How to order SC Air Operated Liquid Pumps

1. **Available Air pressure and Flow Rate**
   For optimum performance, the maximum recommended air pressure for continuous duty is 100 psig for all pumps and power units. Air - drive pressure up to 150 psig may be used intermittently.

2. **Required Hydraulic Output pressure and Flow Rate**
   We recommend that SC pumps be selected to deliver the required hydraulic flow rate and output pressure with 70 psig of air-drive pressure. This will provide a safety factor if air-drive pressure decreases for any reason. For hydraulic pressure, see "Approximate Air to Hydraulic Pressure Ratios -- Static Conditions". For hydraulic flow, see "Hydraulic Pump Approximate Rate of Discharge".

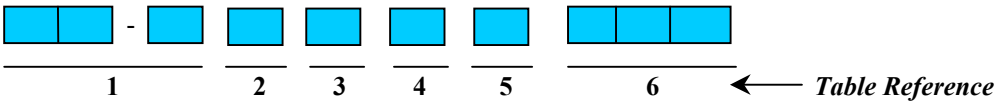
3. **Type of Fluid Being Pumped**
   The type of fluid being pumped is an important consideration in the selection of a pump. The materials of the hydraulic assembly and compounds of the hydraulic seals are determined by the specific fluid. Standard SC pumps are available for oil, water and most benign fluids. The standard hydraulic seal compound is Nitrile (Buna-N) with Tetrafluoroethylene (Teflon back up rings.) Pumps and power units can be purchased for other types of fluids. Consult the factory for recommended seal combinations.

4. **Acceptable Size and Weight**
   For some applications, the unit's physical size and weight may be an important consideration.

**Notice: Some Charts and Diagrams may need to be enlarged to see fine detail.*

**Note: hydraulic seal performance and life will be effected to some degree with non-lubricating fluids, such as water, than with lubrication type fluids.*

SC Air Operated Liquid Pumps
Model Selection table:



Example #1

1) Hydraulic Pump series	10-5
2) Seal Compound Air drive	V
3) Seal Compound Hydraulic	V
4) Modifications	D
5) Hydraulic section Material	W
6) Model Number	060

10-5 V V D W 060

10-5 Series Pump with Viton Air seal and Viton Hydraulic seal with Heavy Duty bottom Inlet Mod. in Aluminum Bronze &Stainless Steel construction with a Pressure Ratio of 105:1. Max Output 10,500 psi.

Example #2

1) Hydraulic Pump series	10-6
2) Seal Compound Air drive	0
3) Seal Compound Hydraulic	0
4) Modifications	E
5) Hydraulic section Material	S
6) Model Number	020

10-6 0 0 E S 020

10-6 Series Pump with Standard Air and Hydraulic seals with bottom inlet "A" Mod. in Stainless Steel construction with a Pressure Ratio of 35:1. Max Output 3,500 psi.

Table 1. Pump Series Designation

10 - 4	10 - 4 Series air operated liquid pump
10 - 5	10 - 5 Series air operated liquid pump
10 - 6	10 - 6 Series air operated liquid pump

Table 2. Seal Compound Air Drive

O	Buna - N (Standard)
V	Viton

Table 3. Seal Compound Hydraulic

O	Buna - N (Standard)
E	EPR
V	Viton
*	Special compounds contact factory

Table 4. Modifications

O	Standard Pump
A	"A" Modification (See Mod Chart)
B	Bottom Inlet
D	Bottom Inlet Heavy Duty (notes 1,3)
E	Bottom Inlet "A" Modification (1)
G	Isolator Heavy Duty (1,3)
H	Heavy Duty (1)
J	Bottom Inlet "K" Modification (1)
K	"K" Modification (See Mod Chart) (1)
M	Bottom Inlet "A" and "K" Modification (1)
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" Modification (1,3)
V	Heavy Duty Isolator "K" Modification (1,3)

Table 5. Construction Material Hydraulic Section

C	Cadmium plated Carbon Steel & Stainless Steel (2)
S	All Stainless Steel
W	Aluminum Bronze & Stainless Steel

Table 6. Model Description and Ratio

Refer to our Pressure Ratio Chart for Model # Selection.
"Max Pressure calculation "
Inlet Air Drive psi times Ratio number equals max Hydraulic Outlet psi.
100 psi * 35 = 3,500 psi max.

Notes:

1) Not available for 10-4 series pump.
2) For oil service only, with orders of 25 units or more.
3) "A" Modification standard on all "H" models.

SC Hydraulic Engineering Corp. 1130 Columbia St. Brea, CA. 92821 (714) 257-4800

* 10-4 Series

When operating from 0 to rated hydraulic pressure, air consumption will be approximately 14 scfm of free air to 100-psi input. At lower air pressures and higher hydraulic pressures air consumption will be reduced proportionately to flow rates indicated.

* 10-5 Series

When operating form 0 to rated hydraulic pressure, air consumption will be approximately 28 scfm of free air at 100-psi input. At lower air pressures and higher hydraulic pressures air consumption will be reduced proportionately to flow rates indicated.

* 10-6 Series

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

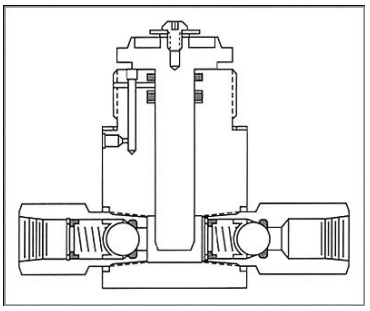
PRESSURE RATED CHART

10-4 SERIES			10-5 SERIES			10-6 SERIES		
Model Number		PRESSURE RATED	Model Number		PRESSURE RATED	Model Number		PRESSURE RATED
OLD	REF.		OLD	REF		OLD	REF	
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	C151	240
			6	060	105	20	C201	330
			8	080	140	30	301	460
			10	100	195	40	402	740
			16	160	280			
			25	250	440			
			35	350	555			

Special and Modified Pumps

10-4, 10-5, and 10-6 Series

A combination of any of the modifications shown can be supplied upon request. Write or call the factory for information and prices.



. "A" Modification *

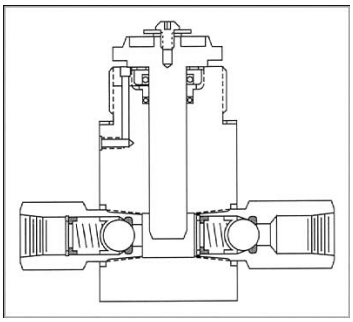
The "A" modification utilizes dual seals in the hydraulic assembly with a bleed port between the seals to atmosphere, providing a visual indication of hydraulic seal leakage. Used where contamination of the air motor from the hydraulic fluid being pumped is objectionable.

. "K" Modification *

The "K" 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 sir motor service life. Used in applications exhibiting rapid pressure losses, such as burst pressure testing.

. "B" Models *

The "B" models have a bottom inlet connection for convenient tank top installation.



. "H" Models *

The "H" models utilize special packing in the hydraulic assembly for maximum performance where hydraulic fluid media is contaminated with foreign matter, providing for a much greater life expectancy from the hydraulic seals than with standard "O" ring seals. "A" modification is standard on all "H" models.

. "R" Models *

The "R" models are furnished with an isolator attachment which prevents the hydraulic piston from retracting into the air motor during operation, providing for 100% non contamination of the hydraulic assembly from the air motor. The isolator attachment also acts as a heat barrier.

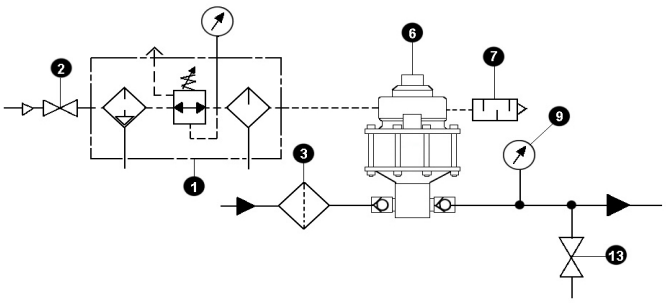
* Not available in 10-4 Series

SC Hydraulic Engineering Corp. 1130 Columbia St. Brea, CA. 92821 (714) 257-4800

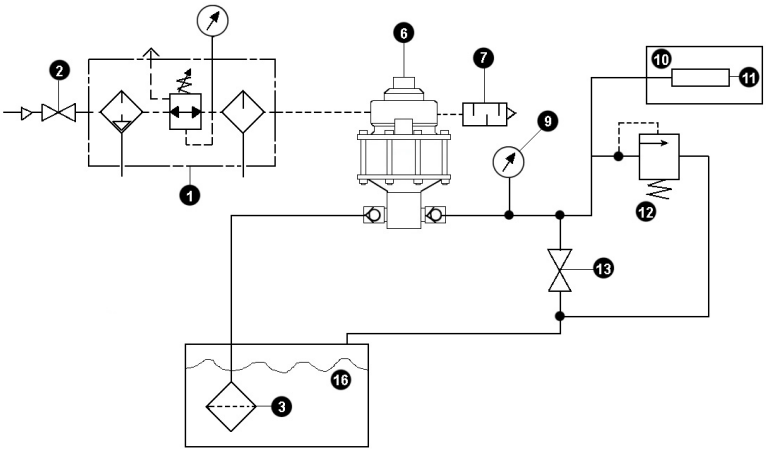
LEGEND

1. Filter, regulator, lubricator assembly
2. Air shut off valve
3. Hydraulic filter
4. Manual 4 way air valve
5. Air sequence valve
6. SC air operated hydraulic pump
7. Air exhaust muffler
8. Pressure unloading valve, air operated
9. Hydraulic pressure gauge
10. Test chamber
11. Test object
12. Pressure relief valve
13. Fluid bleed valve
14. Hydraulic press
15. Check valve
16. Hydraulic reservoir

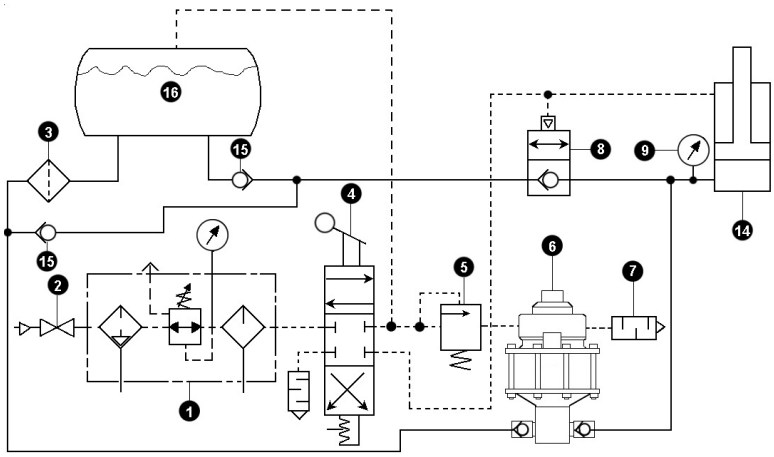
TYPICAL CIRCUIT FOR INSTALLATION



TYPICAL CIRCUIT FOR STATIC PRESSURE TEST



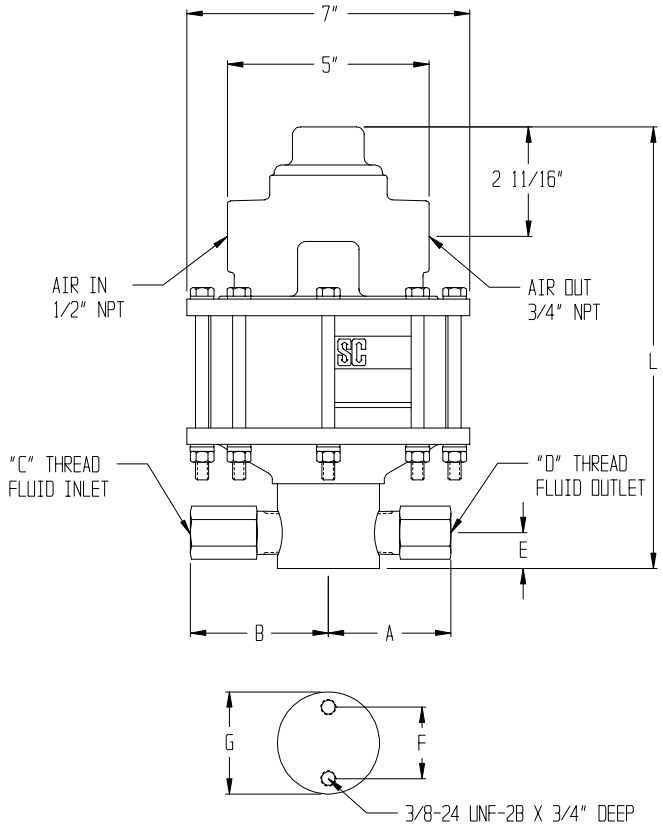
TYPICAL CIRCUIT FOR OPERATION OF HYDRAULIC PRESS



Air Operated Hydraulic Pump

10-5 Series

Specifications and Installation Data



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

10-5 Series pumps have a 5 ½ " diameter air piston and a 1 ¼ " stroke.

10-5 Series Mounting Dimensions (Inches)

10-5 Series Model No.	L	A	B	C NPTF	D NPTF	E	F	G
-003	13 1/8	3 1/2	4 3/4	1	½	1 1/8	2 3/8	3 1/8"
-005 thru -010	12 5/16	3	4	1	½	1	1 3/4	2 ½"
-015 thru -060	10 7/8	3	3 3/8	½	½	7/8	1 3/4	2 ½"
-080 thru -250	11 1/4	2 1/2	2 5/16	3/8	3/8	7/8	1 3/4	2 ½"
-350	11 3/16	†	2 1/8	3/8	†	1	1 3/4	2 ½"

+ Super Pressure (coned & threaded) 1/4" o.d. tubing

SC Hydraulic Engineering Corp. 1130 Columbia St. Brea, CA. 92821 (714) 257-4800

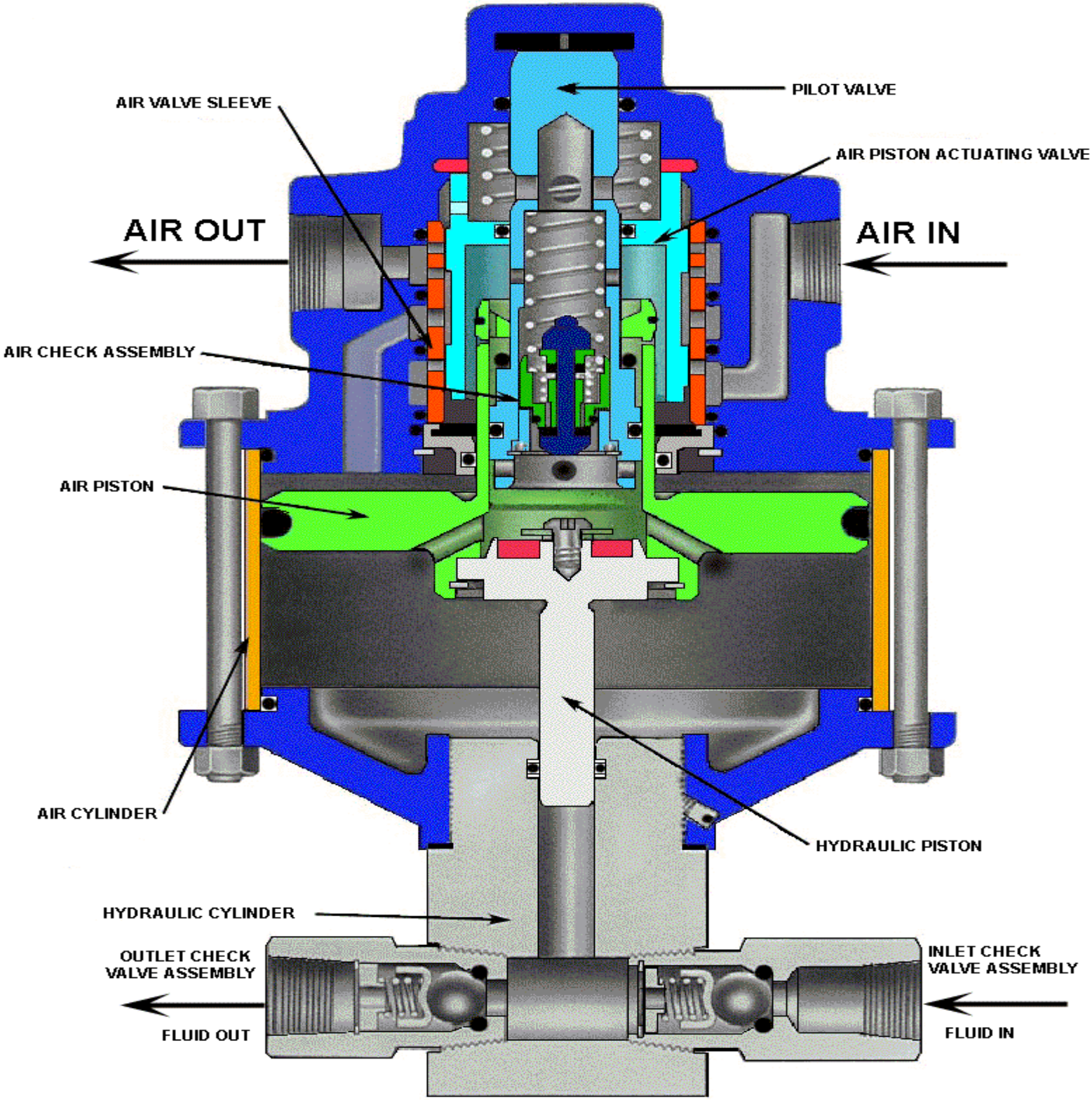
10-5 Series Approximate Air to Hydraulic Pressure Ratios
Static Conditions

10-5 Series Model	Air Pressure (PSI)									
	10	20	30	40	50	60	70	80	90	100
-003	30	75	130	175	220	270	320	370	415	465
-005	80	180	285	385	490	590	690	795	900	1,000
-007	90	200	340	450	560	700	850	980	1,100	1,225
-010	145	330	525	700	925	1,100	1,300	1,500	1,700	1,900
-015	200	475	750	1,000	1,300	1,550	1,800	2,000	2,350	2,625
-018	225	525	875	1,150	1,500	1,775	2,050	2,350	2,700	3,075
-020	250	600	1,000	1,400	1,775	2,125	2,475	2,825	3,200	3,625
-030	400	1,000	1,700	2,200	2,900	3,400	4,000	4,600	5,200	5,800
-040	500	1,175	1,950	2,600	3,350	4,100	4,900	5,600	6,350	7,000
-045	800	1,700	2,600	3,400	4,400	5,100	6,000	6,900	7,800	8,600
-060	900	2,000	3,150	4,200	5,400	6,400	7,450	8,500	9,700	10,700
-080	1,100	2,400	3,900	5,400	6,900	8,300	9,800	11,200	12,600	14,000
-100	1,400	3,250	5,250	7,250	9,250	11,250	13,250	15,000	17,000	18,750
-160	2,250	4,000	7,750	10,500	13,500	16,250	18,750	21,500	24,500	27,500
-250	5,000	8,000	12,500	16,500	21,000	25,500	30,000	34,000	38,000	42,500
-350	6,250	12,500	18,750	25,000	31,250	37,500	43,750	47,500	51,250	55,000

10-5 Series Measurements

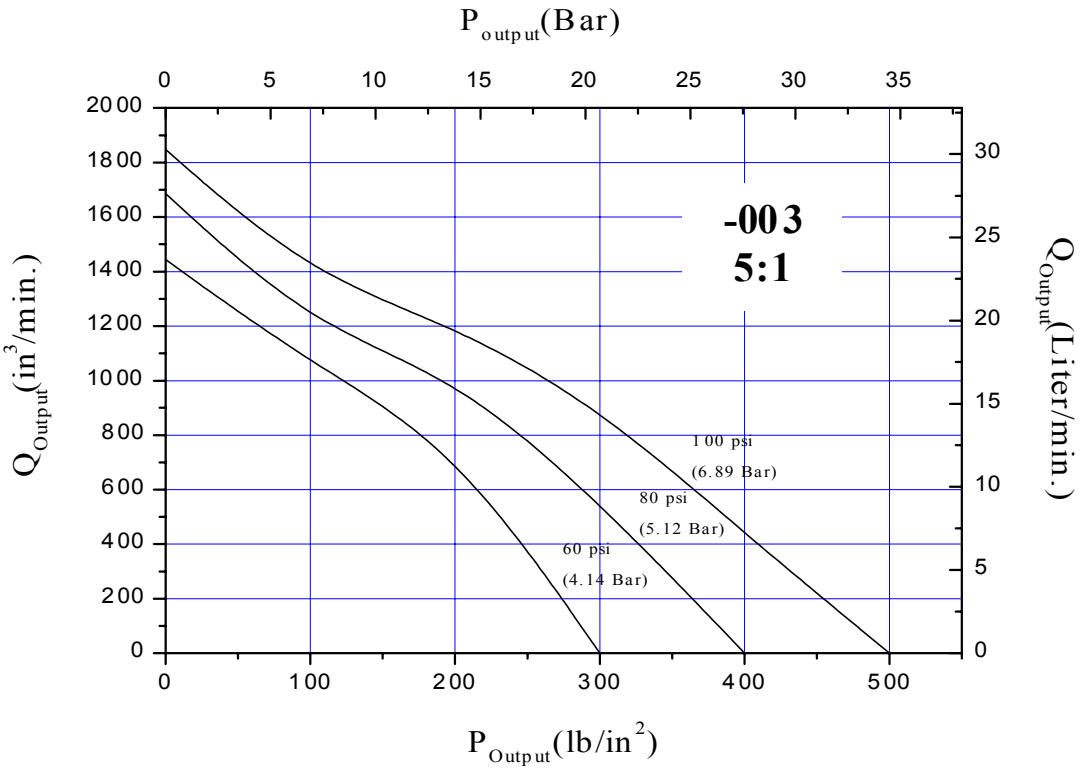
10-5 Series Model No.	Hydraulic Piston Diameter (Inches)	Hydraulic Piston Area (Square Inches)	Volume per Stroke (Cubic Inches)
-003	2.375	4.43	5.54
-005	1.625	2.07	2.59
-007	1.500	1.77	2.21
-010	1.1875	1.11	1.39
-015	1.000	.785	.981
-018	.9375	.689	.861
-020	.875	.601	.751
-030	.6875	.371	.464
-040	.625	.307	.384
-045	.5625	.248	.310
-060	.500	.196	.245
-080	.4375	.150	.188
-100	.375	.110	.138
-160	.3125	.077	.096
-250	.250	.049	.061
-350	.2187	.038	.048

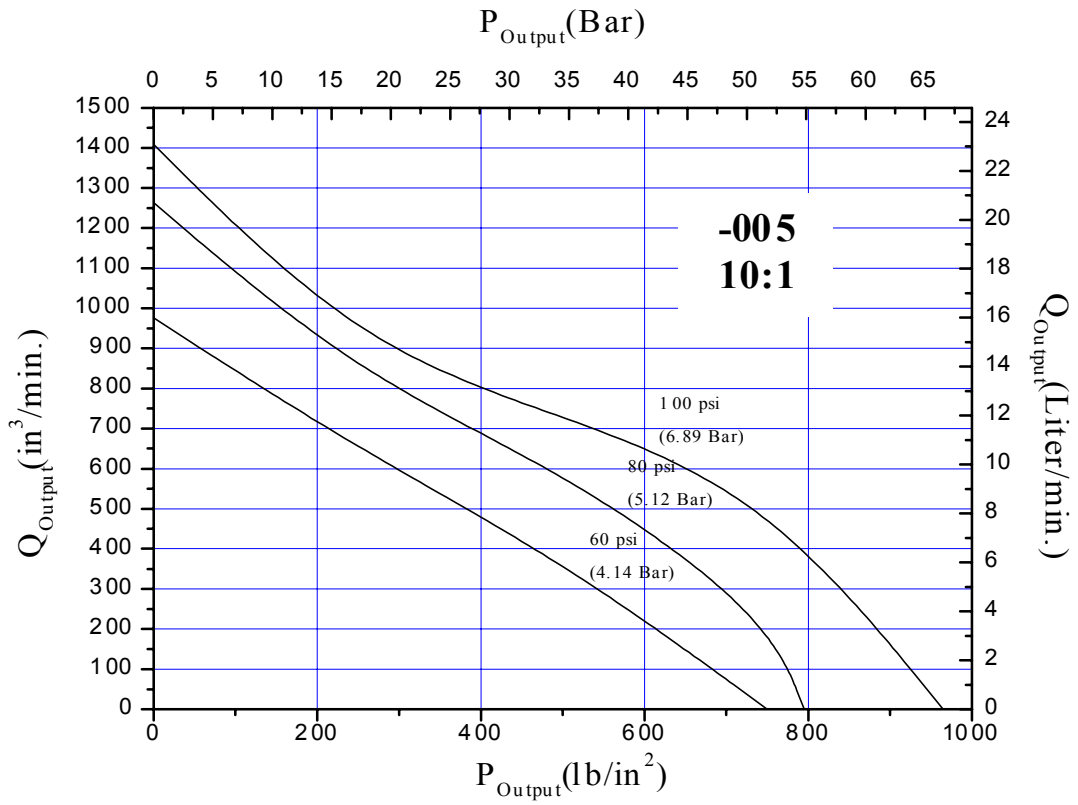
Liquid Pump Cut-a-way

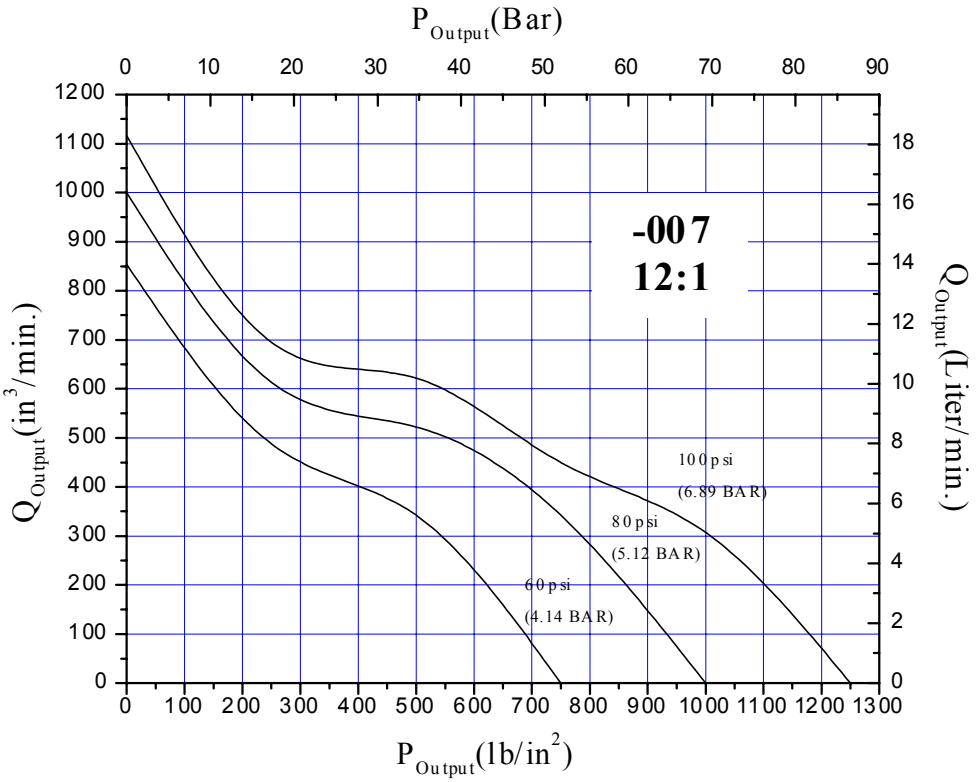


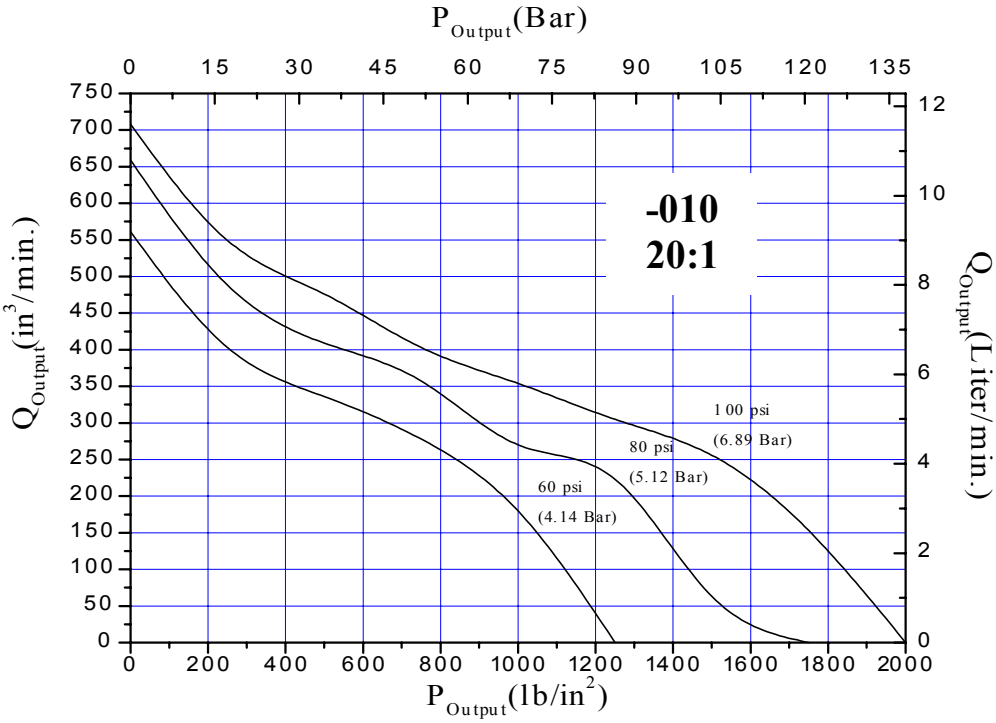
SC Hydraulic Engineering Corp. 1130 Columbia St. Brea, CA. 92821 (714) 257-4800

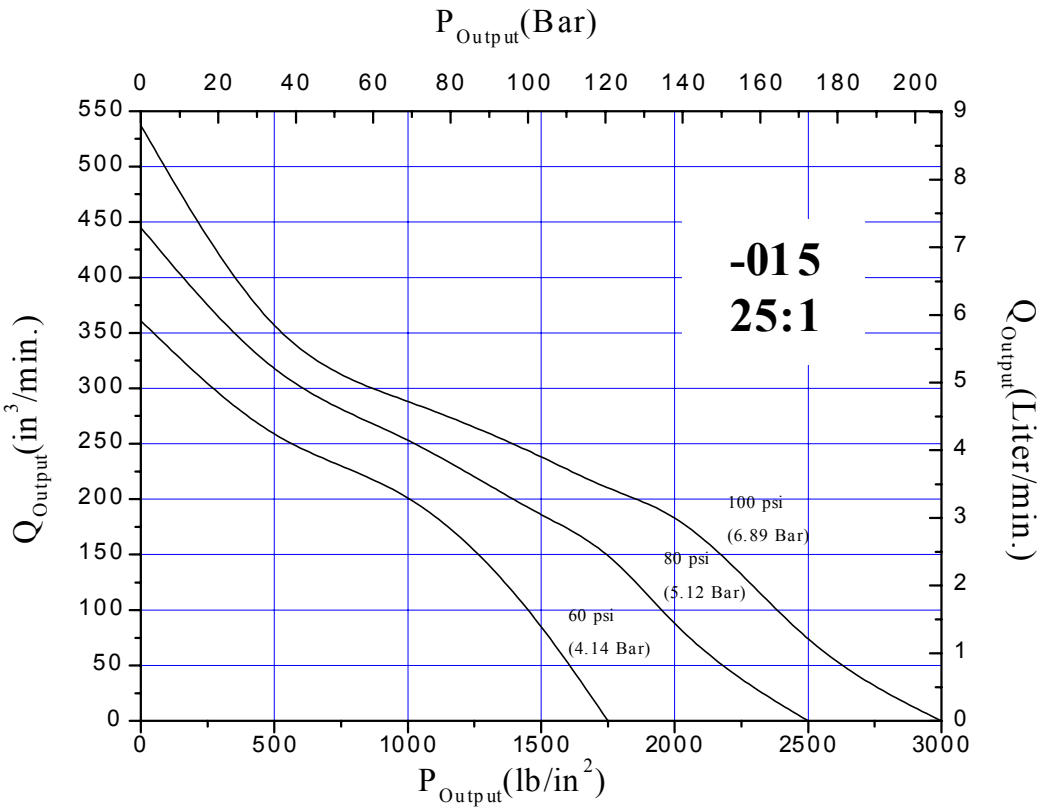
Air Operated Hydraulic Pump **10-5 Series** **Approximate Rate of Discharge**

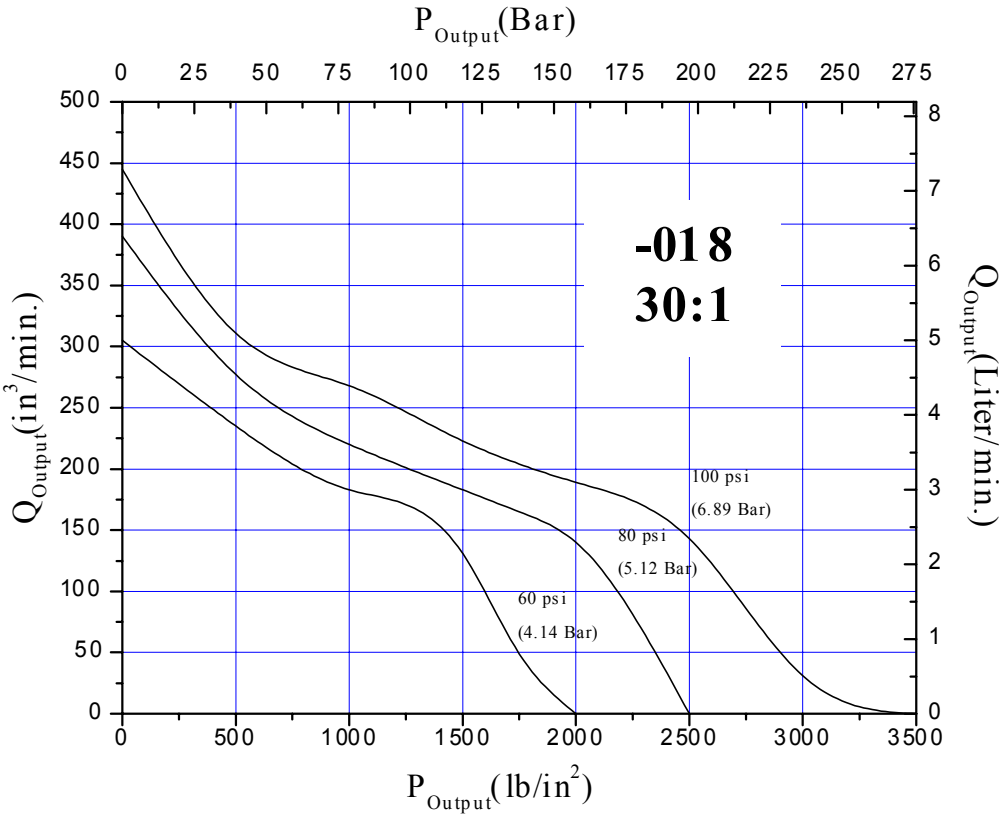


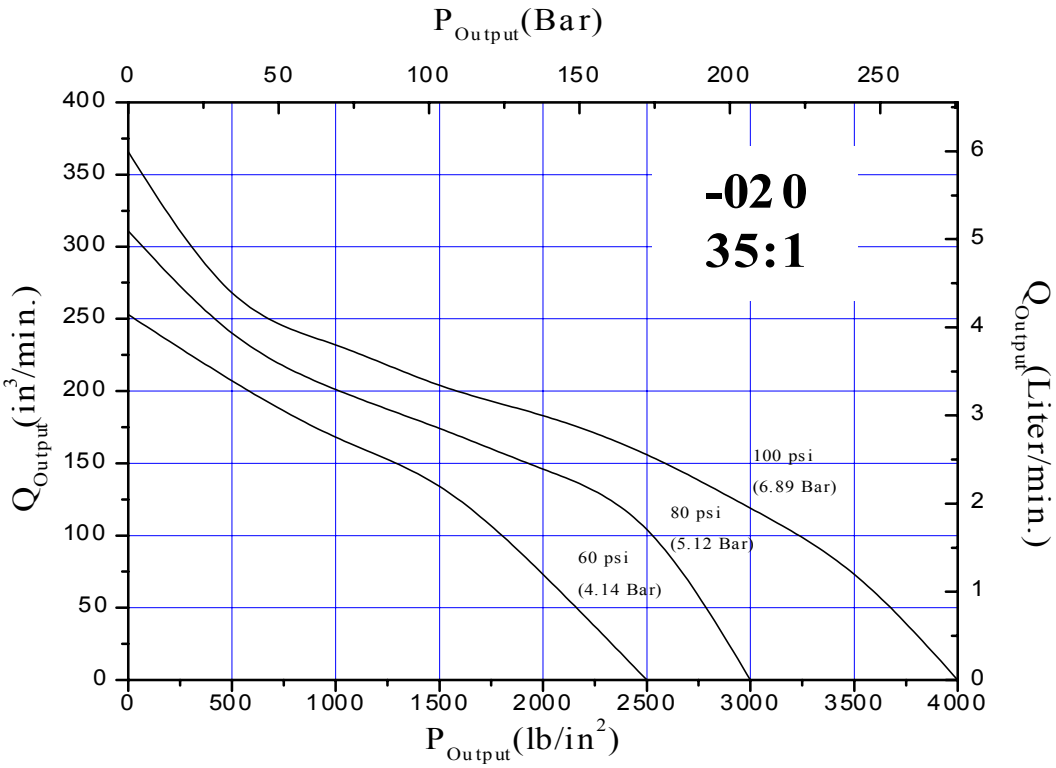


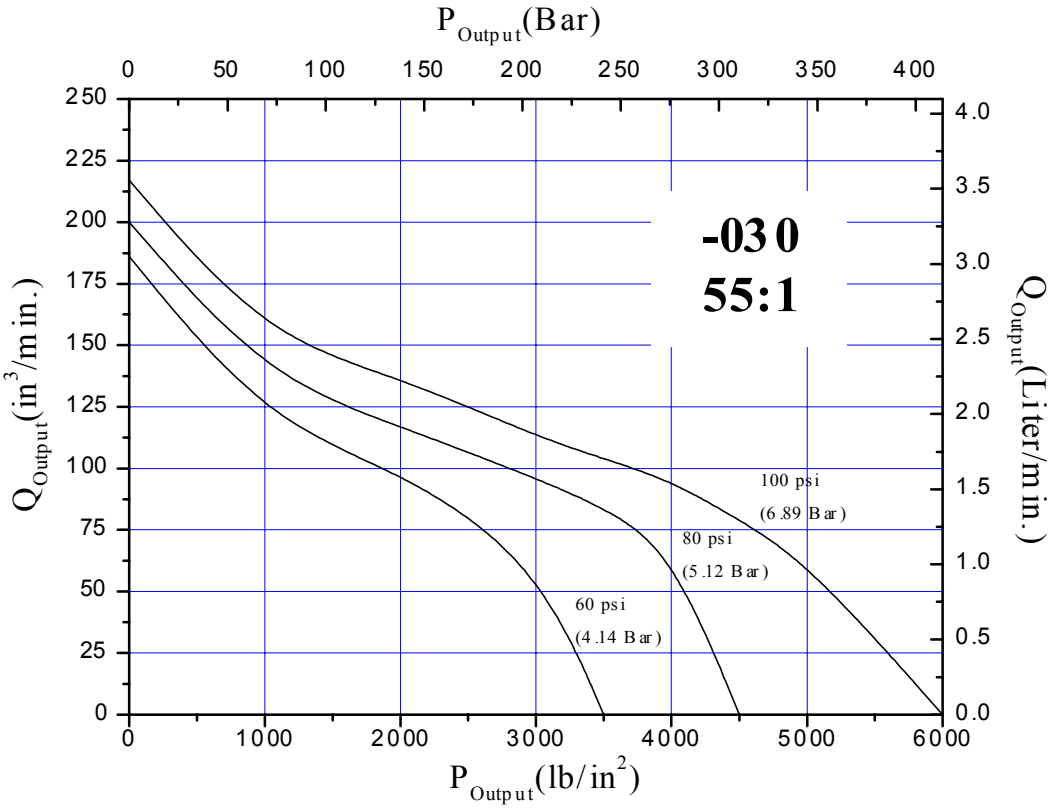

P Output (Bar)
0 10 20 30 40 50 60 70 80 90
1200 1100 1000 900 800 700 600 500 400 300 200 100 0
18 16 14 12 10 8 6 4 2 0
-007
12:1
100 psi
(6.89 BAR)
80 psi
(5.12 BAR)
60 psi
(4.14 BAR)
0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300
Q Output (in3/min.)
Q Output (Liter/min.)
P Output (lb/in2)

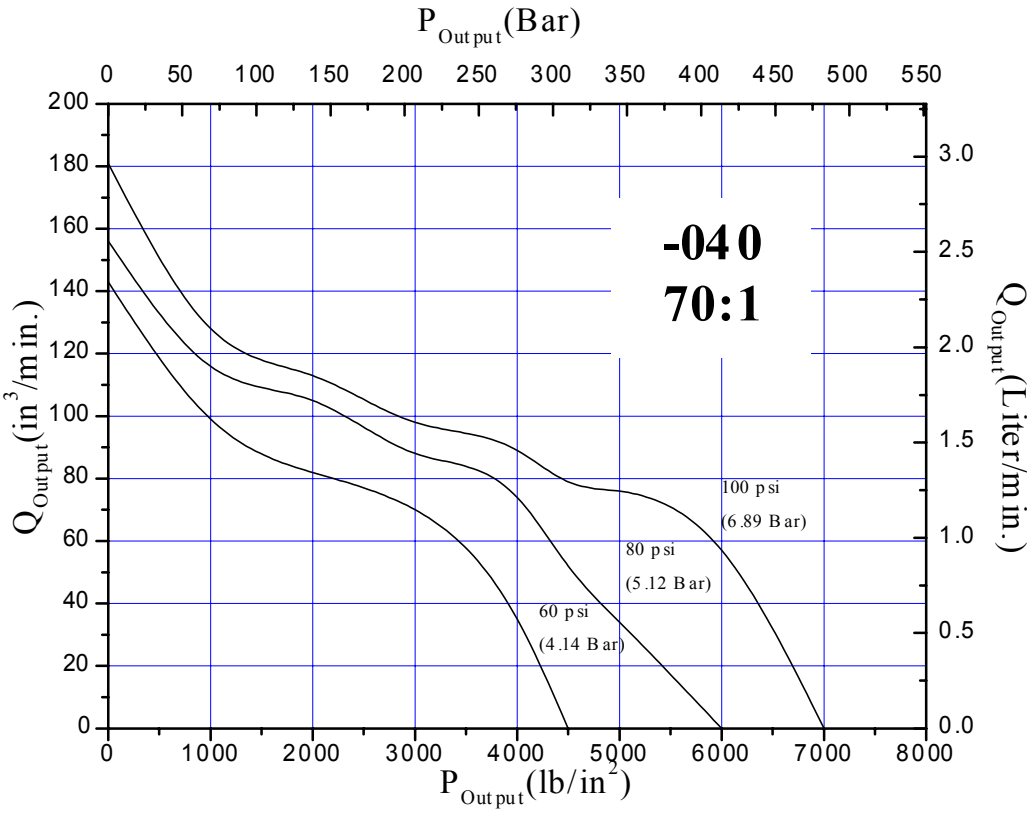

P Output (Bar)
0 15 30 45 60 75 90 105 120 135
750 700 650 600 550 500 450 400 350 300 250 200 150 100 50 0
12 10 8 6 4 2 0
-010
20:1
100 psi
(6.89 Bar)
80 psi
(5.12 Bar)
60 psi
(4.14 Bar)
0 200 400 600 800 1000 1200 1400 1600 1800 2000
Q Output (in3/min.)
Q Output (Liter/min.)
P Output (lb/in2)

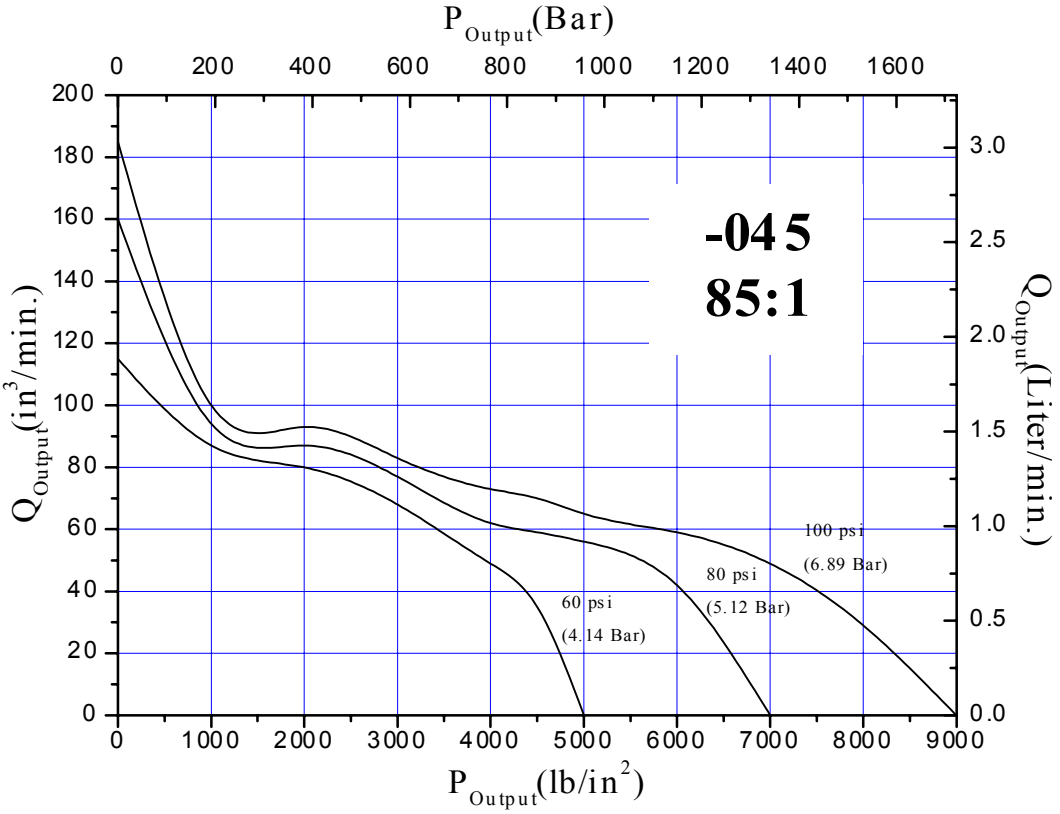

P Output (Bar)
0 20 40 60 80 100 120 140 160 180 200
550 500 450 400 350 300 250 200 150 100 50 0
9 8 7 6 5 4 3 2 1 0
-015
25:1
100 psi
(6.89 Bar)
80 psi
(5.12 Bar)
60 psi
(4.14 Bar)
Q Output (in3/min.)
Q Output (Liter/min.)
0 500 1000 1500 2000 2500 3000
P Output (lb/in2)

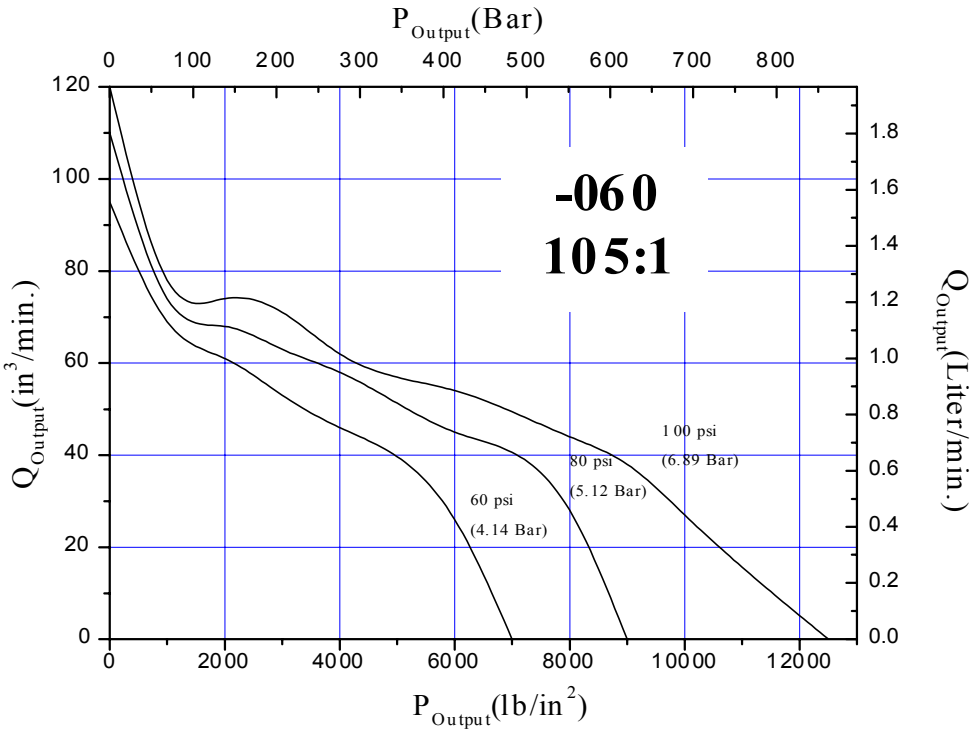

P Output (Bar)
0 25 50 75 100 125 150 175 200 225 250 275
500 450 400 350 300 250 200 150 100 50 0
8 7 6 5 4 3 2 1 0
-018
30:1
100 psi
(6.89 Bar)
80 psi
(5.12 Bar)
60 psi
(4.14 Bar)
Q Output (in3/min.)
Q Output (Liter/min.)
0 500 1000 1500 2000 2500 3000 3500
P Output (lb/in2)

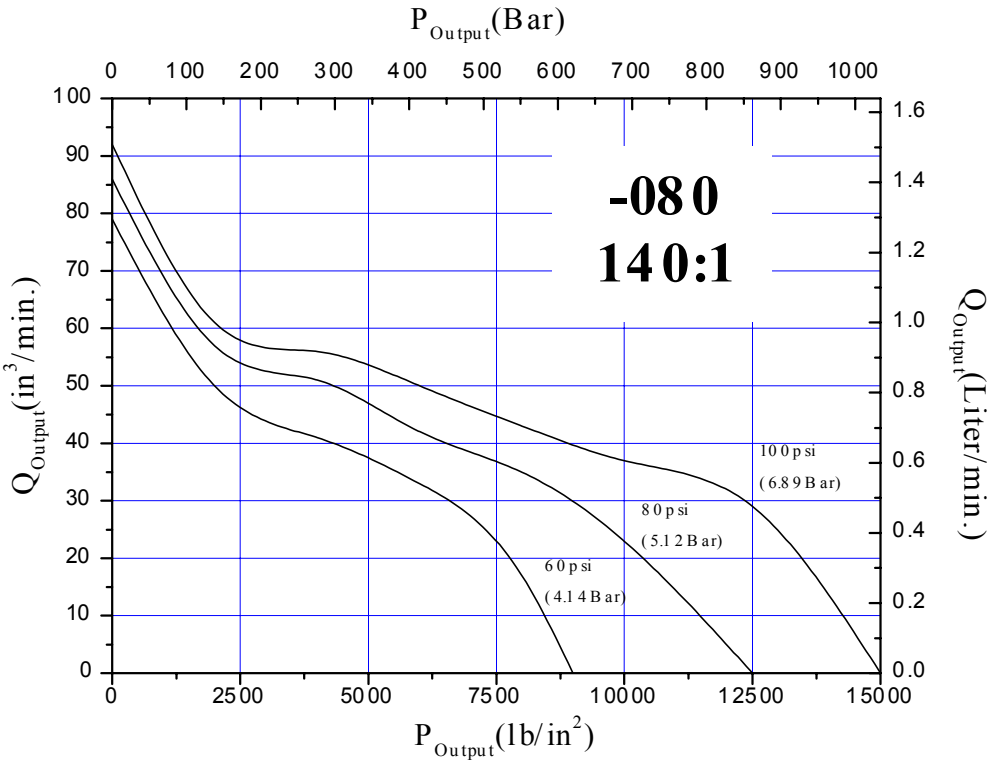

P Output (Bar)
0 50 100 150 200 250
400 350 300 250 200 150 100 50 0
6 5 4 3 2 1 0
-020
35:1
100 psi
(6.89 Bar)
80 psi
(5.12 Bar)
60 psi
(4.14 Bar)
Q Output (in3/min.)
Q Output (Liter/min.)
0 500 1000 1500 2000 2500 3000 3500 4000
P Output (lb/in2)

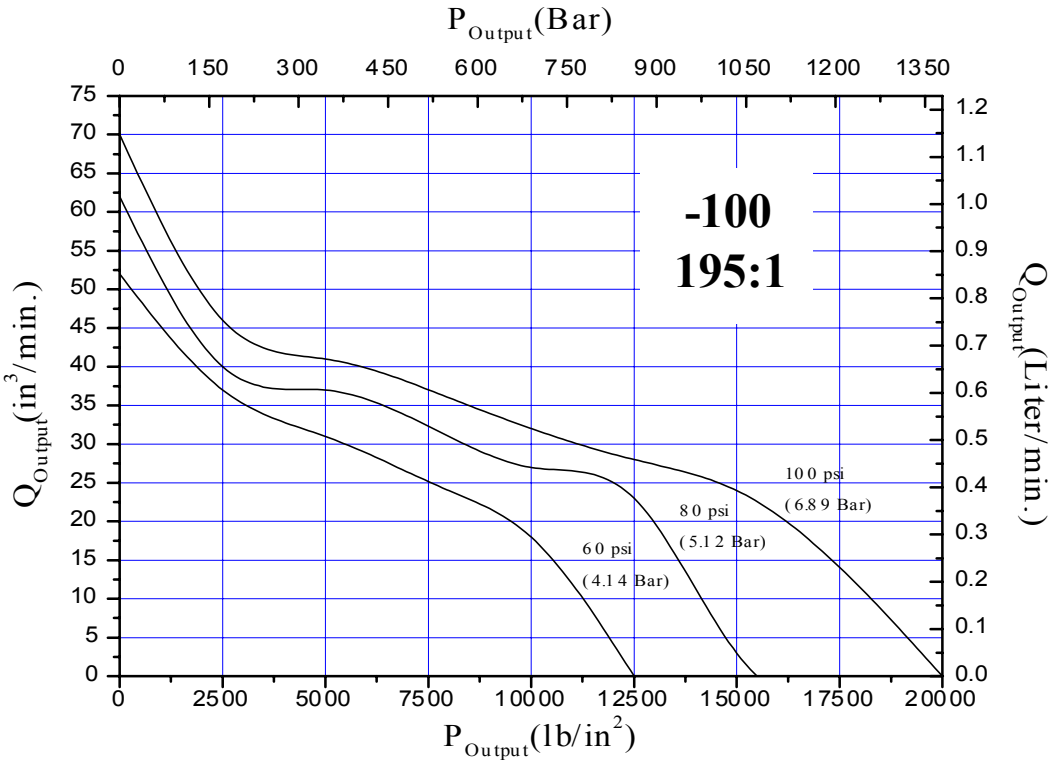

P Output (Bar)
0 50 100 150 200 250 300 350 400
250 225 200 175 150 125 100 75 50 25 0
4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
-030
55:1
100 psi
(6.89 Bar)
80 psi
(5.12 Bar)
60 psi
(4.14 Bar)
Q Output (in3/min.)
Q Output (Liter/min.)
0 1000 2000 3000 4000 5000 6000
P Output (lb/in2)

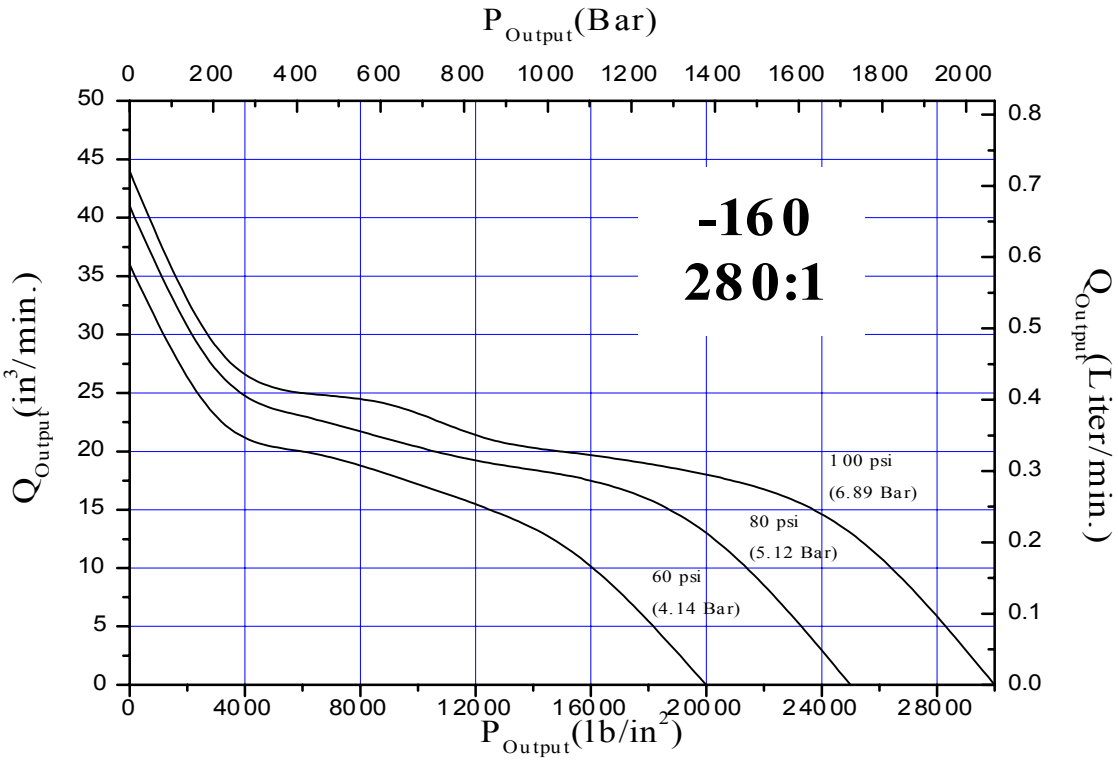

P Output (Bar)
0 50 100 150 200 250 300 350 400 450 500 550
200 180 160 140 120 100 80 60 40 20 0
Q Output (in3/min.)
3.0 2.5 2.0 1.5 1.0 0.5 0.0
Q Output (Liter/min.)
-040
70:1
100 psi
(6.89 Bar)
80 psi
(5.12 Bar)
60 psi
(4.14 Bar)
0 1000 2000 3000 4000 5000 6000 7000 8000
P Output (lb/in2)


P Output (Bar)
0 200 400 600 800 1000 1200 1400 1600
200 180 160 140 120 100 80 60 40 20 0
Q Output (in3/min.)
3.0 2.5 2.0 1.5 1.0 0.5 0.0
Q Output (Liter/min.)
-045
85:1
100 psi
(6.89 Bar)
80 psi
(5.12 Bar)
60 psi
(4.14 Bar)
0 1000 2000 3000 4000 5000 6000 7000 8000 9000
P Output (lb/in2)

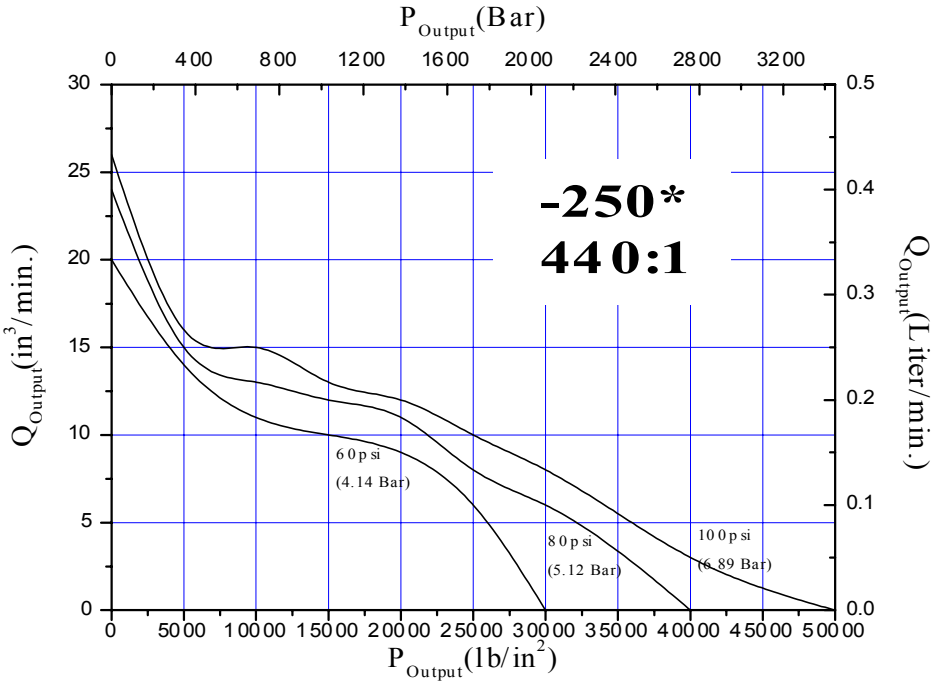

P Output (Bar)
0 100 200 300 400 500 600 700 800
120 100 80 60 40 20 0
1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2 0.0
-060
105:1
100 psi
(6.89 Bar)
80 psi
(5.12 Bar)
60 psi
(4.14 Bar)
Q Output (in3/min.)
Q Output (Liter/min.)
0 2000 4000 6000 8000 10000 12000
P Output (lb/in2)

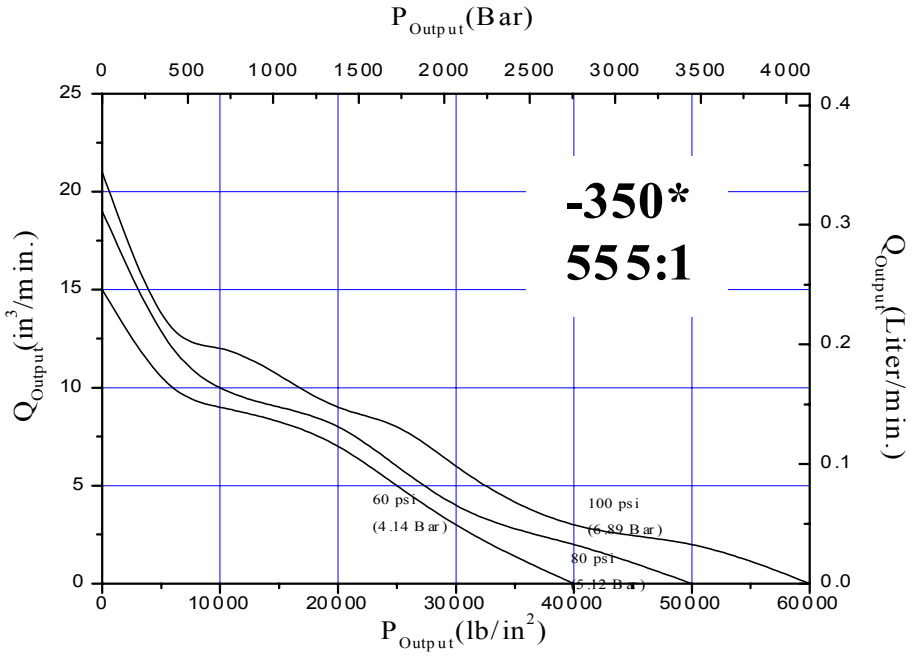

P Output (Bar)
0 100 200 300 400 500 600 700 800 900 1000
100 90 80 70 60 50 40 30 20 10 0
1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2 0.0
-080
140:1
100 psi
(6.89 Bar)
80 psi
(5.12 Bar)
60 psi
(4.14 Bar)
Q Output (in3/min.)
Q Output (Liter/min.)
0 2500 5000 7500 10000 12500 15000
P Output (lb/in2)


P Output (Bar)
0 150 300 450 600 750 900 1050 1200 1350
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0
1.2 1.1 1.0 0.9 0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1 0.0
-100
195:1
100 psi
(6.89 Bar)
80 psi
(5.12 Bar)
60 psi
(4.14 Bar)
0 2500 5000 7500 10000 12500 15000 17500 20000
P Output (lb/in2)
Q Output (in3/min.)
Q Output (Liter/min.)


P Output (Bar)
0 200 400 600 800 1000 1200 1400 1600 1800 2000
50 45 40 35 30 25 20 15 10 5 0
0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1 0.0
-160
280:1
100 psi
(6.89 Bar)
80 psi
(5.12 Bar)
60 psi
(4.14 Bar)
0 4000 8000 12000 16000 20000 24000 28000
P Output (lb/in2)
Q Output (in3/min.)
Q Output (Liter/min.)

Air Operated Hydraulic Pump **10-5 Series** **Approximate Rate of Discharge**





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

If 10-5 Series Hydraulic Pump Approximate Rate of Discharge (CIPM) exceeds your requirements, refer to 10-4 Series Hydraulic Pump Approximate Rate of Discharge (CIPM) charts. If 10-5 Series Hydraulic Pump Approximate Rate of Discharge (CIMP) is lower than your requirements, refer to 10-6 Series Hydraulic Pump Approximate Rate of Discharge (CIPM) charts.