Section Contents

Engineering Information

Bore Codes

Use the appropriate bore code shown below to designate the bore diameter (in inches) for the clutch's unit and coupling.

Bore Size (Fraction)	Bore Size (Decimal)	Bore Code
1/8	0.1250	P02
3/16	0.1875	P03
1/4	0.2500	P04
5/16	0.3125	P05
3/8	0.3750	P06
7/16	0.4375	P07
1/2	0.5000	P08
9/16	0.5625	P09
5/8	0.6250	P10
11/16	0.6875	P11
3/4	0.7500	P12
13/16	0.8125	P13
7/8	0.8750	P14
15/16	0.9375	P15
1	1.0000	P16
1-1/16	1.0625	P17
1-1/8	1.1250	P18
1-3/16	1.1875	P19
1-1/4	1.2500	P20
1-5/16	1.3125	P21
1-3/8	1.3750	P22
1-7/16	1.4375	P23
1-1/2	1.5000	P24
1-9/16	1.5625	P25
1-5/8	1.6250	P26
1-11/16	1.6875	P27
1-3/4	1.7500	P28
1-13/16	1.8125	P29
1-7/8	1.8750	P30
1-15/16	1.9375	P31
2	2.0000	P32
2-1/16	2.0625	P33
2-1/8	2.1250	P34
2-3/16	2.1875	P35
2-1/4	2.2500	P36
2-5/16	2.3125	P37
2-3/8	2.3750	P38
2-7/16	2.4375	P39
2-1/2	2.5000	P40
2-9/16	2.5625	P41
2-5/8	2.6250	P42
2-11/16	2.6875	P43
2-3/4	2.7500	P44
2-13/16	2.8125	P45
2-7/8	2.8750	P46
2-15/16	2.9375	P47
3	3.0000	P48
3-1/16	3.0625	P49
3-1/8	3.1250	P50
3-3/16	3.1875	P51
3-1/4	3.2500	P52
3-5/16	3.3125	P53
3-3/8	3.3750	P54
3-7/16	3.4375	P55
3-1/2	3.5000	P56

Bore Size (Fraction)	Bore Size (Decimal)	Bore Code
3-9/16	3.5625	P57
3-5/8	3.6250	P58
3-11/16	3.6875	P59
3-3/4	3.7500	P60
3-13/16	3.8125	P61
3-7/8	3.8750	P62
3-15/16	3.9375	P63
4	4.0000	P64
4-1/16	4.0625	P65
4-1/8	4.1250	P66
4-3/16	4.1875	P67
4-1/4	4.2500	P68
4-5/16	4.3125	P69
4-3/8	4.3750	P70
4-7/16	4.4375	P71
4-1/2	4.5000	P72
4-9/16	4.5625	P73
4-5/8	4.6250	P74
4-11/16	4.6875	P75
4-3/4	4.7500	P76
4-13/16	4.8125	P77
4-7/8	4.8750	P78
4-15/16	4.9375	P79
5	5.0000	P80
5-1/16	5.0625	P81
5-1/8	5.1250	P82
5-3/16	5.1875	P83
5-1/4	5.2500	P84
5-5/16	5.3125	P85
5-3/8	5.3750	P86
5-7/16	5.4375	P87
5-1/2	5.5000	P88
5-9/16	5.5625	P89
5-5/8	5.6250	P90
5-11/16	5.6875	P91
5-3/4	5.7500	P92
5-13/16	5.8125	P93
5-7/8	5.8750	P94
5-15/16	5.9375	P95
6	6.0000	P96
6-1/16	6.0625	P97
6-1/8	6.1250	P98
6-3/16	6.1875	P99
6-1/4	6.2500	P100
6-5/16	6.3125	P101
6-3/8	6.3750	P102
6-7/16	6.4375	P103
6-1/2	6.5000	P104
6-9/16	6.5625	P105
6-5/8	6.6250	P106
6-11/16	6.6875	P107
6-3/4	6.7500	P108
6-13/16	6.8125	P109
6-7/8	6.8750	P110
6-15/16	6.9375	P111
7	7.0000	P112

Standard Keyways

Bore Range (Inch)	Square
Over - To	W x D
5/16 - 7/16	3/32 x 3/64
7/16 - 9/16	1/8 x 1/16
9/16 - 7/8	3/16 x 3/32
7/8 - 1-1/4	1/4 x 1/8
1-1/4 - 1-3/8	5/16 x 5/32
1-3/8 - 1-3/4	3/8 x 3/16
1-3/4 - 2-1/4	1/2 x 1/4
2-1/4 - 2-3/4	5/8 x 5/16
2-3/4 - 3-1/4	3/4 x 3/8
3-1/4 - 3-3/4	7/8 x 7/16
3-3/4 - 4-1/2	1 x 1/2
4-1/2 - 5-1/2	1-1/4 x 5/8
5-1/2 - 6-1/2	1-1/2 x 3/4
6-1/2 - 7-1/2	1-3/4 - 7/8

Square keyways will be furnished unless otherwise specified or noted in catalog.

Keys will be furnished with bores which require reduced keys.

Bore Tolerances (Inch)

Diameter	Tolerance
0 to 1	+.0005/-.0000
1 to 3	+.0010/-.0000
3 and up	+.0020/-.0000

Overload/Torque Limiting Clutch Location

Location

The torque limiting clutch should always be located as close as possible to the potential source of an overload condition. Figures 1 through 4 indicate both preferred and non-preferred locations for mounting an Overload Release clutch.

Note:
Clutch mounted sprockets, etc. and couplings should be positioned as close to a supporting bearing as possible to minimize overhung loads. A minimum shaft engagement of 1-1/2 times the shaft diameter is recommended for clutch and coupling flange installation.

Direct Drives

Figure 1 shows the preferred location for mounting in a direct drive application. The clutch is mounted on the low speed side of the reducer, and transmits power from its housing, through its rotor to the driven shaft.

Locating the clutch as shown in Figure 2 is **not preferred**. Here the clutch is mounted on the high-speed side of the reducer. Generally, mounting in this manner requires the clutch to be hypersensitive to perform satisfactorily.

Indirect Drives

Either location of the clutch shown in Figure 3 is **preferred** in indirect drive applications, with the overload protection on the slow speed side of the reducer.

The mounting location in Figure 4 is **not preferred** for the same reasons as those for Figure 2. Always consult the factory when a mounting of this type is necessary.

Figure 1 Direct Drive Preferred

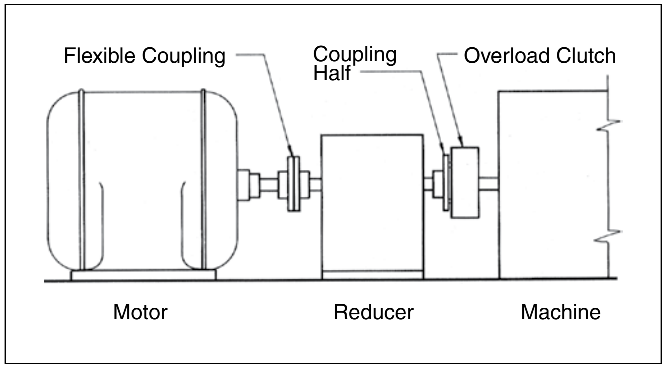


Figure 2 Direct Drive Not Preferred

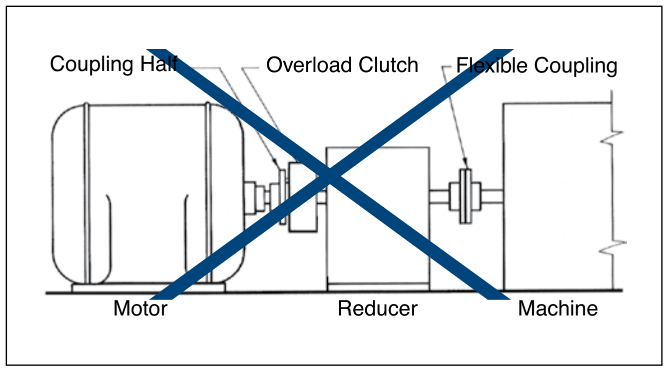


Figure 3 Indirect Drive Preferred

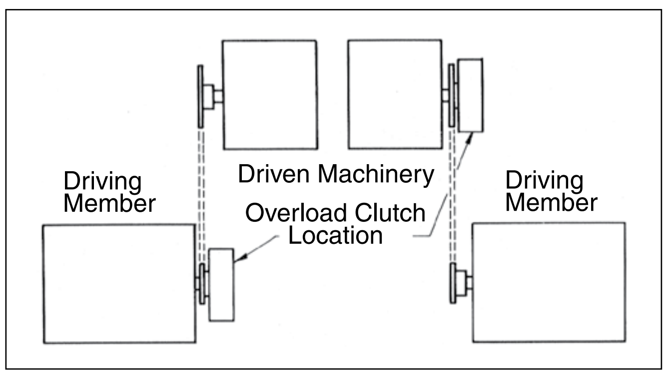
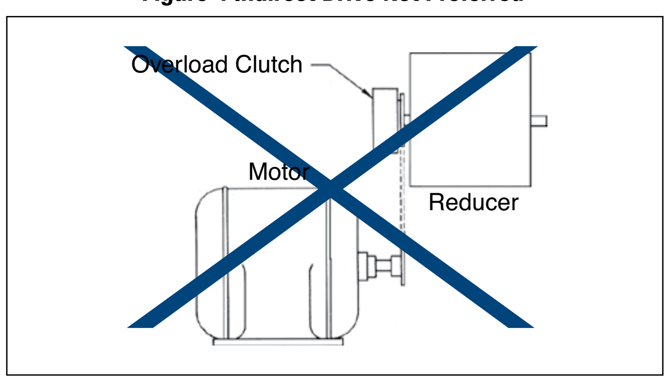


Figure 4 Indirect Drive Not Preferred



Engineering Information

Application Classification for Various Loads

Type of Machine To Be Driven	Chart I For All Drives Service Factor Loading		
	Not More Than 15 Mins. in 2 Hrs.	Not More Than 10 Hrs. per Day	More Than 10 Hrs. Per Day
AGITATORS			
Pure Liquid	0.80	1.00	1.25
Semi-Liquids, Variable Density	1.00	1.25	1.50
BLOWERS			
Centrifugal and Vane	0.80	1.00	1.25
Lobe	1.00	1.25	1.50
BREWING AND DISTILLING			
Bottling Machinery	0.80	1.00	1.25
Brew Kettles–Continuous Duty	—	—	1.25
Cookers – Continuous Duty	—	—	1.25
Mash Tubs – Continuous Duty	—	—	1.25
Scale Hopper – Frequent Starts	—	1.25	1.50
CAN FILLING MACHINES	**—**	**1.00**	**—**
CANE KNIVES	—	1.50	—
CAR DUMPERS	—	1.75	—
CAR PULLERS	—	1.25	—
CLARIFIERS	—	1.00	1.25
CLASSIFIERS	—	1.25	1.50
CLAY WORKING MACHINERY			
Brick Press & Briquette Machine	—	1.75	2.00
Extruders and Mixers	1.00	1.25	1.50
COMPRESSORS			
Centrifugal	—	1.00	1.25
Lobe – Reciprocating, Multi-Cycle	—	1.25	1.50
Reciprocating – Single Cycle	—	1.75	2.00
CONVEYORS— UNIFORMLY LOADED & FED			
Apron	—	1.00	1.25
Assembly-Belt – Bucket or Pan	—	1.00	1.25
Chain – Flight	—	1.00	1.25
Oven – Live Roll – Screw	—	1.00	1.25
CONVEYORS—HEAVY DUTY NOT UNIFORMLY FED			
Apron	—	1.25	1.50
Assembly-Belt – Bucket or Pan	—	1.25	1.50
Chain – Flight	—	1.25	1.50
Live Roll	—	—	—
Oven – Screw	—	1.25	1.50
Reciprocating – Shaker	—	1.75	2.00
CRANES AND HOISTS			
Main Hoists			
Bridge and Trolley Drive	*	1.00	1.25
CRUSHERS			
Ore, Stone	—	1.75	2.00
Sugar	—	1.50	1.50

Type of Machine To Be Driven	Chart I For All Drives Service Factor Loading		
	Not More Than 15 Mins. in 2 Hrs.	Not More Than 10 Hrs. per Day	More Than 10 Hrs. Per Day
ELEVATORS			
Bucket – Uniform Load	—	1.00	1.25
Bucket – Heavy Load	—	1.25	1.50
Centrifugal Discharge	—	1.25	1.50
Freight	—	1.25	1.50
Gravity Discharge	—	1.00	1.25
FANS			
Centrifugal – Light (Small Diam.)	—	1.00	1.25
Large Industrial	—	1.25	1.50
FEEDERS			
Apron – Belt – Screw	—	1.25	1.50
Disc	—	1.00	1.25
Reciprocating	—	1.75	2.00
FOOD INDUSTRY			
Beet Slicer	—	1.25	1.50
Cereal Cooker	—	1.00	1.25
Dough Mixer – Meat Grinder	—	1.25	1.50
GENERATORS (NOT WELDING)	—	1.00	1.25
HAMMER MILLS	—	1.75	2.00
HOISTS			
Heavy Duty	—	1.75	2.00
Medium Duty and Skip Type	—	1.25	1.50
LAUNDRY TUMBLERS	—	1.25	1.50
LINE SHAFTS			
Uniform Load	—	1.00	1.25
Heavy Load	—	1.25	1.50
MACHINE TOOLS			
Auxiliary Drive	—	1.00	1.25
Main Drive – Uniform Load	—	1.25	1.50
Main Drive – Heavy Duty	—	1.75	2.00
METAL MILLS			
Draw Bench Carriers & Main Drive	—	1.25	1.50
SLITTERS	**—**	**1.25**	**1.50**
TABLE CONVEYORS — NON REVERSING			
Group Drives	—	1.25	1.50
Individual Drives	—	1.75	2.00
Wiring Drawing, Flattening or Winding	—	1.25	1.50
MILLS ROTARY TYPE BALL AND ROD			
Spur Ring Gear and Direct Connected	—	—	2.00
Cement Kilns, Pebble	—	—	1.50
Dryers and Coolers	—	—	1.50
Plain and Wedge Bar	—	—	1.50
Tumbling Barrels	—	—	2.00

Application Classification for Various Loads (continued)

Type of Machine To Be Driven	Chart I For All Drives – Service Factor Loading: Not More Than 15 Mins. in 2 Hrs.	Not More Than 10 Hrs. per Day	More Than 10 Hrs. Per Day
MIXERS			
Concrete – Continuous	—	1.25	1.50
Concrete – Intermittent	—	1.25	1.50
Constant Density	—	1.00	1.25
Semi-Liquid	—	1.25	1.50
OIL INDUSTRY			
Oil Well Pumping	—	—	*
Chillers, Paraffin Filter Press	—	1.25	1.50
Rotary Kilns	—	1.25	1.50
PAPER MILLS			
Agitator (Mixer)	—	1.25	1.50
Agitator – Pure Liquids	—	1.00	1.25
Barking Drums – Mechanical			
Barkers	—	1.75	2.00
Bleacher	—	1.00	1.25
Beater	—	1.25	1.50
Calender Heavy Duty	—	—	2.00
Calender Anti-Friction Brgs.	—	1.00	1.25
Cylinders	—	1.25	1.50
Chipper	—	—	2.00
Chip Feeder	—	1.25	1.50
Coating Rolls – Couch Rolls	—	1.00	1.25
Conveyors – Chips – Bark – Chemical	—	1.00	1.25
Conveyors – Log and Slab	—	—	2.00
Cutter	—	—	2.00
Cylinder Molds, Dryers (Anti-Friction Brg.)	—	—	1.25
Felt Stretcher	—	1.25	1.50
Screens – Chip and Rotary	—	1.25	1.50
Thickener (AC)	—	1.25	1.50
Washer (AC)	—	1.25	1.50
Winder – Surface Type	—	—	1.25
PLASTICS INDUSTRY			
Intensive Internal Mixers			
Batch Type	—	—	1.75
Continuous Type	—	—	1.50
Batch Drop Mill – 2 Rolls	—	—	1.25
Compounding Mills	—	—	1.25
Calenders	—	—	1.50
Extruder – Variable Speed	—	—	1.50
Extruder – Fixed Speed	—	—	1.75
PULLERS			
Barge Haul	—	—	2.00

Type of Machine To Be Driven	Chart I For All Drives – Service Factor Loading: Not More Than 15 Mins. in 2 Hrs.	Not More Than 10 Hrs. per Day	More Than 10 Hrs. Per Day
PUMPS			
Centrifugal	—	—	1.25
Proportioning	—	—	1.50
Reciprocating			
Single Acting, 3 or more Cycles	—	1.25	1.50
Double Acting, 2 or more Cycles	—	1.25	1.50
Rotary – Gear or Lube	—	1.00	1.25
RUBBER INDUSTRY			
Batch Mixers	—	—	1.75
Continuous Mixers	—	—	1.50
Calenders	—	—	1.50
Extruders – Continuous	—	—	1.50
Extruders – Intermittent	—	—	1.75
Tire Building Machines	—	—	—
Tire & Tube Press Openers	—	—	—
SEWAGE DISPOSAL EQUIPMENT			
Bar Screens	—	1.00	1.25
Chemical Feeders	—	1.00	1.25
Collectors	—	1.00	1.25
Dewatering Screws	—	1.25	1.50
Scum Breakers	—	1.25	1.50
Slow or Rapid Mixers	—	1.25	1.50
Thickeners	—	1.25	1.50
Vacuum Filters	—	1.25	1.50
SCREENS			
Air Washing	—	1.00	1.25
Rotary – Stone or Gravel	—	1.25	1.50
Traveling Water Intake	—	1.00	1.25
SKIP HOISTS	—	—	—
SLAB PUSHERS	—	1.25	1.50
STOKERS	—	—	1.25
TEXTILE INDUSTRY			
Batchers or Calenders	—	1.25	1.50
Cards	—	1.25	1.50
Card Machines	—	1.75	2.00
Dry Cans and Dryers	—	1.25	1.50
Dyeing Machines	—	1.25	1.50
Looms	—	1.25	1.50
Mangles, Nappers and Pads	—	1.25	1.50
Soapers, Tenner Frames	—	1.25	1.50
Spinners, Washers, Winders	—	1.25	1.50
TUMBLING BARRELS	1.50	1.75	2.00
WINDLASS	—	1.25	1.50

This list is not all-inclusive and each application should be checked to determine if any unusual operating conditions will be encountered.

Engineering Information

Application Formulas

TO OBTAIN	HAVING	FORMULA
Velocity (V) Feet Per Minute	Pitch Diameter (D) of Gear or Sprocket - Inches and Revolutions Per Minute (RPM)	$V = .2618 \times D \times RPM$
Revolutions Per Minute (RPM)	Velocity (V) Feet Per Minute and Pitch Diameter (D) of Gear or Sprocket - Inches	$RPM = \frac{V}{.2618 \times D}$
Pitch Diameter (D) of Gear or Sprocket	Velocity (V) Feet Per Minute and Revolutions Per Minute (RPM)	$D = \frac{V}{.2618 \times RPM}$
Torque (T) In. Lbs.	Force (W) Lbs. and Radius (R) Inches	$T = W \times R$
Horsepower (HP)	Force (W) Lbs. and Velocity (V) Feet Per Minute	$HP = \frac{W \times V}{33000}$
Horsepower (HP)	Torque (T) In. Lbs. and Revolutions Per Minute (RPM)	$HP = \frac{T \times RPM}{63025}$
Torque (T)	Horsepower (HP) and Revolutions Per Minute (RPM)	$T = \frac{63025 \times HP}{RPM}$
Force (W) Lbs.	Horsepower (HP) and Velocity (V) Feet Per Minute	$W = \frac{33000 \times HP}{V}$
Revolutions Per Minute (RPM)	Horsepower (HP) and Torque (T) In. Lbs.	$RPM = \frac{63025 \times HP}{T}$

POWER is the rate of doing work.

WORK is the exerting of a FORCE through a DISTANCE. ONE FOOT POUND is a unit of WORK. It is the WORK done in exerting a FORCE OF ONE POUND through a DISTANCE of ONE FOOT.

THE AMOUNT OF WORK done (Foot Pounds) is the FORCE (Pounds) exerted multiplied by the DISTANCE (Feet) through which the FORCE acts.

THE AMOUNT OF POWER used (Foot Pounds per Minute) is the WORK (Foot Pounds) done divided by the TIME (Minutes) required.

$$\text{POWER (Foot Pounds per Minute)} = \frac{\text{WORK (Ft. Lbs.)}}{\text{TIME (Minutes)}}$$

POWER is usually expressed in terms of HORSEPOWER.

HORSEPOWER is POWER (Foot Pounds per Minute) divided by 33,000.

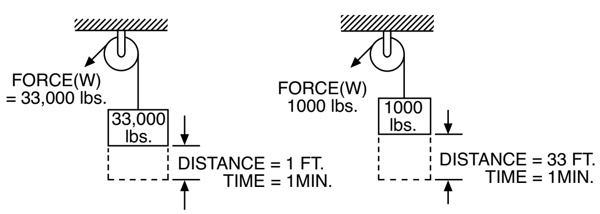
HORSEPOWER (HP)

$$= \frac{\text{POWER (Ft. Lbs. per Minute)}}{33{,}000}$$

$$= \frac{\text{WORK (Ft. Pounds)}}{33{,}000 \times \text{TIME (Min.)}}$$

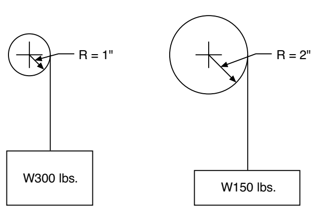
$$= \frac{\text{FORCE (Lbs.)} \times \text{DISTANCE (Feet)}}{33{,}000 \times \text{TIME (Min.)}}$$

ILLUSTRATION OF HORSEPOWER



$$HP = \frac{33{,}000 \times 1}{33{,}000 \times 1} = 1\ HP \qquad HP = \frac{1000 \times 33}{33{,}000 \times 1} = 1\ HP$$

TORQUE (T) is the product of a FORCE (W) in pounds, times a RADIUS (R) in inches from the center of shaft (Lever Arm) and is expressed in Inch Pounds.



T = WR
= 300 x 1 = 300 In. Lbs.

T = WR
= 150 x 2 = 300 In. Lbs.

If the shaft is revolved, the FORCE (W) is moved through a distance, and WORK is done.

$$\text{WORK (Ft. Lbs.)} = W \times \frac{2\pi R}{12} \times \text{No. of Rev. of shaft}$$

When WORK is done in a specified TIME, POWER is used.

$$\text{POWER (Ft. Pounds per Minute)} = W \times \frac{2\pi R}{12} \times \text{RPM}$$

Since (1) HORSEPOWER = 33,000 Ft. Pounds per Minute

$$\text{Horsepower (HP)} = W \times \frac{2\pi R}{12} \times \frac{\text{RPM}}{33{,}000} = \frac{W \times R \times \text{RPM}}{63{,}025}$$

but TORQUE (Inch Pounds) = FORCE (W) x RADIUS (R)

$$\text{Therefore HORSEPOWER (HP)} = \frac{\text{TORQUE (T)} \times \text{RPM}}{63{,}025}$$

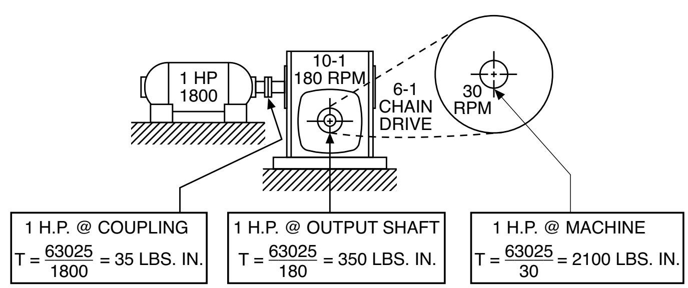
Where total reductions are small, 50 to 1 or less, HP figures are commonly used. Higher reductions require that TORQUE figures be used to select drive components, because with large reductions, a small motor can produce extremely high TORQUE at the final low speed. For example, 1/12 HP reduced to 1 RPM using the formula below and neglecting friction:

$$HP = \frac{\text{TORQUE} \times \text{RPM}}{63{,}025} \quad \text{or} \quad \text{TORQUE} = \frac{63{,}025 \times HP}{\text{RPM}}$$

$$\text{TORQUE} = \frac{63{,}025 \times 1/12}{1} = 5{,}252\ \text{In. Lbs.}$$

Therefore, motors for use with large reductions should be carefully selected. Even a small motor, if stalled, can produce enough Torque to ruin the drive, unless it is protected by an overload clutch.

Neglecting frictional losses, this sketch illustrates the manner in which Torque increases as speed decreases.



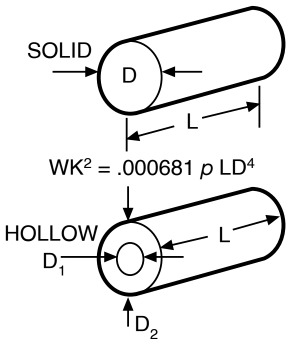
Horsepower and Torque (continued)

INERTIA (WK^2)

The factor WK^2 is the weight (lbs) of an object multiplied by the square of the radius of gyration (K). The unit measurement of the radius of gyration is expressed in feet.

For solid or hollow cylinders, inertia may be calculated by the equations shown below.

The inertia of solid steel shafting per inch of shaft length is given in the table. To calculate for hollow shafts, take the difference between the inertia values for the O.D. and I.D. as the value per inch. For shafts of materials other than steel, multiply the value for steel by the appropriate material factor.



$WK^2 = .000681\, \rho L\, (D_2^4 - D_1^4)$

WK^2 = lb. ft.^{2}
D, D_1, D_2 and L = in.
ρ = lb./in.^{3}
ρ (aluminum) = .0924
ρ (bronze) = .320
ρ (cast iron) = .260
ρ (steel) = .282

WK^2 of Rotating Elements – In practical mechanical systems, all the rotating parts do not operate at the same speed. The WK^2 of all moving parts operating at each speed must be reduced to an equivalent WK^2 at the motor shaft, so that they can all be added together and treated as a unit, as follows:

$$\text{Equivalent } WK^2 = WK^2 \left[\frac{N}{N_M}\right]^2$$

Where, WK^2 = Inertia of the moving part
N = Speed of the moving part (RPM)
N_M = Speed of the driving motor (RPM)

When using speed reducers, and the machine inertia is reflected back to the motor shaft, the equivalent inertia is equal to the machine inertia divided by the square of the drive reduction ratio.

$$\text{Equivalent } WK^2 = \frac{WK^2}{(DR)^2}$$

Where, DR = drive reduction ratio = $\frac{N_M}{N}$

Inertia of Steel Shafting (Per Inch of Length)

Diam. (In.)	WK^2 (Lb. Ft.^{2})	Diam. (In.)	WK^2 (Lb. Ft.^{2})
3/4	0.00006	10-1/2	2.35
10.0002	10-3/4	2.58	
1-1/4	0.0005	11	2.83
1-1/2	0.001	11-1/4	3.09
1-3/4	0.002	11-1/2	3.38
20.003	11-3/4	3.68	
2-1/4	0.005	12	4.00
2-1/2	0.008	12-1/4	4.35
2-3/4	0.011	12-1/2	4.72
30.016	12-3/4	5.11	
3-1/2	0.029	13	5.58
3-3/4	0.038	13-1/4	5.96
40.049	13-1/2	6.42	
4-1/4	0.063	13-3/4	6.91
4-1/2	0.079	14	7.42
50.120	14-1/4	7.97	
5-1/2	0.177	14-1/2	8.54
60.250	14-3/4	9.15	
6-1/4	0.296	15	9.75
6-1/2	0.345	16	12.59
6-3/4	0.402	17	16.04
70.464	18	20.16	
7-1/4	0.535	19	25.03
7-1/2	0.611	20	30.72
7-3/4	0.699	21	37.35
80.791	22	44.99	
8-1/4	0.895	23	53.74
8-1/2	1.000	24	63.71
8-3/4	1.130	25	75.02
91.270	26	87.76	
9-1/4	1.410	27	102.06
9-1/2	1.550	28	118.04
9-3/4	1.750	29	135.83
10	1.930	30	155.55
10-1/4	2.130	—	—

Material Factors

Shaft Material	Factor
Rubber	.121
Nylon	.181
Aluminum	.348
Bronze	1.135
Cast Iron	.922

Formulas to Approximate WK^2
For a solid cylinder or disc = $W \times \frac{r^2}{2}$
where r = radius in feet and W is weight in pounds.
For a hollow cylinder: $WK^2 \times W \frac{r_1^2 + r_2^2}{2}$
where r_1, is $\frac{ID}{2}$ and r_2 is $\frac{OD}{2}$.

Metric Conversion Chart

MULTIPLY	BY	TO OBTAIN
LENGTH		
Millimeter	.03937	Inch
Centimeter	.3937	Inch
Meter	39.37	Inch
Inch	2.54	Centimeter
Feet	30.48	Centimeter
Feet	.3048	Meter
WEIGHT		
Gram	.03527	Ounce
Kilogram	35.27	Ounce
Kilogram	2.205	Pounds
Ounce	28.35	Grams
Pound	453.6	Grams
ROTATION		
RPM	.1047	Rad./Sec.
RPM	6.00	Degrees/Sec.
Degrees/Sec.	.1667	RPM
Rad./Sec	9.549	RPM
VELOCITY		
Centimeter/second	.3937	Inches/Second
Centimeter/second	1.969	Feet/Minute
Meter/second	3.281	Feet/Second
Meter/second	196.9	Feet/Minute
Meter/second	2.237	Miles per hour
Inch/second	25.4	Millimeters/Second
Inch/second	2.54	Centimeters/Second
Foot/second	.3048	Meters/Second
Foot/minute	.00508	Meters/Second
VOLUME		
Centimeter^3	.0610	Inches^3
Centimeter^3	.034	Fluid Ounce
Liter	61.02	Inches^3
Liter	.0353	Feet^3
Liter	.264	U.S. Gallon
Inch^3	16.39	Centimeter^3
Feet^3	28.32	Liter
Gallon	3.785	Liter

MULTIPLY	BY	TO OBTAIN
TORQUE		
Newton-meter	8.84	Lb. In.
Lb. In.	.113	Newton-Meter
Lb. Ft.	1.3558	Newton-Meter
Lb. Ft.	12	Lb. In.
MOMENT OF INERTIA		
Newton-Meters^2	2.42	Lb. Ft.^{2}
Oz.-In.^{2}	.000434	Lb. Ft.^{2}
Lb.-In.^{2}	.00694	Lb. Ft.^{2}
Slug-Ft.^{2}	32.17	Lb. Ft.^{2}
Oz.-In.-Sec.^{2}	.1675	Lb. Ft.^{2}
Lb.-In.-Sec.^{2}	2.68	Lb. Ft.^{2}
POWER		
Joule/sec	.001341	Horsepower
Kilocalorie/hour	3.967	BTW/Hour
Horsepower	.33000	Lb. Ft./Min.
Horsepower	746	Watts
BTU/hour	.2521	Kilocalorie/Hour
Watts	.00134	Horsepower
AREA		
Millimeters^2	.00155	Inches^2
Centimeters^2	.155	Inches^2
Meters^2	10.76	Feet^2
Inches^2	645.16	Millimeters^2
Inches^2	6.452	Centimeters^2
Feet^2	929.03	Centimeters^2
Feet^2	.0929	Meters^2
DENSITY		
lg/cm^3	.03613	Lb/In^3
lg/cm^3	62.43	Lb/Ft^3
lb/in^3	27.68	Gr/Cm^3
lb/ft^3	.016	G/Cm^3
lb/ft^3	16.02	Kg/M^3