wide range of output capacities – Only 100 psi air pressure is required for all models to attain maximum rate of flow (see performance charts for data).

Complete flexibility – SC Hydraulic pumps adapt to a wide variety of applications, from simple manual controls to fully automatic operation. Air motors are interchangeable for most models within each series.

Automatic restart – Whenever an SC Hydraulic pump is idle, the pilot valve is designed to re-position the pump on the power stroke for the next cycle of operation.

Smooth operation – The air piston actuating valve is precision fit to close tolerances for maximum efficiency and long service life.

Both pressure and volume of flow are easily and accurately controlled by a pressure regulator installed in the air supply line.

Fluid Compatibility – Pumps can operate with almost any type fluid service (specify when ordering).

Hydraulic cylinders are constructed from aluminum-bronze, stainless steel, or carbon steel.

Hydraulic pistons are constructed from stainless steel, hard chrome-plated.

Materials incorporated in the hydraulic assembly vary depending upon type of service and pump model.

Designed for easy maintenance – Costly down time is reduced to a minimum when service is required. "D" Dry Lube Series pumps are packed at the factory with valve lubricant and may be operated without a lubricator in air supply. Hydraulic cylinder packing may be replaced without dismantling the air motor.

Three Series available – choose from:

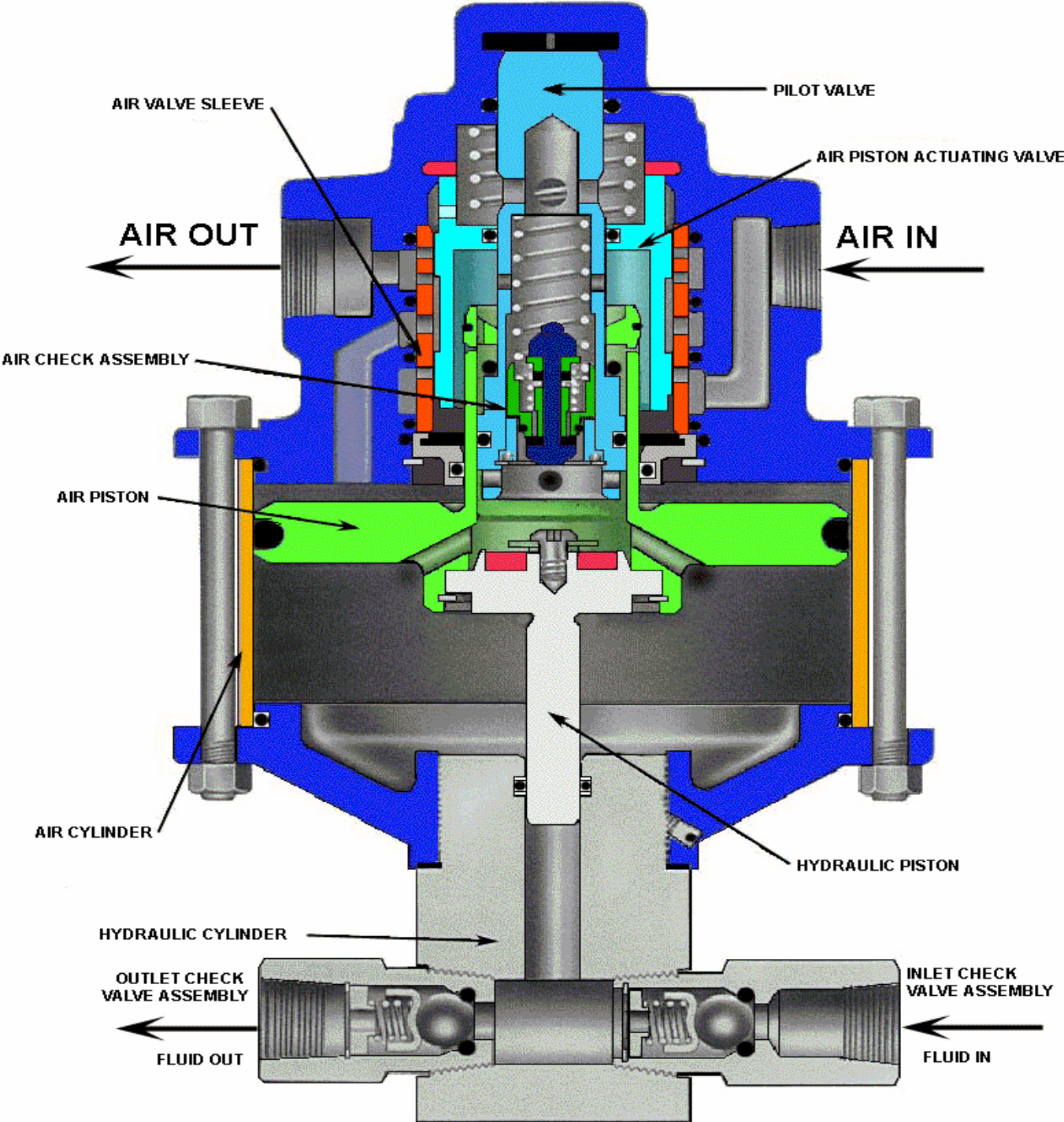
10-4 Series • 9 models • to 22,000 psi

D5/10-5 Series • 16 models • to 55,000 psi

/D6/10-6 Series • 13 models • to 65,000 psi

Applications include static and burst testing, flow testing requiring relatively low flows at high pressures, operation of hydraulic presses, clamping, pressing, metal forming, piercing, blanking, staking, etc. Applications requiring extreme intermittent pressure and velocity commonly associated with water blasting and jetting.

Liquid Pump Cut-a-way



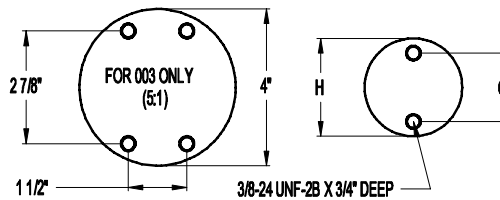
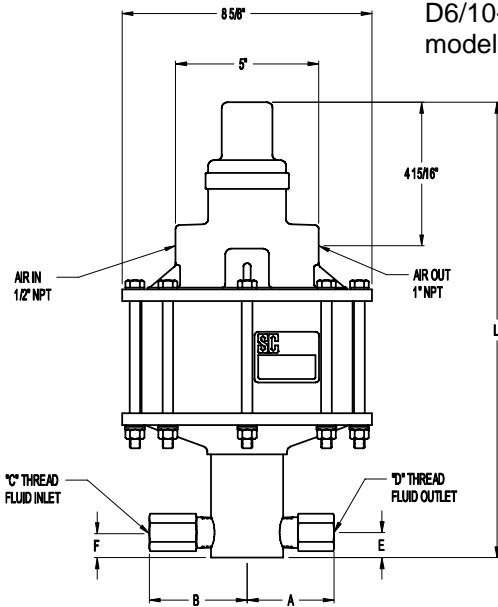
D6 & 10-6 SERIES

D6/10-6 Series pumps have a 7" diameter air piston and a 2 1/2" stroke. Thirteen models are available with pressures up to 65,000 psig.

When operating from 0 to rated hydraulic pressure, air consumption will be approximately 56 scfm of free air at 100 psi output. At lower air pressures and higher hydraulic pressures air consumption will be reduced proportionately to flow rates indicated.

Mounting may be in any position, vertical preferred. When mounting in an inverted position, a drain cock should be provided to drain off any liquid that may accumulate in the pilot valve air chamber.

The D6 Series "Dry Lube" pump is identical to the 10-6 Series except it is pre-lubricated and therefore does not require an air line lubricator. The part number distinguishes it from the 10-6 Series by the D6 prefix and using the actual ratio rather than a numerical code in the model suffix.



Mounting Dimensions in Inches

D6 Series Model (Ratio)	10-6 Series Model	L	A	B	NPT/HF4 (Std)		SAE/HF4 (Optional)		E	F	G	H
					C Thread	D Thread	C Thread	D Thread				
5	-003	19.625	4.875	2.375	1 1/4"	1"	-	-	1.500	2.500	---	4.000
10	-005	18.625	4.750	4.375	1"	1"	-	-	1.375	1.375	2.375	3.000
20 thru 35	-010 thru -020	17.063	3.000	4.000	1"	1/2"	-	-10 SAE	1.000	1.000	1.750	2.500
55 thru 180	-030 thru -100	15.750	3.000	3.375	1/2"	1/2"	-10 SAE	-10 SAE	0.875	0.875	1.750	2.500
240 thru 330	-151 thru -201	16.000	2.500	2.313	3/8"	3/8"	-	9/16-18 *	0.875	0.875	1.750	2.500
460	-301	16.000	3.750	2.313	3/8"	9/16-18 *	-	-	0.875	0.875	1.750	2.500
740	-402	16.250	4.250	2.313	3/8"	9/16-18 *	-	-	1.125	1.125	2.375	3.000

*Coned and Threaded High Pressure Connection for 1/4" O.D.

Measurements & Approximate Air to Hydraulic Pressure

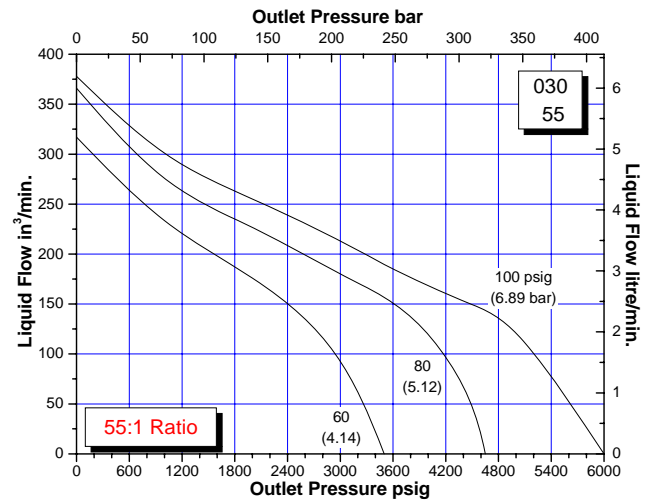
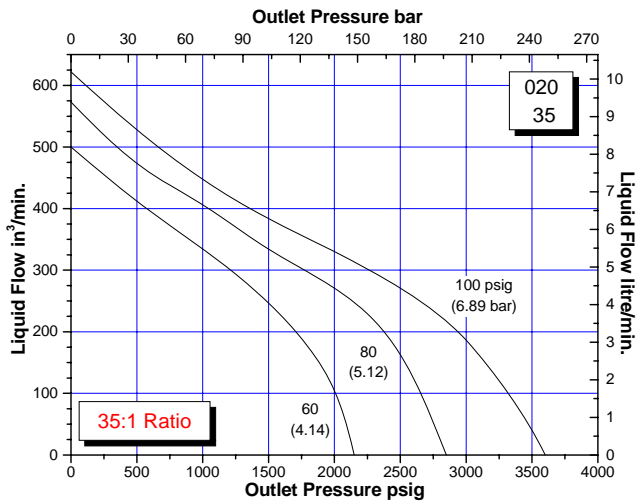
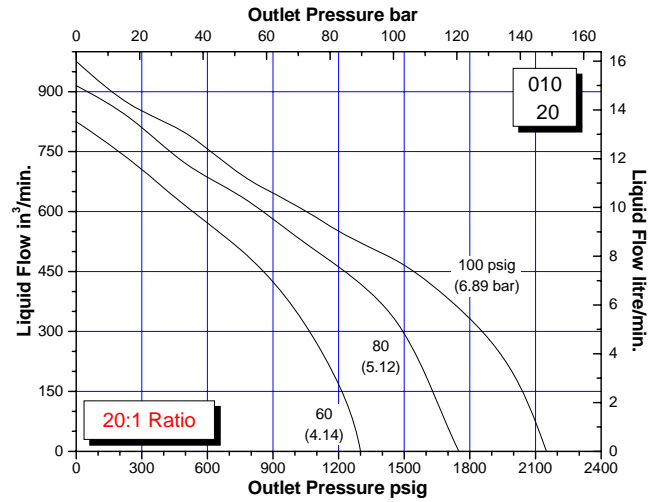
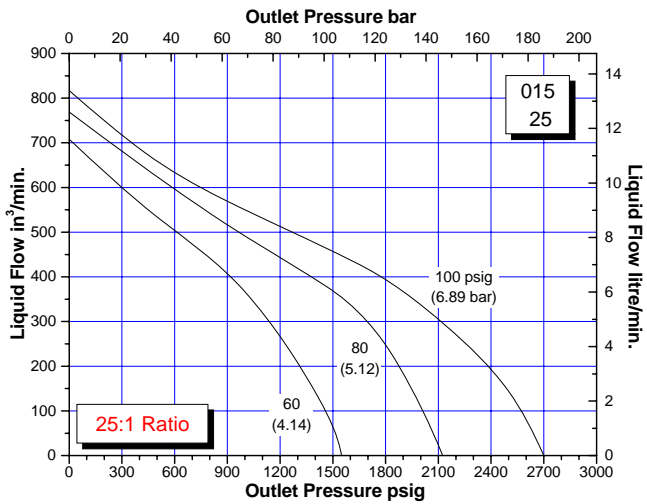
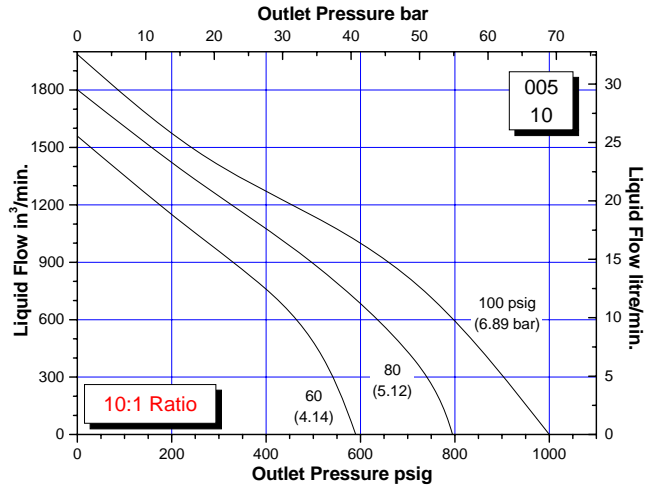
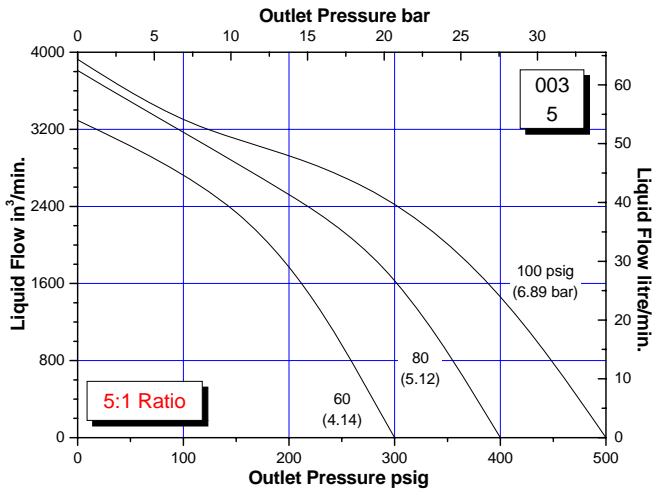
D6 Series Model (ratio)	10-6 Series Model	Hydraulic Piston Diameter (in)	Hydraulic Piston Area (in ²)	Volume per Stroke (in ³)	Air Pressure (PSI)									
					10	20	30	40	50	60	70	80	90	100
5	003	3.000	7.070	17.70	50	100	150	200	250	300	350	400	450	500
10	005	2.125	3.560	8.900	85	185	285	390	490	590	690	795	900	1000
20	010	1.438	1.620	4.050	165	425	650	875	1075	1300	1550	1750	1950	2150
25	015	1.315	1.350	3.380	180	450	725	1000	1300	1550	1850	2125	2400	2700
35	020	1.125	0.994	2.490	250	625	1025	1400	1800	2150	2500	2850	3250	3600
55	030	0.875	0.601	1.500	450	1050	1700	2275	2900	3500	4100	4650	5200	6000
95	050	0.688	0.371	0.928	750	1750	2800	3700	4750	5900	6875	7700	8750	9700
145	080	0.563	0.249	0.623	1100	2600	4200	5550	7100	8500	10000	11500	12950	14400
180	100	0.500	0.196	0.490	1500	3200	5200	7100	9000	10800	12500	14500	16300	18000
240	151	0.438	0.150	0.375	1900	4400	6900	9100	11600	14000	16400	18800	21300	23700
330 **	201 **	0.375	0.110	0.275	3000	6000	9500	12600	16000	19100	22300	25600	29000	32300
460 **	301 **	0.313	0.077	0.193	4000	8800	13700	18000	22500	27000	31500	36500	41400	45800
740 **	402 **	0.250	0.049	0.123	6000	13000	21000	27000	34000	40500	46000	52000	59000	65000

** Recommended for continuous duty at pressures up to 30,000 psi. Intermittent duty above 30,000 psi.

D6 & 10-6 SERIES

APPROXIMATE RATE OF DISCHARGE

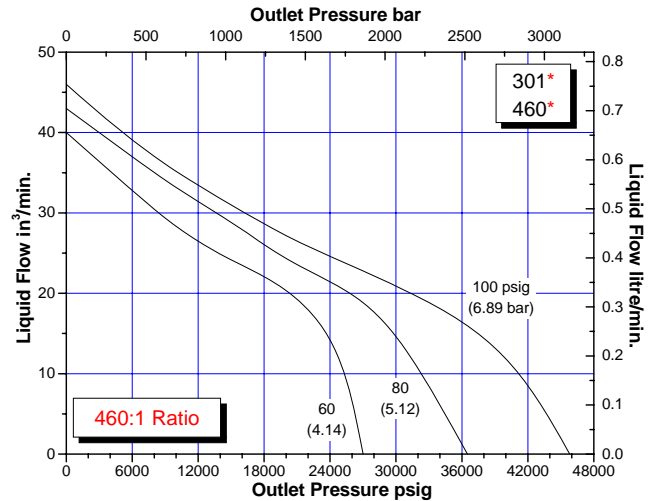
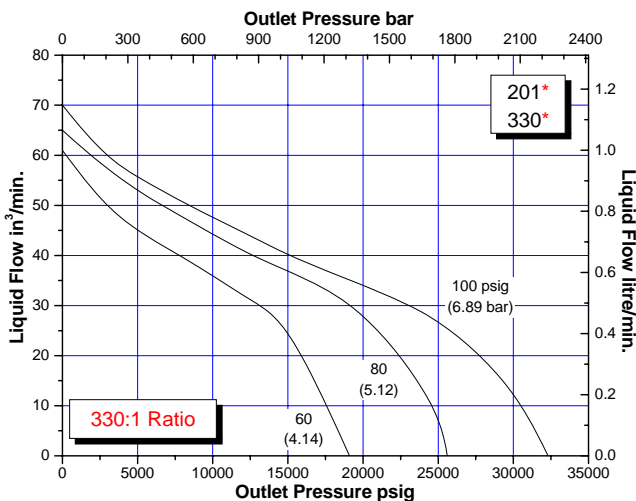
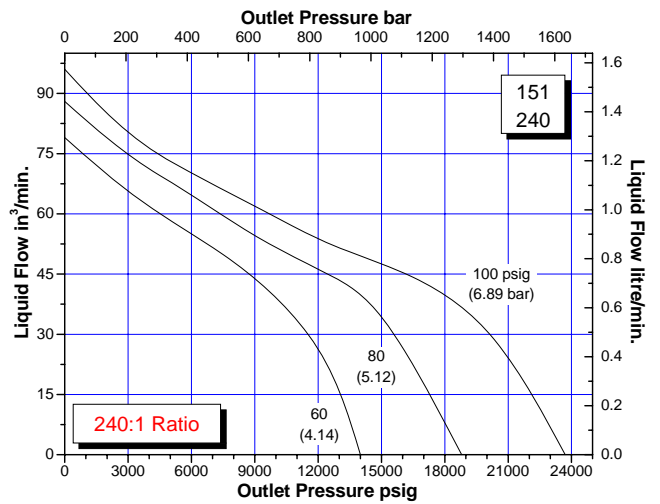
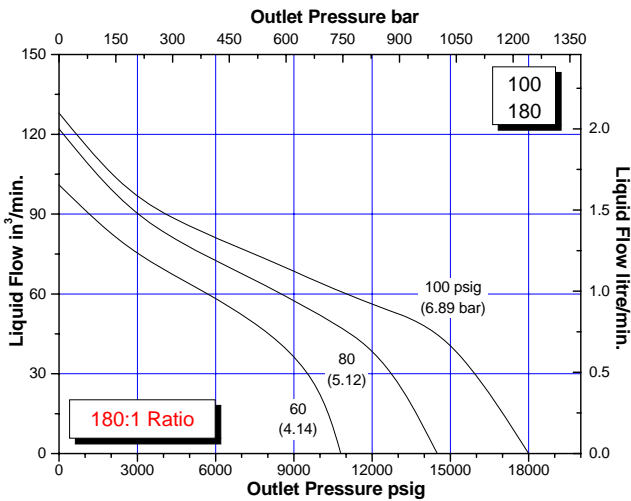
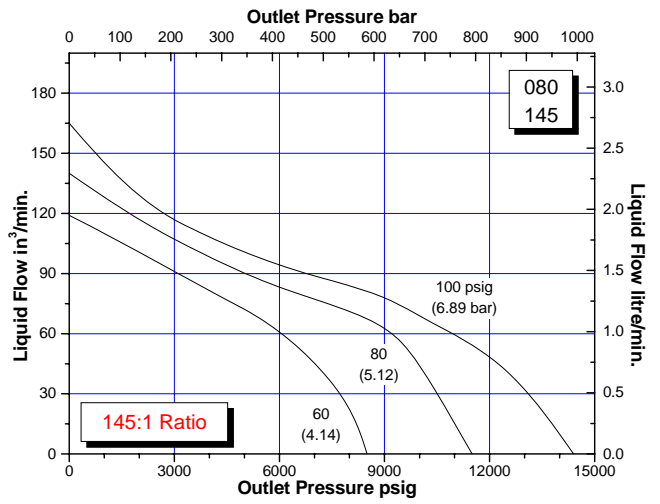
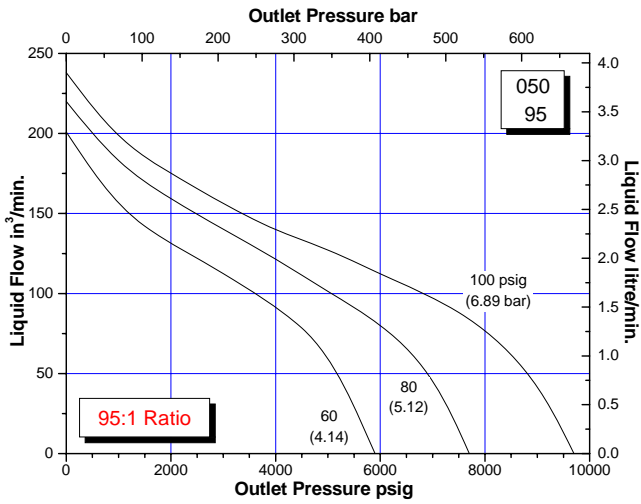
Model Code
 Use Top for 10-6
 Use Bottom for D6



D6 & 10-6 SERIES

APPROXIMATE RATE OF DISCHARGE

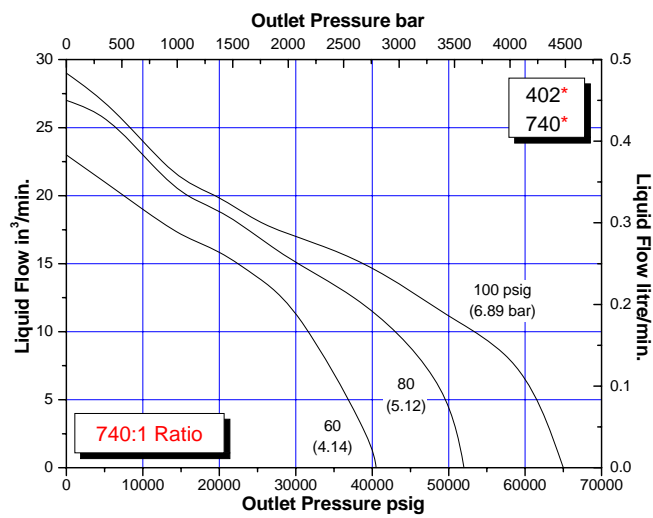
Model Code
Use Top for 10-6
Use Bottom for D6



Model Code
Use Top for 10-6
Use Bottom for D6

D6 & 10-6 SERIES

APPROXIMATE RATE OF DISCHARGE



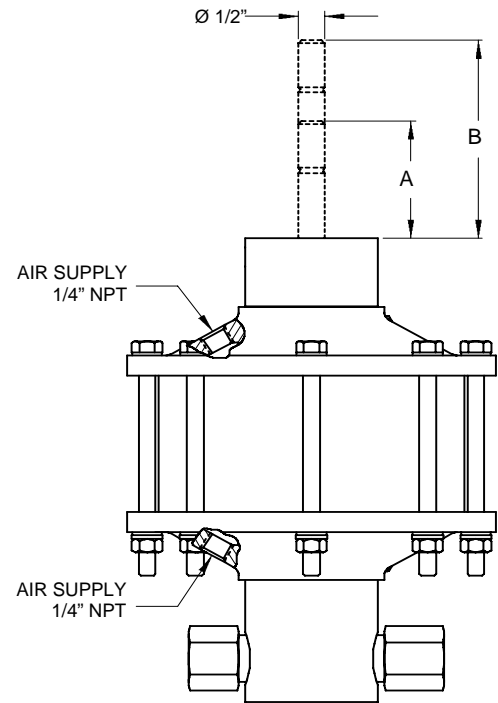
80-5 & 80-6 SERIES INTENSIFIERS

SC Hydraulic Engineering 80-5 and 80-6 Intensifiers operate on the same principle as our air operated liquid pumps with one distinctive difference — the air motor is modified so that it operates as a double-acting cylinder. Instead of automatically reciprocating until the stall pressure is reached, the 80 Series Intensifiers require an external four-way air valve to operate the unit.

POSITION ROD INDICATOR		
MODEL	"A" RETRACT	"B" EXTEND
80-5	1.188	3.937
80-6	2.362	3.987

The end caps have 1/4" NPT air supply port connections and the unit can be supplied with a position indicator rod at the top of the intensifier if required. All ratios and options available on the intensifiers are the same as on our D5 and D6 Series pumps. The units can be mounted in any position however upright is preferred. The air cylinder does not require lubrication.

Refer to the "How to Order" and performance data sheets of the D5 and D6 Series pumps for additional information.

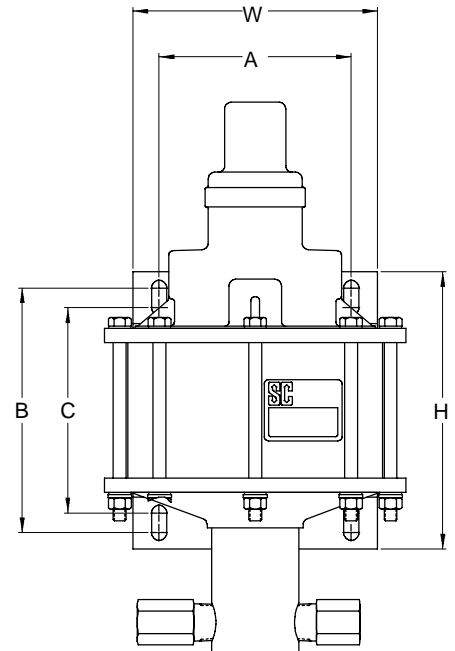


D5/10-5 & D6/10-6 SERIES MOUNTING BRACKETS

MOUNTING BRACKET DIMENSIONS						
Pump Series	Part No.	W	H	A	B	C
D5/10-5	11-5162S000	7.00	6.83	5.50	5.89	4.77
D6/10-6	11-6172S000	7.00	7.94	5.50	7.00	5.88

Mounting brackets can be ordered with a pump by adding an "M-105" modification as a suffix on the model number for the D5/10-5 or D6/10-6 pumps. If ordered as separate parts use the numbers above. One or two brackets can be used for each pump depending on the application.

The brackets are installed by removing the three bolts for the bracket position and loosening the remaining tie rod bolts. The tie rod bolts should then be drawn up gradually in a cross sequence for uniform tightening to 15-17 ft-lb. Refer to the "Servicing Instructions" for additional information.

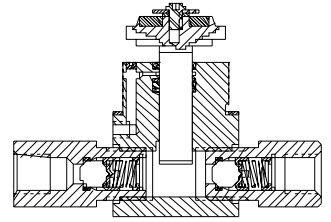


PUMP MODIFICATIONS

A combination of any of the modifications shown can be supplied upon request. Consult factory for additional information and dimensional data if required.

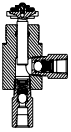
“A” Modification – Available on all models

This modification utilizes dual seals in the hydraulic assembly with a bleed-off between the seals to atmosphere, thus providing a visual indication of hydraulic seal leakage. Used where contamination of the air motor from the hydraulic fluid being pumped is objectionable



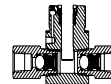
”K” Modification – Available on D5/10-5 and D6/10-6

This modification utilizes a special air piston in the air motor assembly which decreases the stroke of the pump, thus minimizing the internal forces and increasing air motor life. Used in applications exhibiting rapid pressure losses, such as burst testing.



“B” Models – Available on D5/10-5 and D6/10-6

The “B” models have a bottom inlet connection for convenient tank top installation or alternate mounting configuration.

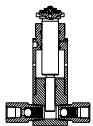


“H” Models – Available on D5/10-5 and D6/10-6

The “H” Models utilize special packing in the hydraulic assembly for maximum performance where hydraulic fluid media is contaminated with foreign matter, thus providing for a much greater life expectancy from the hydraulic seals than with standard o-ring seals. The “A” modification is included on all “H” models and the check valves have PTFE o-rings

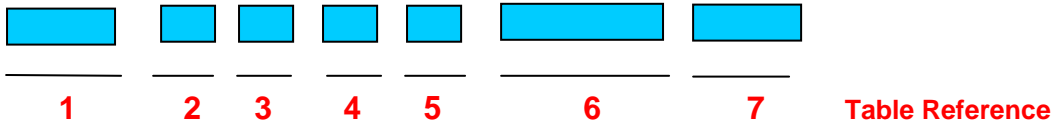
“C” Models – Available on D5/10-5 and D6/10-6

The “C” Models utilize PTFE chevron packing in the hydraulic assembly for ultimate performance when other packing material is not compatible with the fluid used or because of extreme temperature conditions. The “A” modification is included on all “C” models and the check valves have PTFE o-rings.

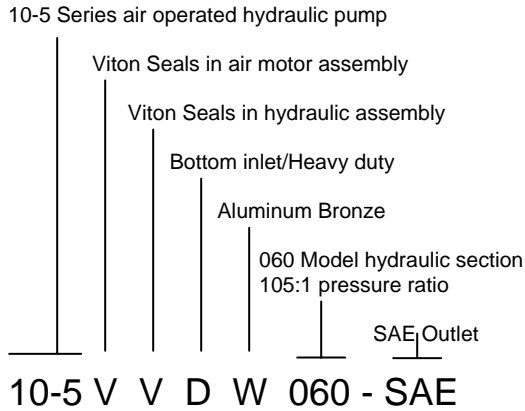


“R” Modification – Available on D5/10-5 and D6/10-6. The “R” Models are furnished with an isolator attachment which prevents the hydraulic piston retracting into the air motor during operation, thus providing for 100% non-contamination of the hydraulic assembly from the air motor. The isolator also acts as a heat barrier.

HOW TO ORDER TABLE



Example #1 Pump Selection



Example #2 Pump Selection

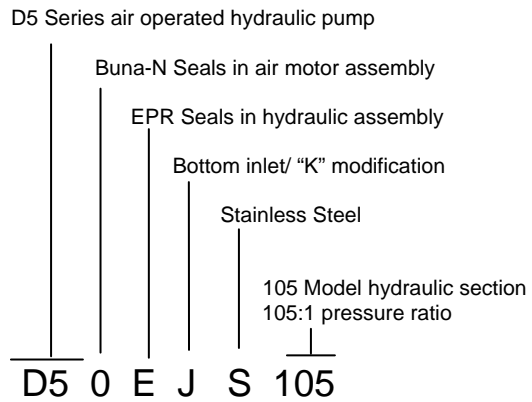


TABLE 1 ⁽⁴⁾ **Pump Series Designation**

10-4	Series Lubricated pump
10-5	Series Lubricated pump
D5	D5 Series "Dry Lube" pump
10-6	Series Lubricated pump
D6	D6 Series "Dry Lube" pump
80-5	5 1/2" Bore Intensifier
83-5	5 1/2" Intensifier with Position Indicator Rod
80-6	7" Bore Intensifier
83-6	7" Intensifier with Position Indicator Rod

TABLE 2 Seal Compound - Air Motor

0	Buna-N (standard)
V	Viton

TABLE 3 Seal Compound – Hydraulic Section

0	Buna-N nitrile (standard)
E	EPR - ethylene propylene
V	Fluorocarbon
*	Consult factory for special compounds

TABLE 4 Modifications

0	Standard pump
A	"A" modification
B	Bottom inlet ⁽¹⁾
C	Chevron Seals
D	Bottom inlet – heavy duty ^(1,3)
E	Bottom inlet – "A" modification ⁽¹⁾
F	Isolator – Chevron Seals ^(1,3)
G	Isolator – heavy duty ^(1,3)
H	Heavy duty ⁽¹⁾
J	Bottom inlet – "K" modification ⁽¹⁾
K	"K" modification ⁽¹⁾
M	Bottom inlet – "A" and "K" modification ⁽¹⁾

TABLE 4 Modifications

(continued)

N	Isolator – "A" modification ⁽¹⁾
P	Isolator – "K" modification ⁽¹⁾
Q	Isolator – "A" and "K" modification ⁽¹⁾
R	Isolator ⁽¹⁾
S	Heavy duty – "K" modification ^(1,3)
U	Heavy duty – bottom inlet – "K" mod. ^(1,3)
V	Heavy duty – isolator – "K" modification ^(1,3)

TABLE 5 Material of Construction – Hyd. Section

W	Aluminum bronze & stainless steel (10-4, 10-5, 10-6 Series) standard
B	Aluminum bronze & stainless steel (D5, D6 Series) standard
S	All stainless steel
C	Cad plate carbon steel, stainless steel ⁽²⁾

TABLE 6 Model designation –Pressure ratio

Refer to pressure ratio charts for proper selection

TABLE 7 Port option

Blank	Standard
SAE	Straight thread as indicated on chart
HF4	9/16-18 x 1/4" OD tube 60K psi

Additional Special Modifications may be included with an "M" suffix at the end of the model number.

Notes:

- (1) Not available for 10-4 Series
- (2) 25 piece minimum order
- (3) "A" modification included with all Chevron and Heavy Duty seal modifications.
- (4) Do not fill gap on a two digit description. Refer to Example #2