

MOTO DRIVE

ERC SHIFTING TIMES (APPROX.)
050 - 600K MOTO DRIVE REDUCERS

Unit Size	ERC Type	Speed Variation With Time In Seconds				
		2:1	3:1	4:1	5:1	Maximum
50	Heavy/Auto Duty	17.0	21.5	23.0	25.0	28.0
100	Heavy/Auto Duty RAC	11.0	17.0	21.0	24.0	30.0
		28.5	36.5	40.0	42.6	47.0
200	Heavy/Auto Duty RAC	11.0	17.0	22.5	27.5	40.0
		26.5	34.5	38.0	40.5	45.0
300	Heavy/Auto Duty RAC	12.0	19.0	24.0	29.0	42.0
		18.0	24.0	28.0	31.0	37.0
400	Heavy Duty Automatic Duty	16.0	26.0	33.0	38.0	46.0
		5.0	7.5	8.5	9.5	10.5
500	Heavy Duty Automatic Duty	21.0	36.0	45.0	50.0	53.0
		5.0	7.5	9.0	10.0	11.5
600	Heavy Duty Automatic Duty	22.0	37.0	42.0	48.0	54.0
		5.5	8.0	9.5	10.0	11.0
600K	Heavy Duty Automatic Duty	23.0	38.0	--	--	--
		6.5	9.5	--	--	--

Automatic Duty Type Controls are equipped with ball screw shifting mechanism on sizes 400 through 600K

AIRTOL SHIFTING TIMES (SIZE 100 TO 600)

Unit Size	Max. Speed Range	2:1 Speed Range
100, 200, & 300	5 seconds	3 seconds
400,500,600	8 seconds	4 seconds

ERC MOTOR SPECIFICATIONS
HEAVY DUTY - SIZES 050 THRU 600K MOTO DRIVE REDUCERS

Size	Volts	Phase	Hz	Amperes	Type or Model	Enclosure	Duty	Push-button	Wiring Dia.	Remarks
050- 100	115	1	60/50	0.19	605036-03-G	TENV	30.00%	C-H 10250ED6317	1-62943	Built-In Brake and Thermal
200- 300	115	1	60/50	0.80	605038-20-A	TENV	30.00%	C-H 10250ED6317	1-62943	Built-In Brake and Thermal
400- 600K	115	1	60	2.80	CM	TENV	25.00%	C-H 10250ED6317	D42000-07C	Friction Safety Clutch
100-200	115	1	60	0.25	605036-03-J	TENV	100.00%	RAC 702805-12-E	D72000-03C	Built-In Brake and Thermal
300	115	1	60	0.17	605036-03-K	TENV	100.00%	RAC 702805-12-F	D72000-03C	Built-In Brake and Thermal

APG

MASTER XL

MOTO DRIVE

ULTIMA

MOTO DRIVE HORSEPOWER RATINGS

PARALLEL SHAFT UNITS

REEVES VARI-SPEED MOTO DRIVE horsepower ratings for parallel shaft units given in the Ratings and Prices Section are defined as the capability of the listed unit to deliver its rating at the OUTPUT SHAFT at the listed maximum output speed. When drive motor specifications include 50 Hz., explosion-proof, multi-speed, BISSC or any combination of these features, the horsepower rating in the input of the MOTO DRIVE belt case.

The MOTO DRIVE as listed is, therefore, considered to be a constant torque device over its entire speed range with its horsepower capability at the output shaft varying directly with the output speed.

RIGHT ANGLE SHAFT UNITS

REEVES VARI-SPEED MOTO DRIVE horsepower ratings for right angle shaft units as listed are defined as capable of delivering its catalog rating into the right angle reducer at maximum speed. For the output ratings of MOTO DRIVES with right angle reducers, refer to the Selection tables.

INTERMEDIATE SPEED

Most REEVES MOTO DRIVES have a built in constant horsepower range. Torque capacity actually increases as the output speed is reduced from MAX to INT Speed. Although maximum belt life is obtained through rating the REEVES MOTO DRIVE as a constant torque device (use Output Torque listed under MAX SPD as constant torque through entire speed range), the drive may also be rated by allowing the torque capacity to increase linearly from MAX to INT speed, then holding the OUTPUT TORQUE value at INT speed constant from INT speed to MIN. speed.

DETERMINING TORQUE AND HORSEPOWER VALUES

A REEVES VARI-SPEED MOTO DRIVE is capable of delivering constant torque over its entire speed range, as determined by the following formula:

Torque Capacity (inch-lbs.) =

$$\frac{\text{Output Horsepower} \times 63,025}{\text{Maximum Output rpm}}$$

When the torque requirement is constant over the speed range, the horsepower required can be calculated as follows:

$$\text{Horsepower} = \frac{\text{Torque (inch-lbs.)} \times \text{Maximum rpm}}{63,025}$$

$$\text{or, Horsepower} = \frac{\text{Torque (ft-lbs.)} \times \text{Maximum rpm}}{5,252}$$

When the requirement is specified in terms of pull, or tension, and speed of travel, such as when selecting a MOTO DRIVE for a conveyor, or the continuous processing of paper, cloth, sheet metal or web material, the horsepower would be determined as follows:

$$\text{Horsepower} = \frac{\text{Pull (pounds)} \times \text{Maximum Speed of Travel (F.P.M.)}}{33,000}$$

CONSTANT HORSEPOWER

Whenever an application requires constant horsepower over a portion of the speed range, or whenever the duty requirements exceed the basis for catalog ratings, contact Applications Engineering.

NOTE: For additional information on rating curves request paper "MOTO DRIVE Performing Rating Curves."

LUBRICATION

Refer to Instruction manual.

A. **Mounting** - Sprockets, sheaves, gears and pulleys on output shaft.

MOTO DRIVE OVERHUNG LOAD CAPACITIES

In general, the closer a sprocket, sheave, gear or pulley is mounted to the supporting bearings of an output shaft, the less will be the load on the bearing and the less the stress on the shaft.

The overhung load capacities given below are calculated on the basis of the load being located one shaft diameter from the bearing housing. Make sure that the overhung load capacity of the output shaft is not exceeded.

B. Determining Minimum Pitch Diameters for Connecting Drives

When the type of drive load connection is a chain and sprocket, it is necessary to be sure the sprocket pitch diameter is adequate. Sprockets of small pitch diameter produce greater overhung loads than do larger sprockets. The same applied to other types of drive load connections, i.e., sheaves, gears or pulleys.

The following formula may be used to calculate the minimum

allowable pitch diameter (min. P.D.) of the load connecting device.

$$\text{Min. P.D.} = \frac{\text{Maximum output HP} \times F \times 126,000}{\text{Allowable overhung load} \times \text{Max. output rpm}}$$

Where:

F = Factor for type of load connecting device

Such as:

- F = 1 for chain and sprocket with one side tight,
- F = 1.25 for chain and sprocket with both sides tight,
- F = 1.25 for gear,
- F = 1.5 for V-belt and sheave with drive and driven sheaves of equal diameter,
- F = 1.5 to 2 for V-belt and sheave with drive and driven sheaves of unequal diameter,
- F = 2.5 for flat pulley and flat belt.

Use allowable overhung load capacity for appropriate MOTO DRIVE and reducer from tables below.

OVERHUNG LOAD CAPACITY - IN POUNDS PULL ONE SHAFT DIAMETER FROM SHAFT STEP NON-GEAR - SIZES #050 THROUGH #600K MOTO DRIVE REDUCERS

Max. Output Speed rpm	MOTO DRIVE SIZE							
	050	100	200	300	400	500	600	600K
	.25 - .50 HP	.75 - 1 1.50 HP	2 - 3 HP	5 - 7.50 HP	10 - 15 HP	20 - 25 HP	30 - 40 HP	50 HP
Any cataloged maximum speed	73	189	288	343	344	1288	1724	1578

**MOTO DRIVE
OVERHUNG LOAD CAPACITIES**

RIGHT ANGLE REDUCERS - W12, W16, W21, W28⁽¹⁾

Output Speed rpm (Max.)	W12		W16					W21					W28			
	.25 HP	.50 HP	.25 HP	.50 HP	.75 HP	1 HP	1.50 HP	.75 HP	1 HP	1.50 HP	2 HP	3 HP	2 HP	3 HP	4 HP	7.50 HP
520	540	540	-	-	630	-	-	-	-	-	-	-	-	-	-	-
420	540	530	-	-	690	660	640	-	-	-	930	890	-	-	-	-
350	540	520	-	-	700	680	650	-	-	-	960	920	-	-	1530	1460
280	540	510	-	-	730	710	680	-	-	-	1000	950	-	1680	1590	1490
230	540	490	-	-	770	760	720	-	-	1090	1050	1000	-	1780	1680	-
190	530	480	-	850	820	790	740	-	-	1150	1100	1020	-	1500	1380	-
155	520	460	-	950	880	850	790	-	1250	1220	1170	1080	1660	1570	-	-
125	510	440	-	990	910	870	-	1010	1280	1250	1210	-	1760	1630	-	-
100	490	400	-	990	980	950	-	1100	1320	1310	1280	-	1880	1800	-	-
84	480	360	860	980	970	-	-	1320	1320	1300	-	-	1930	-	-	-
68	460	-	860	980	960	-	-	1320	1310	-	-	-	2040	-	-	-
56	450	-	860	980	-	-	-	1310	1310	-	-	-	-	-	-	-
45	430	-	860	970	-	-	-	1310	1290	-	-	-	-	-	-	-
37	400	-	990	960	-	-	-	1310	-	-	-	-	-	-	-	-
30	380	-	980	950	-	-	-	1290	-	-	-	-	-	-	-	-
25	-	-	980	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	850	-	-	-	-	-	-	-	-	-	-	-	-	-

RIGHT ANGLE COMBINATION REDUCERS - C12, C16, C21, C28⁽¹⁾

Output Speed rpm (Max.)	C12		C16					C21							C28									
	.25 HP	.50 HP	.25 HP	.50 HP	.75 HP	1 HP	1.50 HP	.25 HP	.50 HP	.75 HP	1 HP	1.50 HP	2 HP	3 HP	5 HP	.50 HP	.75 HP	1 HP	1.50 HP	2 HP	3 HP	5 HP	7.50 HP	
420	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1400	--	--	--	--	--	--	--	--	2000
350	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1500	--	--	--	--	--	--	--	--	3300
280	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1650	--	--	--	--	--	--	--	--	3600
230	--	--	--	--	--	--	--	--	--	--	--	--	--	1900	1800	--	--	--	--	--	--	--	--	3900
190	--	--	--	--	--	--	--	--	--	--	--	--	--	1950	1900	--	--	--	--	--	--	--	--	4200
155	--	--	--	--	--	--	--	--	--	--	--	--	2100	2050	2040	--	--	--	--	--	--	--	--	4500
166	--	--	--	--	--	--	1010	--	--	--	--	--	--	--	2160	--	--	--	--	--	--	--	3800	--
125	--	--	--	--	--	--	1420	--	--	--	--	--	2200	2200	2300	--	--	--	--	--	--	--	4080	4800
100	--	--	--	--	--	--	1500	--	--	--	--	--	2400	2860	2380	--	--	--	--	--	--	--	5200	5100
84	--	390	--	--	--	1230	1540	--	--	--	--	--	2500	2480	--	--	--	--	--	--	--	--	5400	5300
68	1180	1170	--	--	1680	1660	1640	--	--	--	--	2900	2650	2600	--	--	--	--	--	--	--	--	5700	5600
56	1180	1170	--	--	1800	1780	1750	--	--	--	--	2900	2830	2770	--	--	--	--	--	--	5900	5900	5800	5800
45	1180	1160	--	1800	1790	1760	1720	--	--	--	--	2900	2900	2840	--	--	--	--	--	5600	5900	5800	5700	5700
37	1180	1150	--	1800	1780	1740	1680	--	--	--	2500	2860	2880	2760	--	--	--	--	--	5900	5900	5800	--	--
30	1170	1140	--	1790	1760	1720	--	--	--	2800	2700	2820	2840	--	--	--	--	--	5900	5900	5800	5700	--	--
25	1170	1130	--	1780	1740	1680	--	--	--	2950	2900	--	2800	--	--	--	--	5900	5900	5800	5600	--	--	--
20	1160	1140	--	1780	1720	1600	--	--	--	3050	2900	--	2640	--	--	--	--	5900	5900	5800	--	--	--	--
16.5	1150	--	1800	1760	1680	--	--	--	3080	2900	2880	--	--	--	--	--	6300	6300	5900	5800	5700	--	--	--
13.5	1140	--	1800	1740	1600	--	--	--	3080	2880	2860	--	--	--	--	--	6300	6300	5900	5800	5600	--	--	--
11.0	1140	--	1790	1680	--	--	--	--	3040	2880	2820	--	--	--	--	--	6300	6300	5900	5800	--	--	--	--
9.0	1130	--	1780	1660	--	--	--	--	3000	2850	2740	--	--	--	--	--	6300	6250	5800	5700	--	--	--	--
7.5	1080	--	1770	1580	--	--	--	--	2900	2800	--	--	--	--	--	--	6280	5900	5800	--	--	--	--	--
6.0	--	--	1750	--	--	--	--	--	2860	--	--	--	--	--	--	--	6260	6200	--	--	--	--	--	--
5.0	--	--	1720	--	--	--	--	--	2840	--	--	--	--	--	--	6300	6250	--	--	--	--	--	--	--
4.0	--	--	1680	--	--	--	--	--	2760	--	--	--	--	--	--	6270	--	--	--	--	--	--	--	--
3.3	--	--	1680	--	--	--	--	--	--	--	--	--	--	--	6250	--	--	--	--	--	--	--	--	--
2.7	--	--	--	--	--	--	--	3000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2.2	--	--	--	--	--	--	--	2980	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(1) In pounds pull at one shaft diameter from gearbox bearing housing.



**MOTO DRIVE
OVERHUNG LOAD CAPACITIES**

**PARALLEL REDUCERS
SINGLE REDUCERS - SIZES 01, 11, 21, 31, 41, 51, 61**

(IN POUNDS PULL ONE SHAFT DIA. FROM
SHAFT STEP HOUSING)

Maximum Output Speed rpm	01		11			21			31			41			51			61			
	.25 HP	.50 HP	.75 HP	1 HP	1.50 HP	1.50 HP	2 HP	3 HP	3 HP	5 HP	7.50 HP	7.50 HP	10 HP	15 HP	15 HP	20 HP	25 HP	25 HP	30 HP	40 HP	50 HP
3940	80	75	125	...	...	...	...	...	...	...	...	...	...	...	1030	1015	...	1220	...	...
3220	85	80	130	130	125	...	255	250	...	480	465	...	670	660	...	1090	1070	...	1295	...	...
2630	90	95	140	135	130	.....	270	260	...	510	500	...	715	705	...	...	...	...	...	...	...
2150	95	95	150	145	140	.....	290	280	...	545	530	...	760	743	...	1245	1230	...	1475	1440	1400
1750	100	100	160	155	145	...	305	295	...	575	560	...	805	790	...	1325	1300	...	1575	1520	1490
1430	110	105	165	160	155	...	325	315	...	575	560	...	855	833	...	1410	1370	...	1670	1620	1570
1170	115	110	180	175	165	...	345	335	...	650	625	...	910	883	...	1490	1440	...	1770	1705	1650
950	125	120	190	185	170	375	370	350	...	690	660	...	965	930	...	1580	1530	...	1880	1795	1760
780	130	125	200	195	180	400	390	375	...	730	690	1050	1020	1000	...	1670	1610	...	1980	1890	1815
640	140	130	210	205	190	425	415	390	...	770	730	1110	1075	1030	...	1760	1690	...	2090	1980	1900
520	150	140	225	215	...	450	435	410	...	815	765	1175	1130	1090	...	1860	1760	...	2205	2075	1950
420	160	145	235	225	...	475	460	430	...	860	...	1240	1190	...	2045	1955	1830	...	2315	2165	...
350	170	155	245	235	...	500	485	...	955	895	...	1300	1240	...	2140	2040	...	2490	2400	...	...
280	180	160	260	245	...	530	510	...	1005	930	...	1370	1295	...	2260	2140	...	2605	...	...	...
230	190	...	...	...	...	...	...	...	...	...	...	...	...	...	2360	...	...	...	...	...	...

DOUBLE REDUCERS - SIZES 02, 12, 22, 32, 42, 52

Max. Output Speed rpm	02		12			22			32			42			52									
	.25 HP	.50 HP	.75 HP	1 HP	1.50 HP	1 HP	1.50 HP	2 HP	3 HP	3 HP	5 HP	7.50 HP	5 HP	7.50 HP	10 HP	15 HP	10 HP	15 HP	20 HP	25 HP	30 HP	40 HP	50 HP	
640	385	380
520	410	405	320	315	...	...	835	830	795	...	1075	1050	...	...	2255	2180	...	...	...	...	...	...	4100
420	440	435	340	335	...	...	895	885	830	...	1140	1100	...	...	2385	2300	...	...	...	...	...	...	4330
350	470	460	360	355	...	...	945	940	865	...	1210	1170	...	...	2405	2390	...	...	...	...	...	...	4500
280	500	490	385	375	360	...	1015	985	900	...	1290	1250	...	2730	2660	2510	...	...	5040	5000	4950	4860	4765
230	535	520	405	400	380	...	1080	1025	915	...	1370	1300	...	2820	2815	2600	...	...	5320	5265	5200	5100	5000
190	570	550	430	415	...	...	1135	1075	945	1500	1420	1340	.....	2950	2860	2700	...	...	5605	5540	5480	5350	5215
155	605	585	455	440	...	...	1200	1110	955	1590	1490	...	...	3075	2985	2788	...	...	5915	5835	5755	5600	5435
125	650	625	485	465	...	.....	1250	1155	970	1685	1560	...	...	3215	3065	...	...	6355	6265	6170	6075	5880	...
100	695	665	510	490	...	...	1295	1180	...	1790	1645	...	...	3360	3175	...	...	6750	6750	6510	6390	6150	...
84	730	695	535	...	...	1475	1340	1205	...	1875	1715	...	3865	3480	3265	...	6920	6920	6920	6800	6650	...	...
68	780	740	560	...	...	1540	1375	1210	...	1990	...	...	...	3595	...	...	...	...	...	6920	6920	...	...
56	825	775	585	...	...	1595	1395	1190	...	2095	...	...	4015	...	...	...	6920	6920	6920	6920	...	...	.....
45	880	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TRIPLE REDUCERS - SIZES 03, 13, 23, 33, MAXIMUM

Maximum Output Speed rpm	03		13			23			33			
	.25 HP	.50 HP	.25 HP	.50 HP	.75 HP	1 HP	1.50 HP	2 HP	1 HP	1.50 HP	2 HP	3 HP
125	645	620	...	...	...	...	...	...	...	...	...	...
100	690	660	...	...	...	...	...	...	...	...	...	...
84	730	690	...	...	...	505	1390	1265	1140	...	...	1790
68	775	725	620	585	550	530	1445	1290	1140	...	...	1880
56	880	760	655	615	...	550	1515	1310	1125	...	...	1995
45	875	745	700	650	580	...	1565	1565	1350	...	...	2090
37	920	685	740	680	...	...	1610	1340	...	...	2370	2140
30	970	580	785	705	...	...	1590	1230	...	...	2485	2050
25	1010	...	825	...	...	...	1685	...	...	2750	2660	...
20	...	...	830	...	...	...	1680	...	...	2930	2800	2690
16.5	...	...	915	...	...	...	...	...	...	3090	2965	...
13.5	...	...	960	...	...	...	...	...	...	3260	3100	...
...	...	...	...	...	...	...	...	...	...	3315	...	...

TRIPLE REDUCERS - SIZES 43, 53

Maximum Output Speed rpm	43							53							
	1 HP	1.50 HP	2 HP	3 HP	5 HP	7.50 HP	10 HP	3 HP	5 HP	7.50 HP	10 HP	15 HP	20 HP	25 HP	30 HP
100	...	...	...	...	3940	3610	3675	...	...	...	...	6920	...	...	...
84	...	...	...	...	4125	3960	3795	...	...	...	...	6920	6920	6920	...
68	...	...	...	...	4335	3030	...	...	...	6920	6920	6920	6920	6920	6920
50	...	...	...	...	4445	4370	4040	...	...	6920	6920	6920	6920	6920	...
45	...	...	.....	4445	4445	...	...	...	6920	6920	6920	6920	6920	...	...
37	...	...	...	4445	4445	...	...	...	6920	6920	6920	6920	6920	...	...
30	...	...	4445	4445	...	...	...	6920	6920	6920	6920	6920	...	...	...
25	...	4445	4445	4445	...	...	...	6920	6920	6920	6920	...	...	...	...
20	...	4445	4445	...	...	...	...	6920	6920	6920	6920	...	...	...	...
16.5	4445	4445	4445	...	...	...	...	6920	6920	6920	...	...	...	...	...
13.5	4445	4445	4445	...	...	...	...	6920	6920	6920	...	...	...	...	...
11.0	4445	4445	...	...	...	...	...	6920	...	...	...	...	...	...	...
9.0	4445	...	...	...	...	...	...	6920	...	...	...	...	...	...	...
7.5	4445	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

MOTO DRIVE

WIRING DIAGRAMS

ELECTRIC REMOTE CONTROLS

For Sizes 050 - 300 MOTO DRIVES with 115 VAC 1 PH, Heavy Duty Cam Type:

Standard Pushbutton 1-62943	
Standard Pushbutton with Transformer	1-62945
Return to Low Speed before Stop	D42000-07-P
REEVES Automatic Controller (RAC) wiring	
100-200 MOTO DRIVE	D72000-03-AF
300 MOTO DRIVE	D72000-03-AG

For Sizes 400-600K MOTO DRIVES with 115 VAC 1 PH
Heavy Duty ERC with Master Gearmotor:

Standard Pushbutton	D42000-07-C
Standard Pushbutton with Transformer	D42000-07-D
Standard Pushbutton with Brake on Gearmotor	D42000-07-E
Standard Pushbutton with Rotary Limit Switch	D42000-07-F
Standard Pushbutton with 2-Speed Drive Motor	D42000-07-N

For Sizes 400-600K MOTO DRIVES with Heavy Duty Ball Screw Shifting Motor:

Standard Pushbutton	1-65254
Standard Pushbutton with Transformer	1-65255
Return to Low Speed before Stop	1-65275
RAC Wiring (Ball Screw Actuator)	D72000-03-AH

MISCELLANEOUS

AIRTR0L Supply Air Solenoid Valves	D42000-25-C
AIRTR0L Return to Low Speed before Stop	D62000-14-A
RAC AIRTR0L Wiring (all Sizes) ☒	D42000-45-C
LED Digital Tachometer Model DM4000	D62000-02-K
LED Digital Tachometer; Multiple Indicators	D62000-02-L
LCD Digital Tachometer	D62000-02-M
ULTIMA RAC Wiring	D72000-03-AM

OTHER

Mechanical Automatic Control: Lever angle versus shifting force and vari shaft speed	
100 MOTO DRIVE	2-57189
200 MOTO DRIVE	2-59779

APG

MASTER XL

MOTO DRIVE

ULTIMA

MOTO DRIVE

TEMPERATURE LIMITS

Max. Ambient for Standard Ventilated MOTO DRIVES	130° F
Max. Ambient for XT MOTO DRIVES	115° F
Min. Ambient for Belt Operation	-20° F
Min. Ambient for Reducer, with Oils Listed in Maintenance Manual	0° F
(For Lower Temperature Consult Application Engineering)	
Min. Ambient for Standard Grease Packed Bearings	-15° F
(For Lower Temperature Consult Application Engineering)	
Min. Ambient for Standard Grease Lubricated Discs	-5° F
(For Lower Temperature Consult Application Engineering)	
Max. Ambient Storage Temperature (Not Running)	175° F
Extended storage above 1205F will result in belt deterioration	
Min. Ambient Storage Temperature (Not Running)	-65° F

NOTE: Refer to Motor Section for Motor Ambient Temperatures.

MOTO DRIVE

INSTALLATION

MOTO DRIVE units with Right Angle reducers ship installation-ready with gear units factory filled with lubricant. MOTO DRIVE units with Parallel reducers are shipped without lubricant. Refer to the instruction manual provided with each unit for lubrication information. Some surfaces are coated with corrosion preventive compound with should be cleaned prior to mounting the output components. Disc faces are shipped with corrosion resistant compound that does not need to be removed prior to start-up. This compound will wear off quickly in service. A rigid base is essential for mounting the MOTO DRIVE unit because of the high torque capability of these drives. When used with coupling outputs, shimming will be necessary to assure proper alignment. When belt or chain drives outputs are used, it is desirable to install the sheave, pulley or sprocket as close to the MOTO DRIVE output cover as is possible.

NOTE: For comprehensive installation instructions and safety precautions refer to manual.

MAINTENANCE

Reeves MOTO DRIVE, with it's rugged construction and proven reliability, requires little maintenance. Occasional visual inspections to check for hardware security, leakage, and general overall condition is good practice with any machine. In an extremely dirty environment, heavy accumulation of dirt can cause overheating. An occasional washdown or wipe-off is good practice with any machine. Every 6 months or 2,000 hours running time, an inspection should be made for unusual noises, belt wear, bushing wear and lubricant conditions. By following the instructions in the manual provided with each unit, you can assure years of dependable service from you REEVES MOTO DRIVE unit. Complete maintenance instructions and MOTO DRIVE warnings should be reviewed prior to installation. See manual.

APG

Notes

MASTER XL

MOTO DRIVE

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