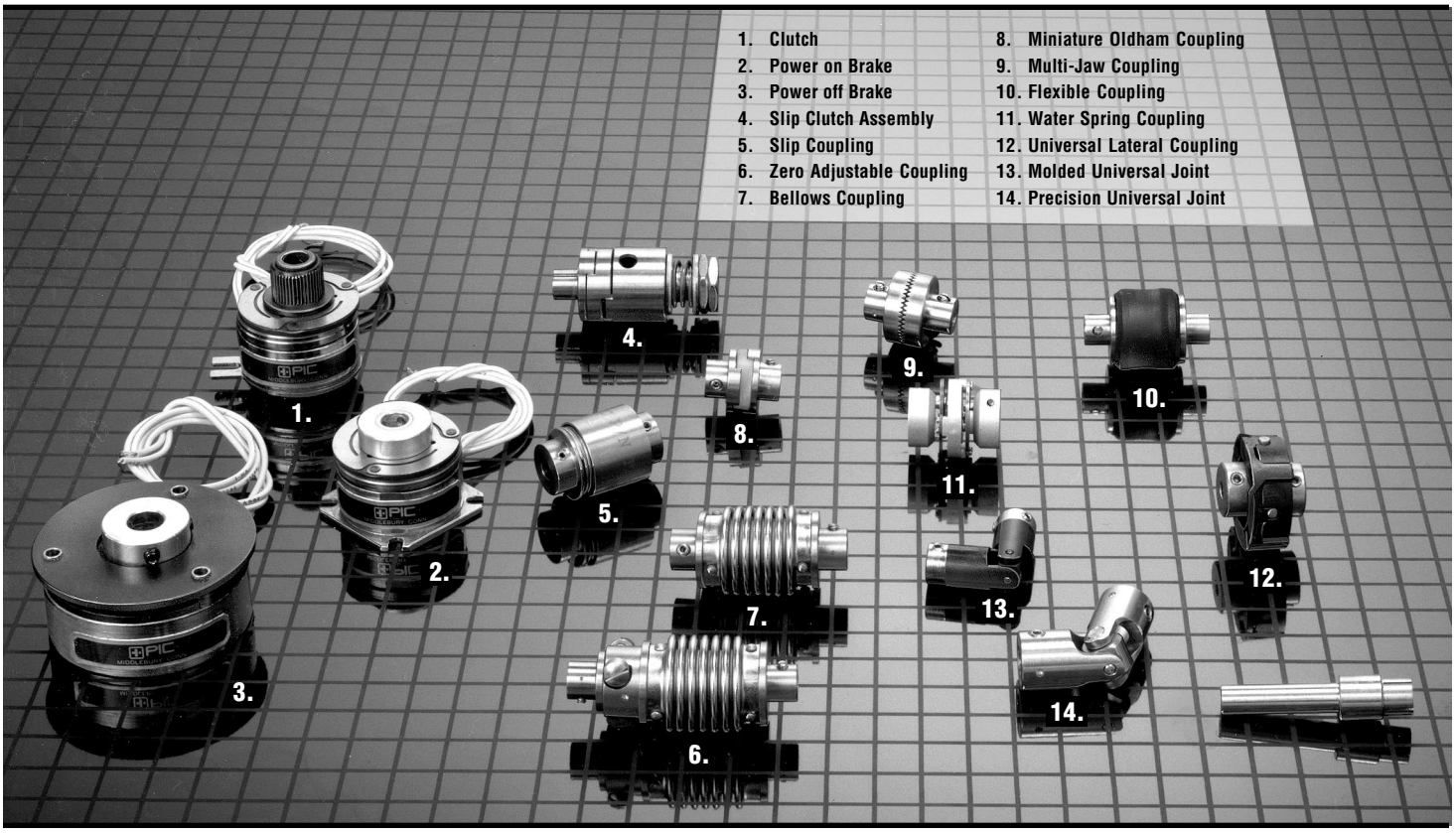
PIC DESIGN®

PRECISION INDUSTRIAL COMPONENTS

CLUTCHES, BRAKES & COUPLINGS



Whatever type of clutch, brake or coupling your application requires, you can be most assured of finding it quickly and easily among the comprehensive assortment of such components available from PIC Design...one that includes a complete selection of electro-magnetic clutches and brakes and mechanical slip clutches and couplings.

PIC Design Clutches, Brakes and Couplings—A Brief Overview

ELECTRIC CLUTCHES AND BRAKES

The PIC line comprises both shaft-mounted clutches and flange-mounted power-on and power-off brakes, all highly suited to situations in which an immediate response is required in either start or stop functions of driving mechanisms. The variety of voltages and bore sizes offered is aimed at giving designers and engineers especially easy access to precise components needed for such applications as copier drives, tape and film drives and packaging machines.

SERVO ELECTRIC CLUTCHES AND BRAKES

These units consist of miniature precision electromagnetic clutches and brakes designed for use in military/aerospace applications and precision servo mechanisms. Each is available with a servo mounting flange and with one or two output shafts.

SLIP CLUTCHES

These stainless steel mechanical clutches come precision-calibrated and spring-wrapped, and are designed to accommodate the mounting of input gears, sprockets or pulleys. Slip torque is stable and independent of velocity, regardless of rotational direction.

ROLLER CLUTCHES

The roller clutches are used to transmit torque between the shaft and housing in one direction and allows free overrun in the opposite direction. The clutches are generally used in applications requiring indexing, backstopping, or overrunning.

SLIP COUPLINGS

These devices not only serve as couplings for two colinear shafts, but also as a torque limiter. When the load exceeds the limit torque of a slip coupling, the two shafts will rotate relative to each other at the full limit torque.

COUPLINGS

The designs and styles listed below are suitable for a wide array of applications; for example, a design requiring the connection of two in-line shafts of equal or unequal diameters measured either in inches or millimeters.

Bellows Couplings
Zero Adjustable Couplings
Flexible Couplings
Miniature Oldham Couplings
Wafer Oldham Couplings
Universal Lateral Couplings
Multi-Jaw Couplings
Precision Universal Joint Couplings
Molded Universal Joint Couplings
Precision Sleeve Couplings
Flexible Zero Backlash Couplings

Assistance in determining which coupling best fills your particular requirements is provided in the technical section that follows.

TECHNICAL SECTION

Industrial Clutches and Brakes

Clutches in this category are utilized in applications involving a driving shaft which, when rotating, is able to engage or disengage a secondary shaft driven either by gears or a belt-and-pulley combination. Industrial brakes are intended for applications in which the primary mover is to be held at its stop position. A power-on brake will decelerate and provide inertia when power is supplied, requiring that power be transferred from motor to brake. A power-off brake is energized along with the motor itself, decelerating and retaining inertia when the power is shut off. The latter is geared to applications where power consumption and safety are of major concern.

PIC Design clutches and brakes can perform any of the following functions for a variety of applications similar to the ones listed below:

Functions	Applications
Remote Coupling	Copier Paper Drives
Instant Reversing	Computer Disc Drives
Speed Changing	Card Feeders
Torque Limiting	Collators
Rapid Cycling	Money Dispensers
Indexing	Teletype Machines
Jogging	X-Ray Table Drives
Tensioning	Blood Gas Analyzers
Cushioned Starts & Stops	Ticket Dispensers

BURNISHING

Burnishing is a wearing in or mating process used to ensure the highest possible output torques. It is accomplished by forcing the clutch or brake to slip rotationally when energized. Best results are obtained when the unit is energized at 30-40% of rated voltage and forced to slip for a period of 2-3 minutes at a low speed of 100-200 rpm. Units in applications involving high inertial loads and speed will usually become burnished in their normal operating mode. Whenever possible, it is desirable to perform the burnishing operation in the final location so the alignment of the burnished faces will not be disturbed.

CYCLE LIFE EXPECTANCY

The number of cycles a clutch or brake will produce before it ceases to function is largely dependent on the following factors: (1) duration of slip while accelerating or decelerating a given load, (2) ability of individual unit to dissipate heat generated at friction faces, (3) thickness of friction material (used to retard wear), (4) thickness of armature plate, (5) type of bearing system used in clutch, (6) environmental conditions contributing to bearing and friction face degradation (dust, lint, grit, toner, oil, etc.). Units that are required to accelerate or stop small inertial loads at low shaft speeds (under 500 rpm) will experience little slip before lock-in at time of engagement, hence minimal wear and extremely long life, commonly in the tens of millions of cycles (typical of copy machine applications). The bearing system is usually the life limiting factor in these applications. Units that are required to accelerate or stop loads with large inertia (such as punch press fly wheels) will experience a longer duration of slip before lock-in, resulting in faster wear and the shortened life. Friction face wear only occurs while the units are slipping differentially.

Couplings

COUPLING SELECTION GUIDE

Coupling Type	Angular Misalignment >5°	Angular Misalignment <5°	Lateral Misalignment > .010"	Withstand Shock Loads	Vibration Dampening	High Speeds	High Torque	High Ambient Temperature	Clean Room Environment	Stepper Motors	Reversing Drives	Maintenance Required	Vacuum Environment (No Lube)	Compressibility	Electrically Insulated
Bellows		X	X					X	X	X	X		X	X	
Zero Adjustable		X	X					X	X	X	X		X	X	
Flexible		X	X	X	X	X			X					X	
Oldham		X	X				X				X	X			
Wafer Spring	X	X	X	X		X	X	X	X	X	X		X		
Universal Lateral	X	X	X		X	X			X	X	X				X
Multi-Jaw				X			X	X	X		X		X		
Universal Joint	X	X					X	X		X	X	X			
Molded Universal Joint	X	X			X	X			X	X	X				X
Sleeve Coupling				X		X	X	X	X		X		X		
Flexible Zero Coupling		X	X			X	X	X	X	X	X		X	X	
Flexible K	X	X	X	X	X	X	X		X					X	X

Bellows Couplings
These couplings are the ideal solution where shafts are angularlly and laterally misaligned. They feature a stainless steel hub pinned to a stainless steel bellows.

Zero Adjustable Couplings
Get the same characteristics as on the bellows type coupling, except these couplings have an adjustable hub for zeroing synchros and other similar devices.

Flexible Couplings
When you've got to isolate vibration, absorb shock loads or electrically insulate, these couplings are a sure bet. They feature a molded neoprene body connected to stainless steel hubs.

Miniature Oldham Couplings
An oil impregnated center block of bronze or nylon eliminates metal-to-metal contact from taking place between the hubs. Use these couplings in high-torque applications.

Wafer Spring Couplings
The choice for your highest torque applications and where there is up to 8° of angular and .03 inches of lateral misalignment.

Universal Lateral Couplings
Not only will these couplings provide electrical insulation, but they can handle up to 10° angular and .05 inches of lateral misalignment. A nickel-plated metal alloy trunion and a Delrin annular ring does the trick.

Multi-Jaw Couplings
Interlocking teeth permit precision coupling/decoupling with limited transmission error between two stainless steel hubs.

Precision Universal Joint Couplings
When there's up to 30° of angular misalignment, this stainless-steel coupling is the recommended choice.

Molded Universal Joint Couplings
Working angles up to 30° are no problem when you use these couplings. They are made with a Delrin body and shackle connected to nickel-plated brass inserts.

Precision Sleeve Couplings
Use them when coupling shafts of similar or dissimilar diameters. This allows you to couple inch to inch, millimeter to millimeter, and inch to millimeter shafts.

Flexible Zero Backlash Couplings
These couplings work well in high accuracy systems. Stainless steel or aluminum one-piece construction with high torsional stiffness, constant velocity, and very low wind up.

Flexible K Couplings
An excellent choice for use in abrasive dust environments and where maximum flexibility is required. The hubs are zinc plated; the bodies are polyurethane.

Shaft Extensions
Used to add an additional inch of shaft length or facilitate a change from special to standard shaft diameter. — See Section 6.

PIC DESIGN
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FLANGE MOUNTED-POWER OFF BRAKES

24 VDC and 120 VAC 3/16", 1/4", 5/16", and 3/8" Bores

Diagram 1

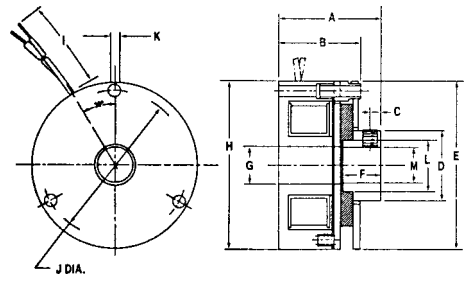
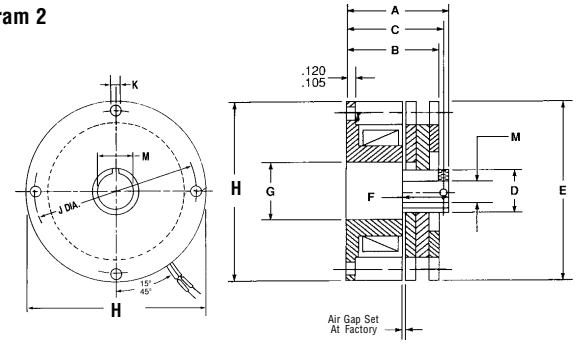


Diagram 2



PIC Series	A	B Max.	C Nom.	D Max.	E Max.	F Min.	G Ref.	H Max.	I ±.500	J Nom.	K Min.	L Nom.	Diagram
RY5	.890	.710	.070	.510	1.485	.320	.280	1.375	12.0	1.180	.124	3/8	1
RY6	1.060	.870	.115	.755	1.910	.380	.410	1.752	12.0	1.545	.113	9/16	
RY7	1.400	1.200	1.255	.722	2.465	.605	.781	2.436	12.0	2.125	.172	5/8	2
RY8	1.400	1.200	1.255	.722	2.465	.605	.781	2.436	12.0	2.125	.172	5/8	

Mechanical

PIC Series	24 VDC		120 VAC	
	Amps	Ohms	Amps	Ohms
RY5	.170	138	.041	N.A.
RY6	.190	132	.050	N.A.
RY7	.247	97.3	.045	N.A.
RY8	.369	65.1	.077	N.A.

Electrical

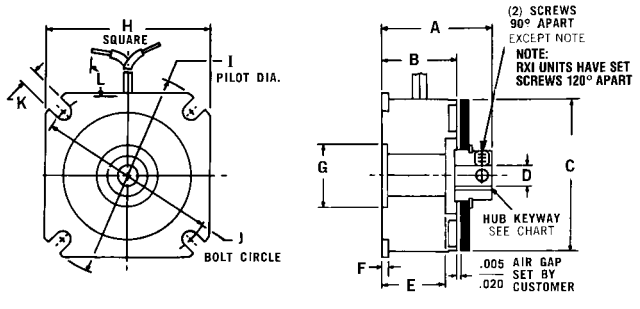
PIC Series	24 VDC		120 VAC	
	Amps	Ohms	Amps	Ohms
RY5	.170	138	.041	N.A.
RY6	.190	132	.050	N.A.
RY7	.247	97.3	.045	N.A.
RY8	.369	65.1	.077	N.A.

Key Way	M Nom.	Voltage	Part No.
	3/16	24 VDC	RY5-302
	3/16	120 VAC	RY5-702
	1/4	24 VDC	RY5-303
	1/4	120 VAC	RY5-703
	1/4	24 VDC	RY6-303
	1/4	120 VAC	RY6-703
	5/16	24 VDC	RY6-304
	5/16	120 VAC	RY6-704
1/32 x 1/16	5/16	24 VDC	RY7-304
	5/16	120 VAC	RY7-704
3/64 x 3/32	3/8	24 VDC	RY7-305
	3/8	120 VAC	RY7-705
1/32 x 1/16	5/16	24 VDC	RY8-304
	5/16	120 VAC	RY8-704
3/64 x 3/32	3/8	24 VDC	RY8-305
	3/8	120 VAC	RY8-705

Series	Typical Out-of-Box Torques lb.-in.	Rated Static Torques lb.-in.	Typical Torques After Burnishing lb.-in.
RY5	1	1	1.5
RY6	3	3	4
RY7	7	7	9
RY8	15	15	18

FLANGE MOUNTED-POWER ON BRAKES

24 VDC and 90 Volts DC 3/16", 1/4", 5/16", and 3/8" Bores



Mechanical

PIC Series	Static Torque Lb-In	Inertia Lb-In² Arm & Hub	Wgt. Oz.
RX1	2.5	.0011	2
RX2	6	.0024	3.2
RX3	10	.026	3.8
RX4	15	.031	11

Electrical

PIC Series	90 VDC		24 VDC	
	Amps	Ohms	Amps	Ohms
RX1	.046	1977	.117	205
RX2	.047	1930	.198	121
RX3	.042	2150	.183	132
RX4	.066	1369	.289	83

Key Way	D Nom.	Voltage	Part No.
	3/16	90 VDC	RX1-102
	3/16	24 VDC	RX1-302
	1/4	90 VDC	RX1-103
	1/4	24 VDC	RX1-303
	1/4	90 VDC	RX2-103
	1/4	24 VDC	RX2-303
	5/16	90 VDC	RX2-104
	5/16	24 VDC	RX2-304
	5/16	90 VDC	RX3-104
	5/16	24 VDC	RX3-304
	3/8	90 VDC	RX3-105
	3/8	24 VDC	RX3-305
1/32 x 1/16	5/16	90 VDC	RX4-104
	5/16	24 VDC	RX4-304
3/64 x 3/32	3/8	90 VDC	RX4-105
	3/8	24 VDC	RX4-305

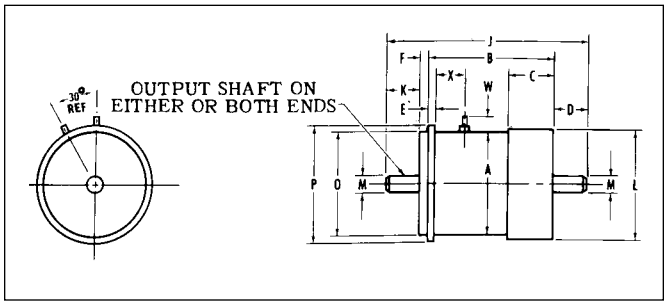
To Order Alternate Bores and Voltages, Consult Factory

Dimensions

PIC Series	A	B Nom.	C Max.	E Nom.	F Max.	G ±.001	H Max.	I ±.001	J Nom.	K Min.	L ±.500
RX1	.885	.686	.903	.572	.034	N.A.	.980	1.1995	1.030	.094	12.00
RX2	.974	.643	1.160	.583	.048	N.A.	1.230	1.498	1.312	.123	12.00
RX3	1.309	.870	1.500	.805	.063	N.A.	1.569	1.999	1.750	.156	12.00
RX4	1.269	.848	1.780	.745	.062	.750	1.943	2.436	2.125	.186	12.00

Series	Typical Out-of-Box Torques lb.-in.	Rated Static Torques lb.-in.	Typical Torques After Burnishing lb.-in.
RW2, R X1	2	2.5	3
RW2, RX2	5	6	8
RW3, RX3	8	10	15
RW4, RX4	12	15	20

FAILSAFE BRAKE (SPRING BRAKE)



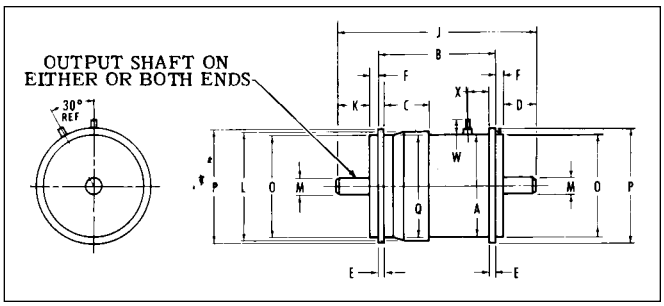
Part No.		RG5-01	RG8-01	RG11-01
Weight (Nominal)	Oz.	.7	2.2	4.7
Volts	D.C.	24 to 28	24 to 28	24 to 28
Coil Resistance ± 10%	Ohms	246.0	193.0	169.0
Brake Torque Minimum	Oz-in	3.5	14.0	32.0
Response Time @ 28 VDC (Energize)	MS Nom.	7.0	14.0	24.0
Maximum No Load Torque (Drag)	Oz-in	.10	.20	.30
Polar Moment of Inertia (In. Lb-Sec²) Calculated				
Output Shaft		0.6 x 10^{-6}	3.7 x 10^{-6}	14.7 x 10^{-6}

– 01 Output Shaft on "K" end only
– 04 Output Shaft on "D" end only
– 05 Output Shaft on Both Ends

A	B	C	D	E	F	J	K	L	M*	O*	P	W	X	Part No.
±.010	±.015	±.010	±.020	+.003 −.000	±.005	±.015	±.020	±.005	−.0000 −.0005	+.0000 −.0005	+.000 −.005	REF	REF	
.531	.882	.304	.300	.047	.060	1.542	.300	.578	.0935	.5000	.594	.150	.245	**RG5-01**
.750	1.240	.360	.300	.060	.100	1.940	.300	.796	.1248	.7500	.827	.229	.368	**RG8-01**
1.000	1.485	.411	.375	.060	.100	2.335	.375	1.080	.1248	1.0000	1.090	.224	.431	**RG11-01**

*Concentric within .0015 T.I.R.

MAGNETIC BRAKE



Part No.		RB5-01	RB8-01	RB11-01
Weight (Nominal)	Oz.	.7	2.1	4.5
Volts	D.C.	24 to 28	24 to 28	24 to 28
Coil Resistance ± 10%	Ohms	246.0	193.0	169.0
Brake Torque Minimum @ 24 VDC	Oz-in	6.0	35.0	90.0
Response Time @ 28 VDC (Energize)	MS Nom.	5.0	9.0	11.0
Maximum No Load Torque (Drag)	Oz-in	.05	.10	.10
Polar Moment of Inertia (In. Lb-Sec²) Calculated				
Output Shaft		.26 x 10^{-6}	1.2 x 10^{-6}	6.1 x 10^{-6}

– 01 Output Shaft on "K" end only
– 04 Output Shaft on "D" end only
– 05 Output Shaft on Both Ends

A	B	C	D	E	F	J	K	L	M*	O*	P	Q	W	X	Part No.
±.010	±.015	±.010	±.020	+.003 −.000	±.005	±.015	±.020	±.005	−.0000 −.0005	+.0000 −.0005	+.000 −.005	±.005	REF	REF	
.531	.810	.298	.300	.047	.060	1.530	.300	.578	.0935	.5000	.594	.530	.150	.200	**RB5-01**
.750	1.140	.343	.300	.060	.100	1.940	.300	.796	.1248	.7500	.827	.750	.229	.254	**RB8-01**
1.000	1.390	.424	.375	.060	.100	2.340	.375	1.080	.1248	1.0000	1.090	1.000	.224	.257	**RB11-01**

*Concentric within .0015 T.I.R.

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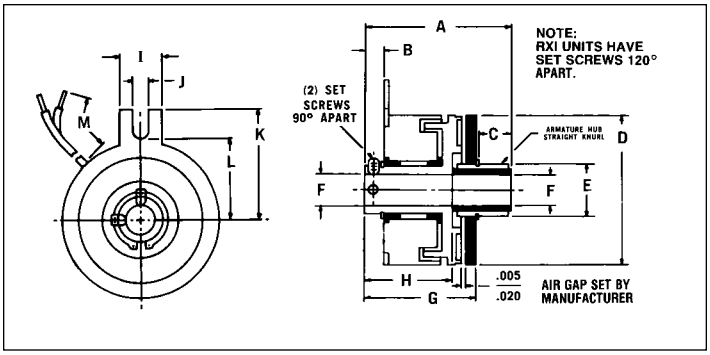
E-Mail: info@pic-design.com

SHAFT MOUNTED-CLUTCHES

24 and 90 Volts DC 3/16", 1/4", 5/16", and 3/8" Bores



Mechanical

PIC Series	Static Torque Lb-In	Inertia Lb-In²		Wgt. Oz.
		Rotor	Arm & Hub	
RW1	2.5	.002	.0015	2.0
RW2	6	.0058	.0029	3.2
RW3	10	.060	.0031	3.8
RW4	15	.061	.036	11

Electrical

PIC Series	90 VDC		24 VDC	
	Amps	Ohms	Amps	Ohms
RW1	.046	1977	.117	205
RW2	.047	1930	.198	121
RW3	.042	2150	.183	132
RW4	.066	1369	.289	83

F Nom.	Voltage	Part No.
3/16	90 VDC	RW1-122
3/16	24 VDC	RW1-322
1/4	90 VDC	RW1-133
1/4	24 VDC	RW1-333
1/4	90 VDC	RW2-133
1/4	24 VDC	RW2-333
5/16	90 VDC	RW2-144
5/16	24 VDC	RW2-344
5/16	90 VDC	RW3-144
5/16	24 VDC	RW3-344
3/8	90 VDC	RW3-155
3/8	24 VDC	RW3-355
5/16	90 VDC	RW4-144
5/16	24 VDC	RW4-344
3/8	90 VDC	RW4-155
3/8	24 VDC	RW4-355

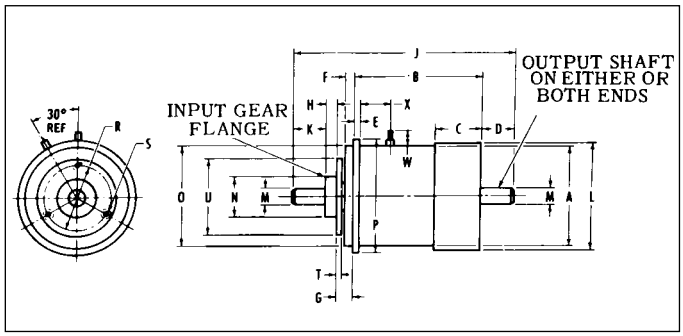
To Order Alternate Bores and Voltages, Consult Factory.

Dimensions

PIC Series	A	B Nom.	C	D Max.	E ±.002	G Nom.	H Nom.	I Max.	J Min.	K Nom.	L Nom.	M ±.500
RW1	1.370	.191	.410	.903	.506	.874	.763	.305	.094	.625	.445	12.00
RW2	1.409	.147	.396	1.160	.506	.935	.777	.380	.122	.875	.585	12.00
RW3	1.700	.273	.303	1.500	.630	1.255	1.075	.520	.180	1.120	.750	12.00
RW4	1.823	.270	.355	1.780	.630	1.314	1.060	.505	.184	1.325	.975	12.00

Series	Torque Build-up Time — Milliseconds				Torque Decay Time MS
	Rated Static Torque lb.-in.	65% of Rated Torque	80% of Rated Torque	100% of Rated Torque	10% of Rated Torque
RW1, RX1	2.5	3.3	4.8	7.5	6.6
RW2, RX2	6	5.5	7.2	10.5	11
RW3, RX3	10	6	9	12	17
RW4, RX4	15	8	10	14	14

MAGNETIC CLUTCH



Part No.		RC5-01	RC8-01	RC11-01
Weight (Nominal)	Oz.	.8	2.4	4.9
Volts	D.C.	24 to 28	24 to 28	24 to 28
Coil Resistance ± 10%	Ohms	246.0	193.0	169.0
Clutch Torque Minimum @ 24 VDC	Oz-in	6.0	26.0	64.0
Response Time @ 28 VDC (Energize)	MS Nom.	5.0	11.0	13.0
Maximum No Load Torque (Drag) Energized	Oz-in	.05	.25	.40
Maximum No Load Torque (Drag) De-energized	Oz-in	.05	.10	.15
Polar Moment of Inertia (In. Lb-Sec²) Calculated				
Input Gear Flange		.48 x 10^{-6}	3.8 x 10^{-6}	11.5 x 10^{-6}
Output Shaft		.30 x 10^{-6}	1.2 x 10^{-6}	6.1 x 10^{-6}

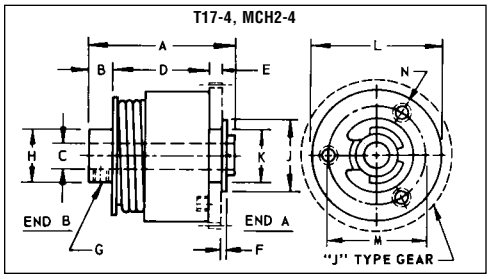
– 01 Output Shaft on "K" end only
– 04 Output Shaft on "D" end only
– 05 Output Shaft on Both Ends

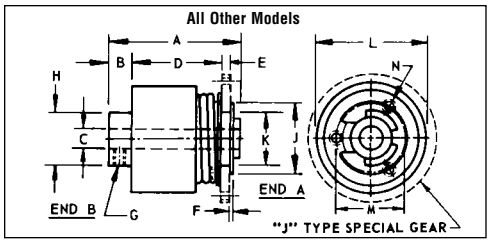
A ±.010	B ±.015	C ±.010	D ±.020	E +.003 −.000	F ±.005	G ±.005	H ±.005	J ±.015	K ±.020	L ±.005	M* −.0000 −.0005	N* +.0000 −.0005	O* +.0000 −.0005	P +.000 −.005	R ±.005	S 2 B THD	T ±.002	U ±.005	W REF	X REF	Part No.
.531	.882	.304	.300	.047	.060	.125	.079	1.686	.300	.578	.0935	.2190	.5000	.594	.344	#0-80	.056	.450	.150	.245	RC5-01
.750	1.240	.360	.300	.060	.100	.170	.120	2.130	.300	.796	.1248	.3750	.7500	.827	.625	#2-56	.061	.740	.229	.368	RC8-01
1.000	1.485	.411	.375	.060	.100	.177	.177	2.589	.375	1.080	.1248	.5000	1.0000	1.090	.750	#2-56	.064	.934	.224	.431	RC11-01

*Concentric within .0015 T.I.R.

SLIP CLUTCHES — CONTINUOUS SLIP OPERATION

1/8", 3/16", and 1/4" Bores and 3, 4, 6 mm Bores





Pre-set Slip Torque Bi-directional (oz. in.)	A	B	C +.0006 −.0000	D	E	F	G	H	J	K +.0000 −.0008	L	M	N	Part No.
9 ± 1	1.05	.18	.1248	.72	.080	.03	#2-56	.38	.45	.3740	.63	.500	#0-80 x .08 deep	T17-1
20 ± 2	1.24	.21	.1873	.85	.095	.04	#4-40	.50	.68	.4990	1.00	.650	#1-72 x .10 deep	T17-2
20 ± 2	1.24	.21	.2498	.85	.095	.04	#4-40	.50	.68	.4990	1.00	.650	#1-72 x .10 deep	T17-3
48 ± 5	1.39	.23	.2498	.94	.130	.04	#6-32	.50	.68	.4990	1.25	.925	#2-56 x .11 deep	T17-4
80 ± 8	1.39	.23	.2498	.94	.130	.04	#6-32	.63	.68	.4990	1.50	.925	#2-56 x .11 deep	T17-5
120 ± 12	1.67	.25	.2498	1.20	.130	.04	#6-32	.63	.59	.4990	1.87	.780	#4-40 x .15 deep	T17-6

Dimensions below are in millimeters.

Pre-set Slip Torque Bi-directional (N-m)	A	B	C +0.015 −0.000	D	E	F	G	H	J	K +0.00 −0.02	L	M	N	Part No.
0.064 ± 0.007	26.67	4.57	2.995	18.29	2.03	0.76	M2X.4	9.65	11.43	9.500	16.00	12.70	#0-80 x $\frac{08}{2.0}$ deep	MCH2-1
0.141 ± 0.014	31.50	5.33	3.995	21.59	2.41	1.02	M2X.4	12.70	17.27	12.675	25.40	16.51	#1-72 x $\frac{10}{2.5}$ deep	MCH2-2
0.141 ± 0.014	31.50	5.33	5.995	21.59	2.41	1.02	M3X.5	12.70	17.27	12.675	25.40	16.51	#1-72 x $\frac{10}{2.5}$ deep	MCH2-3
0.339 ± 0.035	35.31	5.84	5.995	23.88	3.30	1.02	M3X.5	12.70	17.27	12.675	31.75	23.50	#2-56 x $\frac{11}{2.8}$ deep	MCH2-4
0.565 ± 0.057	35.31	5.84	5.995	23.88	3.30	1.02	M3X.5	16.00	17.27	12.675	38.10	23.50	#2-56 x $\frac{11}{2.8}$ deep	MCH2-5
0.847 ± 0.085	42.42	6.35	5.995	30.48	3.30	1.02	M3X.5	16.00	14.99	12.675	47.50	19.81	#4-40 x $\frac{15}{3.8}$ deep	MCH2-6

FEATURES
- Mounting provision for modified "J" Gears, Pulleys and Sprockets
- Stainless Steel with Bronze Bearings
- Same or Different Torques Available for Two Directions of Rotation - See Special Ordering Information
- Precise and stable limit Torque
- Same Torque at breakway as at high slip velocity
- Torque Range: 2 to 120 Oz.In.

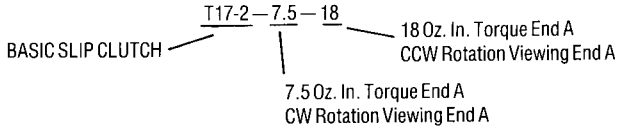
Higher Torques - To 240 Oz. In.
Larger Bores - To ½"
Available on Request

*SPECIALS Torque Range	
Max. Oz. In.	Min. Oz. In.
9 ± 1	2 ± .5
20 ± 2	5 ± 1
20 ± 2	5 ± 1
48 ± 5	10 ± 1.5
80 ± 8	20 ± 3
120 ± 12	30 ± 4

TO ORDER SPECIAL TORQUE SETTINGS:
Refer to Torque Range Min. — Max. values to obtain the practical Torque Ranges available for each basic clutch.

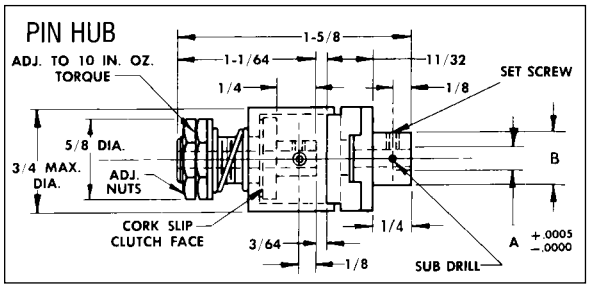
SPECIFY: Basic Part Number — Required Torque for End A, CW Rotation — Required Torque for End A, CCW Rotation.

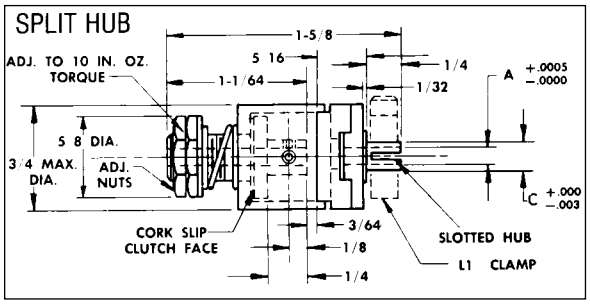
EXAMPLE: Special Slip Clutch:



IN-LINE COUPLING & SLIP CLUTCHES — ADJUSTABLE-INTERMITTENT DUTY

1/8", 3/16", and 1/4" Bores and 3, 4, 6 mm Bores





Material: 303 Stainless Steel

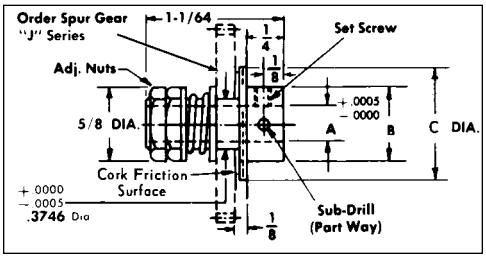
	*Shaft Size	*A	B	C	Set Screw	Clamp No. (Ref.)	Pin Hub Part No.	Split Hub Part No.
Inch Bores Toler. +.0005 −.0000	1/8 to 3/16	.1248 .1873	.37	.250	#4-40	L1-5	T14-7	T14-10
	3/16 to 3/16	.1873	.37	.250	#4-40	L1-5	T14-2	T14-5
	3/16 to 1/4	.1873 .2498	.50	.312	#6-32	L1-6	T14-9	T14-12
	1/4 to 1/4	.2498	.50	.312	#6-32	L1-6	T14-3	T14-6
Dimensions below are in millimeters.								
Metric Bores Toler. +.013 −.000	3 to 3	2.995	7.92	4.78	M2X.4	L1-4	MCU18-1	MCU19-1
	3 to 4	2.995 3.995	9.52	6.35	M2X.4	L1-5	MCU18-2	MCU19-2
	3 to 6	2.995 5.995	12.70	7.92	M2X.4	L1-6	MCU18-3	MCU19-3
	4 to 4	3.995	9.52	6.35	M2X.4	L1-5	MCU18-4	MCU19-4
	4 to 6	3.995 5.995	12.70	7.92	M2X.4	L1-6	MCU18-5	MCU19-5
	6 to 6	5.995	12.70	7.92	M3X.5	L1-6	MCU18-6	MCU19-6

*Adjustable End is first shaft size shown.
For 10 to 50 in. oz. Torque Adjustment, Add – 50 to Part Number. Available with 0.07 to 0.35 N-m on Request.

PIC DESIGN
Phone: 800-243-6125 ▪ FAX: 203-758-8271
E-Mail: info@pic-design.com

SLIP CLUTCH ASSEMBLY — ADJUSTABLE-MOMENTARY OVERLOAD*

Pin Hub ■ 1/8", 3/16", and 1/4" Bores and 3, 4, 6 mm Bores



*Not to be used for continuous slippage. For continuous Duty Slip Clutch See T17, MCH2 Series.

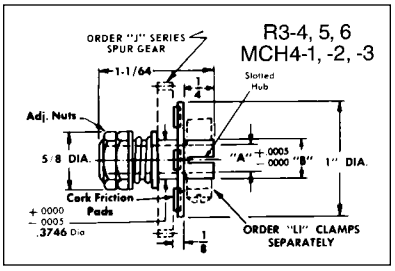
Material: Stainless Steel

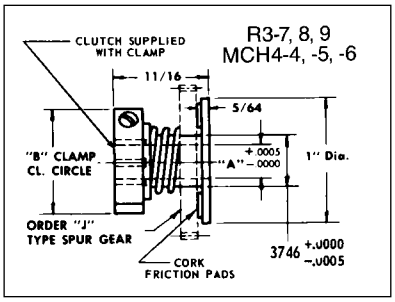
Part No.	Friction Surface
MCH3-2, -4, -6	Pads
MCH3-1, -3, -5	Ring
ADJUSTABLE TO 0.07 N-m AVAILABLE WITH 0.07 TO 0.35 N-m ON REQUEST	

Part No.	Friction Surface
R3-3	Pads
R3-10, 11, 12	Ring
ADJUSTABLE TO 10 OZ. IN. TORQUE FOR 10 TO 50 OZ. IN. TORQUE ADD 50 TO CAT. NO.	

	Shaft Size	A	B	C	Set Screw	Part No.
Inch Bores Teler. +.0005 −.0000	1/8	.1248	.312	5/8	#2-56	R3-10
	3/16	.1873	.375	5/8	#4-40	R3-11
	1/4	.2498	.500	5/8 1	#6-32	R3-12 R3-3
Dimensions below are in millimeters.						
Metric Bores Teler. +.013 −.000	3	2.995	7.92	15.88 25.40	M2X.4	MCH3-1 MCH3-2
	4	3.995	9.52	15.88 25.40	M2X.4	MCH3-3 MCH3-4
	6	5.995	12.70	15.88 25.40	M3X.5	MCH3-5 MCH3-6

Clamp Type ■ 1/8", 3/16", and 1/4" Bores and 3, 4, 6 mm Bores





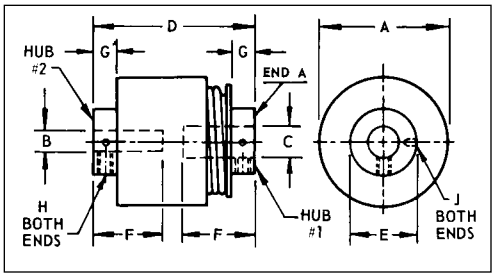
Material: Stainless Steel

*Not to be used for continuous slippage. For continuous Duty Slip Clutch See T17, MCH2 Series.

	Shaft Size	A	B	Clamp	Part No.
Inch Bores Toler. +.0005 −.0000	1/8	.1248	.188	L1-4	R3-4
	3/16	.1873	.250	L1-5	R3-5
	1/4	.2498	.312	L1-6	R3-6
	1/8	.1248	7/8	L1-4	R3-7
	3/16	.1873	1-1/32	L1-5	R3-8
	1/4	.2498	1-1/8	L1-6	R3-9
Dimensions below are in millimeters.					
Metric Bores Toler. +.013 −.000	3	2.995	4.78	L1-4	MCH4-1
	4	3.995	6.35	L1-5	MCH4-2
	6	5.995	7.92	L1-6	MCH4-3
	3	2.995	22.23	L1-4	MCH4-4
	4	3.995	26.19	L1-5	MCH4-5
	6	5.995	28.58	L1-6	MCH4-6

SLIP COUPLINGS — CONTINUOUS SLIP OPERATION

1/8", 3/16", and 1/4" Bores and 3, 4, 6 mm Bores



FEATURES
- Misalignment Allowance between shafts - 0.006"
- Stainless Steel
- Same or Different Torques Available for Two Directions of Rotation - See Special Ordering Information
- Torque Range: 1 to 120 Oz. In.
- Precise and stable limit Torque
- Same Torque at breakway as at high slip velocity

Special Bores - 1/8 to 1/2
Higher Torques - To 240 Oz. In.
Larger Bores - To 1/2"
Available on Request

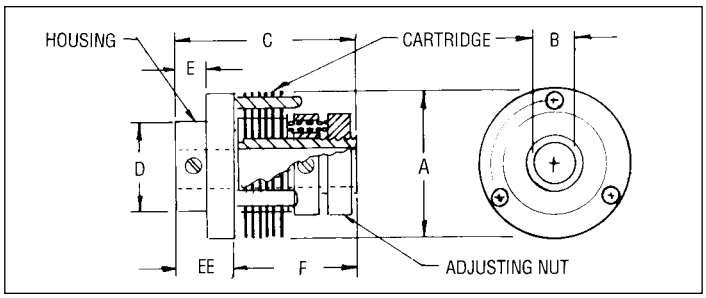
*SPECIALS	
Torque Range	
Max. Oz. In.	Min. Oz. In.
12 ± 1.2	3 ± .5
20 ± 2	5 ± 1
48 ± 5	10 ± 1.5

	Pre-Set Slip Torque Bi-directional	A	B	C	D	E	F	G	H	Part No.
Inch Bores Toler. +.0005 −.0000	12 ± 1.2 Oz. In	.75	.1875 .1875 .2500	.1875 .2500 .2500	1.11	.50	.50	.19	#4-40	T18-4 T18-5 T18-6
	20 ± 2 Oz. In.	1.00	.1875 .1875 .2500	.1875 .2500 .2500	1.26	.50	.55	.19	#4-40	T18-7 T18-8 T18-9
	48 ± 5 Oz. In.	1.25	.2500 .2500 .3750	.2500 .3750 .3750	1.43	.62	.62	.25	#6-32	T18-10 T18-11 T18-12
Dimensions below are in millimeters.										
Metric Bores Toler. +.013 −.000	0.035 ± 0.005 N-m	12.70	3	3	22.60	9.40	10.92	4.32	M2X.4	MCU17-1
			3	4						MCU17-2
			4	4						MCU17-3
	0.085 ± 0.008 N-m	19.05	4	4	28.19	12.70	12.70	4.83	M2X.4	MCU17-4
			4	6						MCU17-5
			6	6					M3X.5	MCU17-6
	0.141 ± 0.014 N-m	25.40	4	4	32.00	12.70	13.97	4.83	M2X.4	MCU17-7
			4	6						MCU17-8
			6	6					M3X.5	MCU17-9

TO ORDER SPECIAL TORQUE SETTINGS:
Refer to Torque Range Min. — Max. values to obtain the practical Torque Ranges available for each basic coupling.
EXAMPLE: Special Slip Coupling: T18-10 — 12 — 44
BASIC SLIP COUPLING
12 Oz. In. Torque Hub = 1, CW Rotation Viewing End A
44 Oz. In. Torque Hub = 1, CCW Rotation Viewing End A
SPECIFY: Basic Part Number — Required Torque for Hub #1. Rotating CW — Required Torque for Hub #1. Rotating CCW.

SLIP CLUTCHES — CONTINUOUS SLIP OPERATION

Adjustable Torque



Material:

Housing — Steel; Zinc Plated
Clutch Plates — Brass
Friction Plates — Proprietary (Non Asbestos)

Open Plate

$$\text{Maximum RPM} = \frac{\text{WATTS (From Table Below)}}{\text{Torque (oz.- in.) x .0007}}$$

Dimensions And Capacity Rating

A	Bore B +.002 -.000	C	D ±.005	E	EE	F	Capacity oz.- in.	Capacity Watts	Friction Surfaces	Part No*
1.00	.250	1.06	.76	.25	Cartridge Enclosed		.3 to 32	1.0	2	T25-164-2S T25-164-2H
1.00	.250	1.31	.76	.25			4.8 to 160	5.8	8	T25-164-8S T25-164-8H
1.25	.250	1.50	.76	.25	.50	1.00	1.6 to 160	6.0	8	T25-204-S T25-204-H
1.50	.375	2.50	1.01	.37	.75	1.75	8 to 400	14.5	12	T25-246-S T25-246-H
2.00	.500	2.87	1.38	.50	1.00	1.88	12.8 to 800	29.0	12	T25-328-S T25-328-H

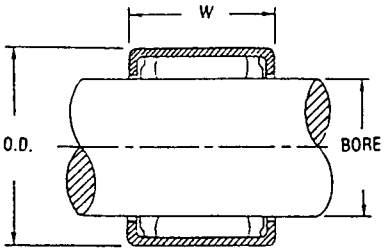
Features:

- A multi plate slip clutch
- Adjustable torque
- Preset torque available on special orders (Torque setting ± 10%)
- Can be used as a slip coupling
- Backlash of 6° is standard
- Constant tension
- Overload protection
- Controlled slip
- Clutches exhibit same torque in either direction
- Shaft to shaft clutch/ coupling or thru shaft to pulley, gear, etc.
- Bronze bearing in housing for thru-shaft to pulley models
- Low stick-slip ratio

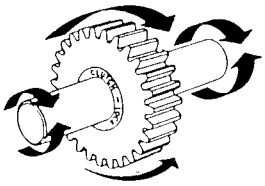
Capacity at continuous duty, 50 RPM, 25 million cycles (Rev)

*Note:
- For shaft to shaft coupling, set screws in both housing and cartridge — use Part No. ending with "S"
- For thru shaft to housing (pulley, gear, etc.), bronze bearing in housing, set screw in cartridge — use Part No. ending with "H"
- Metric bores can be accomplished by use of bore reducers (5,6,8 & 10 mm finished bores) found in the catalog
- Consult factory for other bore sizes

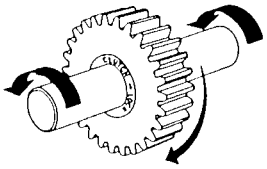
ROLLER CLUTCHES



Lock Function
Shaft Drives Gear Clockwise (top arrows)
or
Gear Can Drive Shaft Counter-Clockwise (bottom arrows)



Overrun Function
Shaft Overruns in Gear Counter-Clockwise (top arrows)
or
Gear Overruns on Shaft Clockwise (bottom arrow)



Material:
Roller Cup - Case Hardened Steel
Needle Bearing - 52100 Hardened Chrome Steel
Cage: Acetal with Integral leaf springs

- Ideal For Indexing, Backstopping Or Overrunning Operations
- Free Rolling One Way, Drives In Opposite Direction
- Light Weight, Low Profile
- High Indexing, Frequency
- Temp. max 200°F
- Minimum Backlash

Bore	O.D.	W +.000 −.010	Torque Rating In Lb.	Overrun Limiting Speed RPM	Mounting Dim. Shaft Dia. +.0000 −.0005	Mounting Dim. Hsg. Bore Dia. +.001 −.000	Part No.
1/8	9/32	.250	2.86	50,000	.1250	.2812	EC-02-04
1/4	7/16	.500	17.2	21,000	.2500	.4370	EC-04-07
3/8	5/8	.500	45.4	14,000	.3750	.6245	EC-06-10
1/2	3/4	.500	73.6	11,000	.5000	.7495	EC-08-12
5/8	7/8	.625	143	8,500	.6250	.8745	EC-10-14
3/4	1	.625	196	7,000	.7500	.9995	EC-12-16

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