SECTION VIII

VERTICAL SCREW ELEVATOR SECTION VIII

Standard Screw Elevator

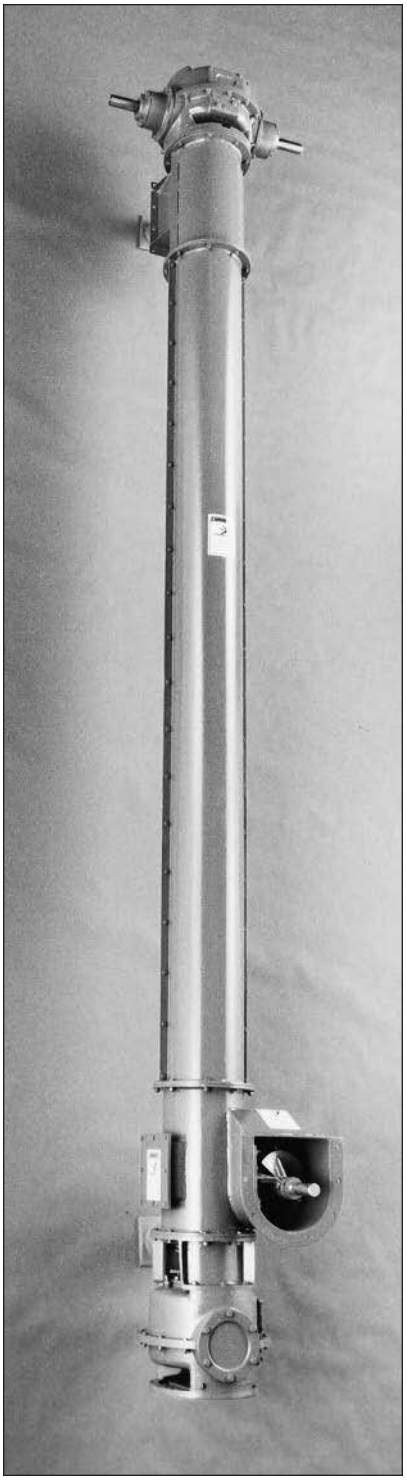
Screw Elevators

For over fifty years, our 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.

Our 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. Thomas has an experienced staff that can help you design the right screw elevator for your application.

Contact Thomas with your application information and we will design the right elevator for your needs.



Type 4
Superscrew Elevator

Partial Material List

Alfalfa Meal
Barley, Malted
Bone Meal
Cement
Coffee
Corn Meal
Cotton Seed
Cryolite
Flours
Grains
Hops
Ice
Kaolin Clay
Lead Oxide
Lime
Malt
Mica
Milk, Dried
Mixed Feeds
Mustard Seed
Oats
Paper Pulp
Peanuts
Resin
Rubber, Ground
Salt
Sawdust
Screened Wood Chips
Shellac, Powder
Soda Ash
Soybean Meal
Sugar
Sunflower Seeds
Tobacco
Wheat
Wood Flour

*Conveyors shown without cover for illustration purposes only. Please follow manufacturing safety guidelines when operating conveyors.

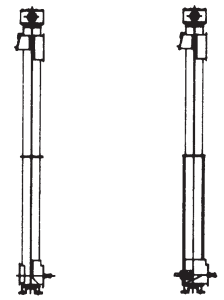
Screw Elevators

To help better meet the needs of our customers, we offer both the Standard and Superscrew Elevators in ten 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.

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

The drives for the Superscrew Elevators are manufactured by Thomas and are specifically designed for use with our screw elevators. We offer a Screw Conveyor Drive arrangement for standard applications, but can offer additional drive arrangements.

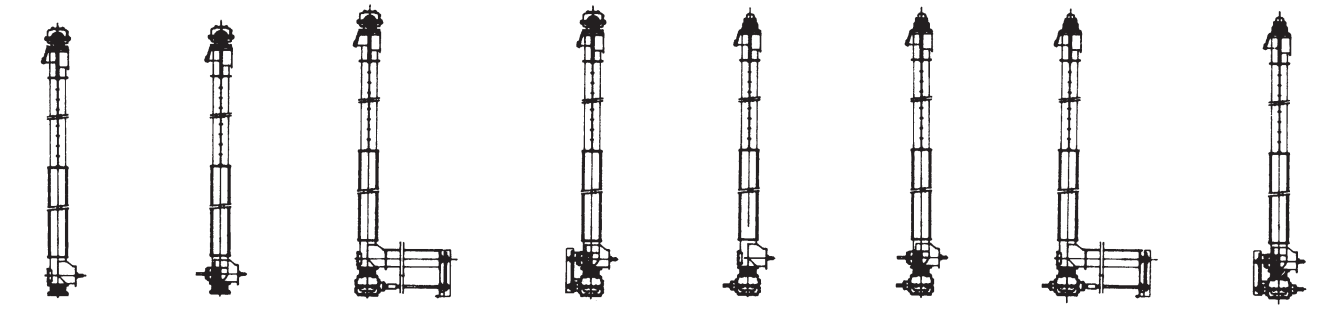
Standard Screw Elevator Types



Type B
Straight Inlet
Top Drive,
Pedestal Base

Type BO
Offset Inlet
Top Drive,
Pedestal Base

SuperScrew Elevator Types



Type 1
Straight Inlet
Top Drive,
Pedestal Base

Type 2
Offset Inlet
Top Drive,
Pedestal Base

Type 3
Straight Inlet Top
Drive, Bottom P.T.O.
w/4′-0″ Feeder
And Drive

Type 4
Offset Inlet
Top Drive,
Bottom P.T.O.
With Drive

Type 5
Straight Inlet
Bottom Drive,
Thrust Head

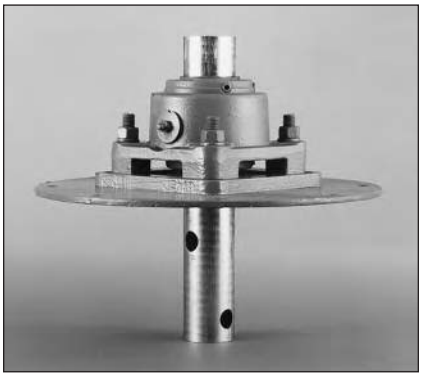
Type 6
Offset Inlet
Bottom Drive,
Thrust Head

Type 7
Straight Inlet
Bottom Drive,
Thrust Head w/4′-0″
Feeder And Drive

Type 8
Offset Inlet
Bottom Drive,
Thrust Head
With Drive

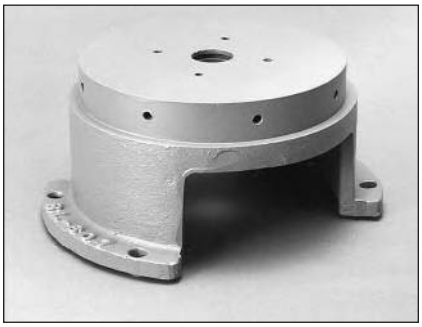
NOTE: All elevators are furnished less feeder and/or feeder drive unless otherwise specified.

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



Optional Screw Thrust Unit

Optional Stabilizer Bearing for Standard Screw Elevator



Optional Screw Pedestal Base

Optional Screw Thrust Head

All Screw Elevators come with heavy duty helicoid or sectional screws which are checked for straightness and run-out to insure 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 Standard Screw and Superscrew Elevators are supplied with split intermediate housing to allow easier maintenance.

Our 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.

The drives for the Superscrew Elevator is manufactured by Thomas to guarantee their quality and availability.

Clearance Between Screw and Housing

Size	Type of Housing	Clearance	Gauge of Housing			
			Standard Elevator		Superscrew Elevator	
			Intermediate	Top and Bottom Sections	Intermediate	Top and Bottom Sections
6	Standard Clearance	½	14	10	14	10
	Close Fitting Clearance	5/16	14	10	14	10
9	Standard Clearance	½	12	¼	12	3/16
	Close Fitting Clearance	5/16	12	¼	12	3/16
12	Standard Clearance	½	10	¼	10	3/16
	Close Fitting Clearance	5/16	10	¼	10	3/16
16	Standard Clearance	½	10	¼	10	3/16
	Close Fitting Clearance	5/16	10	¼	10	3/16

Standard Screw Elevators

Our 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, Thomas' engineering staff can help you design the right Screw Elevator for your application.

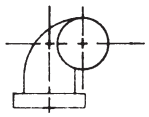
Standard Screw Elevator Speed / Capacity

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

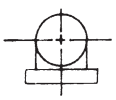
▲ For speeds in excess or less than shown, consult Thomas Conveyor.

The Standard Screw Elevator drive unit will function efficiently with the elevator erected at any angle of incline from horizontal to vertical.

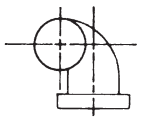
An alternative drive arrangement is required when the elevator, feeder and discharge conveyor are all driven from one power source, the elevator and discharge conveyor are driven from one source or the elevator and feeder are driven from one power source. The drives are designed and constructed to withstand all radial and thrust loads and support the entire weight of a fully loaded elevator.



Elevator Offset to the Right of Inlet



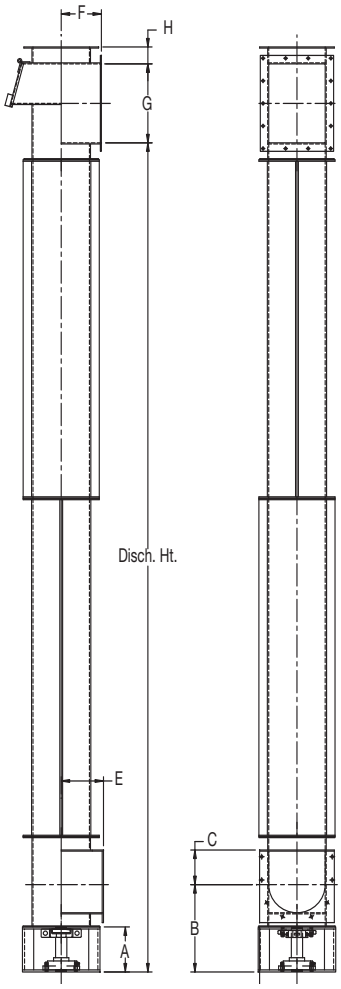
Straight Inlet



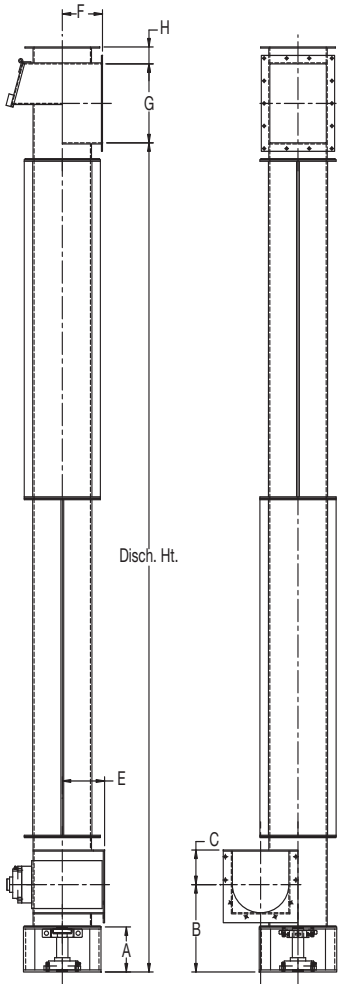
Elevator Offset to the Left of Inlet

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

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 158 for typical elevator arrangements.

Type BO

Size of Elevator	A	B	C	D	E	F	G	H
6	8	14	4½	4¾	6	5	12	2½
9	8	15½	6⅛	6⅝	7½	7⅛	14	3
12	9	18½	7¾	7⅞	9	8⅞	17	4

Type B

Size of Elevator	A	B	C	E	F	G	H
6	8	14	4½	6	5	12	2½
9	8	15½	6⅛	7½	7⅛	14	3
12	9	18½	7¾	9	8⅞	17	4

Dimensions in Inches

Note: Dimensions not certified for construction.

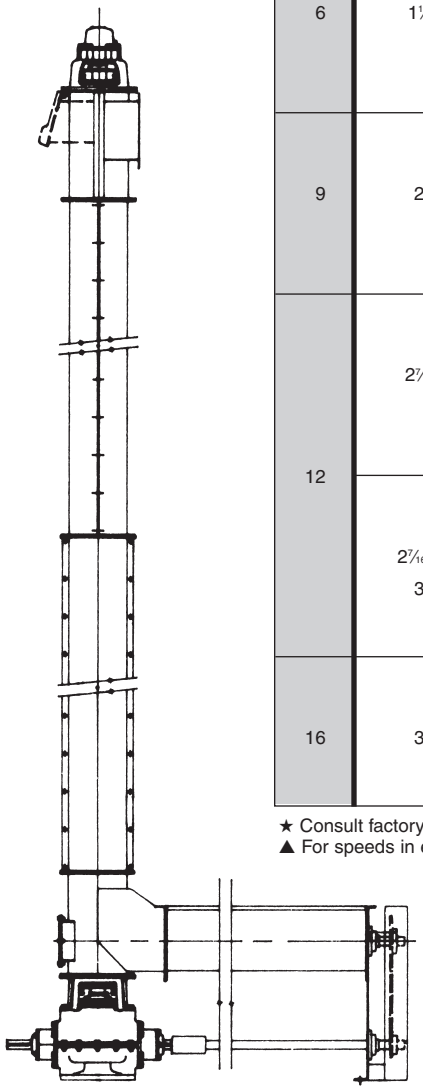
Super Screw Elevator

Our 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.

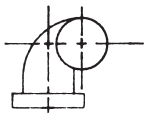
SuperScrew Elevator Speed / Capacity

Size	Vertical Shaft Diameter	Ratio Top Drive	Ratio Bottom Drive	▲ Recommended Minimum and Maximum			RPM Horizontal Feeder Screw 45 Percent Loading	Capacity Cubic Foot per Hour
				Vertical Screw	Input Top Drive	Input Bottom Drive		
1	2	3	4	5	6	7	8	9
6	1½	2:1	2:1	200	400	400	165	360
				215	430	430	177	400
				275	550	550	226	500
				330	660	660	272	600
				Up to 425	Up to 850	Up to 850	★	★
9	2	2:1	2:1	170	340	340	139	1100
				200	400	400	163	1300
				230	460	460	187	1500
				240	480	480	196	1600
				Up to 425	Up to 850	Up to 850	★	★
12	2 7/16	2:1	2:1	155	310	310	147	2800
				165	330	330	156	3000
				200	400	400	189	3600
				210	420	420	199	3800
				Up to 425	Up to 850	Up to 850	★	★
	2 7/16★ 3	2.06:1	2.06:1	155	319	319	151	2800
				165	340	340	161	3000
				200	412	412	195	3600
				210	433	433	205	3800
				Up to 425	Up to 876	Up to 876	★	★
16	3	2.06:1	2.06:1	138	284	284	132	6000
				150	309	309	144	6500
				161	332	332	155	7000
				Up to 425	Up to 876	Up to 876	★	★

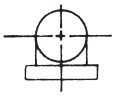
★ Consult factory.
▲ For speeds in excess or less than those shown, consult factory.



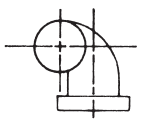
Type 7 Superscrew Elevator



Elevator Offset to the Right of Inlet



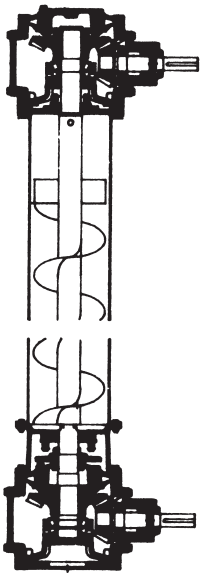
Straight Inlet

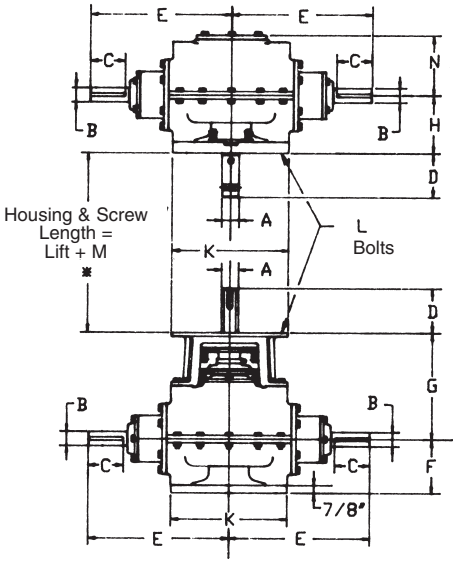


Elevator Offset to the Left of Inlet

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

SuperScrew 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	B	C	D		E	F	G	H	K	L		M
					Top	Bottom						No.	Size	
6	2:1	1½	1⅝	4	4¾	5	16	6⅛	12	7½	10⅛	8	⅜	12¼
9	2:1	2	1⅝	4	4¾	5	16	6⅛	12	7½	13¼	8	⅜	13¼
12	2:1	2 7/16	1⅝	4	4⅞	5	16	6⅛	12	7½	16¼	8	½	18¼
	2.06:1	2 7/16	1⅝	4¼	4⅞	5	18.1	6⅞	12⅝	7¼	17¼	8	½	18¼
	2.06:1	3	2 3/16	4¼	5	5	18.1	6⅞	12⅝	7¼	17⅜	8	½	18¼
16	2.06:1	3	2 3/16	4¼	5	5	18.1	6⅞	12⅝	7¼	20¼	12	½	24¼

Spider Type Stabilizer
Used on SuperScrew

SuperScrew
Thrust Head

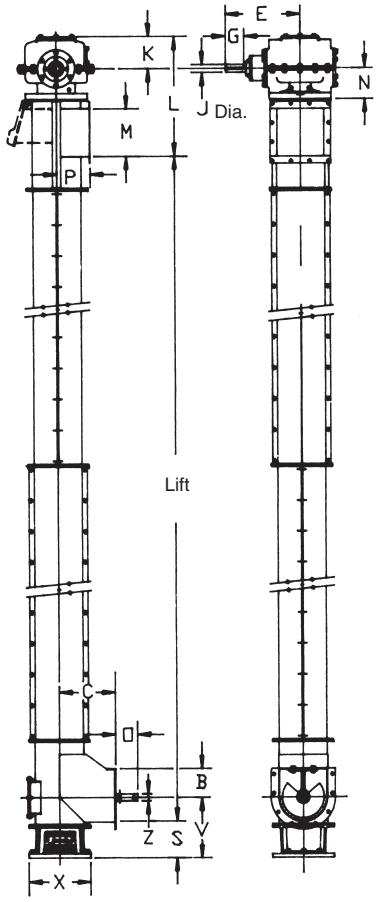
SuperScrew
Pedestal Base

Note: Dimensions not certified for construction.

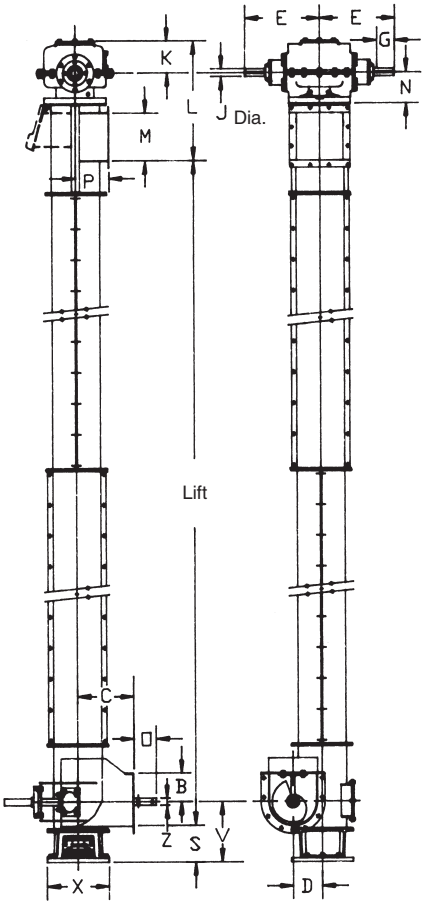
Super Screw Elevator Dimensions

thomas conveyor company®

Type 1



Type 2



Normally Furnished Offset to the Left

Type 1

Size of Elevator	Vert. Shaft Dia.	Ratio	B	C	E	G	J	K	L	M	N	O	P	S	V	X	Z ◇
6	1½	2:1	4½	10½	16	4	1⅝	6¾	26¾	7	6½	4¾	5	8⅜	11⅞	13¼	1½
9	2	2:1	6⅛	12	16	4	1⅝	6¾	28¼	10	6½	4¾	8⅞	7⅞	12⅞	13¼	1½
12	2 7/16	2:1	7¾	15	16	4	1⅝	6¾	32¼	13	6½	4¾	8⅞	8⅞	15⅝	13¼	2
	○ 2 7/16	2.06:1	7¾	15	18.1	4¼	2 3/16	7 15/16	34⅜	13	7¼	4¾	8⅞	9	15½	17⅜	2
	3	2.06:1	7¾	15	18.1	4¼	2 3/16	7 15/16	34⅜	13	7¼	4¾	8⅞	9	15½	17⅜	2
16	3	2.06:1	10⅝	20	18.1	4¼	2 3/16	7 15/16	39⅞	17	7¼	5	11⅛	9½	18	17⅜	3

Type 2

Size of Elevator	Vert. Shaft Dia.	Ratio	B	C	D	E	G	J	K	L	M	N	O	P	S	V	X	Z ◇
6	1½	2:1	4½	10½	4¾	16	4	1⅝	6¾	23¾	7	6½	4¾	5	8⅜	11⅞	13¼	1½
9	2	2:1	6⅛	12	6¼	16	4	1⅝	6¾	25¼	10	6½	4¾	8⅞	7⅞	12⅞	13¼	1½
12	2 7/16	2:1	7¾	15	8	16	4	1⅝	6¾	29¼	13	6½	4¾	8⅞	8⅞	15⅝	13¼	2
	○ 2 7/16	2.06:1	7¾	15	8	18.1	4¼	2 3/16	7 15/16	31⅜	13	7¼	4¾	8⅞	9	15½	17⅜	2
	3	2.06:1	7¾	15	8	18.1	4¼	2 3/16	7 15/16	31⅜	13	7¼	4¾	8⅞	9	15½	17⅜	2
16	3	2.06:1	10⅝	20	10½	18.1	4¼	2 3/16	7 15/16	36¾	17	7¼	5	11⅛	9½	18	17⅜	3

Dimensions in Inches

◇ Horizontal coupling diameter may vary upon length of feeder.

○ Consult factory 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.

Warning & Safety Reminder

Thomas does not install conveyor; consequently 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 Standard 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 B20.1-1993, with special attention given to section 6.12.
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 or feet in the conveyor.
7. Never walk on conveyor covers, grating or guards.
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. Always regulate the feeding of material into the unit at a uniform and continuous rate.
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. Screw 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, Thomas should be consulted prior to any modifications.

Thomas 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-assembler 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 caution signs (as illustrated below) are attached to conveyor housings, conveyor covers and screw elevator housings. Please order replacement caution labels should the labels attached to this equipment become illegible.

The label shown below has been reduced in size. The actual size is printed next to the label. For more detailed instructions and information, please request a free copy of our "Screw Conveyor Safety, Installation, Operation, Maintenance Instructions."

The Conveyor Equipment Manufacturer's Association (CEMA) has produced an audio-visual presentation entitled "Safe Operation of Screw Conveyors, Drag Conveyors, and Bucket Elevators." Thomas encourages acquisition and use of this source of safety information.

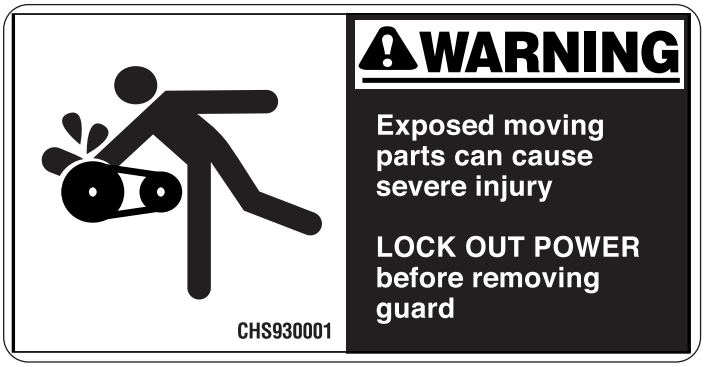
LABEL B
ACTUAL SIZE 6" x 3"

PROMINENTLY DISPLAY IN WORK AREAS

Use **Label "A"** on Belt Guard

Use **Label "B"** on Ends of Trough, Middle of Covers and at Inlet Opening. (Use Vertical or Horizontal Label Depending on Space Available)

Use **Label "C"** on Top of Covers.



LABEL A ACTUAL SIZE 5" x 2½"

LABEL C ACTUAL SIZE 5" x 2½"