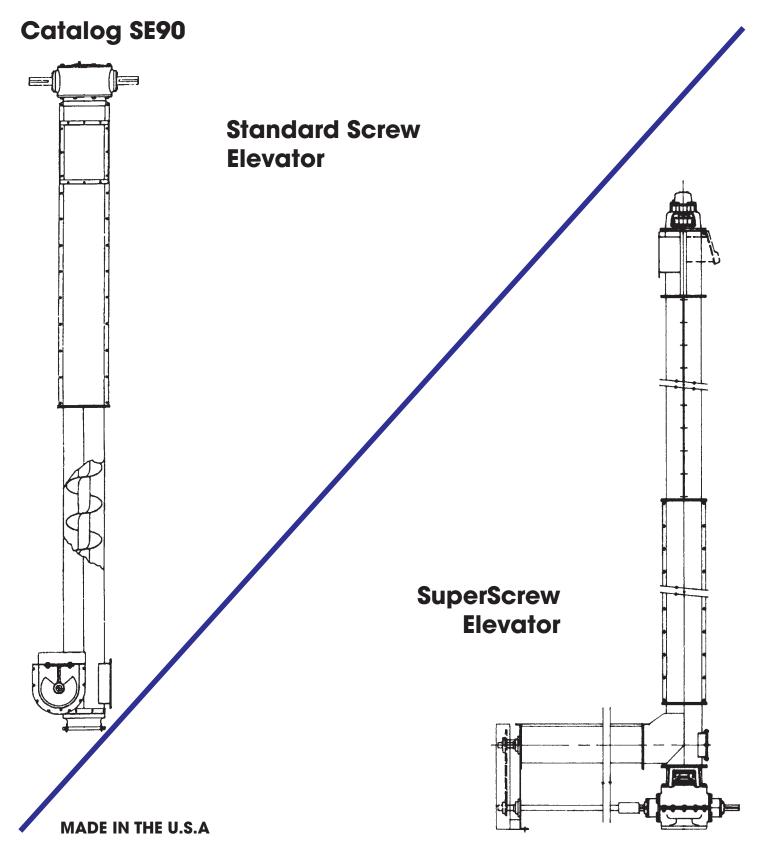


# Martin CONVEYOR DIVISION





## Vertical Screw Elevator



## SECTION VIII VERTICAL SCREW ELEVATOR SECTION VIII

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Standard Screw Elevator

## Warning & Safety Reminder





## WARNING AND SAFETY REMINDERS FOR SCREW, DRAG, AND BUCKET ELEVATOR CONVEYORS

APPROVED FOR DISTRIBUTION BY THE SCREW CONVEYOR SECTION OF THE CONVEYOR EQUIPMENT MANUFACTURERS ASSOCIATION (CEMA)

It is the responsibility of the contractor, installer, owner and user to install, maintain and operate the conveyor, components and, conveyor assemblies in such a manner as to comply with the Williams-Steiger Occupational Safety and Health Act and with all state and local laws and ordinances and the American National Standards Institute (ANSI) B20.1 Safety Code.

In order to avoid an unsafe or hazardous condition, the assemblies or parts must be installed and operated in accordance with the following minimum provisions.

- 1. Conveyors shall not be operated unless all covers and/or guards for the conveyor and drive unit are in place. If the conveyor is to be opened for inspection cleaning, maintenance or observation, the electric power to the motor driving the conveyor must be LOCKED OUT in such a manner that the conveyor cannot be restarted by anyone; however remote from the area, until conveyor cover or guards and drive guards have been properly replaced.
- 2. If the conveyor must have an open housing as a condition of its use and application, the entire conveyor is then to be guarded by a railing or fence in accordance with ANSI standard B20.1.(Request current edition and addenda)
- 3. Feed openings for shovel, front loaders or other manual or mechanical equipment shall be constructed in such a way that the conveyor opening is covered by a grating. If the nature of the material is such that a grating cannot be used, then the exposed section of the conveyor is to be guarded by a railing or fence and there shall be a warning sign posted.
- 4. Do not attempt any maintenance or repairs of the conveyor until power has been LOCKED OUT.
- 5. Always operate conveyor in accordance with these instructions and those contained

on the caution labels affixed to the equipment.

- 6. Do not place hands, feet, or any part of your body, in the conveyor.
- 7. Never walk on conveyor covers, grating or quards.
- 8. Do not use conveyor for any purpose other than that for which it was intended.
- 9. Do not poke or prod material into the conveyor with a bar or stick inserted through the openings.
- 10. Keep area around conveyor drive and control station free of debris and obstacles.
- 11. Eliminate all sources of stored energy (materials or devices that could cause conveyor components to move without power applied) before opening the conveyor.
- 12. Do not attempt to clear a jammed conveyor until power has been LOCKED OUT.
- 13. Do not attempt field modification of conveyor or components.
- 14. Conveyors are not normally manufactured or designed to handle materials that are hazardous to personnel. These materials which are hazardous include those that are explosive, flammable, toxic or otherwise dangerous to personnel. Conveyors may be designed to handle these materials. Conveyors are not manufactured or designed to comply with local, state or federal codes for unfired pressure vessels. If hazardous materials are to be conveyed or if the conveyor is to be subjected to internal or external pressure, manufacturer should be consulted prior to any modifications.

CEMA insists that disconnecting and locking out the power to the motor driving the unit provides the only real protection against injury. Secondary safety devices are available; however, the decision as to their need and the type required must be made by the owner-assem-

bler as we have no information regarding plant wiring, plant environment, the interlocking of the screw conveyor with other equipment, extent of plant automation, etc. Other devices should not be used as a substitute for locking out the power prior to removing guards or covers. We caution that use of the secondary devices may cause employees to develop a false sense of security and fail to lock out power before removing covers or guards. This could result in a serious injury should the secondary device fail or malfunction.

There are many kinds of electrical devices for interlocking of conveyors and conveyor systems such that if one conveyor in a system or process is stopped other equipment feeding it, or following it can also be automatically stopped.

Electrical controls, machinery guards, railings, walkways, arrangement of installation, training of personnel, etc., are necessary ingredients for a safe working place. It is the responsibility of the contractor, installer, owner and user to supplement the materials and services furnished with these necessary items to make the conveyor installation comply with the law and accepted standards.

Conveyor inlet and discharge openings are designed to connect to other equipment or machinery so that the flow of material into and out of the conveyor is completely enclosed.

One or more warning labels should be visible on conveyor housings, conveyor covers and elevator housings. If the labels attached to the equipment become illegible, please order replacement warning labels from the OEM or CEMA

The Conveyor Equipment Manufacturers Association (CEMA) has produced an audiovisual presentation entitled "Safe Operation of Screw Conveyors, Drag Conveyors, and Bucket Elevators." CEMA encourages acquisition and use of this source of safety information to supplement your safety program.





## PROMINENTLY DISPLAY THESE SAFETY LABELS ON INSTALLED EQUIPMENT









NOTICE: This document is provided by CEMA as a service to the industry in the interest of promoting safety. It is advisory only and it is not a substitute for a thorough safety program. Users should consult with qualified engineers and other safety professionals. CEMA makes no representations or warranties, either expressed or implied, and the users of this document assume full responsibility for the safe design and operation of equipment.



### **Martin** Screw Elevators

For over fifty years, **Martin** Standard Screw Elevators have been successfully elevating a wide range of materials. In 1956, we added the heavier duty Superscrew Elevator, giving our customers the ability to elevate larger capacities to greater heights.

The **Martin** Screw Elevator is ideally suited to elevate a wide range of bulk materials in a relatively small space. If a material can be classified as very free flowing or free flowing, it can probably be elevated in a Screw Elevator.

We offer both our Standard and Superscrew Elevators with several different drive arrangements to meet our customers' individual requirements. *Martin* has an experienced staff in over twenty locations throughout the U.S.A. and Canada that can help you design the right screw elevator for your application. We have the capability of manufacturing our screw elevators in six locations in the U.S.A.

Contact your nearest *Martin* facility with your application information and we will design the right elevator for your needs.

#### **Partial Material List**

Alfalfa Meal Mixed Feeds
Barley, Malted Mustard Seed

Bone Meal Oats
Cement Paper Pulp
Coffee Peanuts
Corn Meal Resin

Cotton Seed Rubber, Ground

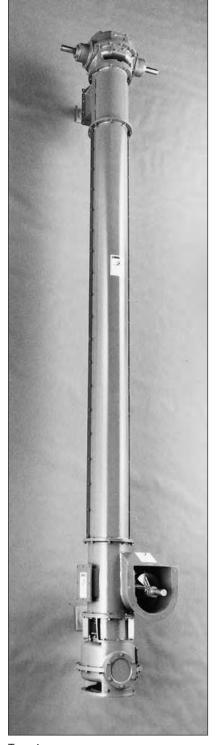
Cryolite Salt Flours Sawdust

Grains Screened Wood Chips
Hops Shellac, Powder
Ice Soda Ash
Kaolin Clay Soybean Meal

Lead Oxide Sugar

Lime Sunflower Seeds

Malt Tobacco
Mica Wheat
Milk, Dried Wood Flour



Type 4 Superscrew Elevator

### Screw Elevator

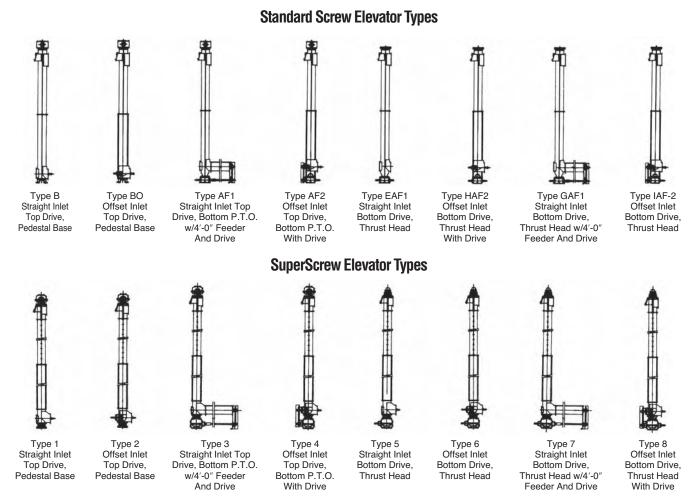


### **Martin** Screw Elevators

To help better meet the needs of our customers, we offer both the **Martin** Standard and Superscrew Elevators in sixteen different types. The different types allow us to vary the drive location, discharge location and feed arrangement. We are also able to drive the feeder or take-away conveyor by the screw elevator drive.

The **Martin** Screw Elevators are easy to install because they are factory assembled, match-marked and disassembled prior to shipment. All **Martin** Screw Elevators are of a sturdy self-supporting design and only need lateral support when installed.

The drives for the *Martin* Standard and Superscrew Elevators are manufactured by *Martin* and are specifically designed for use with our screw elevators. We can also offer a Screw Conveyor Drive arrangement for lighter duty applications.



NOTE: All elevators are furnished less feeder and/or feeder drive unless otherwise specified.

CAUTION: Never operate without covers and guards. Always LOCKOUT/TAGOUT electrical power when working on equipment for inspection, cleaning, maintenance, or other purposes.



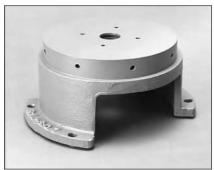
## Screw **Elevator**



**Standard Screw Thrust Unit** 



Stabilizer Bearing Used on Standard Screw Elevator



Standard Screw Pedestal Base



Standard Screw Thrust Head

All **Martin** Screw Elevators come with heavy duty helicoid or sectional screws which are checked for straightness and run-out to ensure a smooth running elevator. When handling free flowing material, we add stabilizers as needed, as the height of the elevator increases. The stabilizer bearings are available in a wide range of bearing materials to meet our customers' requirements, including wood, hard iron, bronze, UHMW, and others.

Both the **Marlin** Standard Screw and Superscrew Elevators are supplied with split intermediate housing to allow easier maintenance.

**Martin**'s specially engineered inlet/bottom section assures a smooth transfer to conveyed material from the horizontal to vertical with a minimum of back-up and product degradation.

The bottom inspection panel is bolted to minimize any product leakage. It also has a shroud to assure that the conveyed material is moving smoothly through the area.

The drives for both the Standard Screw and the Superscrew Elevator are manufactured by *Martin* to guarantee their quality and availability.

### Clearance Between Screw and Housing

			Sta	andard Elev	rator	Supe	r Screw Ele	vator
Size	Type of Housing	Clearance	Intermediate	Top and Bottom Sectons	Screw	Intermediate	Top and Bottom Sectons	Screw
6	Standard Clearance	1/2	14	14	6H304	14	10	6H304
0	Close Fitting Clearance	1/4	14	14	6.5S312*	14	10	6.5S312*
9	Standard Clearance	1/2	12	12	9H306	12	3/16	9H306
9	Close Fitting Clearance	1/4	12	12	9.5S312*	12	3/16	9.5\$312*
12	Standard Clearance	1/2	10	10	12H408	10	3/16	12H408
12	Close Fitting Clearance	1/4	10	10	12.5S412*	10	3/16	12.5\$412*
16	Standard Clearance	1/2				10	3/16	16H610
10	Close Fitting Clearance	1/4				10	3/16	16.5\$612*

<sup>\*</sup> Close clearance sectional screws supplied as required.

## Standard Screw Elevator



The *Martin* Standard Screw Elevator is designed to handle under normal conditions, capacities ranging from 360 CFH to 3600 CFH in 6" dia., 9" dia., and 12" dia. sizes. With complete information, *Martin* engineering staff can help you design the right Screw Elevator for your application.

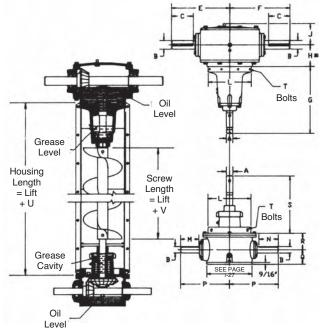
### **Marlin** Standard Screw Elevator Speed / Capacity

	Vertical	Ratio	Ratio	▲ Recommend	ed Minimum and Ma	aximum Speeds	RPM	Oit
Size	Shaft Diameter	Top Drive	Bottom Drive	Vertical Screw	Input Top Drive	Input Bottom Drive	Horizontal Feeder Screw 45 Percent Loading	Capacity Cubic Foot per Hour
				200	400	280	165	360
6	1½	2:1	1.4:1	215	430	301	177	400
				275	550	385	226	500
				170	340	238	139	1100
9	1½	2:1	1.4:1	200	400	280	163	1300
				230	460	322	187	1500
				155	310	310	147	2700
12	2	2:1	2:1	165	330	330	156	3000
				200	400	400	189	3600

lack A For speeds in excess or less than shown, consult  $\emph{Martin}$  .

The Standard Screw Elevator drive unit will function efficiently with the elevator erected at any angle of incline from horizontal to vertical. The input shaft can be driven in either direction, and the input shaft extension may be used to drive a horizontal feeder or discharge conveyor.

Both top and bottom drives are required when the elevator, feeder and discharge conveyor are all driven from one power source. A top drive and pedestal base are used when the elevator and discharge conveyor are driven from one source. A bottom drive and thrust unit are necessary if the elevator and feeder are driven from one power source. The drives are designed and constructed to withstand all radial and thrust loads and support the entire weight of a fully loaded elevator.



#### **Dimensions in Inches**

	R	atio		В																T Bolts	U		V
Size	Top Drive	Bottom Drive	A	Top Drive	Bottom Drive	С	Е	F	G	Н	J	L	M	N	Р	Q	R	S	No. Rec'd	Size	B & B0	All Other Types	All Types
6*	2:1	1.4:1	11/2	2	1½	5	13½	14	151/4	7%	415/16	7	41/4	4½	1111/32	3%	313/16	13¼	4	%-16 NC	16%	231/8	65%
9	2:1	1.4:1	1½	2	1½	5	13½	14	151/4	5	415/16	10	41/4	41/2	11 <sup>1</sup> / <sub>32</sub>	3%	313/16	131/4	8	%-16 NC	21½	27¾	83/4
12	2:1	2:1	2	2	2	5	13½	14	151/4	47/8	415/16	13	5	5%16	147/16	31/8	4%16	131/4	8	½-13 NC	26	31¾	12¾

<sup>\*25%&</sup>quot; lg. adapter for 6" head not illustrated

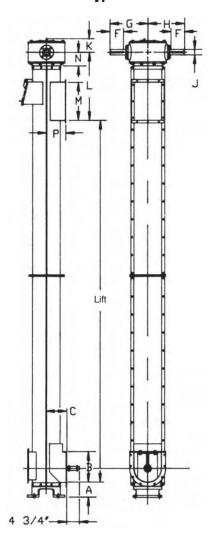
CAUTION: Never operate without covers and guards. Always LOCKOUT/TAGOUT electrical power when working on equipment for inspection, cleaning, maintenance, or other purposes.

Note: Dimensions not certified for construction.

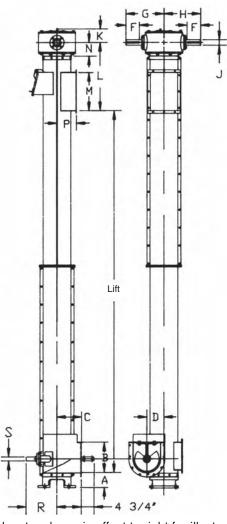


## Standard Screw Elevator

Type B



Type BO



Screw elevator shown is offset to right for illustration purpose only. This elevator will normally be furnished offset to left, unless otherwise specified. See page H-156 for typical elevator arrangements.

Type BO

Size of Elevator	A	В	С	D	F	G	Н	J	К	L	М	N	Р	R	S
6	6	8	9	43/4	5	13½	14	2	415/16	23	12	7%	5½	11%	1½
9	5½	111%	9	61/4	5	13½	14	2	415/16	25	14	5	71//8	11%	1½
12	8	141/4	15	8	5	13½	14	2	415/16	29	18	47/8	8¾	147/16	2

Type B

Size of Elevator	A	В	С	F	G	Н	J	К	L	М	N	Р
6	6	8	9	5	13½	14	2	415/16	23	12	7%	5½
9	5½	111%	9	5	13½	14	2	415/16	25	14	5	7%
12	8	141/4	15	5	13½	14	2	415/16	29	18	47/8	8¾

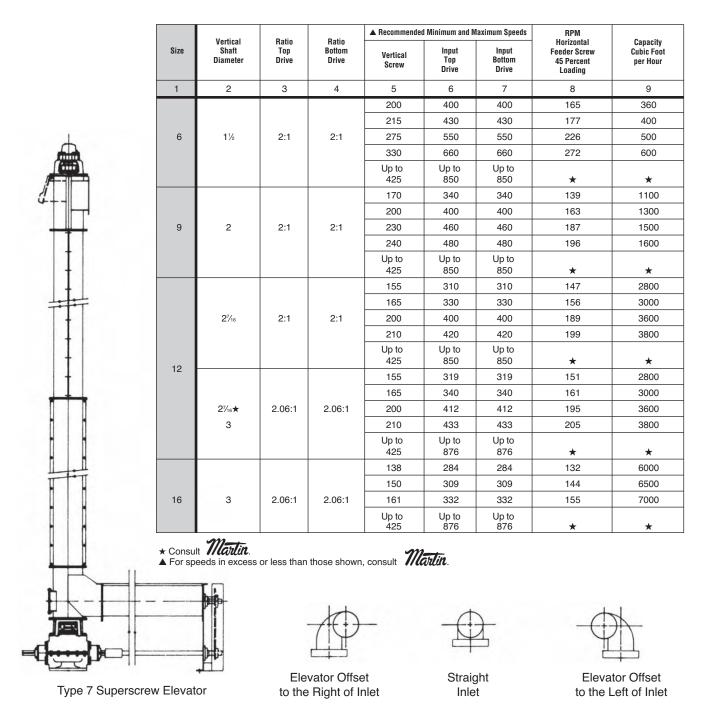
Dimensions in Inches

## Super Screw Elevator



The **Martin** Superscrew Elevator is designed to handle capacities ranging from 360 CFH to 7000 CFH in 6" dia., 9" dia., 12" dia., and 16" dia. sizes.

### **Marlin** SuperScrew Elevator Speed / Capacity



CAUTION: Never operate without covers and guards. Always LOCKOUT/TAGOUT electrical power when working on equipment for inspection, cleaning, maintenance, or other purposes.



## Super Screw Elevator

### **Super Screw Elevator D.S.D. (Dry Shaft Drive)**



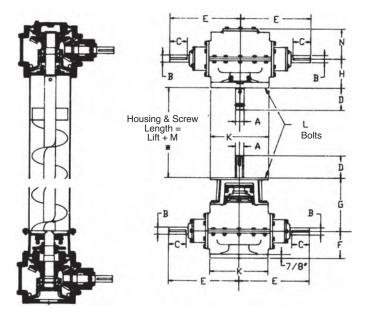


DSD (Dry Shaft Drive) is a completely new design and construction concept especially developed to enable the SuperScrew Elevator to broaden the application of screw elevators.

The DSD unit is designed to meet special conditions encountered in vertical installations and may be installed in the range of 70° to 90° incline. If a smaller angle of incline is required, special units may be furnished.

A patented lubrication system precisely "meters" the proper amount of lubricant to those points where needed with no danger of damaging seals.

DSD units may be furnished at both the top and the bottom of the elevator. The top drive incorporates special design features to assure that no lubricant may pass into the elevator to contaminate the material being elevated. In the bottom drive unit other special features prevent entrance of foreign material into lubricant.



DSD units may also be furnished at the top only with a pedestal base or at the bottom only with a thrust head.

The compactness of the DSD requires a minimum of head room providing maximum lift with minimum overall elevator height.

DSD units are sturdily constructed to withstand all radial and thrust loads encountered and to support the entire weight of elevators and materials handled.

Size	Ratio	A	A	A	A	В	C		D	_		G	н	v		L	М
3126	naliu	, A	D		Top Bottom		-	Г	u u	"	, r	No.	Size	IVI			
6	2:1	1½	1%	4	43/4	5	16	61/8	12	7½	101//8	8	3/8	121/4			
9	2:1	2	1%	4	43/4	5	16	61//8	12	7½	131/4	8	3/8	13¼			
12	2:1	27/16	1%	4	41//8	5	16	61//	12	7½	161/4	8	1/2	181/4			
	2.06:1	21/16	1%	41/4	41//8	5	18.1	6%	12%	71/4	171/4	8	1/2	181/4			
	2.06:1	3	23/16	41/4	5	5	18.1	6%	12%	71/4	17%	8	1/2	18¼			
16	2.06:1	3	23/16	41/4	5	5	18.1	6%	12%	71/4	201/4	12	1/2	241/4			



Spider Type Stabilizer Used on SuperScrew



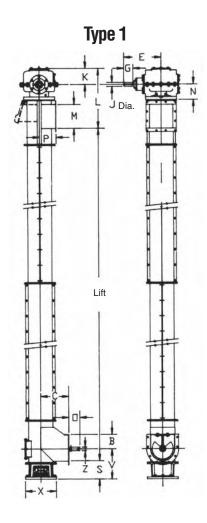
SuperScrew Thrust Head

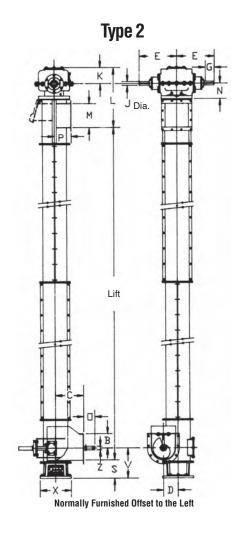


SuperScrew Pedestal Base

### **Super Screw Elevator Dimensions**







Type 1

. ,																	
Size of Elevator	Vert. Shaft Dia.	Ratio	В	С	E	G	J	К	L	М	N	0	Р	s	V	х	<b>Z</b> ♦
6	1½	2:1	41/2	10½	16	4	1%	6¾	26¾	7	6½	43/4	5	8%	11%	131/4	1½
9	2	2:1	61//8	12	16	4	1%	6¾	281/4	10	6½	4¾	71//8	7%	121//8	13¼	1½
12	2 <sup>7</sup> / <sub>16</sub> ○ 2 <sup>7</sup> / <sub>16</sub> 3	2:1 2.06:1 2.06:1	7¾ 7¾ 7¾ 7¾	15 15 15	16 18.1 18.1	4 4¼ 4¼	15/8 23/16 23/16	6 <sup>3</sup> / <sub>4</sub> 7 <sup>15</sup> / <sub>16</sub> 7 <sup>15</sup> / <sub>16</sub>	32¼ 34¾ 34¾	13 13 13	6½ 7¼ 7¼	4 <sup>3</sup> / <sub>4</sub> 4 <sup>3</sup> / <sub>4</sub> 4 <sup>3</sup> / <sub>4</sub>	87/8 87/8 87/8	8% 9 9	15% 15½ 15½	13¼ 17¾ 17¾	2 2 2
16	3	2.06:1	10%	20	18.1	41/4	23/16	715/16	39%	17	71/4	5	111//	9½	18	17%	3

Type 2

Size of Elevator	Vert. Shaft Dia.	Ratio	В	С	D	E	G	J	K	L	M	N	0	Р	S	V	Х	<b>Z</b> ♦
6	1½	2:1	41/2	10½	43/4	16	4	1%	6¾	23¾	7	6½	4¾	5	8%	11%	131/4	1½
9	2	2:1	61//8	12	61/4	16	4	1%	6¾	251/4	10	6½	4¾	71//8	71/8	12%	131/4	1½
12	2 <sup>7</sup> / <sub>16</sub> ○ 2 <sup>7</sup> / <sub>16</sub> 3	2:1 2.06:1 2.06:1	7¾ 7¾ 7¾	15 15 15	8 8 8	16 18.1 18.1	4 4¼ 4¼	15/8 23/16 23/16	6 <sup>3</sup> / <sub>4</sub> 7 <sup>15</sup> / <sub>16</sub> 7 <sup>15</sup> / <sub>16</sub>	29¼ 31¾ 31%	13 13 13	6½ 7¼ 7¼	4¾ 4¾ 4¾ 4¾	81/8 81/8 81/8	8¾ 9 9	15% 15½ 15½	13¼ 17¾ 17¾	2 2 2
16	3	2.06:1	10%	20	10½	18.1	41/4	23/16	715/16	36¾	17	71/4	5	111//	9½	18	17%	3

Dimensions in Inches

♦ Horizontal coupling diameter may vary upon length of feeder.
 Consult Martin before using.

CAUTION: Never operate without covers and guards. Always LOCKOUT/TAGOUT electrical power when working on equipment for inspection, cleaning, maintenance, or other purposes.

Note: Dimensions not certified for construction.



INVENTORY: Martin delivers with incredible fill rates from one of its many facilities strategically located across North America.



**SERVICE:** *Martin* ships rebores and other alterations within hours - not days... MTO's in days - not weeks.



PEOPLE: When you call Martin you get a person, not voice mail. We are ready, able and willing to help...Now!

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Sales and Manufacturing **Martin Sprocket & Gear Canada** 

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#### Cambridge, Ontario

320 Darrell Drive Ayr, Ontario, Canada N0B 1E0 519-621-0546 (FAX 519-621-4413)

#### **MEXICO**

#### Sales and Manufacturing

Martin Sprocket & Gear de México, S.A. de C.V.

#### Guadalajara

Av. Colón Sur No. 6013 Edificio 1 Modulo 2 Colonia Santa María Tequepexpan Tlaquepaque, Jalisco México 45601

#### Monterrey

Av. Industrial No. 100 Lote 6 y 7, Manzana 11 Parque Industrial La Silla Apodaca Apodaca, N.L. México 66600 +52 811 156 6830 (FAX +52 811 156 6833)

#### **Toluca**

Km 52 Carretera, Naucalpan-Toluca Calle 3. Manzana VII. Lote 11 Parque Industrial Toluca 2000 Toluca, Edo. de México 50200 +52 722 276 0800 (Fax: +52 722 276 0801)

#### SOUTH

**Sales and Manufacturing** Martin Sprocket & Gear do Brazil São Paulo

São Paulo, Brazil

#### CHINA

**Asia Division Headquarters** artin Sprocket & Gear (Shanghai) Co., Ltd.

81 Tangyao Road, Huating Town, Jiading District, Shanghai 201816, P. R. China Tel.: (86) 21-5995 0269 Fax: (86) 21-5995 3270

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