

PIPE THREADS

SIZE NPT	THREADS PER INCH	APPROX. THREAD DIAM	
		Outside	Inside
1/8	27	.41	.19
1/4	18	.55	.28
3/8	18	.67	.42
1/2	14	.84	.53
3/4	14	1.0	.97
1"	11 1/2	1.31	1.22
1 1/4	11 1/2	1.66	1.25
1 1/2	11 1/2	1.90	1.50
2"	11 1/2	2.38	1.94

STRAIGHT THREAD FITTING SIZES JIC - SAE - O-RING THREADS

SIZE NO.	THREAD SIZE	TUBE O.D.	THREAD DIAMETER	
			Outside	Inside
2	5/16-24	1/8	.31	
3	3/8-24	3/16	.38	
4	7/16-20	1/4	.44	.37
5	1/2-20	5/16	.50	.41
6	9/16-18	3/8	.56	.47
8	3/4-16	1/2	.75	.66
10	7/8-14	5/8	.88	.77
12	1 1/16-12	3/4	1.06	.94
14	1 3/16-12	7/8	1.19	1.06
16	1 5/16-12	1"	1.31	1.13
20	1 5/8-12	1 1/4	1.63	1.50
24	1 7/8-12	1 1/2	1.88	1.75
32	2 1/2-12	2"	2.50	2.38

FLOW CAPACITIES OF HYDRAULIC LINES

Recommended Maximum for PRESSURE LINES
(Based on Velocity of 20 Ft/Sec)

HOSE SIZE	FLOW - GPM	PIPE SIZE	FLOW - GPM
1/4"	3.5	1/4"	6.5
3/8"	7	3/8"	12
1/2"	12	1/2"	19
3/4"	27	3/4"	33
1"	48	1"	56
1 1/4"	75	1 1/4"	93

Recommended Maximum for SUCTION LINES

(Based on Velocity of 5 Ft/Sec)

Suction Hose or Pipe Size	Flow - GPM
1/2"	3
3/4"	7
1"	12
1 1/4"	19
1 1/2"	27
2"	45
2 1/2"	62
3"	100

Increase size if:

- Oil Viscosity exceeds 150 SSU (SAE 10)
- Oil is cold
- Suction lines are over 5 ft. long
- Pressure lines are over 15 ft. long
- There are multiple fittings or obstructions in line

HYDRAULIC CALCULATIONS

Cylinder	Force (lbs)	$=\pi r^2 \times \text{PSI}$
	Volume (gal)	$=\pi r^2 \times \text{length} \div 231$
	Speed (In per min)	$=\text{GPM} \div \text{Vol}$

Pump	Hp input required	$\text{PSI} \times \text{GPM} \times .0007$
	Hp rule of thumb	1 Hp = 1 GPM at 1500 PSI
	Flow (GPM)	$\text{RPM} \times \text{Displ} \div 231$

Motor	Speed	$\text{GPM} \times 231 \div \text{Displ}$
	Torque (in-lbs)	$\text{Pres} \times \text{Displ} \div 2\pi$
	Horsepower	$\text{Torque in-lbs} \times \text{RPM} \div 63024$

HYDRAULIC EQUIVALENTS

Equivalents	Volume	1 gal = 231 cu in
		1 gal = 3.79 liters
	Pressure	1 bar = 14.5 PSI
	Force	1 lb = 2.2 kg
	Power	1 Hp = 33,000 ft-lbs/min
		1 Hp = 42.4 BTU/Hr
		1 Hp = 746 Watts (.746 kw)
Hp rule of thumb	1 Hp = 1 GPM at 1500 PSI	