



Westinghouse Electric Corporation
Medium Motor and Gearing Division
Buffalo, New York, U.S.A. 14240

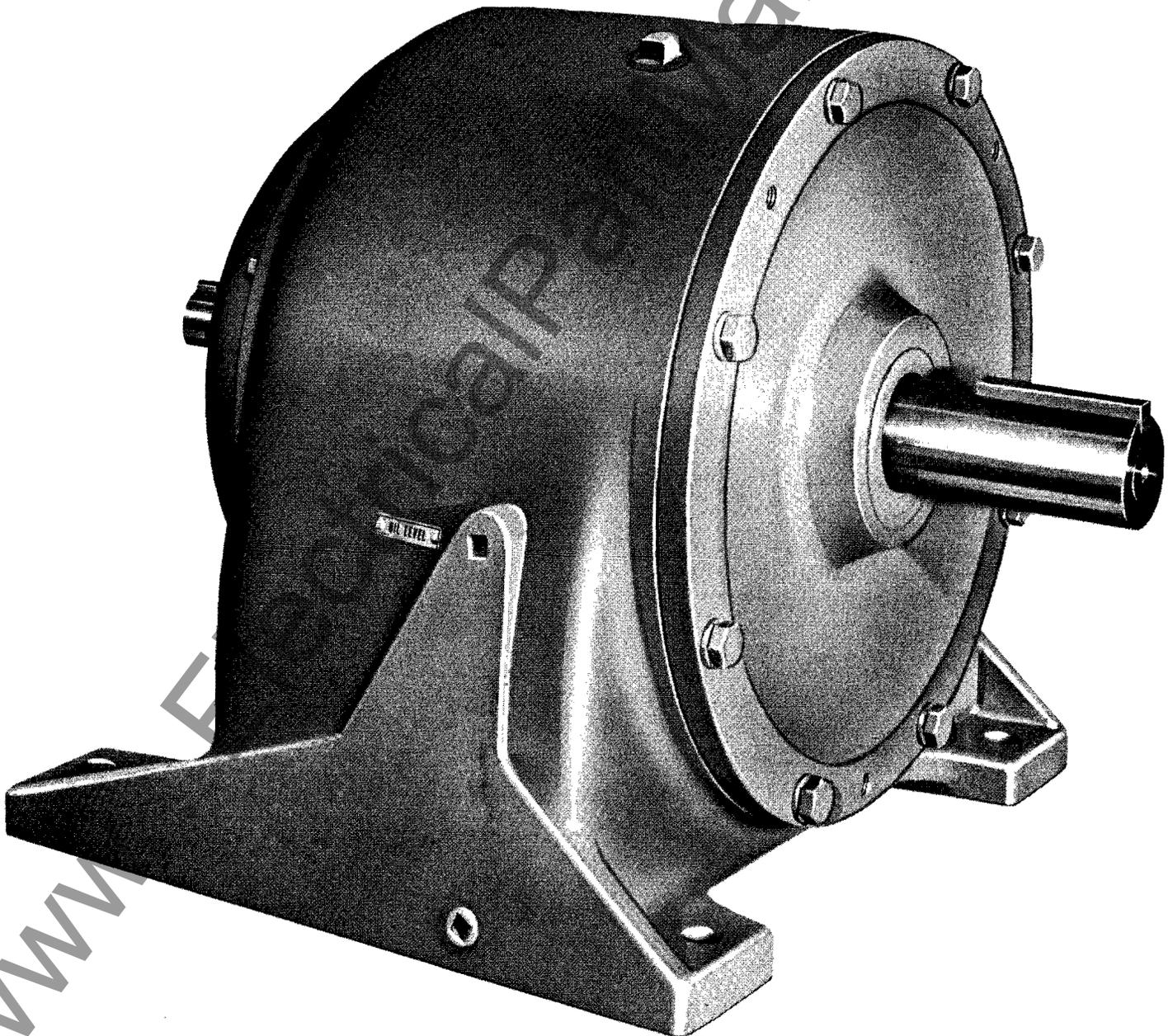
2973-2 A WE A
Application Data

Page 1

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Application Data
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Concentric Shaft Type
Single, Double, and Triple Reduction

Moduline[®] Speed Reducers



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Construction



Moduline concentric shaft speed reducers reflect many years of experience in gearing products utilizing the flexibility of the modular concept to provide readily available drives, closely tailored for individual applications. Ratios are available from 4.13:1 to 238:1 in incremental ratings from 1 through 370 horsepower.

- ① Input and output shafts of chrome-moly steel are supported on wide bearing spans to provide generous overhung load capacity.
- ② The high speed pinion and gear are mounted on splined shafts. The splines are cold rolled and the major diameters ground to close tolerances to assure concentricity of the gear and pinion with the shaft. This design permits easy change in the high speed gear set.
- ③ All gears and pinions are made of high quality chrome-moly steel generated on Pfauter hobbers, and then heat treated by a special Westinghouse process. This assures gears of consistent accuracy, resulting in long trouble-free life and quiet operation.
- ④ A sturdy-one-piece cast iron housing with integrally cast machined bearing supports provides proper internal alignment of components. The inherent corrosion resistance of cast iron allows placement of the unit in many severe atmospheres without special finishes.
- ⑤ Rugged feet are integrally cast on double

- and triple reduction units to provide maximum strength. Foot pads are accurately milled to assure ease of alignment.
- ⑥ A combination breather-filler plug keeps overall height at a minimum.
- ⑦ Single row tapered roller bearings are used on all shafts. These bearings are conservatively selected in accordance with bearing manufacturers' recommendations to provide maximum load carrying capacity and reliability.
- ⑧ Dual-lip seals are used exclusively by Westinghouse to retain oil effectively and to protect against entry of contaminants. This assures trouble-free long life.
- ⑨ Helical gears, pioneered by Westinghouse, permit more than one gear tooth face to carry the load, and allow gradual progressive transmission of the load from tooth to tooth.
- ⑩ Large oil reservoir and splash system provide positive lubrication of all gears and bearings.

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Service Factors

Westinghouse speed reducers are rated to specific applications by the use of service factors. In applying service factors, the assumption is made that a system is free from serious critical or torsional vibrations, and that the maximum momentary or starting loads do not exceed 200% of normal load. Each application has its own conditions and operating requirements. AGMA has analyzed and catalogued these into three load classifications: uniform, moderate shock and heavy shock. As a result of actual field experience with each application, a numerical value has been assigned to classifications of: intermittent; 10 hours; and 24 hours per day operation; and for the prime mover – electric motor or engine. Values for most applications are listed on page 4. Unlisted applications or those subjected to repetitive shocks should be referred to Westinghouse.

Example: A comparison of three different applications each operating 10 hours per day will illustrate the application of service factor. A bucket elevator uniformly loaded (S.F. 1.0); an assembly conveyor, heavy duty (S.F. 1.25); and an ore crusher (S.F. 1.75). If each application requires 10 hp, then the reducer is selected for a rating of 10 hp times the S.F. – that is, for 10.0, 12.5, 17.5 respectively. Thus, it is clearly shown that the service factor takes into consideration the variation in operating conditions for the above applications.

Note: Brake equipment motors – when the torque rating of a brake exceeds the torque rating of the motor, the rating of the brake should be the guide in selecting the proper speed reducer.

Note: Oversized prime movers – published service factors do not cover applications that require oversize prime movers. Such applications must be referred to Westinghouse.

Thermal Horsepower

Thermal hp rating represents the maximum hp than can be transmitted without overheating when a reducer is operated continuously for more than three hours. When the transmitted hp exceeds the thermal rating of a given unit, some method of external cooling, either oil or air cooling, will be necessary to increase the thermal rating. It is important that the thermal horsepower of any unit be checked prior to application, for if the unit develops heat at a faster rate than it can be dissipated, premature failure may occur. The thermal horsepower, mechanical horsepower and torque rating of Moduline reducers is tabulated on pages 5 through 9.

Occasional and Intermittent Service or Engine Driven Applications

For multi-cylinder engine driven applications and all applications operating intermittently up to 3 hours per day, refer to table 2 or 3 for the service factor of the same application operating 10 hours per day. Next, in the first column of table 1, find this same service factor in bold type. Then, under the desired hours service and prime mover, locate the converted service factor.

For example, from table 3 on page 4, the service factor is 1.00 for a uniformly loaded belt conveyor. From table 1, for the same application, the following are the service factors for various conditions:

1. Engine driven 10 hours per day; use 1.25 service factor.
2. Engine driven 3 hours intermittently; use 1.00 service factor.
3. Motor driven 3 hours intermittently; use .80 service factor.

Table 1: Service Factor Conversions

S.F. With Motor	Multi-Cyl. Engine ^②		Intermittent	
	10 Hours Per Day	24 Hours Per Day	3 Hours Per Day ^① Motor	Multi-Cyl. E
1.00	1.25	1.50	.80	1.00
1.25	1.50	1.75	1.00	1.25
1.50	1.75	2.00	1.25	1.50
1.75	2.00	2.25	1.50	1.75
2.00	2.25	2.50	1.75	2.00

① For applications operating less than 3 hours per day and applications driven by single cylinder engines, refer to Westinghouse for other service factors.

② These service factors are based on the assumption that the system is free from serious critical and torsional vibrations and that maximum momentary or starting loads do not exceed 200% of the normal load.

Table 2: Dry Dock Cranes (Hammerhead, Rotating and Whirler, Stationary or Moving)

Due to the nature of these crane drives, the following service factors apply for any duration of service:

Dry Dock Cranes:

Main hoist	1.00
Auxiliary hoist.	1.00
Boom (Luffing)	1.00
Rotating (swing or slew)	1.25
Tracking (drive wheels)	1.50

Selection and Pricing

Establish the following information to select a Westinghouse Moduline speed reducer.

1. Type of prime mover (motor, engine, diesel).
2. Brake horsepower or output torque (in inch-pounds) requirement.
3. AGMA service factor, page 4.
4. Equivalent horsepower or torque (no's. 2 x 3).

5. Input or output rpm and gear ratio.
6. Determine unit size from reducer selection tables on pages 5-9.
7. Check the overhung load capacity of the reducer if the application does not call for coupled service. Refer to pages 10 and 11.
8. Refer to Price List 2973-3 P WE A for list prices of the reducer and any modifications.

Example

A. Horsepower Method:

Select a Moduline reducer to drive a reciprocating single cylinder compressor 10 hours a day, requiring 18 brake Hp. Compressor is to operate at 350 Rpm. Prime mover is a 20 Hp electric motor at 1750 Rpm.

Step 1: Prime mover – motor.

Step 2: Brake horsepower – 18.

Step 3: From AGMA service factor chart, page 4, application gives SF=1.75.

Step 4: Equivalent Hp: 18 x 1.75=31.5 Hp.

Step 5: Input Rpm=1750. Output Rpm=350

Step 6: From reducer selection tables, pages 5-9, input-output speed combinations and equivalent horsepower determines 36 Hp is necessary. Read left column for gear unit size 32D or 76S.

Step 7: Check overhung load capacity and allowable thrust loads from pages 10 and 11.

B. Torque Method:

Step 1: To select a Moduline reducer by torque method, multiply the required torque by the service factor to obtain equivalent torque.

Step 2: From reducer selection tables, pages 5-9, input-output speed combination and equivalent torque determines the gear unit size reading in the left hand column.

Step 3: The balance of the procedure is identical to the horsepower method above.

Ordering Information

Designation System: The first two numbers represent the gear frame size. The letter S, D or T represents single, double or triple reduction (e.g. 21D).

Note: The following are Moduline speed reducer frame sizes:

S: 10, 21, 32, 54, 76

D and T: 10, 21, 32, 54, 64, K76, 76, 88, 92.

How to Order

The following information is required to order a Westinghouse Moduline speed reducer:

1. Hp, input speed and type of prime mover (motor, engine, etc.).
2. Output speed, type of driven equipment (conveyor, kiln, etc.), gear ratio, service factor.
3. Unit designation (example: 21D)
4. Mounting Position.
5. Any modifications that may be required (example: mounting customer's pinion).
6. Coupling sizes for output and input shaft if required.

AGMA Service Factors

Table 3: Typical Applications for Electric Motor Drives
Recommendations are minimum and normal conditions are assumed.

Application	Hrs. Service per Day		Application	Hrs. Service per Day		Application	Hrs. Service per Day		Application	Hrs. Service per Day	
	10	24		10	24		10	24		10	24
Agitators			Elevators - Cont'd			Lumber Indus - Cont'd			Pumps		
Pure liquid	1.00	1.25	Centrifugal discharge	1.00	1.25	⓪Veneer lathe drives			Centrifugal	1.00	1.25
Liquid and solids	1.25	1.50	Gravity discharge	1.00	1.25	Machine Tools			Proportioning	1.25	1.50
Blowers			Extruders			Bending rolls	1.25	1.50	Reciprocating - single		
Centrifugal	1.00	1.25	Coating, film, pipe }	1.25	1.25	Punch press - gear			acting - 3 or more		
Lobe	1.25	1.50	Rods, sheet, tubing }	1.25	1.25	driven	1.75	2.00	cylinders	1.25	1.50
Vane	1.00	1.25	Blow molders	1.50	1.50	Notching press - belt			Reciprocating - double		
Brewing and Distilling			Preplasticizers	1.50	1.50	driven			acting - 2 or more		
Bottling machinery	1.00	1.25	Fans			Plate planers	1.75	2.00	cylinders	1.25	1.50
Brew Kettles, cont. duty	1.00	1.25	Centrifugal	1.00	1.25	Tapping machine	1.75	2.00	⓪Reciprocating - double		
Cookers, continuous duty	1.00	1.25	Cooling towers			Other machine tools			acting - single cylinder		
Mash tubs, cont. duty	1.00	1.25	⓪Induced draft			Main drives	1.25	1.50	⓪Reciprocating - single		
Scale hopper, frequent			Forced draft	1.25	1.25	Auxiliary drives	1.00	1.25	acting - 1 or 2		
starts	1.25	1.50	Induced draft	1.25	1.50	Metal Mills			cylinders		
Cane Filling Machines	1.00	1.25	Large (mine, etc.)	1.25	1.50	Draw bench carriage			Rotary - gear type	1.00	1.25
Cane Knives	1.50	1.50	Light (small diameter)	1.00	1.25	and main drive	1.25	1.50	Rotary - lobe-vane	1.00	1.25
Car Dumpers	1.75	2.00	Feeders			Forming machines	1.75	2.00	Rubber and Plastics		
Car Pullers	1.25	1.50	Apron	1.25	1.50	⓪Pinch, dryer and scrub-			Industries		
Clarifiers	1.00	1.25	Belt	1.25	1.50	ber rolls, reversing			Crackers	2.00	2.00
Classifiers	1.25	1.50	Disc type	1.00	1.25	Slitters	1.25	1.50	Laboratory equipment	1.25	1.50
Clay Working			Reciprocating	1.75	2.00	Table conveyors			Mixing mills	2.00	2.00
Machinery			Screw	1.25	1.50	Non-reversing			Refiners	1.50	1.50
Brick press	1.75	2.00	Food Industry			Group drives	1.25	1.50	Rubber calendars	1.50	1.50
Biquette machine	1.75	2.00	Beet slicer	1.25	1.50	Individual drives	1.75	2.00	Rubber mill (2 on line)	1.50	1.50
Clay working machinery	1.25	1.50	Cereal cookers	1.00	1.25	⓪Reversing			Rubber mill (3 on line)	1.25	1.25
Pug mill	1.25	1.50	Dough mixers	1.25	1.50	Wire drawing and flatten-			Sheeter	1.50	1.50
Compressors			Meat grinders	1.25	1.50	ing machine	1.25	1.50	⓪Tire building machines		
Centrifugal	1.00	1.25	Generators			Wire winding machine	1.25	1.50	⓪Tire and tube press		
Lobe	1.25	1.50	(not welding)	1.00	1.25	Mills, Rotary Type			openers		
Reciprocating, multi-			Hammer mills	1.75	2.00	Ball	1.50	1.50	Tubers and strainers	1.50	1.50
cylinder	1.25	1.50	Hoists			Cement kilns	1.50	1.50	Warming mills	1.50	1.50
Reciprocating, single			Heavy duty	1.75	2.00	Dryers and coolers	1.50	1.50	Sand Muller	1.25	1.50
cylinder	1.75	2.00	Medium duty	1.25	1.50	Kilns	1.25	1.50	Sewage Disposal		
Conveyors - Uniformly			Skip hoist	1.25	1.50	Pebble	1.50	1.50	Equipment		
Loaded or Fed			Laundry Washers			Rod, plain and wedge bar	1.50	1.50	Bar screens	1.00	1.25
Apron, assembly }	1.00	1.25	Reversing	1.25	1.50	Tumbling barrels	1.75	2.00	Chemical feeders	1.00	1.25
Belt, bucket }	1.00	1.25	Laundry Tumblers	1.25	1.50	Mixers			Circuline or straight-line		
Chain, flight }	1.00	1.25	Line Shafts			Concrete	1.25	1.50	collectors	1.00	1.25
Oven, screw }	1.00	1.25	Driving processing equip-			Constant density	1.00	1.25	Dewatering screens	1.25	1.50
Conveyors, Heavy Duty			ment	1.25	1.50	Variable density	1.25	1.50	Grit collectors	1.00	1.25
- Not Uniformly Fed			Light	1.00	1.25	Rubber	2.00	2.00	Scum breakers	1.25	1.50
Apron, assembly }	1.25	1.50	Lumber Industry			Oil Industry			Slow or rapid mixers	1.25	1.50
Belt, bucket }	1.25	1.50	Barkers - spindle feed	1.25	1.50	Chillers	1.25	1.50	Sludge collectors	1.00	1.25
Chain, flight }	1.25	1.50	Barkers - main drive	1.75	1.75	⓪Oil well pumping			Thickeners	1.25	1.50
Oven, screw }	1.25	1.50	⓪Carriage drive			Paraffin filter press	1.25	1.50	Vacuum filters	1.25	1.50
⓪Live roll			Conveyors - burner	1.25	1.50	Rotary kiln	1.25	1.50	Screens		
Reciprocating	1.75	2.00	Conveyors - main or			Paper Mills			Rotary - stone or gravel	1.25	1.50
Shaker	1.75	2.00	heavy duty	1.50	1.50	Agitators (mixers)	1.25	1.50	Traveling water intake	1.00	1.25
Cranes (Refer to table 2			Conveyors - main log	1.75	1.75	Barker - auxiliaries -			Air washing	1.00	1.25
for dry dock cranes)			Conveyors - re-saw	1.25	1.50	hydraulic	1.25	1.50	Slab Pushers	1.25	1.50
Main hoists	1.00	1.25	Conveyors - merry-go-			Barker - mechanical	1.25	1.50	⓪Steering Gear		
⓪Bridge travel			round	1.25	1.50	Barking drum	1.75	2.00	Stokers	1.00	1.25
⓪Trolley travel			Conveyors - slab	1.75	1.75	Beater and pulper	1.25	1.50	Sugar Industry		
Crushers			Conveyors - transfer	1.25	1.50	Bleacher	1.00	1.25	Cane knives	1.50	1.50
Ore	1.75	2.00	Chains - floor	1.50	1.50	Calendars	1.25	1.50	Crushers	1.50	1.50
Stone	1.75	2.00	Chains - green	1.50	1.75	Calendars - super	1.75	2.00	Mills	2.00	2.00
Sugar	1.50	1.50	Cut-off saws - chain	1.50	1.75	Converting machines, ex-			Textile Industry		
Dredges			Cut-off saws - drag	1.50	1.75	cept cutters, platers	1.25	1.50	Batchers	1.25	1.50
Cable reels	1.25	1.50	Debarking drums	1.75	1.75	Conveyors	1.00	1.25	Calendars	1.25	1.50
Conveyors	1.25	1.50	Feeds - edger	1.25	1.50	Couch	1.25	1.50	Cards	1.25	1.50
Cutter head drive	1.75	2.00	Feeds - gang	1.75	1.75	Cutters - platers	1.75	2.00	Dry can and dryers	1.25	1.50
Jig drive	1.75	2.00	Feeds - trimmer	1.25	1.50	Cylinders	1.25	1.50	Dyeing machinery	1.25	1.50
Maneuvering winch	1.25	1.50	Log deck	1.75	1.75	Dryers	1.25	1.50	⓪Knitting machine		
Pumps	1.25	1.50	Log hauls - incline -			Felt stretcher	1.25	1.50	Looms	1.25	1.50
Screen drive	1.75	2.00	well type	1.75	1.75	Felt whipper	1.75	2.00	Mangles	1.25	1.50
Stackers	1.25	1.50	Log turning devices	1.75	1.75	Jordan	1.75	1.75	Nappers	1.25	1.50
Utility winches	1.25	1.50	Planer feed	1.25	1.50	Log haul	1.75	1.00	Pads	1.25	1.50
Dry Dock Cranes			Planer tilting hoists	1.50	1.50	Presses	1.00	1.25	⓪Range drives		
(Refer to table 2)			Rolls - live-off brg. -			Pulp machine reel	1.25	1.50	Slashers	1.25	1.50
Elevators			roll cases	1.75	1.75	Stock chests	1.25	1.50	Soapers	1.25	1.50
Bucket (uniform load)	1.00	1.25	Sorting table	1.25	1.50	Suction roll	1.00	1.25	Washers	1.25	1.50
Bucket (heavy load)	1.25	1.50	Tipple hoist	1.25	1.50	Washers and thickeners	1.25	1.50	Winders	1.25	1.50
Bucket (continuous)	1.00	1.25	Transfers - chain	1.50	1.75	Winders	1.00	1.25	⓪Printing Presses		
Freight	1.25	1.50	Transfers - craneway	1.50	1.75	Pullers			Barge haul	1.75	2.00
⓪Passenger			Tray drives	1.25	1.50						

⓪ Refer to Westinghouse

com

Horsepower Selection, Double Reduction Units

High Speed Shaft - Rpm	Unit Size	Standard Gear Ratio											
		4.13	5.06	6.20	7.59	9.30	11.3	14.0	17.1	20.9	25.6	31.4	38.4
Nominal Output Speed		420	350	280	230	190	155	125	100	84	68	56	45
1750	10 D	12.1	12.1	12.1	12.1	10.0	8.1	6.7	5.7	4.8	2.6	2.2	.....
	21 D	18.7	18.7	18.7	18.7	17.0	14.0	11.2	9.1	7.1	4.1	3.9	3.4
	32 D	36.0	36.0	36.0	31.1	25.5	21.4	17.3	14.0	10.9	8.4	6.2	6.0
	43 D	40.0	40.0	40.0	40.0	40.0	33.2	27.2	22.0	19.0	14.8	9.4	7.8
	54 D	80.0	85.0	78.0	77.9	64.7	54.4	43.9	37.7	31.7	26.0	16.7	13.5
	64 D	.....	161.0	133.0	112.0	94.4	77.9	65.3	53.7	45.0	38.5	.....	.....
	K76 D	240.0	205.6	175.2	139.2	120.8	100.0	82.4	67.2	54.0	40.5	.....	.....
	76 D	300.0	257.0	219.0	174.0	151.0	125.0	103.0	84.0	67.5	50.7	.....	.....
	88 D	325.0	325.0	325.0	300.0	250.0	203.0	165.0	137.0	114.0	92.0	72.0	60.0
	92 D	.....	.....	358.0	306.0	260.0	214.0	180.0	150.0	125.0	106.0	106.0	90.0
Nominal Output Speed		350	280	230	190	155	125	100	84	68	56	45	37
1430	10 D	12.1	12.1	12.1	10.0	8.1	6.7	5.5	4.4	3.4	2.18	1.8	.....
	21 D	18.7	18.7	18.7	17.0	14.0	11.2	9.1	7.1	5.3	3.89	3.24	2.81
	32 D	36.0	36.0	31.1	25.6	21.4	17.3	14.0	10.9	8.4	7.0	5.03	4.24
	43 D	40.0	40.0	40.0	40.0	33.2	27.2	22.0	19.0	14.8	12.0	7.75	6.77
	54 D	80.0	78.0	78.0	64.7	54.4	43.9	37.7	31.7	26.0	22.0	13.5	11.4
	64 D	.....	133.0	112.0	94.4	77.9	65.3	53.7	45.0	38.5	31.9	.....	.....
	K76 D	205.6	175.2	139.2	120.8	100.0	82.4	67.2	54.0	40.5	34.0	.....	.....
	76 D	257.0	219.0	174.0	151.0	125.0	103.0	84.0	67.5	50.7	42.6	.....	.....
	88 D	325.0	325.0	300.0	250.0	203.0	165.0	137.0	114.0	91.6	75.0	60.0	48.8
	92 D	.....	.....	358.0	306.0	260.0	214.0	180.0	150.0	125.0	106.0	106.0	90.0
Nominal Output Speed		280	230	190	155	125	100	84	68	56	45	37	30
1165	10 D	12.1	12.1	10.0	8.1	6.7	5.5	4.4	3.4	2.8	1.8	1.48	.....
	21 D	18.7	18.7	17.0	14.0	11.2	9.1	7.1	5.3	4.4	3.24	2.81	2.31
	32 D	36.0	31.1	25.6	21.4	17.3	14.0	10.9	8.4	7.0	5.03	4.24	3.44
	43 D	40.0	40.0	40.0	33.2	27.2	22.0	19.0	14.8	12.4	7.75	6.77	5.25
	54 D	78.0	78.0	64.7	54.4	43.9	37.7	31.7	26.0	21.5	13.5	11.4	9.35
	64 D	.....	112.0	94.4	77.9	65.3	53.7	45.0	38.5	30.9	26.4	.....	.....
	K76 D	175.2	139.2	120.8	100.0	82.4	67.2	54.0	40.5	34.0	28.2	.....	.....
	76 D	219	174	151	125	103	84	67.5	50.7	42.6	35.2	.....	.....
	88 D	325	300	250	203	165	137	114	91.6	80.5	60.0	48.8	40.0
	92 D	.....	.....	306	260	214	180	150	125	106	90.0	75.0	62.5
Nominal Output Speed		210	175	140	115	95	77	62	50	42	34	28	22
870	10 D	11.0	9.0	7.6	6.4	5.2	4.2	3.5	2.8	2.2	1.40	1.15	.....
	21 D	18.7	15.4	12.5	10.8	8.9	7.3	5.8	4.9	4.2	2.49	2.07	1.75
	32 D	28.5	23.2	19.1	16.5	13.4	11.2	9.0	7.5	6.3	5.3	3.17	2.63
	43 D	40.0	37.7	31.8	26.6	21.9	18.3	14.7	12.5	10.5	8.6	4.84	4.00
	54 D	71.8	58.9	50.4	41.6	34.4	28.8	23.1	19.7	16.5	13.5	8.59	7.1
	64 D	.....	87.9	72.2	60.6	50.4	41.3	34.5	28.2	23.6	20.1	.....	.....
	K76 D	136.0	112.0	95.2	79.2	65.6	55.2	44.0	37.6	32.0	26.4	.....	.....
	76 D	170	140	119	99.0	82.0	69.0	55.0	47.0	40.0	33.0	.....	.....
	88 D	162	162	155	155	127	106	85.8	70.6	58.1	47.6	37.4	30.7
	92 D	.....	.....	183	178	166	139	115.0	96.9	81.9	67.9	57.0	47.7
Nominal Output Speed		140	115	95	77	62	50	42	34	28	23	18	15
580	10 D	7.5	6.2	5.2	4.3	3.6	2.9	2.4	2.0	1.7	.95	.79	.....
	21 D	12.9	10.6	8.9	7.3	5.8	4.9	4.2	3.4	2.6	1.75	1.42	1.20
	32 D	19.1	16.5	13.4	11.2	9.0	7.5	6.3	5.3	4.0	3.1	2.17	1.80
	43 D	31.8	26.6	21.9	18.3	14.7	12.5	10.5	8.6	7.1	5.5	3.34	2.70
	54 D	50.4	41.6	34.4	28.8	23.1	19.7	15.5	13.5	11.3	9.2	5.91	4.81
	64 D	.....	60.6	50.4	41.3	34.5	28.2	23.6	20.1	16.1	13.7	.....	.....
	K76 D	95.2	79.2	65.6	55.2	44.0	37.6	32.0	26.4	20.5	15.2	.....	.....
	76 D	119	99.0	82	69.0	55.0	47.0	40.0	33.0	25.7	19.1	.....	.....
	88 D	162	155	127	106	85.8	70.6	58.1	47.6	39.5	30.7	25.6	20.7
	92 D	.....	.....	122	119	115	96.9	81.9	67.9	57.0	47.7	39.8	32.3

Note: Horsepower ratings shown in bold type are limited by thermal capacity if the reducer is operated continuously for more than three hours. See thermal

horsepower capacity table below. Note: For input speeds higher than 1750 rpm, refer to Westinghouse.

Thermal Horsepower Capacity

Fans are available on reducer sizes K76, 76, 88 and 99 double reduction. When fans are used, thermal rating is increased 1.75 times the published rating. Fans can be supplied in conjunction with backstops and/or dust seals on reducer sizes K76D and 76D only. Fan with internal backstop will be supplied.

Size	Thermal Horsepower (All Speeds)	Thermal Horsepower									
		Nominal Output Speeds at 1750 Rpm Input									
		420	350	280	230	190	155	125	100	and below	
10	12										
21	16	K76	75	75	100	100	100	100	100	100	100
32	25	76	75	75	100	100	100	100	100	100	100
43	33	88	125	150	150	150	150	150	125	125	125
54	50	92	...	...	150	150	150	150	150	150	150
64	65										

Thermal horsepower ratings are based on the following conditions:

1. Ambient temperature must not exceed 100°F.

2. Adequate air circulation around gear unit.
3. Gear unit must not be covered with any foreign material (coal, cement, grain dust, etc.) which will prevent proper heat dissipation.

4. Use of proper gear lubrication oil.
5. Correct coupling alignment.

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Output Torque Capacity – in 1000 Inch-Lbs., Double Reduction Units[Ⓢ]

High Speed Shaft – Rpm	Unit Size	Standard Gear Ratio											
		4.13	5.06	6.20	7.59	9.30	11.3	14.0	17.1	20.9	25.6	31.4	38.4
Nominal Output Speed ▶		420	350	280	230	190	155	125	100	84	68	56	45
1750	10 D	1.8	2.2	2.5	3.3	3.4	3.4	3.5	3.5	3.5	2.4	2.5	.....
	21 D	2.8	3.3	4.2	5.1	5.6	5.7	5.8	5.7	5.3	4.3	4.4	4.65
	32 D	5.1	6.5	8.3	8.4	8.6	8.8	8.9	8.8	8.3	7.6	6.9	7.1
	43 D	6.1	7.3	9.0	11.0	13.3	13.5	13.7	14.0	14.2	13.6	10.6	10.7
	54 D	12.0	15.3	17.6	21.2	21.8	22.2	22.7	23.0	23.4	23.8	18.8	19.0
	64 D	.....	29.2	30.1	30.9	31.7	32.5	33.1	33.8	34.4	34.9	.....	.....
	K76 D [Ⓢ]	36.0	37.2	38.0	39.5	40.0	40.8	41.6	42.4	40.0	36.5	.....	.....
	76 D	45.0	46.5	47.5	49.4	50.0	51.0	52.0	53.0	50.0	45.6	.....	.....
	88 D	48.6	58.5	73.0	81.5	82.0	82.5	83.0	85.0	86.7	85.0	81.0	82.0
	92 D	.....	.....	82.0	98.0	102	106	108	112	114	117	120	124
Nominal Output Speed ▶		350	280	230	190	155	125	100	84	68	56	45	37
1430	10 D	2.2	2.7	3.3	3.4	3.4	3.5	3.5	3.3	3.1	2.4	2.5	.....
	21 D	3.3	4.2	5.1	5.6	5.7	5.8	5.7	5.3	4.9	4.3	4.4	4.7
	32 D	6.5	8.3	8.4	8.6	8.8	8.9	8.8	8.3	7.6	7.8	7.0	7.2
	43 D	7.3	9.0	11.0	13.3	13.5	13.7	14.0	14.2	13.6	13.5	10.7	10.8
	54 D	14.5	17.6	21.2	21.8	22.2	22.7	23.0	23.4	23.8	24.2	19.0	19.2
	64 D	.....	30.1	30.9	31.7	32.5	33.1	33.8	34.4	34.9	35.4	.....	.....
	K76 D [Ⓢ]	37.2	38.0	39.5	40.0	40.8	41.6	42.4	40.0	36.5	38.4	.....	.....
	76 D	46.5	47.5	49.4	50.0	51.0	52.0	53.0	50.0	45.6	48.0	.....	.....
	88 D	58.5	73.0	81.5	82.0	82.5	83.0	85.0	86.7	85.5	85.5	82.0	82.5
	92 D	.....	.....	98.0	102	106	108	112	114	117	120	124	126
Nominal Output Speed ▶		280	230	190	155	125	100	84	68	56	45	37	30
1165	10 D	2.7	3.3	3.4	3.4	3.5	3.5	3.3	3.1	3.2	2.5	2.5	.....
	21 D	4.2	5.1	5.6	5.7	5.8	5.7	5.3	4.9	5.0	4.4	4.7	4.8
	32 D	8.3	8.4	8.6	8.8	8.9	8.8	8.3	7.6	7.9	7.0	7.2	7.3
	43 D	9.0	11.0	13.3	13.5	13.7	14.0	14.2	13.6	14.0	10.7	10.8	10.9
	54 D	17.6	21.2	21.8	22.2	22.7	23.0	23.4	23.8	24.1	19.0	19.2	19.4
	64 D	.....	30.9	31.7	32.5	33.1	33.8	34.4	34.9	35.5	35.9	.....	.....
	K76 D [Ⓢ]	38.0	39.5	40.0	40.8	41.6	42.4	40.0	36.5	38.2	40.0	.....	.....
	76 D	47.5	49.4	50.0	51.0	52.0	53.0	50.0	45.6	47.8	50.0	.....	.....
	88 D	73.0	81.5	82.0	82.5	83.0	85.0	86.7	85.5	89.7	86.0	82.5	83.0
	92 D	.....	.....	102	106	108	112	114	117	120	124	126	130
Nominal Output Speed ▶		210	175	140	115	95	77	62	50	42	34	28	22
870	10 D	3.2	3.3	3.4	3.5	3.5	3.6	3.6	3.5	3.3	2.59	2.61	.....
	21 D	5.6	5.7	5.8	5.8	5.9	6.0	6.1	6.1	6.2	4.63	4.71	4.85
	32 D	8.5	8.7	8.9	9.0	9.1	9.2	9.4	9.5	9.5	9.6	7.20	7.30
	43 D	12.1	13.6	14.3	14.6	14.8	15.0	15.3	15.4	15.6	15.7	11.0	11.1
	54 D	21.5	22.0	22.4	22.8	23.2	23.6	24.0	24.3	24.6	24.9	19.5	19.7
	64 D	.....	32.0	32.8	33.4	34.0	34.7	35.2	35.8	36.2	36.6	.....	.....
	K76 D [Ⓢ]	40.7	41.8	42.7	43.6	44.5	45.2	46.0	46.6	47.2	47.8	.....	.....
	76 D	50.9	52.3	53.4	54.5	55.6	56.5	57.6	58.3	59.0	59.8	.....	.....
	88 D	48.6	58.5	73.0	85.0	85.5	86.5	87.0	87.5	88.0	88.5	85.5	85.5
	92 D	.....	.....	82.0	98.0	112	114	117	120	124	126	130	133
Nominal Output Speed ▶		140	115	95	77	62	50	42	34	28	23	18	15
580	10 D	3.3	3.5	3.5	3.6	3.6	3.6	3.7	3.7	3.7	2.63	2.63	2.65
	21 D	5.8	5.8	5.9	6.0	6.1	6.1	6.2	6.2	6.1	4.79	4.85	4.99
	32 D	8.9	9.0	9.1	9.2	9.4	9.5	9.5	9.6	9.0	8.5	7.40	7.49
	43 D	14.3	14.6	14.8	15.0	15.3	15.4	15.6	15.7	15.9	15.0	11.2	11.3
	54 D	22.4	22.8	23.2	23.6	24.0	24.3	24.6	24.9	25.1	25.3	19.9	20.1
	64 D	.....	33.4	34.0	34.7	35.2	35.8	36.2	36.6	37.1	37.4	.....	.....
	K76 D [Ⓢ]	42.7	43.6	44.5	45.2	46.1	46.6	47.2	47.8	46.4	42.0	.....	.....
	76 D	53.4	54.5	55.6	56.5	57.6	58.3	59.0	59.8	58.0	52.5	.....	.....
	88 D	73.0	85.0	85.5	86.5	87.0	87.5	88.0	88.5	89.0	89.5	86.0	86.5
	92 D	.....	.....	112	114	117	120	124	126	130	133	134	135

Note: For high speed shaft rpm lower than 580 rpm, torque values are the same as for 580 rpm.

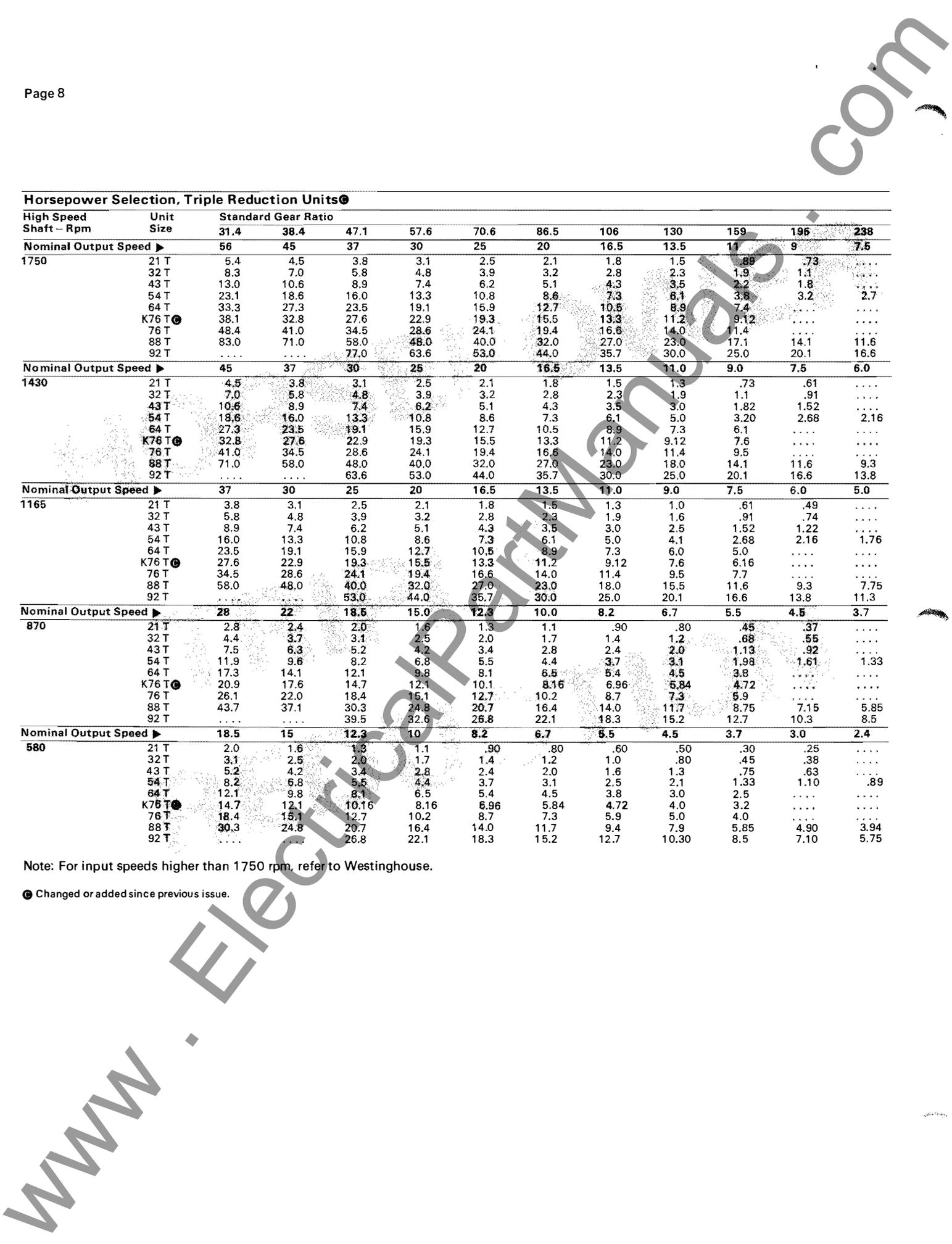
[Ⓢ] Changed or added since previous issue.

Horsepower Selection, Triple Reduction Units

High Speed Shaft – Rpm	Unit Size	Standard Gear Ratio										
		31.4	38.4	47.1	57.6	70.6	86.5	106	130	159	196	238
Nominal Output Speed ▶		56	45	37	30	25	20	16.5	13.5	11	9	7.5
1750	21 T	5.4	4.5	3.8	3.1	2.5	2.1	1.8	1.5	.89	.73	.....
	32 T	8.3	7.0	5.8	4.8	3.9	3.2	2.8	2.3	1.9	1.1	.....
	43 T	13.0	10.6	8.9	7.4	6.2	5.1	4.3	3.5	2.2	1.8	.....
	54 T	23.1	18.6	16.0	13.3	10.8	8.6	7.3	6.1	3.8	3.2	2.7
	64 T	33.3	27.3	23.5	19.1	15.9	12.7	10.5	8.9	7.4	.....	.....
	K76 T	38.1	32.8	27.6	22.9	19.3	15.5	13.3	11.2	9.12	.....	.....
	76 T	48.4	41.0	34.5	28.6	24.1	19.4	16.6	14.0	11.4	.....	.....
	88 T	83.0	71.0	58.0	48.0	40.0	32.0	27.0	23.0	17.1	14.1	11.6
92 T	.....	.....	77.0	63.6	53.0	44.0	35.7	30.0	25.0	20.1	16.6	
Nominal Output Speed ▶		45	37	30	25	20	16.5	13.5	11.0	9.0	7.5	6.0
1430	21 T	4.5	3.8	3.1	2.5	2.1	1.8	1.5	1.3	.73	.61	.....
	32 T	7.0	5.8	4.8	3.9	3.2	2.8	2.3	1.9	1.1	.91	.....
	43 T	10.6	8.9	7.4	6.2	5.1	4.3	3.5	3.0	1.82	1.52	.....
	54 T	18.6	16.0	13.3	10.8	8.6	7.3	6.1	5.0	3.20	2.68	2.16
	64 T	27.3	23.5	19.1	15.9	12.7	10.5	8.9	7.3	6.1	.....	.....
	K76 T	32.8	27.6	22.9	19.3	15.5	13.3	11.2	9.12	7.6	.....	.....
	76 T	41.0	34.5	28.6	24.1	19.4	16.6	14.0	11.4	9.5	.....	.....
	88 T	71.0	58.0	48.0	40.0	32.0	27.0	23.0	18.0	14.1	11.6	9.3
92 T	.....	.....	63.6	53.0	44.0	35.7	30.0	25.0	20.1	16.6	13.8	
Nominal Output Speed ▶		37	30	25	20	16.5	13.5	11.0	9.0	7.5	6.0	5.0
1165	21 T	3.8	3.1	2.5	2.1	1.8	1.5	1.3	1.0	.61	.49	.....
	32 T	5.8	4.8	3.9	3.2	2.8	2.3	1.9	1.6	.91	.74	.....
	43 T	8.9	7.4	6.2	5.1	4.3	3.5	3.0	2.5	1.52	1.22	.....
	54 T	16.0	13.3	10.8	8.6	7.3	6.1	5.0	4.1	2.68	2.16	1.76
	64 T	23.5	19.1	15.9	12.7	10.5	8.9	7.3	6.0	5.0	.....	.....
	K76 T	27.6	22.9	19.3	15.5	13.3	11.2	9.12	7.6	6.16	.....	.....
	76 T	34.5	28.6	24.1	19.4	16.6	14.0	11.4	9.5	7.7	.....	.....
	88 T	58.0	48.0	40.0	32.0	27.0	23.0	18.0	15.5	11.6	9.3	7.75
92 T	.....	.....	53.0	44.0	35.7	30.0	25.0	20.1	16.6	13.8	11.3	
Nominal Output Speed ▶		28	22	18.5	15.0	12.5	10.0	8.2	6.7	5.5	4.5	3.7
870	21 T	2.8	2.4	2.0	1.6	1.3	1.1	.90	.80	.45	.37	.....
	32 T	4.4	3.7	3.1	2.5	2.0	1.7	1.4	1.2	.68	.55	.....
	43 T	7.5	6.3	5.2	4.2	3.4	2.8	2.4	2.0	1.13	.92	.....
	54 T	11.9	9.6	8.2	6.8	5.5	4.4	3.7	3.1	1.98	1.61	1.33
	64 T	17.3	14.1	12.1	9.8	8.1	6.5	5.4	4.5	3.8	.....	.....
	K76 T	20.9	17.6	14.7	12.1	10.1	8.16	6.96	5.84	4.72	.....	.....
	76 T	26.1	22.0	18.4	15.1	12.7	10.2	8.7	7.3	5.9	.....	.....
	88 T	43.7	37.1	30.3	24.8	20.7	16.4	14.0	11.7	8.75	7.15	5.85
92 T	.....	.....	39.5	32.6	26.8	22.1	18.3	15.2	12.7	10.3	8.5	
Nominal Output Speed ▶		18.5	15	12.3	10	8.2	6.7	5.5	4.5	3.7	3.0	2.4
580	21 T	2.0	1.6	1.3	1.1	.90	.80	.60	.50	.30	.25	.....
	32 T	3.1	2.5	2.0	1.7	1.4	1.2	1.0	.80	.45	.38	.....
	43 T	5.2	4.2	3.4	2.8	2.4	2.0	1.6	1.3	.75	.63	.....
	54 T	8.2	6.8	5.5	4.4	3.7	3.1	2.5	2.1	1.33	1.10	.89
	64 T	12.1	9.8	8.1	6.5	5.4	4.5	3.8	3.0	2.5	.....	.....
	K76 T	14.7	12.1	10.16	8.16	6.96	5.84	4.72	4.0	3.2	.....	.....
	76 T	18.4	15.1	12.7	10.2	8.7	7.3	5.9	5.0	4.0	.....	.....
	88 T	30.3	24.8	20.7	16.4	14.0	11.7	9.4	7.9	5.85	4.90	3.94
92 T	.....	.....	26.8	22.1	18.3	15.2	12.7	10.30	8.5	7.10	5.75	

Note: For input speeds higher than 1750 rpm, refer to Westinghouse.

Ⓢ Changed or added since previous issue.





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Output Torque Capacity – in 1000 Inch-Lbs., Triple Reduction

High Speed Shaft – Rpm	Unit Size	Standard Gear Ratio										
		31.4	38.4	47.1	57.6	70.6	86.5	106	130	159	195	238
Nominal Output Speed ▶		56	45	37	30	25	20	16.5	13.5	11	9	7.5
1750	21 T	6.1	6.3	6.4	6.5	6.5	6.5	6.7	6.8	5.1	5.1	....
	32 T	9.4	9.8	9.8	10.0	10.0	10.0	10.4	10.6	11.1	7.65	....
	43 T	14.7	14.9	15.2	15.5	15.7	15.9	16.2	16.5	12.7	12.7	....
	54 T	26.5	26.9	27.1	27.4	27.7	28.0	28.2	28.4	21.1	22.4	22.5
	64 T	38.5	39.1	39.5	40.0	40.4	40.9	41.2	41.5	41.8	....	....
	K76 T	44.2	45.8	46.9	48.0	48.5	48.9	49.2	50.4	52.0	....	....
	76 T	55.3	57.3	58.7	60.0	60.7	61.1	61.5	63.0	65.0	....	....
	88 T	96.0	98.0	99.0	101	102	103	104	105	98.0	98.0	98.0
92 T	....	....	130	132	134	135	136	137	139	141	143	
Nominal Output Speed ▶		45	37	30	25	20	16.5	13.5	11	9	7.5	6.0
1430	21 T	6.3	6.4	6.5	6.5	6.5	6.7	6.8	7.2	5.1	5.2	....
	32 T	9.8	9.8	10.0	10.0	10.0	10.4	10.6	10.9	7.6	7.7	....
	43 T	14.9	15.2	15.5	15.7	15.9	16.2	16.5	16.8	12.7	12.8	....
	54 T	26.9	27.1	27.4	27.7	28.0	28.2	28.4	28.6	22.4	22.5	22.6
	64 T	39.1	39.5	40.0	40.4	40.9	41.2	41.5	41.8	42.1	....	....
	K76 T	45.8	46.9	48.0	48.5	48.8	49.2	50.4	52.2	53.2	....	....
	76 T	57.3	58.7	60.0	60.7	61.1	61.5	63.0	65.3	66.5	....	....
	88 T	98	99	101	102	103	104	105	106	97.7	97.7	97.8
92 T	....	....	132	134	135	136	137	139	141	143	145	
Nominal Output Speed ▶		37	30	25	20	16.5	13.5	11.0	9.0	7.5	6.0	5.0
1165	21 T	6.4	6.5	6.5	6.5	6.5	6.7	6.8	7.2	5.1	5.1	....
	32 T	9.8	10.0	10.0	10.0	10.0	10.4	10.6	10.9	7.7	7.9	....
	43 T	15.2	15.5	15.7	15.9	16.2	16.5	16.8	17.1	12.6	12.8	....
	54 T	27.1	27.4	27.7	28.0	28.2	28.4	28.6	28.7	22.5	22.6	22.6
	64 T	39.5	40.0	40.4	40.9	41.2	41.5	41.8	42.0	42.3	....	....
	K76 T	46.9	48.0	48.5	48.8	49.2	50.4	52.2	53.2	52.0	....	....
	76 T	58.7	60.0	60.7	61.1	61.5	63.0	65.3	66.5	65.0	....	....
	88 T	99.0	101	102	103	104	105	106	107	97.7	97.8	97.8
92 T	....	....	134	135	136	137	138	141	143	145	146	
Nominal Output Speed ▶		28	22	18.5	15	12.3	10	8.2	6.7	5.5	4.5	3.7
870	21 T	7.0	7.0	7.1	7.1	7.1	7.2	7.2	7.2	5.2	5.2	....
	32 T	10.0	10.3	10.5	10.5	10.6	10.7	11.1	11.2	7.8	7.8	....
	43 T	17.6	17.7	17.8	18.0	18.1	18.2	18.3	18.4	13.0	13.0	....
	54 T	27.6	27.9	28.0	28.3	28.5	28.7	28.8	29.0	22.7	22.8	22.9
	64 T	40.2	40.7	41.0	41.3	41.6	42.0	42.2	42.5	42.7	....	....
	K76 T	47.2	50.4	50.4	50.4	51.2	52.0	52.8	53.6	53.6	....	....
	76 T	59.0	63.0	63.0	63.0	64.0	65.0	66.0	67.0	67.0	....	....
	88 T	101	102	104	105	106	106	107	108	101	101	101
92 T	....	....	135	136	137	139	141	143	145	146	147	
Nominal Output Speed ▶		18.5	15	12.3	10.0	8.2	6.7	5.5	4.5	3.7	3.0	2.4
580	21 T	7.1	7.1	7.1	7.2	7.2	7.2	6.9	7.0	5.3	5.31	....
	32 T	10.5	10.5	10.6	10.7	11.1	11.2	11.5	11.3	7.85	7.92	....
	43 T	17.8	18.0	18.1	18.2	18.3	18.4	18.4	18.5	13.0	13.1	....
	54 T	28.0	28.3	28.5	28.7	28.8	29.0	29.1	29.2	22.9	23.0	23.1
	64 T	41.0	41.3	41.6	42.0	42.2	42.5	42.7	42.9	43.1	....	....
	K76 T	50.4	50.4	51.2	52.0	52.8	53.6	53.6	56.0	55.2	....	....
	76 T	63.0	63.0	64.0	65.0	66.0	67.0	67.0	70.0	69.0	....	....
	88 T	104	105	106	106	107	108	108	109	101	102	102
92 T	....	....	137	139	141	143	145	146	147	148	149	

Note: For high speed shaft rpm lower than 580 rpm, torque values are the same as for 580 rpm.

Ⓢ Changed or added since previous issue.

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Overhung Load Capacities

Moduline reducers provide generous overhung load capacity which is seldom exceeded; however, when a pulley, sprocket or pinion is to be mounted on the input or output shaft, the overhung load capacity of the reducer must be checked.

The overhung load capacities listed in the tables below are calculated for a sprocket, pinion or pulley mounted with the centerline of its face at the midpoint of the input or output shaft extension.

If the sprocket, pinion or pulley is to be mounted at a location other than the above, use the following formula to calculate the overhung load on the shaft after selecting appropriate L_c and L_f factors from the tables below.

If the calculated overhung load for the reducer selected exceeds the capacity listed in the table below, select the next larger reducer.

Overhung Load Formula

$$OHL \text{ (lbs)} = \frac{\text{motor hp} \times 126,000 \times L_c}{\text{output rpm} \times \text{pitch diameter (inches)} \times L_f}$$

Load Connection Factor, L_c

Type of Load Connection	Factor, L _c
Sprocket	1.00
Pinion	1.25
V-Belt	1.50
Flat Belt	2.50

Input Shafts, Allowable Overhung Load Capacities

Input Rpm	Unit Size									
	10	21	32	43	54	64	K76	76	88	92
Single and Double Reduction										
1750	150	200	250	350	500	575	650	650	650	700
1450	160	210	265	370	530	615	700	700	700	740
1150	170	230	290	400	570	655	740	740	740	800
870	185	250	320	430	620	710	800	800	800	870
720	195	260	340	460	650	750	850	850	850	910
580	210	280	360	490	700	800	900	900	900	980
Triple Reduction										
1750	...	150	150	200	250	250	350	350	350	500
1450	...	160	160	210	265	265	370	370	370	530
1150	...	170	170	230	290	290	400	400	400	570
870	...	185	185	250	320	320	430	430	430	620
720	...	195	195	260	340	340	460	460	460	650
580	...	210	210	280	360	360	490	490	490	700

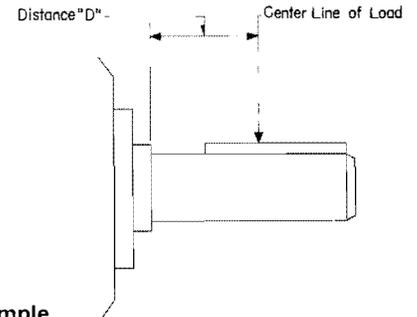
Load Location Factor, L_f

Shaft Dia. Inches	"D" – Distance From Center Line of Load to Reducer Shaft Shoulder, Inches															
	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5
.875	1.06	.90	.77	.68	...	...	...	...	...	...	...	...	...	...	...	...
1.125	1.12	.98	.83	.74	...	...	...	...	...	...	...	...	...	...	...	...
1.375	1.15	1.03	.91	.79	.73	...	...	...	...	...	...	...	...	...	...	...
1.500	1.17	1.06	.94	.83	.76	.70	...	...	...	...	...	...	...	...	...	...
1.625	1.18	1.08	.97	.86	.78	.73	.68	...	...	...	...	...	...	...	...	...
1.875	1.22	1.13	1.04	.94	.85	.78	.74	.69	...	...	...	...	...	...	...	...
2.125	1.23	1.14	1.06	.96	.88	.80	.76	.71	.67	...	...	...	...	...	...	...
2.375	1.24	1.17	1.09	1.01	.94	.85	.79	.75	.71	.67	...	...	...	...	...	...
2.625	1.25	1.18	1.11	1.04	.97	.89	.82	.77	.74	.70	.67	...	...	...	...	...
3.125	1.25	1.22	1.15	1.09	1.04	.97	.91	.85	.79	.76	.73	.70	...	...	...	...
3.625	1.25	1.24	1.18	1.13	1.08	1.02	.97	.91	.86	.80	.78	.75	.72	.69	...	...
4.500	1.25	1.25	1.23	1.18	1.14	1.08	1.04	1.00	.96	.92	.87	.83	.79	.77	.74	.72
5.000	1.25	1.25	1.24	1.20	1.16	1.12	1.07	1.04	.99	.95	.91	.87	.83	.79	.77	.75

Shaft Diameters

Gear Size	Output		Input		
	Single	Double & Triple	Single	Double	Triple
10	1.125	1.375	.875	.875	...
21	1.500	1.625	1.125	1.125	.875
32	2.125	1.875	1.375	1.375	.875
43	2.125	2.125	1.625	1.625	1.125
54	2.375	2.625	1.625	1.625	1.375
64	...	3.125	...	1.875	1.375
K76	2.375	3.625	1.625	2.125	1.625
76	2.375	4.000	1.625	2.125	1.625
88	...	4.500	...	2.125	1.625
92	...	5.000	...	2.125	1.625

Ⓢ Changed or added since previous issue.



Example

A belt conveyor is to be driven by a 5 hp motor coupled to a size 21D Moduline reducer, 280 rpm output using a 4" diameter V-belt sheave on the output shaft. The output shaft diameter on a size 21 D is 1.625 inches. The centerline of the load is to be placed 1.5 inches from the shaft shoulder.

Procedure – Calculate overhung load
L_c = 1.50 and L_f = 1.08

$$OHL = \frac{5 \times 126,000 \times 1.50}{280 \times 4 \times 1.08} = 781 \text{ lbs.}$$

Refer to overhung load table at right. Since the overhung load capacity of the gear size 21D at 280 rpm is 1420 lbs., the gear unit has ample capacity.



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**Output Shaft – Overhung Load and Thrust Capacities
Single Reduction**

Gear Size	Pounds	Output Rpm								
		1400	1165	950	780	640	520	420	350	280
10S	Overhung Load	300	320	360	400	420	450	500	540	580
	Thrust (Down or Out)	130	190	270	340	400	475	525	590	600
	Thrust (Up or In)	130	190	270	340	400	475	525	590	600
21S	Overhung Load	650	720	800	860	930	1000	1075	1140	1200
	Thrust (Down or Out)	540	630	770	880	1000	1120	1160	1190	1210
	Thrust (Up or In)	540	630	770	880	1000	1120	1160	1190	1210
32S	Overhung Load	900	980	1075	1150	1250	1360	1490	1500	1500
	Thrust (Down or Out)	950	1090	1200	1200	1200	1200	1200	1200	1200
	Thrust (Up or In)	950	1090	1200	1200	1200	1200	1200	1200	1200
43S	Overhung Load	920	1000	1080	1170	1180	1300	1400	1500	1500
	Thrust (Down or Out)	500	675	825	900	900	900	900	900	900
	Thrust (Up or In)	500	675	825	900	900	900	900	900	900
54S	Overhung Load	1000	1000	1000	1000	1000	1050	1090	1180	1200
	Thrust (Down or Out)	775	775	775	775	775	775	775	775	775
	Thrust (Up or In)	775	775	775	775	775	775	775	775	775
76S [Ⓢ]	Overhung Load	1000	1000	1000	1000	1000	1000	1000	1025	1100
	Thrust (Down or Out)	775	775	775	775	775	775	775	775	775
	Thrust (Up or In)	775	775	775	775	775	775	775	775	775

**Output Shaft – Overhung Load and Thrust Capacities
Double and Triple Reduction**

Gear Size	Pounds	Output Rpm													
		420	350	280	230	190	155	125	100	84	68	56	45	37 and Below	
10	Overhung Load	1000	1100	1160	1240	1320	1400	1500	1600	1700	1700	1700	1700	1700	.....
	Thrust (Down or Out)	860	920	1000	1050	1130	1210	1300	1400	1500	1600	1720	1850	1850	.....
	Thrust (Up or In)	700	760	820	880	930	1000	1070	1150	1230	1320	1400	1500	1500	.....
21	Overhung Load	1260	1330	1420	1500	1600	1700	1800	1930	2020	2150	2300	2300	2300	2300
	Thrust (Down or Out)	1220	1300	1400	1500	1600	1720	1850	2000	2110	2260	2420	2600	2600	2600
	Thrust (Up or In)	1000	1060	1150	1230	1300	1400	1500	1620	1720	1850	1970	2120	2200	2200
32	Overhung Load	1600	1690	1800	1920	2020	2150	2300	2450	2580	2750	2900	3000	3000	3000
	Thrust (Down or Out)	1640	1750	1880	2000	2150	2300	2470	2660	2820	3020	3250	3500	3500	3500
	Thrust (Up or In)	1430	1520	1640	1750	1870	2000	2150	2320	2450	2630	2810	3000	3000	3000
43	Overhung Load	1950	2050	2200	2340	2480	2620	2800	3000	3150	3370	3570	3800	4000	4000
	Thrust (Down or Out)	2270	2420	2600	2800	2950	3200	3400	3700	3900	4200	4500	4800	5000	5000
	Thrust (Up or In)	2000	2150	2320	2470	2640	2800	3050	3270	3460	3710	3950	4300	4500	4500
54	Overhung Load	3450	3680	3920	4180	4400	4700	5000	5000	5000	5000	5000	5000	5000	5000
	Thrust (Down or Out)	3600	3850	4150	4400	4700	5000	5400	5800	6150	6600	7000	7400	7400	7400
	Thrust (Up or In)	2850	3000	3260	3500	3740	4000	4300	4650	4950	5300	5650	6100	6200	6200
64	Overhung Load	.....	4400	4700	5000	5300	5600	6000	6400	6750	7200	7600	8000	8000	8000
	Thrust (Down or Out)	.....	4600	5000	5300	5700	6000	6500	7000	7400	7900	8500	9000	9000	9000
	Thrust (Up or In)	.....	3600	3900	4200	4500	4800	5200	5600	5900	6400	6800	7300	7500	7500
K76 [Ⓢ]	Overhung Load	5200	5450	5850	6200	6600	7000	7450	8000	8400	8950	9500	10000	10000	10000
	Thrust (Down or Out)	5050	5350	5750	6150	6550	7000	7500	8100	8550	9150	9800	10500	11000	11000
	Thrust (Up or In)	4100	4350	4700	5000	5350	5750	6200	6650	7100	7600	8100	8700	9000	9000
76 [Ⓢ]	Overhung Load [Ⓢ]	5200	5450	5850	6200	6600	7000	7450	8000	8400	8950	9500	10000	10000	10000
	Thrust (Down or Out) [Ⓢ]	5050	5350	5750	6150	6550	7000	7500	8100	8550	9150	9800	10500	11000	11000
	Thrust (Up or In) [Ⓢ]	4100	4350	4700	5000	5350	5750	6200	6650	7100	7600	8100	8700	9000	9000
88	Overhung Load	10000	10500	11250	12000	13000	14500	15250	16500	17750	19250	20000	20000	20000	20000
	Thrust (Down or Out)	9500	10000	10750	11500	12500	13500	14750	16250	17500	20000	20000	20000	20000	20000
	Thrust (Up or In)	9500	10000	10750	11500	12500	13500	14750	16250	17500	20000	20000	20000	20000	20000
92	Overhung Load	.....	.....	12000	12800	13800	14800	16000	17400	18500	10000	21500	22500	22500	22500
	Thrust (Down or Out)	.....	.....	14000	15000	15800	16900	18000	19500	20500	22000	23400	25000	25000	25000
	Thrust (Up or In)	.....	.....	12750	13600	14500	15500	16500	18000	19000	20500	21500	23000	23000	23000

Note: The thrust capacities published above are for units with pure thrust loads. Refer to Westinghouse when there are combined radial and thrust loads or when loads exceed capacities listed. Indicate direction of rotation of shaft and location and direction of applied load.

[Ⓢ] Changed or added since previous issue.

Exact Gear Ratios (When special ratios required, specify exact gear ratio on order)

Single Reduction

Unit Size	Nominal Ratio								
	1.250	1.50	1.84	2.24	2.73	3.37	4.13	5.06	6.20
10S	1.271	1.535	1.868	2.303	2.893	3.542	4.190	5.056	6.207
21S	1.255	1.578	1.850	2.257	2.800	3.560	4.227	5.053	6.188
32S	1.275	1.578	1.854	2.314	2.806	3.538	4.318	5.158	6.188
43S	1.271	1.535	1.868	2.303	2.793	3.542	4.190	5.056	6.267
54S	1.271	1.512	1.868	2.303	2.793	3.542	4.190	5.056	6.267
76S [Ⓢ]	1.271	1.535	1.868	2.303	2.793	3.542	4.238	5.056	6.211

Double Reduction[Ⓢ]

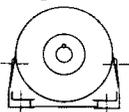
Unit Size	Nominal Ratio											
	4.13	5.06	6.20	7.59	9.30	11.3	14.0	17.1	20.9	25.6	31.4	38.4
10 D	4.120	5.141	6.209	7.559	9.317	11.70	14.33	16.95	20.45	24.50	30.65	.....
21 D	4.119	5.079	6.386	7.488	9.136	11.33	14.41	17.11	20.45	25.65	30.65	37.54
32 D	4.125	5.169	6.399	7.518	9.386	11.38	14.35	17.51	20.92	25.09	31.29	37.54
43 D	4.128	5.150	6.220	7.572	9.333	11.32	14.35	16.98	20.49	25.40	30.65	37.99
54 D	4.131	5.154	6.130	7.577	9.340	11.33	14.36	16.99	20.50	25.42	30.65	37.99
64 D	.....	5.023	6.269	7.614	9.327	11.58	14.08	17.48	21.22	25.19	.....	.....
K76 D [Ⓢ]	4.125	5.147	6.216	7.567	9.327	11.31	14.34	17.16	20.48	25.15	.....	.....
76 D [Ⓢ]	4.125	5.147	6.216	7.567	9.327	11.31	14.34	17.16	20.48	25.15	.....	.....
88 D	4.099	5.017	6.145	7.460	9.248	11.35	14.50	16.99	20.90	25.85	31.65	37.93
92 D	.....	.....	6.257	7.658	9.418	11.56	14.24	17.30	21.28	26.33	32.23	38.62

Triple Reduction[Ⓢ]

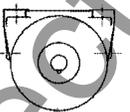
Unit Size	Nominal Ratio											
	31.4	38.4	47.1	57.6	70.6	86.5	106	130	159	195	238	
21T	31.83	38.44	46.79	57.68	72.45	88.70	104.9	126.6	157.3	189.8	.....
32T	31.89	38.52	46.89	57.79	72.59	88.87	105.2	126.9	157.3	189.8	.....
43T	32.28	38.98	47.45	58.49	73.47	89.95	106.4	128.4	159.2	192.1	.....
54T	31.89	40.10	47.02	57.37	71.16	90.48	107.4	128.4	160.6	191.9	235.1	
64T	32.11	39.75	46.70	58.30	70.70	89.15	108.8	129.9	155.9	.....	.....
K76T [Ⓢ]	31.97	38.61	47.00	57.93	70.25	89.08	105.4	127.2	157.6	.....	.....
76T [Ⓢ]	31.97	38.61	47.00	57.93	70.25	89.08	105.4	127.2	157.6	.....	.....
88T	.....	.....	48.20	58.21	70.86	87.35	105.9	134.3	158.9	191.7	237.7
92T	.....	.....	49.08	58.38	72.16	88.95	107.9	136.8	161.8	195.3	242.0

[Ⓢ] Changed or added since previous issue.

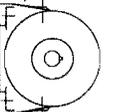
Mounting Positions (Figures 1 thru 4 are viewed from output end.)



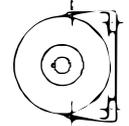
1. Floor mounting



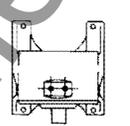
2. Horizontal ceiling mtg.



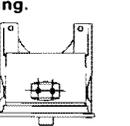
3. Horizontal left hand wall mounting.



4. Horizontal right hand wall mounting.

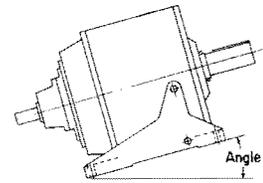


5. Vertical wall mtg. shaft down – refer to Westinghouse.

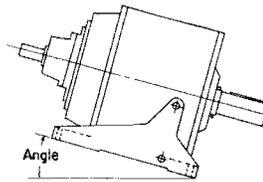


6. Vertical flange mounting shaft down – refer to Westinghouse.

Horizontal Mounting Limits



Output Shaft Up: Maximum 10 degrees. If greater, refer to Westinghouse.



Output Shaft Down: Maximum 15 degrees. If greater, refer to Westinghouse.

Further Information

Discounts and Multipliers:
Selling Policy 2900 S WE A
Price List 2973-3 P WE A
Dimension Sheets 2973-4 F WE A



May 12, 1975
Supersedes 2973-3 P WE A
Price List
page 1 dated June 17, 1974.
Prices effective May 12, 1975 and
subject to change without notice.
(Refer to Selling Policy 2900 S WE A)
Mailed to: E, D, C/1779/PL

Concentric Shaft Type
Single, Double and Triple Reduction

Moduline® Speed Reducers

List Prices, Moduline Speed Reducers, Accessories, Modifications, Discount Symbol HR-1

Unit Size	List Prices [Ⓐ] , HR-1 Unit Only			List Price Additions [Ⓒ] , HR-1					Back-stops (Built-in) [Ⓓ]	Modified or Shaft Extensions Longer Than Standard [Ⓔ] Basic Charge				
	Ratios			Bed-plate Only [Ⓔ]	"Piggy Back" Adj. Motor Mount Only [Ⓔ]	Mounting Charge [Ⓒ]				Customer's Sprockets, Couplings, Pinions or Pulleys, Etc.	High Speed Shaft		Low Speed Shaft	
	Single Reduction	Double Reduction	Triple Reduction			Motor	H.S. Shaft	L.S. Shaft			0-6" or Mod.	6" to 12"	0-6" or Mod.	6" to 24"
10	\$ 628	\$ 846	....	\$ 303	\$226	\$47	\$ 39	\$ 47	\$235	\$167	\$214	\$167	\$214
21	682	1154	\$1308	320	235	47	47	56	250	175	231	184	224	
32	800	1423	1596	348	235	47	47	71	250	184	256	192	246	
43	908	1865	2077	393	276	47	71	71	276	214	256	199	256	
54	1411	2452	2615	466	291	47	71	88	291	214	263	214	263	
64 [Ⓐ]	2740 [Ⓒ]	3462 [Ⓓ]	504	291	56	71	88	318	224	263	224	288	
75	1579	....	....	634	310	64	88	103	444	224	263	231	342
K76	....	3365	3894	634	310	64	88	103	444	224	263	231	342
76	....	4000	4471	634	310	64	88	103	444	224	263	231	342
88	....	5288	6490	852	310	71	96	111	444	224	303	263	367
92	....	7837	8125	1008	310	79	103	120	502	224	303	271	384

Accessories, Modifications	List Price Addition [Ⓒ] , HR-1 Unit Size									
	10	21	32	43	54	64	75(S)	K76/76	88	92
C-Flange [Ⓒ] Motor Adaptor	\$ 43	\$ 94	...	...	...	...	...	...	...	...
Slide Rails (Pair)	90	98	\$113	\$143	\$186	\$212	\$233	\$233	\$312	\$337
Export Boxing	66	73	102	111	118	118	239	239	312	442
Taconite Seals	96	128	160	199	263	327	399	399	645	854
Wet End or Marine Features	24	24	32	39	56	71	88	88	120	143
Special Paint	55	66	73	90	102	102	111	111	128	128
Coupling Guards [Ⓒ]	102	111	139	147	175	175	184	184	192	201
Fan Cooling	...	...	...	...	...	...	278	278	278	278

Special Ratios

Standard ratios are shown in Application Data 2973-2.

For ratios other than those listed make the following list price additions.

Quantity	List Price Addition Per Unit
1-2	\$376 [Ⓒ]
3-24	188 [Ⓒ]
25 or more	No Charge

Oil Sight Gage: Add \$19 list. [Ⓒ]

Note: See Dimension Sheet 2973-4, pages 1-3, for dimensions, all unit sizes.

Quantity Discounts on Special Shafts

Quantity of Identical Shafts	1	2-4	5-24	25 or More
Discount	0%	20%	40%	60%

[Ⓒ]Largest built-in backstop has maximum rating of 215 ft. lbs. at service factor 1.0. Apply reducer service factor to determine required backstop rating. Backstops requiring higher capacity must be externally mounted on a longer than standard H. S. shaft. Refer to Westinghouse for selection and pricing.

[Ⓒ]C-Flange adaptors are available to accommodate standard NEMA motor mounting, using standard motor flange and shaft dimensions.

[Ⓒ]Does not include belts, sheaves or belt guard.

[Ⓒ]Coupling guards priced from this table meet OSHA standards. They are designed for use with Westinghouse reducers and couplings.

[Ⓒ]Changed or added since previous issue.

[Ⓐ]Size 64 in ratios 31.4 and 38.4 are triple reduction and should be priced at the 47.1 to 238.4 ratio level, i.e., \$3462[Ⓒ].

[Ⓒ]Ratio 4.13 not available.

[Ⓒ]31.4 to 158 ratios only.

[Ⓒ]Bedplates: Prices are based on bedplates of standard dimensions suitable for mounting the speed reducer and motor only. Refer to Dimension Sheet 2973-4, page 4, for outline dimensions.

[Ⓒ]Mounting Charges: There is no mounting charge for material supplied by Westinghouse. Customer's material must be delivered to Westinghouse, transportation prepaid and ready for mounting. Any machining of customer's material must be negotiated with Westinghouse in advance of mounting. Westinghouse is not responsible for loss or damage to customer's material.

[Ⓒ]Basic Charges for Special Shafts include the special length, turning down the shaft to one special diameter and cutting a standard keyway. For additional shaft modifications, add the following percentages of the basic charge:

Drilling and tapping end of shaft . . .	add 20%
Special keyway	add 20%
Splined shaft	add 100%
Special diameter, one is included in the basic charge, for each special diameter after the first . . .	add 20%
Tapered shaft with threaded end . . .	add 50%
Threaded shaft, for each set of threads	add 20%

Note: Regardless of the number of shaft variations from standard, add the basic charge only once.

Refer to Westinghouse for prices for special high speed shaft extensions greater than 12" in length, and special low speed shaft extensions greater than 24" in length.

www.ElectricalPartManuals.com

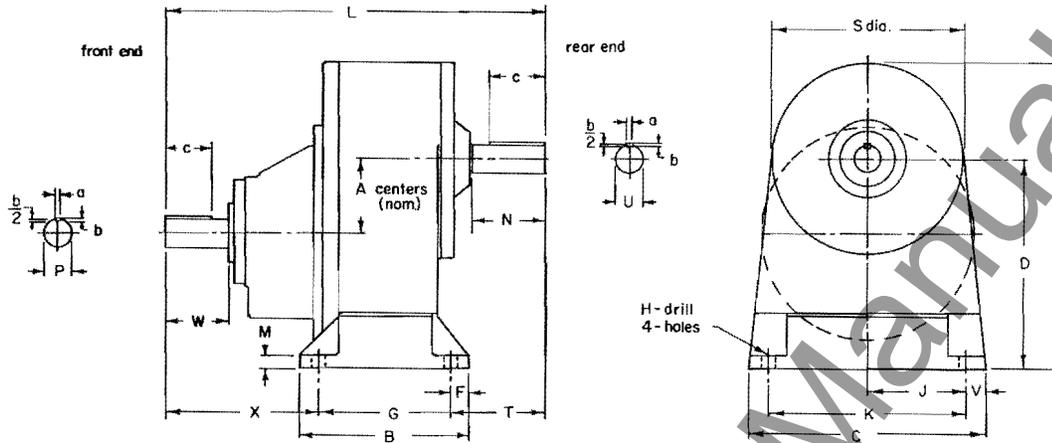


March, 1976
 Supersedes 2973-4
 Dimension Sheet
 pages 1-2 dated December, 1972
 Mailed to: E, D, C/1779/DS

Concentric Shaft Type
 Single Reduction
 Unit Sizes 10 through 76

Moduline®
Speed Reducers

Concentric Shaft Type, Single Reduction, Unit Sizes 10 Through 76



Dimensions, Inches Not to be used for construction purposes unless dimensions are approved.

Unit Size	U ^②	Key			A	B	C	D ^③	E	F	G	H	J	K	L	M	N
		a	b	c													
10	1.125	.25	.25	2.25	3.0	7	9.75	8.50	12.50	.75	5.44	.56	4.06	8.12	15.69	.50	3.00
21	1.500	.38	.38	2.75	3.5	8	12.00	10.25	14.69	.75	6.50	.56	5.25	10.50	17.75	.88	3.50
32	2.125	.50	.50	3.25	4.0	9	15.00	12.19	19.19	.75	7.50	.69	6.69	13.38	20.75	.88	4.25
43	2.125	.50	.50	3.25	5.0	9	15.00	13.19	19.19	.75	7.50	.69	6.69	13.38	21.00	.88	4.25
54	2.375	.50	.50	3.75	6.0	12	19.88	17.00	26.50	.75	10.38	.69	9.19	18.38	24.12	1.00	5.00
76	2.375	.50	.50	3.75	7.5	12	19.88	18.50	26.50	.75	10.38	.69	9.19	18.38	24.12	1.00	5.00

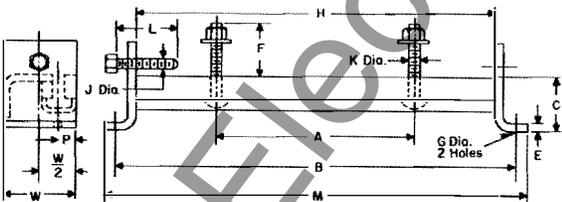
Unit Size	P ^②	Key			S	T	V	W	X
		a	b	c					
10	.88	.19	.19	1.75	8.00	3.66	.81	2.44	6.59
21	1.12	.25	.25	2.25	8.88	4.25	.75	2.94	7.00
32	1.38	.31	.31	2.50	13.00	5.06	.81	3.31	8.19
43	1.62	.38	.38	2.50	13.00	5.06	.81	3.56	8.44
54	1.62	.38	.38	2.75	16.00	5.88	.75	3.81	7.88
76	1.62	.38	.38	2.75	16.00	5.88	.75	3.81	7.88

② Tolerance = +.000 to -.001.
 ③ This dimension will never be exceeded. When exact dimension is required, shims up to .03 inch may be necessary.

Reproduced from Drawing 834-D-185, sub 3.

Moduline Slide Rails

Dimensions, Inches Not to be used for construction purposes unless dimensions are approved



Unit Size	A	B	C ^④	E	F	G	H	J	K	L	M	P	W	Total Adj.
10	8.25	15.25	2.00	.25	1.25	.50	13.25	.38	.38	4.00	16.25	.56	2.25	3.0
21	9.00	18.25	2.00	.38	1.75	.62	15.50	.50	.50	5.00	19.50	.62	2.62	3.5
32	11.00	22.00	2.50	.50	2.00	.75	18.50	.50	.62	5.00	23.50	.69	3.00	4.0
43	14.00	26.75	3.00	.50	2.00	.88	23.00	.75	.75	6.00	28.50	.88	3.25	5.0
54	16.00	30.75	4.00	.50	1.75	1.00	26.75	.75	.88	7.00	32.75	.94	4.38	6.0
64	16.00	30.75	4.00	.50	1.75	1.00	26.75	.75	.88	7.00	32.75	.94	4.38	6.0
76	18.50	37.50	4.00	.75	2.75	1.25	32.00	.88	1.00	9.50	40.00	1.25	4.75	8.0
88	22.00	45.25	4.50	.75	3.75	1.62	39.00	.88	1.50	10.00	48.50	1.50	5.25	9.0
92	22.00	45.25	4.50	.75	3.75	1.62	39.00	.88	1.50	10.00	48.50	1.50	5.25	9.0

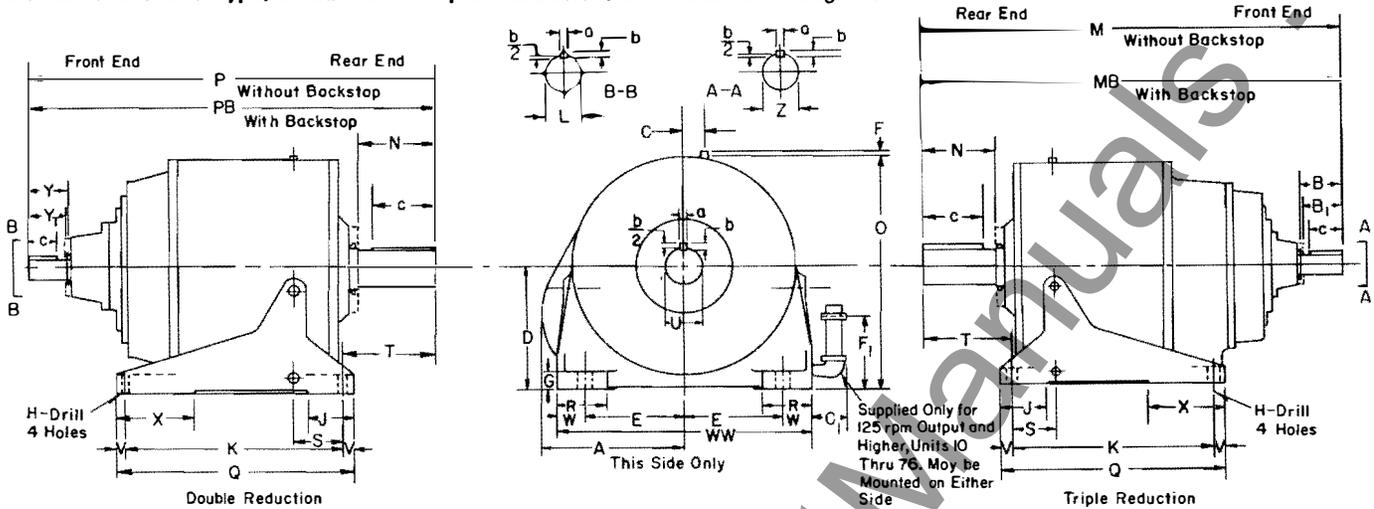
④ Tolerance = +.000 to -.125.

PRELIMINARY CERTIFIED PRINT FOR:

Customer		Customer Order		
G.O.		Cat. No.		Item No.
Motor Rpm	Output Rpm	Service Factor	Service Hp	Gear Ratio
Application	Signed			Date



Concentric Shaft Type, Double and Triple Reduction, Unit Sizes 10 Through 76



Dimensions, Inches Not to be used for construction purposes unless dimensions are approved
Dimensions Common to Double and Triple Reduction Units

Unit Size	U ²	Key			A	C	C ₁	D ³	E	F	F ₁	G	H	J	K	N	O	Q	R	S	T	V	W	WW	X
		a	b	c																					
10	1.375	.31	.31	2.0	5.2	.7	1.7	5.69	4.12	1.1	3.4	.8	.438	2.8	9.00	2.6	10.1	10.5	1.6	2.7	3.4	.8	1.0	10.3	2.8
21	1.625	.38	.38	2.5	...	.8	1.7	6.25	4.50	1.1	4.0	1.0	.562	3.5	9.75	3.4	11.7	11.1	2.3	2.8	4.3	.7	1.5	12.0	2.8
32	1.875	.50	.50	3.0	...	1.1	1.7	7.25	5.50	1.0	4.6	1.1	.688	4.0	13.50	3.8	13.9	15.0	2.8	3.2	4.8	.8	1.8	14.5	5.0
43	2.125	.50	.50	3.5	...	1.4	1.7	9.25	7.00	.9	5.7	1.3	.812	4.8	15.00	4.4	16.6	17.0	3.3	3.5	5.3	1.0	2.0	18.0	6.5
54	2.625	.62	.62	4.0	...	1.4	1.7	10.75	8.00	.6	6.7	1.3	.938	6.0	17.25	5.3	20.0	19.3	4.0	4.5	6.5	1.0	2.4	20.8	7.0
64	3.125	.75	.75	5.0	12.3	..	1.7	10.75	8.00	..	6.7	1.3	.938	..	17.25	6.3	20.0	19.3	4.0	3.6	7.8	1.0	2.4	20.8	..
76	3.625	.88	.88	6.0	13.4	2.0	2.2	12.00	9.25	.8	7.8	1.8	1.062	4.8	20.00	7.3	22.8	22.8	4.8	4.4	8.9	1.4	2.8	24.0	7.4

Double Reduction Units

Unit Size	L ²	Key			Y	Y ₁	PB	P	Approx. Wt. Lbs.
		a	b	c					
10	.875	.19	.19	1.8	2.4	2.0	19.1	18.1	77
21	1.125	.25	.25	2.3	2.9	2.5	21.6	20.5	132
32	1.375	.31	.31	2.5	3.3	2.9	24.7	23.2	194
43	1.625	.38	.38	2.5	3.6	3.1	25.8	24.3	270
54	1.625	.28	.38	2.8	3.8	3.2	29.0	27.6	484
64	1.875 ⁴	.50 ⁴	.50 ⁴	1.8	2.5	2.5	30.4	29.4	550
76	2.125	.50	.50	3.3	4.6	3.9	35.9	34.2	767

Triple Reduction Units

Unit Size	Z ²	Key			B	B ₁	MB	M	Approx. Wt. Lbs.
		a	b	c					
10	.875	.19	.19	1.8	2.4	2.0	22.6	21.6	87
21	.875	.19	.19	1.8	2.4	2.0	23.8	22.8	130
32	.875	.19	.19	1.8	2.4	2.0	25.9	24.9	191
43	1.125	.25	.25	2.3	2.9	2.5	27.9	26.8	287
54	1.375	.31	.31	2.5	3.3	2.9	33.7	32.2	499
64	1.375	.31	.31	2.5	3.3	2.9	36.1	34.6	570
76	1.625	.38	.38	2.5	3.6	3.1	40.0	38.5	773

² Tolerance = +.000 to -.001.

³ This dimension will never be exceeded. When exact dimension is required, shims up to .03 inch may be necessary.

⁴ 1.625 diameter, .375 sq. key with backstop.

Note: When Taconite oil seal is required, use dimension Y₁ and B₁ and add .50 inch to dimensions M, MB, P, PB and T (All units except size 64).

Reproduced from Drawing 823-D-019, sub 6.

PRELIMINARY CERTIFIED PRINT FOR:

Customer				Customer Order			
G.O.				Item No.			
Motor Rpm		Output Rpm		Service Factor		Service Hp	
Application		Signed		Gear Ratio		Date	



Westinghouse Electric Corporation
Medium Motor and Gearing Division
Buffalo, New York, U.S.A. 14240

2973-4 F WE A
Dimension Sheet

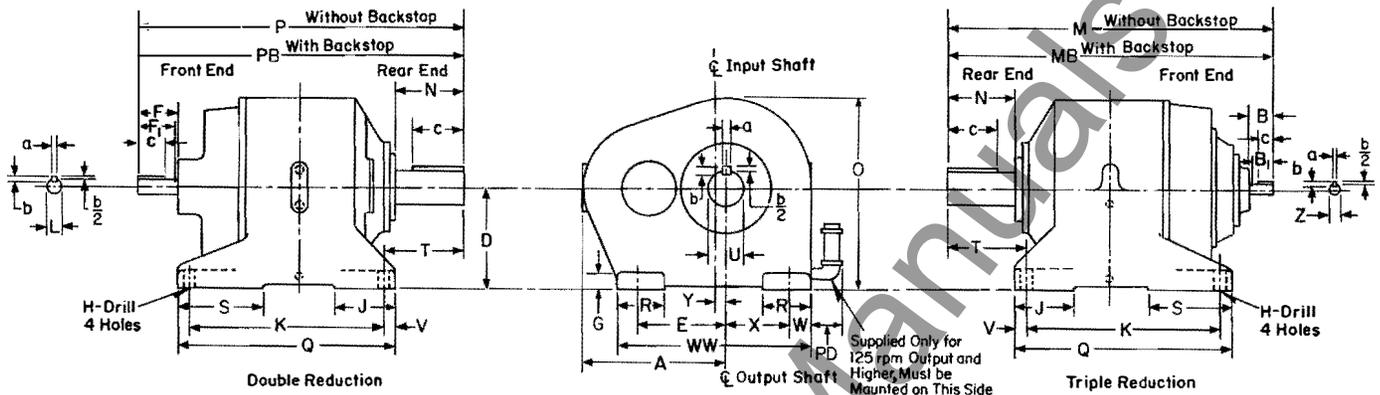
Page 3

March, 1976
Supersedes 2973-4
Dimension Sheet
pages 3-4 dated December, 1972
Mailed to: E, D, C/1779/DS

Concentric Shaft Type
Double and Triple Reduction
Unit Sizes 88 and 92

Moduline®
Speed Reducers

Concentric Shaft Type, Double and Triple Reduction, Unit Sizes 88 and 92



Dimensions, Inches Not to be used for construction purposes unless dimensions are approved
Dimensions Common to Double and Triple Reduction Units

Unit Size	U ^②	Key			A	D ^③	E	G	H	J	J ₁	K	N	O	Q	R	T	V	W	WW	X	Y	PD
		a	b	c																			
88	4.500	1.00	1.00	7.5	19.0	13.00	11.50	2.0	1.625	8.5	11.5	25.50	9.0	23.9	29.0	6.0	11.4	1.8	3.0	26.3	8.75	...	2.3
92	5.000	1.25	.88	7.5	20.6	14.50	12.62	2.3	1.875	9.0	12.5	28.00	9.0	27.5	31.5	7.0	11.4	1.8	3.0	28.0	9.38	1.62	2.9

Double Reduction Units

Unit Size	L ^②	Key			F	F ₁	PB	P	Approx. Wt. Lbs.
		a	b	c					
88	2.125	.50	.50	3.3	4.6	3.6	④	40.1	1227
92	2.125	.50	.50	3.3	4.6	4.1	46.7	43.5	1300

Triple Reduction Units

Unit Size	Z	Key			B	B ₁	MB	M	Approx. Wt. Lbs.
		a	b	c					
88	1.625	.38	.38	2.5	3.6	3.1	45.9	44.4	1236
92	1.625	.38	.38	2.5	3.8	3.2	47.6	46.2	1450

② Tolerance = +.000 to -.001.

③ This dimension will never be exceeded. When exact dimension is required, shims up to .03 inch may be necessary.

④ See outline drawing 4122-D-33

Note: When Taconite oil seal is required, use dimension F₁ and B₁, and add .50 inch to dimensions M, MB, P, PB and T.

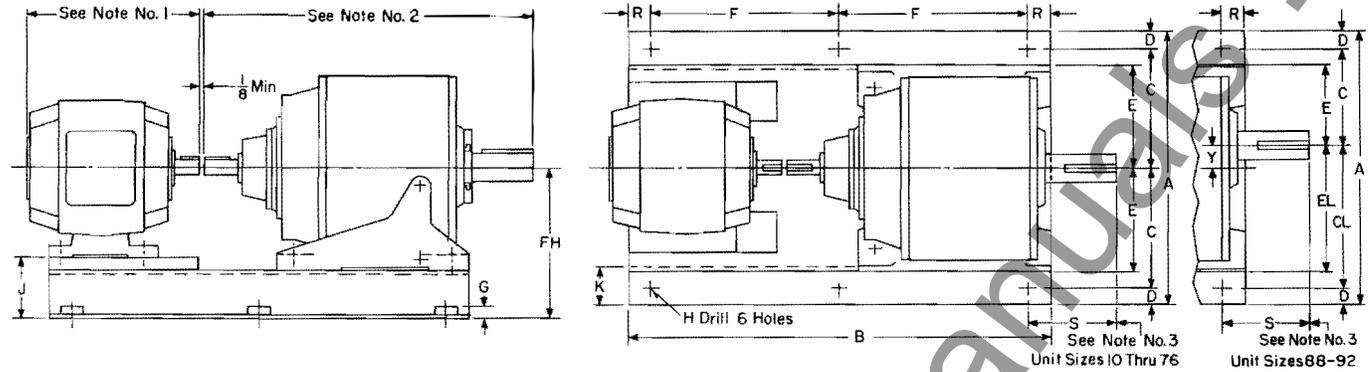
Reproduced from Drawing 842-D-238, sub 9.

PRELIMINARY CERTIFIED PRINT FOR:

Customer G.O.		Customer Order	
Motor Rpm	Output Rpm	Cat. No.	Item No.
Application	Signed	Service Factor	Service Hp
		Gear Ratio	Date



Bedplates, Double and Triple Reduction, Unit Sizes 10 Through 92 with Ac Motors



Dimensions, Inches Not to be used for construction purposes unless dimensions are approved
Dimensions Common to Double and Triple Reduction Units

Unit Size	A	B	C	CL	D	E	EL	F	FH ^⑤	G	H	K	R	S	Y	Approx Wt., Lbs.⑥	
																Double	Triple
10	14.00	30	6.25	....	.75	5.25	....	13.75	8.19	.25	.56	2.00	1.25	3.88	....	132	....
21	16.00	36	7.25	....	.75	6.25	....	16.75	8.75	.25	.56	2.00	1.25	4.81	....	194	192
32	19.50	36	8.75	....	1.00	7.25	....	16.75	10.25	.25	.81	2.75	1.25	5.25	....	312	309
43	23.00	42	10.50	....	1.00	9.00	....	19.75	14.75	.38	.81	2.88	1.25	5.56	....	444	461
54	25.75	48	11.88	....	1.00	10.38	....	22.50	16.25	.88	.94	2.88	1.50	7.00	....	699	714
64	25.75	48	11.88	....	1.00	10.38	....	22.50	16.25	.88	.94	2.88	1.50	8.25	....	765	785
76	30.75	60	14.00	....	1.38	12.00	....	27.00	17.50	1.50	1.38	3.88	3.00	10.56	....	1152	1158
88	38.00	68	17.50	17.50	1.50	15.50	15.50	30.00	19.00	1.50	1.38	4.00	4.00	13.63	....	1480	1635
92	38.00	68	15.88	19.13	1.50	13.88	17.13	30.00	20.50	1.50	1.38	4.00	4.00	13.63	1.63 ^⑦	1550	1850

Motor Frame	Approx. Wt., Lbs.		Double Reduction Units								Triple Reduction Units								
	Open and TENV	TEFC & Expl. Proof	10	21	32	43	54	64	76	88	92	21	32	43	54	64	76	88	92
			J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J
143T	40	55	4.69	5.25	6.75	....	....	....	....	....	....	....	....	....	....	....	....	....
145T	45	60	4.69	5.25	6.75	....	....	....	....	....	....	....	....	....	....	....	....	....
182T	55	85	3.69	4.25	5.75	....	....	....	....	....	4.25	5.75	10.25	11.75	11.75	13.00	....	....
184T	65	100	3.69	4.25	5.75	....	....	....	....	....	4.25	5.75	10.25	11.75	11.75	13.00	....	....
213T	85	140	2.94	3.50	5.00	9.50	....	....	....	....	3.50 ^⑦	5.00	9.50	11.00	11.00	12.25	....	....
215T	110	175	2.94	3.50	5.00	9.50	11.00	11.00	....	....	....	5.00	9.50	11.00	11.00	12.25	....	....
254T	200	260	⑦	2.75	4.00	8.50	10.00	10.00	11.25	....	....	....	8.50 ^⑦	10.00	10.00	11.25	....	....
256T	240	320	⑦	2.75	4.00	8.50	10.00	10.00	11.25	....	....	....	....	10.00	10.00	11.25	....	....
284T	300	360	⑦	⑦	3.25	7.75	9.25	9.25	10.50	....	....	....	....	9.25 ^⑦	9.25 ^⑦	10.50	....	....
286T	370	450	⑦	⑦	3.25	7.75	9.25	9.25	10.50	....	....	....	....	9.25 ^⑦	9.25 ^⑦	10.50	....	....
324T	475	550	....	⑦	⑦	6.75	8.25	8.25	9.50	11.00	12.50	....	....	....	....	9.50 ^⑦	....	....
326T	525	610	....	⑦	⑦	6.75	8.25	8.25	9.50	11.00	12.50	....	....	....	....	9.50 ^⑦	....	....
364T	630	835	....	⑦	⑦	5.88	7.25	7.25	8.50	10.00	11.50	....	....	....	....	8.50 ^⑦	10.00	....
365T	690	920	....	⑦	⑦	5.88	7.25	7.25	8.50	10.00	11.50	....	....	....	....	....	10.00	....
404T	830	1145	....	⑦	⑦	6.25	6.25	7.50	....	10.50	....	....	....	....	....	....	9.00	10.50
405T	915	1260	....	⑦	⑦	6.25	6.25	7.50	....	....	....	....	....	....	....	....	9.00	10.50
444T	1050	1650	....	....	....	....	....	6.50	....	....	....	....	....	....	....	....	8.00	9.50
445T	1250	1950	....	....	....	....	....	6.50	....	....	....	....	....	....	....	....	8.00	9.50

Notes: No. 1 - See motor dimension sheet.
 No. 2 - See speed reducer dimension sheet.
 No. 3 - For standard seal for hazardous dust conditions, add .50 inch to "S" dimension.

⑤ This dimension will never be exceeded. When exact dimension is required, shims up to .125 inch may be necessary.
 ⑥ Add motor weight for total weight.
 ⑦ Combination can be supplied as non-standard. Refer to Westinghouse for outline dimensions and hp capacity.
 ⑧ Motor and input shaft offset.

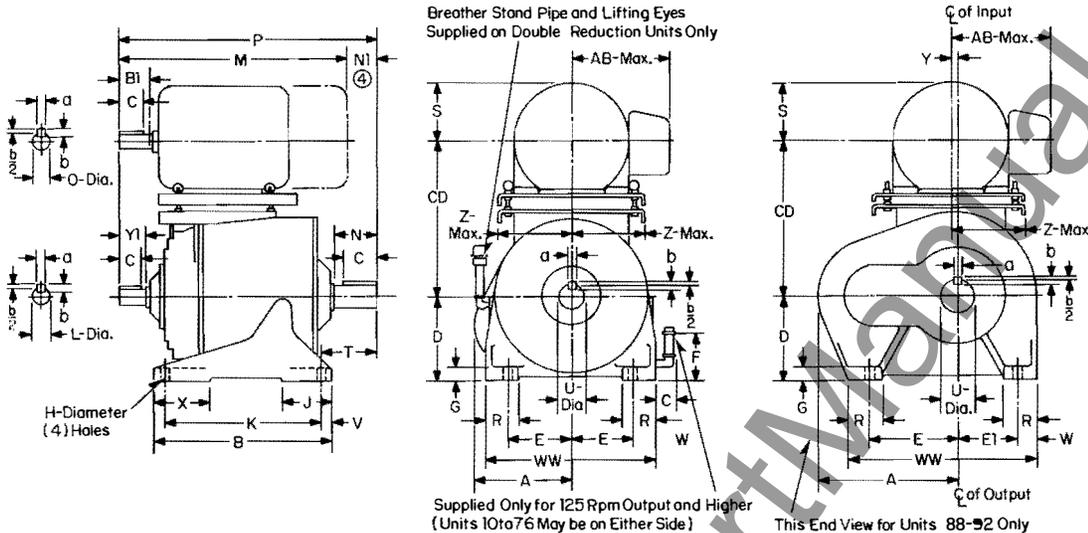


March, 1976
Supersedes 2973-4
Dimension Sheet
pages 5-6 dated April, 1973
Mailed to: E, D, C/1779/DS

Concentric Shaft Type With
Piggyback Mounted Motors
Double and Triple Reduction
Unit Sizes 10 through 92
Motor Frames 143T-444T

Moduline® Speed Reducers

Concentric Shaft Type With Piggyback Mounted Motors Double and Triple Reduction, Unit Sizes 10 Through 54, Motor Frames 143T-326TS



Dimensions, Inches Not to be used for construction purposes unless dimensions are approved
Dimensions Common to Double and Triple Reduction Units

Unit Size	U ^②	Key			A	B	C	D ^③	E	F	G	H	J	K	N	R	T	V	W	WW	X	Z
		a	b	c																		
10	1.375	.31	.31	2.0	5.2	10.5	1.7	5.69	4.12	3.4	.8	.44	2.8	9.00	2.6	1.6	3.4	.8	1.0	10.3	2.8	6.06
21	1.625	.38	.38	2.5	..	11.1	1.7	6.25	4.50	4.0	1.0	.56	3.5	9.75	3.4	2.3	4.3	.7	1.5	12.0	2.8	7.50
32	1.875	.50	.50	3.0	..	15.0	1.7	7.25	5.50	4.6	1.1	.69	4.0	13.50	3.8	2.8	4.8	.8	1.8	14.5	5.0	8.69
43	2.125	.50	.50	3.5	..	17.0	1.7	9.25	7.00	5.7	1.2	.81	4.8	15.00	4.4	3.3	5.3	1.0	2.0	18.0	6.5	8.69
54	2.625	.62	.62	4.0	..	19.3	1.7	10.75	8.00	6.7	1.2	.94	6.0	17.25	5.3	4.0	6.5	1.0	2.4	20.8	7.0	9.12

Double Reduction Units

Unit Size	L ^②	Key			YI	P	Approx. Wt. Lbs.
		a	b	c			
10	.875	.19	.19	1.75	2.44	18.06	80
21	1.125	.25	.25	2.25	2.94	20.50	140
32	1.375	.31	.31	2.50	3.31	23.19	202
43	1.625	.38	.38	2.50	3.56	24.25	278
54	1.625	.38	.38	2.75	3.81	27.62	490

Triple Reduction Units

Unit Size	L ^②	Key			YI	P	Approx. Wt. Lbs.
		a	b	c			
21	.875	.19	.19	1.75	2.44	22.75	135
32	.875	.19	.19	1.75	2.44	24.94	196
43	1.125	.25	.25	2.25	2.94	26.81	293
54	1.375	.31	.31	2.50	3.31	32.19	505

Motor Dimensions

Motor Frame	O ^②	Key			BI	Drip-proof			TEFC, Expl. Proof			CD Dimensions										
		a	b	c		AB	S	M	Wt.	AB	S	M	Wt.	10	21	32	43	54				
													Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
143T	.875	.19	.19	1.38	2.12	5.7	3.3	12.7	40	6.4	3.3	13.0	70	12.5	10.0	14.4	11.4	15.4	12.1	.....	.....	.....
145T	.875	.19	.19	1.38	2.12	5.7	3.3	12.7	45	6.4	3.3	13.0	75	12.5	10.0	14.4	11.4	15.4	12.1	.....	.....	.....
182T	1.125	.25	.25	1.75	2.50	6.2	4.7	12.8	70	7.3	4.8	14.4	85	13.5	11.0	15.4	12.4	16.4	13.1	17.6	14.4	19.4
184T	1.125	.25	.25	1.75	2.50	6.2	4.7	13.8	80	7.3	4.8	15.4	100	13.5	11.0	15.4	12.4	16.4	13.1	17.6	14.4	19.4
213T	1.375	.31	.31	2.38	3.12	6.9	5.5	15.8	115	8.7	5.6	17.7	140	.....	.....	16.1	13.1	17.1	13.9	18.4	15.1	20.1
215T	1.375	.31	.31	2.38	3.12	6.9	5.5	17.3	140	8.7	5.6	19.2	175	.....	.....	16.1	13.1	17.1	13.9	18.4	15.1	20.1
254T	1.625	.38	.38	2.88	3.75	8.5	6.6	20.5	200	11.0	6.6	23.0	230	.....	.....	.....	.....	18.6	15.4	19.4	16.1	21.6
256T	1.625	.38	.38	2.88	3.75	8.5	6.6	22.3	240	11.0	6.6	24.8	290	.....	.....	.....	.....	18.6	15.4	19.4	16.1	21.6
284T	1.875	.50	.50	3.25	4.38	11.2	7.4	23.3	300	11.9	7.4	25.8	360	.....	.....	.....	.....	19.4	16.1	20.1	16.9	22.4
286T	1.875	.50	.50	3.25	4.38	11.2	7.4	24.8	370	11.9	7.4	27.3	450	.....	.....	.....	.....	.....	20.1	16.9	22.4	18.9
324T	2.125	.50	.50	3.88	5.00	14.3	8.4	26.1	475	12.9	8.5	28.8	550	.....	.....	.....	.....	.....	.....	.....	.....	23.4
326TS	1.875	.50	.50	2.00	3.50	14.3	8.4	26.1	525	12.9	8.5	28.8	610	.....	.....	.....	.....	.....	.....	.....	.....	23.4

② Tolerance = +.000 to -.001.

③ This dimension will never be exceeded. When exact dimension is required, shims up to .03 inch may be necessary.

④ NI or (P-M) dimension should be checked by customer to be sure that the motor length "M" does not interfere with driven equipment, belt, chain, etc. mounted on output shaft of gear unit.

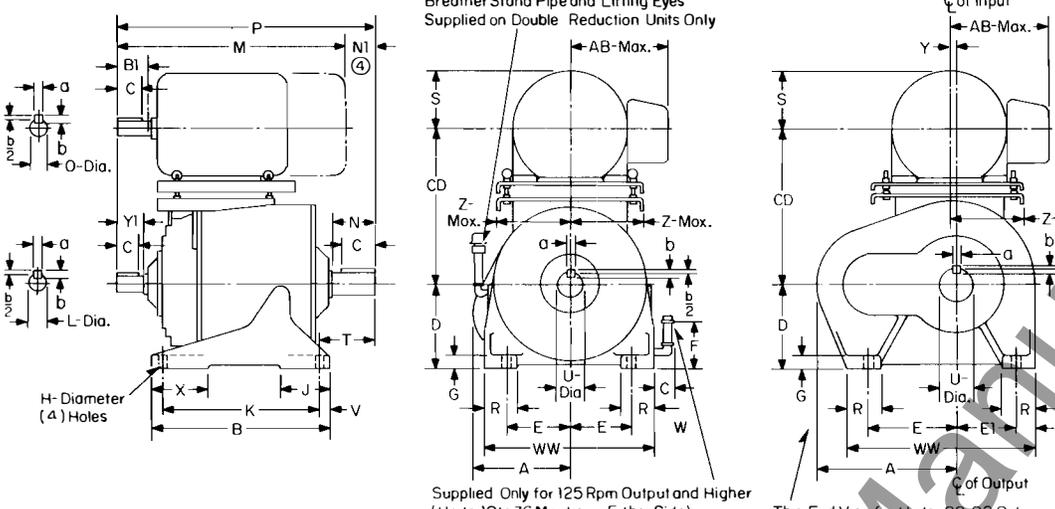
Reproduced from Drawing 5642-D-52, sub 4.

PRELIMINARY CERTIFIED PRINT FOR:

Customer		Customer Order	
G.O.	Cat. No.	Item No.	
Motor Rpm	Output Rpm	Service Hp	Gear Ratio
Application	Signed		Date



Concentric Shaft Type With Piggyback Mounted Motors
Double and Triple Reduction, Unit Sizes 64 Through 92, Motor Frames 182T-444T



Dimensions, Inches Not to be used for construction purposes unless dimensions are approved
Dimensions Common to Double and Triple Reduction Units

Unit Size	U②	Key			A	B	C	D③	E	E1	F	G	H	J	K	N	R	T	V	W	WW	X	Y	Z
		a	b	c																				
64	3.125	.75	.75	5.0	12.3	19.3	2.2	10.75	8.00	...	6.7	1.2	.94	...	17.25	6.2	4.0	7.7	1.0	2.4	20.8	...	...	10.25
76	3.625	.88	.88	6.0	13.4	22.8	...	12.00	9.25	...	7.8	1.8	1.06	4.8	20.00	7.3	4.8	8.9	1.4	2.8	24.0	7.4	...	10.25
88	4.500	1.00	1.00	7.5	19.0	29.0	...	13.00	11.50	8.75	...	2.0	1.62	8.5	25.50	9.0	6.0	11.4	1.8	3.0	26.3	11.5	...	11.76
92	5.000	1.25	.88	7.5	20.6	31.5	...	14.50	12.63	9.38	...	2.3	1.88	9.0	28.00	9.0	7.0	11.4	1.8	3.0	28.0	12.5	1.63	12.88

Double Reduction Units

Triple Reduction Units

Unit Size	L②	Key			Y1	P	Approx. Wt. Lbs.	Unit Size	L②	Key			Y1	P	Approx. Wt. Lbs.
		a	b	c						a	b	c			
64	1.875	.50	.50	1.75	2.50	29.40	560	64	1.375	.31	.31	2.50	3.31	34.62	580
76	2.125	.50	.50	3.25	4.56	34.19	770	76	1.625	.38	.38	2.50	3.56	38.50	783
88	2.125	.50	.50	3.25	4.56	40.12	1230	88	1.625	.38	.38	2.50	3.56	44.44	1246
92	2.125	.50	.50	3.25	4.56	43.50	1310	92	1.625	.38	.38	2.50	3.81	46.19	1460

Motor Dimensions

CD Dimensions

Motor Frame	O③	Key			BI	Drip-proof			TEFC, Expl. Proof				64		76		88		92				
		a	b	c		AB	S	M	Wt.	AB	S	M	Wt.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		
182T	1.125	.25	.25	1.75	2.50	6.2	4.7	12.8	70	7.3	4.8	14.4	85	19.4	15.9	...	...	...	...	...	...
184T	1.125	.25	.25	1.75	2.50	6.2	4.7	13.8	80	7.3	4.8	15.4	100	19.4	15.9	...	...	...	...	...	...
213T	1.375	.31	.31	2.38	3.12	6.9	5.5	15.8	115	8.7	5.6	17.7	140	20.1	16.6	...	...	...	...	...	...
215T	1.375	.31	.31	2.38	3.12	6.9	5.5	17.3	140	8.7	5.6	19.2	175	20.1	16.6	...	...	...	...	...	...
254T	1.625	.38	.38	2.88	3.75	8.5	6.6	20.5	200	11.0	6.6	23.0	230	21.6	18.1	24.9	20.9	25.4	19.2	...	...
256T	1.625	.38	.38	2.88	3.75	8.5	6.6	22.3	240	11.0	6.6	24.8	290	21.6	18.1	24.9	20.9	25.4	19.2	...	...
284T	1.875	.50	.50	3.25	4.38	11.2	7.4	23.3	300	11.9	7.4	25.8	360	22.4	18.9	25.6	21.6	26.1	21.9	...	...
286T	1.875	.50	.50	3.25	4.38	11.2	7.4	24.8	370	11.9	7.4	27.3	450	22.4	18.9	25.6	21.6	26.1	21.9	...	...
324T	2.125	.50	.50	3.88	5.00	14.3	8.4	26.1	475	12.9	8.5	28.8	550	23.4	19.9	26.6	22.6	27.1	22.9	28.9	24.4		
326TS	1.875	.50	.50	2.00	3.50	14.3	8.4	26.1	525	12.9	8.5	28.8	610	23.4	19.9	26.6	22.6	27.1	22.9	28.9	24.4		
364TS	1.875	.50	.50	2.00	3.50	15.6	9.3	26.6	630	16.1	9.6	30.5	835	24.4	20.9	27.6	23.6	28.1	23.9	29.9	25.4		
365TS	1.875	.50	.50	2.00	3.50	15.6	9.3	27.6	690	16.1	9.6	31.5	920	...	...	27.6	23.6	28.1	23.9	29.9	25.4
404TS	2.125	.50	.50	2.75	4.00	16.8	10.6	29.6	830	17.2	10.8	33.6	1145	...	...	...	...	29.1	24.9	30.9	26.4
405TS	2.125	.50	.50	2.75	4.00	16.8	10.6	31.1	915	17.2	10.8	35.1	1260	...	...	...	...	29.1	24.9	30.9	26.4
444TS	2.375	.62	.62	3.00	4.50	19.3	11.8	34.1	1050	18.8	12.1	38.4	1650	31.9	27.4

② Tolerance = +.000 to -.001.

③ This dimension will never be exceeded. When exact dimension is required, shims up to .03 inch may be necessary.

④ NI or (P-M) dimension should be checked by customer to be sure that the motor length "M" does not interfere with driven equipment, belt, chain, etc. mounted on output shaft of gear unit.

Reproduced from Drawing 5642-D-52, sub 4.

PRELIMINARY CERTIFIED

PRINT FOR:

Customer		Customer Order	
G.D.		Item No.	
Motor Rpm	Output Rpm	Service Hp	Gear Ratio
Application		Signed	Date
		Cat. No.	
		Service Factor	