ATC / ATB Series AT Clutches and Brakes

Rugged, Durable, Heavy Duty Clutches and Brakes

Warner Electric's AT clutches and brakes are rugged and durable.

The ATC and ATB incorporate a molded friction material/pole assembly and replaceable armature faces with a rugged, durable clutch and brake assembly. Uniquely designed for ease of application and low maintenance.

Besides providing the ultimate in long life and durability, the AT units are easily repairable. Mounting a standard sheave, pulley or sprocket to the clutch is a snap.

The AT Clutches and Brakes feature a replaceable friction face. The results are long life, efficient operation, and minimal down time. Service kits of pre-selected parts enhance unit life.

ATC's and ATB's are completely assembled at the factory and have been specifically designed to match the torque ratings of standard motors, reducers, and other power transmission components. Easy-to-select and easy-to-install.

AT Clutches and Brakes are ideally suited for extremely rugged, heavy duty application demands.

Advanced Technology Design Advantages

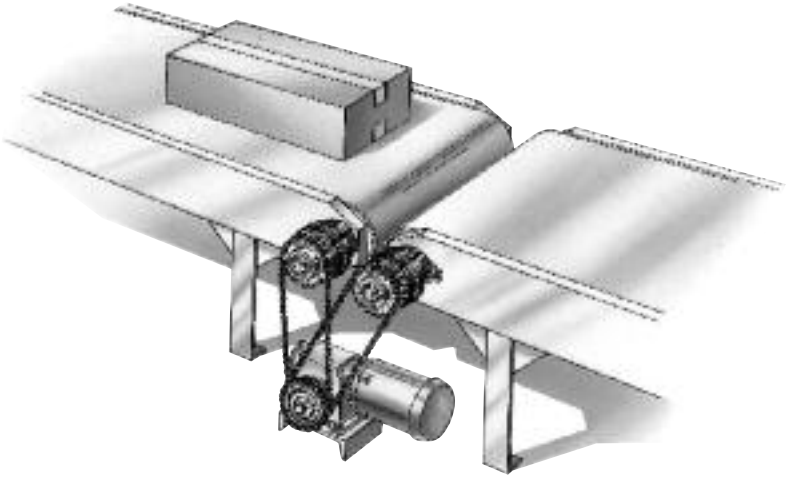
- Replaceable friction face
- Steel wear surface and cast iron hub/armature carrier
- Non-asbestos, split molded friction disc.
- Autogap™ provides automatic wear take-up for consistent engagement.
- Cast iron components–finned, cast iron armature carriers
- Special coil design for high temperature operation.
- Sealed heavy duty bearings
- Rugged spline drive operation
- Easy to install
- Maintenance free

Options and Accessories

Warner Electric offers accessories and repair kits for AT clutches and brakes, including:

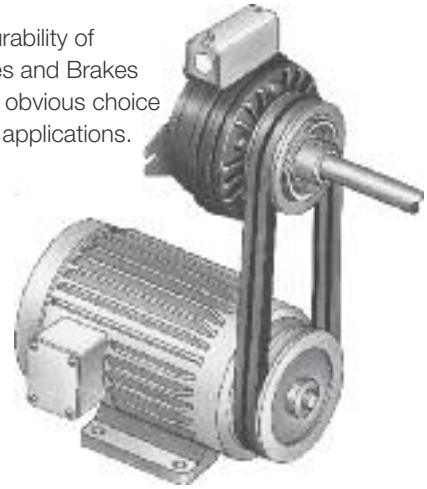
- Clutch field restraining straps
- Brake torque arms
- Conduit boxes
- Clutch pulleys
- Service kits

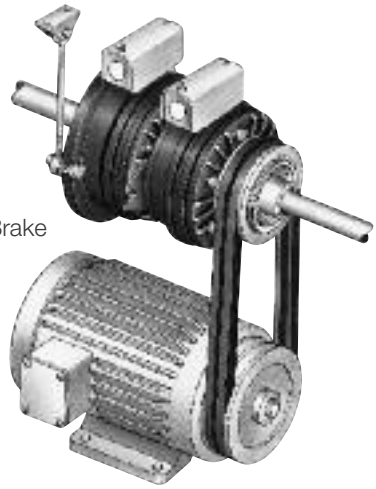
Applications/Mounting Configurations



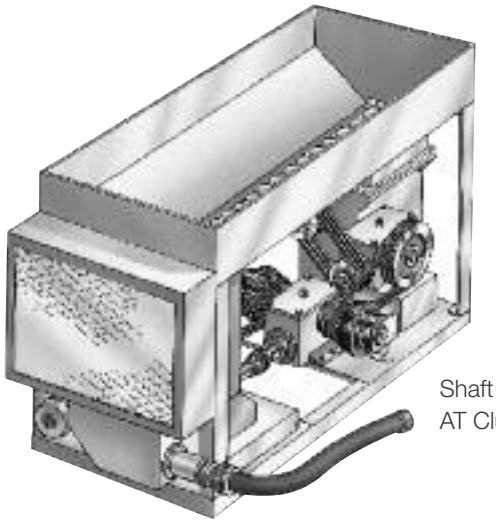
Two AT Clutches, easily mounted on conveyor headshafts, allow conveyor sections to be separately powered from a single drive.

The rugged durability of the AT Clutches and Brakes make them an obvious choice for heavy duty applications.

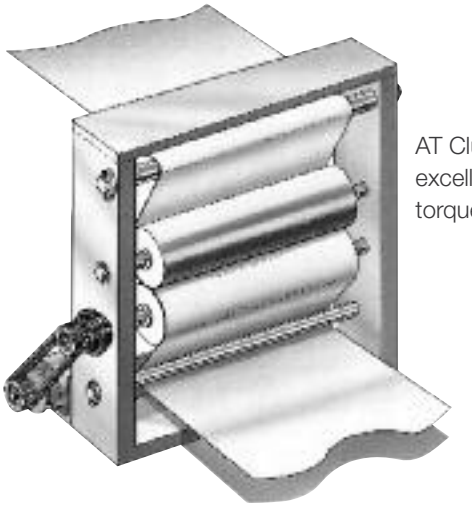




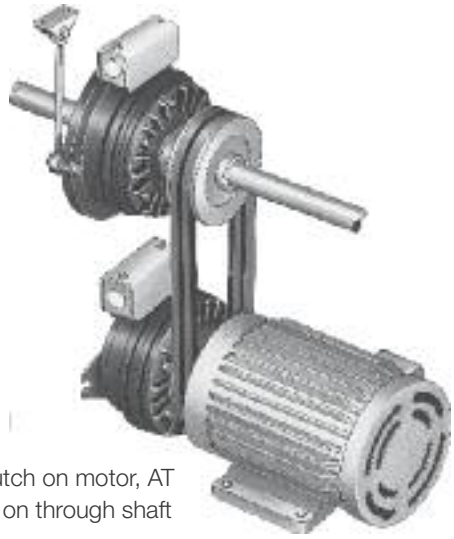
AT Clutch and AT Brake on through shaft



Shaft mounted AT Clutch



AT Clutches and Brakes are excellent for controlled torque applications.

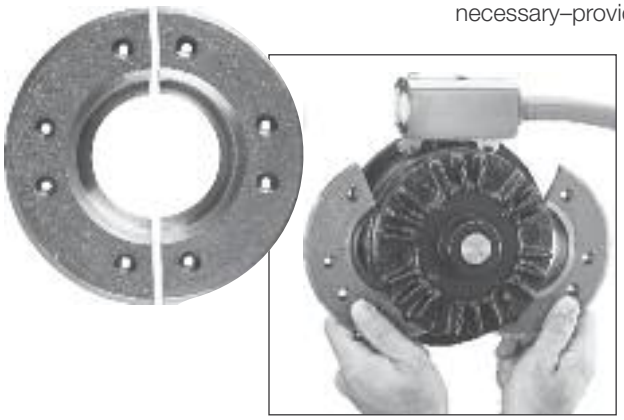


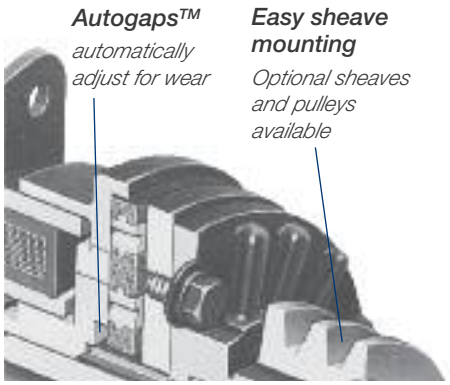
AT Clutch on motor, AT Brake on through shaft

Performance Advantages

Principle of Operation

Ease of control is one of the most outstanding features of Warner Electric brakes and clutches. In operation, a magnetic field is generated as soon as current flows through the magnet coil. The magnetic poles are molded into a replaceable disc with the friction material. The electromagnetic force from the field or magnet passes through the poles to attract the armature, clamping the two together tightly. Strength of the magnetic field is directly proportional to the amount of current applied. The full torque range is completely controllable from 0 to 100% simply by turning the knob on the appropriate Warner Electric control.





Replaceable Friction Discs

The AT Electric Clutches and Brakes feature a patented replaceable friction face incorporating a unique combination of electromagnetic poles and friction material in a simple component. Easily visible friction disc indicates when replacement is necessary–providing a helpful maintenance guide. The results are long life, efficient operation, and minimal down time. Rebuild kits of pre-selected parts enhance unit life.

The split friction disc and armature are replaceable without unit disassembly in less than 5 minutes in most applications.

Autogap™ Alignment

Provides for automatic adjustment of the air gap between the wearing friction surfaces. Engagement times are consistent to maintain stopping and starting accuracy for the entire life of the unit.

Technical Considerations

Most normal duty applications will usually require a selection based only on horsepower and speed at the clutch or brake location as indicated on pages 83, 84 and 88. However, to insure the best possible overall performance and the most cost effective unit size selection, additional factors should be considered.

The main criteria are:

1. Horsepower
2. RPM
3. System inertia at the clutch or brake
4. Cycle rate and start/stop time
5. Static torque requirement, if any.

For instance, the HP and RPM sizing derived from the selection chart on page 84, may be different than the size required by the system inertia and cycle rate. In that case, the proper size is the larger size unit. Additional application information makes a very accurate and exacting unit size selection possible. To achieve this, system inertia and required cycle rate must be known.

Cycle Rate

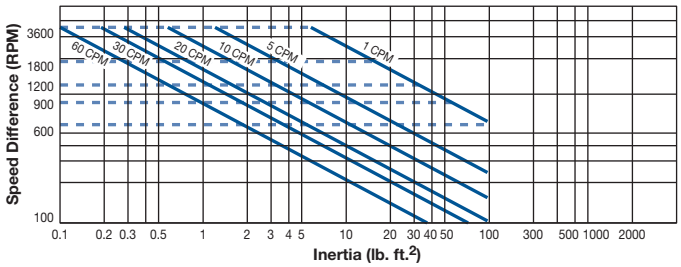
Cycle rate capability is often an important selection criteria. Cycle rate is usually defined as the number of times the clutch and/or brake is switched on and off in a minute or Cycles per Minute (CPM). In order to determine the correct size unit, both required cycle rate and reflected inertia must be known. The inertia of the AT clutch/brake components has been factored into the charts, so these need not be considered. To determine size from the charts:

1. Estimate the size clutch or brake.
2. Read the chart for that size. The intersection of the reflected inertia (lb. ft.^{2}) and speed difference (RPM) lines will indicate the maximum cycle rate for that size unit.
3. Compare cycle rates. If the cycle rate required falls within the units capability, proceed to step 4 below. If the required cycle rate is above the size selected, go to the next larger AT unit.
4. Verify selection. Compare the size selected in 2 and 3 above to the Horsepower/Speed simple selection made on page 84. If the size selected is not the same, choose the larger selected by the two methods.

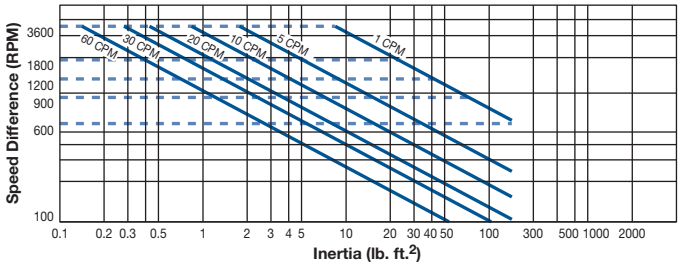
Performance Curves

Cycle Rate Capability

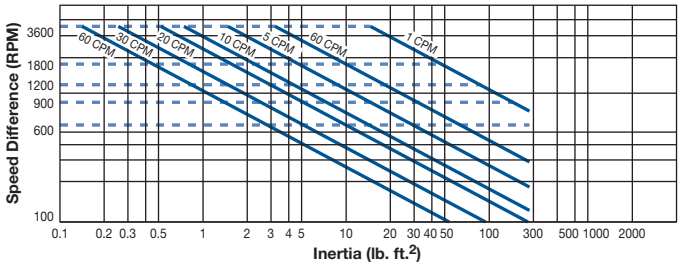
ATC 25/ATB 25



ATC 55/ATB 55

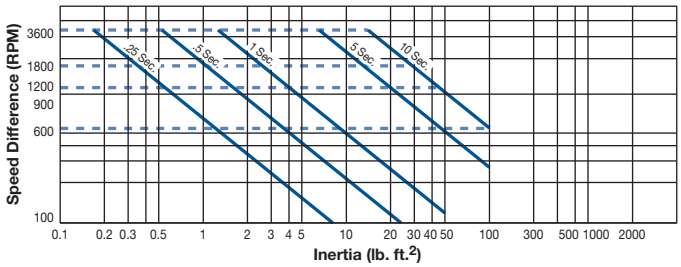


ATC 115/ATB 115

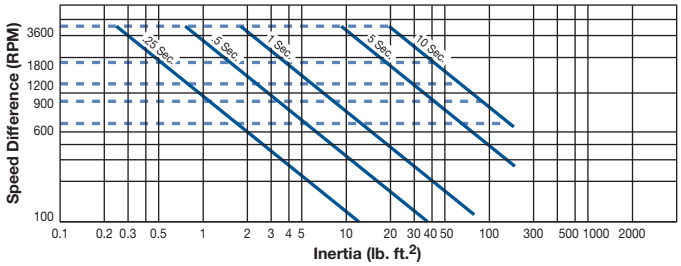


Stop/Start Time Capability

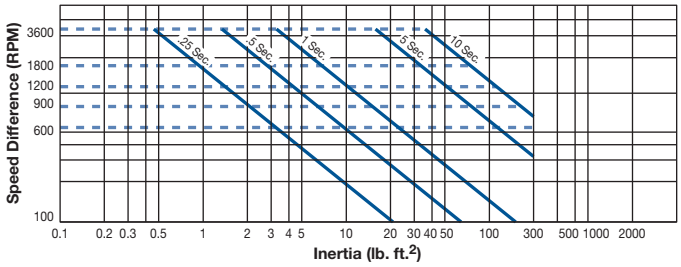
ATC 25/ATB 25



ATC 55/ATB 55



ATC 115/ATB 115



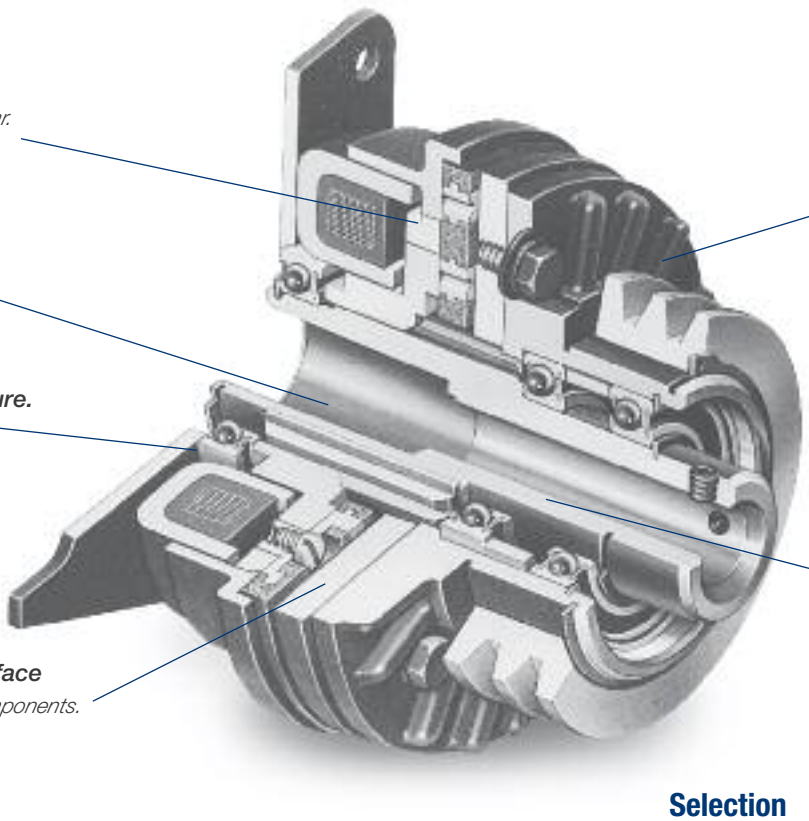
Start/Stop Times

In some applications, accelerating and/or decelerating the load within a specific time is a critical factor. In these start/stop time charts, AT unit inertias have already been factored in, so only reflected inertia need be considered. Selection for start/stop times can be made as follows:

1. Estimate the size clutch or brake required.
2. Read the chart for that size. Cross reference the speed difference (RPM) with the reflected inertia (lb. ft.^{2}) to find the maximum start/stop capability for that size unit.
3. Compare start/stop times. If the start/stop time is equal to or less than that required for that application, the correct size unit has been selected. If shorter start/stop times are required, repeat the procedure on the chart for the next larger size unit.
4. Verify the selection. Compare the unit size chosen in steps 1, 2, and 3 to the unit size chosen by the simple Horsepower/Speed method on page 84. If the sizes selected are not identical, choose the larger selected by the two methods.

ATC Series AT Clutch

Rugged and Durable Operation



Autogaps™
automatically adjust for wear.

Rugged spline drive
for maximum durability.

Sealed, high temperature.
UL recognized.

Rugged steel wear surface
and precision cast iron components.

Easy sheave mounting.
Optional sheaves and pulleys available from Warner Electric.

Sealed heavy duty bearings
with high temperature lubricant.

Mounting Flexibility

The ATC clutch design represents the best combination of features to allow mounting of the widest range of pulleys, sheaves or sprockets with keys and snap rings or bolts for maximum durability. The pulleys or sheaves selected as standard offerings to support the line are matched to the torque capability of each clutch. The torques and wear lives have been designed to match industry-standard motors and reducers by shaft size and bore size.

Horsepower vs. Shaft Speed

HP	SHAFT SPEED (IN RPM)																	
▼	100	200	300	400	500	600	700	800	900	1000	1100	1200	1500	1800	2000	2400	3000	3600
1/4																		
1/2																		
3/4																		
1										AT-25								
1-1/2																		
2																		
3																		
5										AT-55								
7-1/2																		
10										AT-115								
15																		
20																		
25																		
30																		
35																		

Selection

1. Determine Model Size
Determine the motor horsepower and shaft speed (in R.P.M.) at the clutch location.

The correct size unit is shown at the intersection of HP and shaft speed.

2. Determine Bore Size
Select bore size and determine part number for correct size clutch from parts lists starting on page 85.

3. Select Options
Refer to the Standard Sheaves and Pulley chart to choose an optional Warner Electric standard pulley or obtain information for fitting other pulley or sprocket.

4. Select Control
A simple, built-in AC to DC control is optional for 90 volt AT Clutches.

Complete control information is found in the Controls Section.

Selection/Ordering Information

Optional Equipment

Standard Sheaves and Pulleys

Sheave Pulley Type	Clutch or Brake Size	No. Grooves No. Teeth	Part Number	Pitch Diameter	Width	Dimensions O.D.
Timing Belt	25	26H100	689-0256	4.138"	1.312"	4.244"
	55	30H100	689-0278	4.755"	1.312"	4.881"
	115	40H150	689-0257	6.366"	1.812"	6.472"
"A" Section	25	1G3.60	689-0267	3.600"	.750"	3.850"
	55	2G4.80	689-0308	4.800"	1.445"	5.050"
	115	3G6.00	689-0271	6.000"	2.000"	6.250"
"3V" Section	25	1G3.65	689-0259	3.600"	.695"	3.650"
	55	2G4.12	689-0315	4.070"	1.094"	4.120"
	115	3G5.30	689-0263	5.250"	1.515"	5.300"
"B" Section	115	2G6.00	689-0275	6.000"	1.750"	6.350"

Other Sheaves, Pulleys and Sprockets

The unique AT Clutch design permits the installation of any customer provided sheave, pulley or sprocket that can be bored out and key seated to the Bore-to-Size dimensions shown on page 87.

Sprockets

The AT clutch design permits installation of customer supplied sprockets. Minimum size sprocket requirements found in the chart below can be bored out and drilled to the dimensions in that chart.

Minimum Size Sprockets for Pilot Mount

Chain Size	Clutch Size 25	55	115
25	54T	—	—
35	35T	40T	—
41/40	28T	30T	40T
50	22T	24T	30T
60	—	20T	24T
80	—	—	20T
100	—	—	—
120	—	—	—
Bore size	2.500/2.502/ (63.500/63.551)	3.000/3.002/ (76.200/76.251)	4.00/4.002/ (101.600/101.651)
Bolt Circle	3.000/(76.200)	3.500/(88.900)	4.750/(120.650)
No. Holes and Sizes	(3) .281/[(3) 7.144]	(4) .281/[(4) 7.144]	(4) .344/[(4) 8.731]

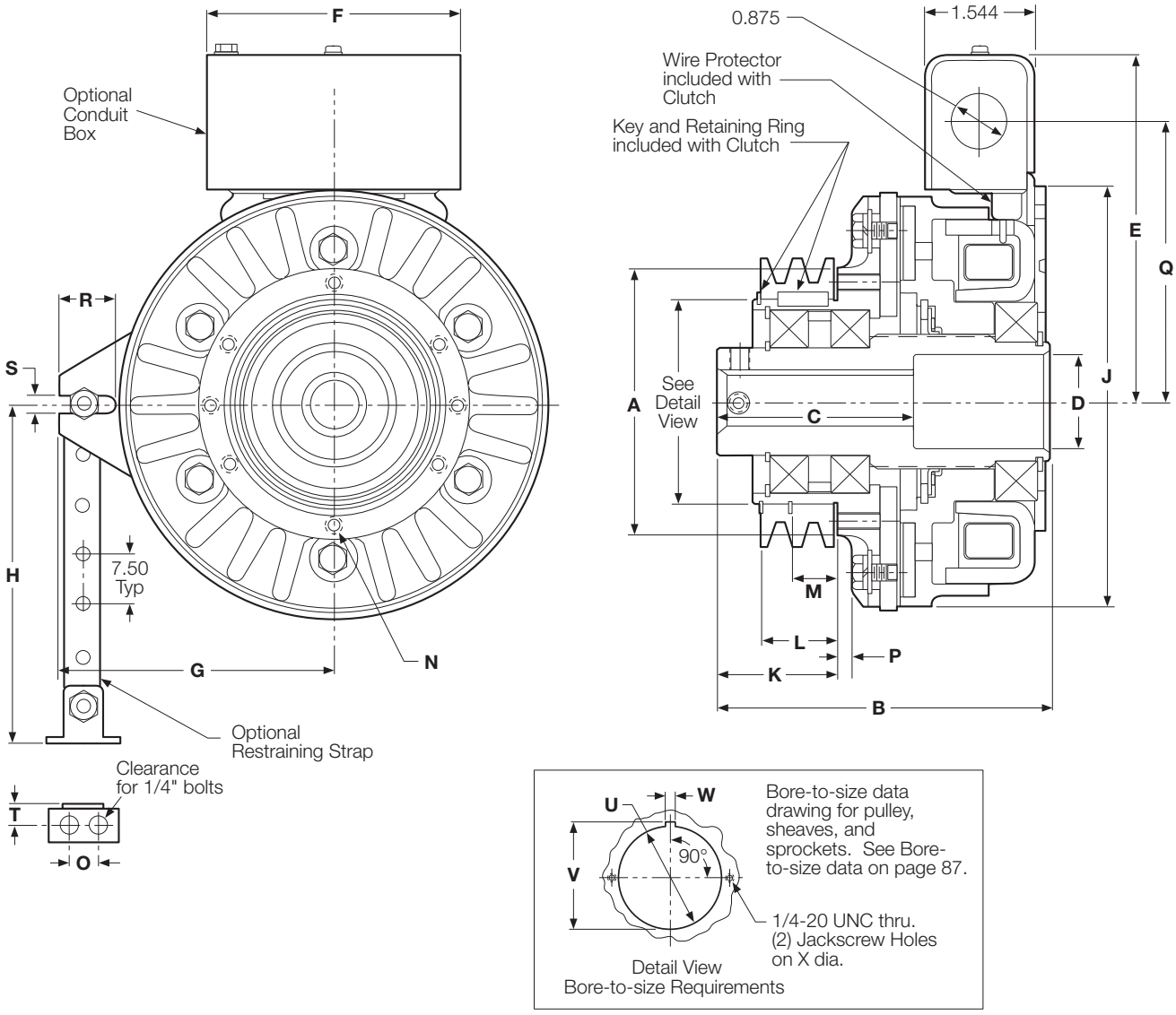
Note: Spacer may be required to avoid chain interference with clutch.

Part Numbers

Model Size	Bore Size	Voltage DC	Part No.
ATC-25	1/2"	6	5161-271-002
		24	5161-271-010
		90	5161-271-003
	5/8"	6	5161-271-004
		24	5161-271-011
		90	5161-271-005
	3/4"	6	5161-271-006
		24	5161-271-012
		90	5161-271-007
	7/8"	6	5161-271-008
		24	5161-271-013
		90	5161-271-009
ATC-55	3/4"	6	5162-271-002
		24	5162-271-010
		90	5162-271-003
	7/8"	6	5162-271-004
		24	5162-271-011
		90	5162-271-005
	1"	6	5162-271-006
		24	5162-271-012
		90	5162-271-007
	1-1/8"	6	5162-271-008
		24	5162-271-013
		90	5162-271-009
ATC-115	1-1/8"	6	5163-271-002
		24	5163-271-010
		90	5163-271-003
	1-1/4"	6	5163-271-004
		24	5163-271-011
		90	5163-271-005
	1-3/8"	6	5163-271-006
		24	5163-271-012
		90	5163-271-007
	1-1/2"	6	5163-271-008
		24	5163-271-013
		90	5163-271-009

ATC Series AT Clutch

ATC-25, ATC-55, ATC-115



Specifications

Model Size	Voltage DC	Unit	Inertia*-WR² (lb.ft.²)	Max. RPM	Weight (lbs.)	Static Torque (lb.ft.)	Dynamic Torque @ 1800 RPM
	6		.048	3600	8	25	12 lb. ft.
25	24	Clutch	.048	3600	8	25	12 lb. ft.
	90		.048	3600	8	25	12 lb. ft.
	6		.173	3600	18	55	20 lb. ft.
55	24	Clutch	.173	3600	18	55	20 lb. ft.
	90		.173	3600	18	55	20 lb. ft.
	6		.483	3600	28	115	30 lb. ft.
115	24	Clutch	.483	3600	28	115	30 lb. ft.
	90		.483	3600	28	115	30 lb. ft.

ATC-25, ATC-55, ATC115

Dimensions

All dimensions are nominal, unless otherwise noted.

Model	A Max. Dia.	B Max.	C Nom.	D Nom. Dia.	E Max.	F Max.	G Max.	H Max.	J Max. Dia.	K Max.	L Nom.	M Max.	T Nom.
25	3.60 (91.44)	4.39 (111.51)	2.375 (60.33)	1.080 (27.43)	4.748 (120.60)	3.767 (95.68)	3.282 (83.36)	5.11 (129.79)	4.822 (122.49)	1.68 (42.67)	1.003/.991 (25.48/25.17)	.715/.703 (18.16/17.86)	.375 (9.53)
55	3.95 (100.33)	4.935 (125.35)	2.925 (74.30)	1.40 35.56)	5.182 (131.62)	3.767 (95.682)	4.032 (102.412)	5.11 (129.792)	6.275 (159.39)	1.817 (46.152)	1.113/1.101 (28.27/27.97)	–	.375 (9.53)
115	5.254 (133.452)	5.977 (151.822)	3.102 (78.792)	1.86 (47.242)	6.089 (154.662)	3.767 (95.682)	4.246 (107.852)	10.11 (256.792)	7.906 (200.812)	2.467 (62.662)	1.539/1.523 (39.09/38.68)	–	.375 (9.53)

Model	No. of Holes	N Thread Size	Max. Depth	Bolt Circle	O Nom.	P Nom.	Q Nom.	R Min.	S Min.
25	3	1/4-20	.500	3.00	.500 (12.7)	.036 (0.91)	3.586 (91.10)	.752 (19.08	.279 (7.09)
55	4	1/4-20	.635	3.50	.500 (12.7)	.081 (2.06)	4.156 (105.56)	.722 (18.34)	.265 (6.73)
115	4	5/16-18	.830	4.75	.500 (12.7)	.237 (6.02)	4.927 (125.15)	.504 (12.80)	.265 (6.73)

Bore to Size Data

Model	U Bore Dia.	V Keyway Height	W Keyway Width	X Bolt Circle
25	2.502/2.500 (63.55/63.50)	2.601/2.591 (66.06/65.81)	.1905/.1855 (4.84/4.79)	3.00 (76.20)
55	3.002/3.000 (76.25/76.20)	3.099/3.089 (78.71/78.46)	.1905/.1885 (4.84/4.79)	3.50 (88.90)
115	4.002/4.000 (101.65/101.60)	4.127/4.117 (104.83/104.57)	.378/.376 (9.60.9.55)	4.50 (114.30)

Bore Size and Keyways

Size	Unit Bore (in.)	Unit Bore (mm)	Key
ATC-25	.5025 .5005	12.76 12.71	1/8 Sq.
	.6275 .6255	15.94 15.89	3/16 Sq.
ATC-25 ATC-55	.7525 .7505	19.11 19.06	3/16 Sq.
ATC-25 ATC-55	.8775 .8755	22.29 22.24	3/16 Sq.
ATC-55	1.0025 1.0005	25.46 25.41	1/4 Sq.
ATC-55 ATC-115	1.1275 1.1255	28.64 28.59	1/4 Sq.
ATC-115	1.2525 1.2505	31.81 31.76	1/4 Sq.
	1.3775 1.3755	34.99 34.94	5/16 Sq.
	1.5025 1.5005	38.16 38.11	3/8 Sq.