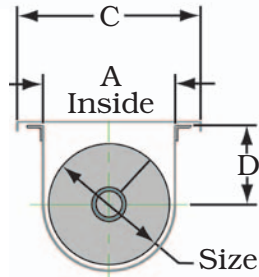




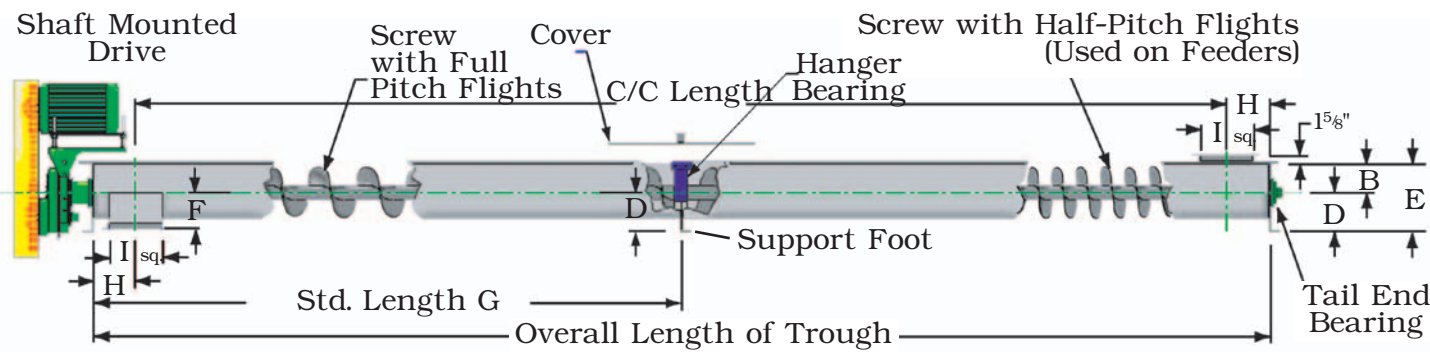
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STANDARD U-TROUGH SCREW CONVEYOR CROSS SECTION

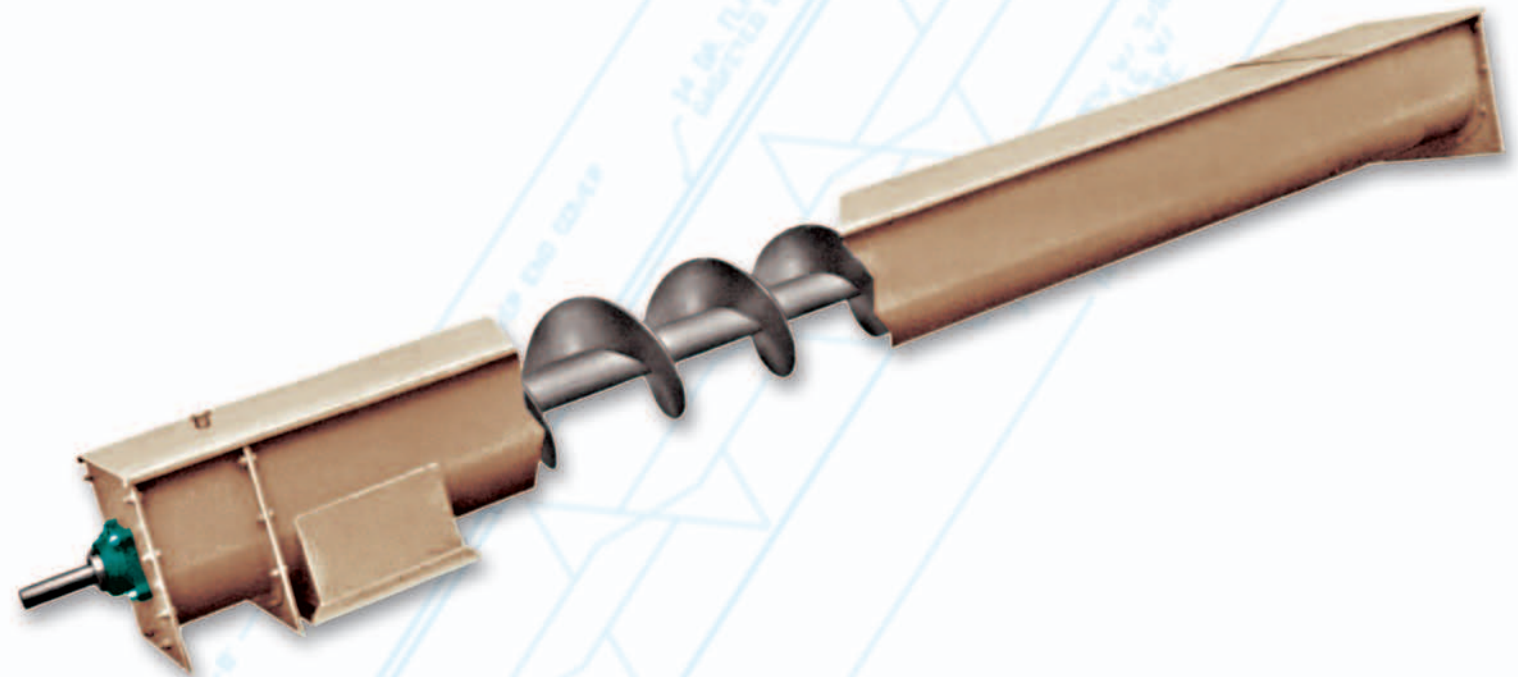


STANDARD SCREW CONVEYOR DIMENSIONS

SCREW SIZE	A	B	C	D	E	F	G	H	I
4"	5"	3 ⁵ / ₈ "	7 ³ / ₄ "	4 ⁵ / ₈ "	9 ⁷ / ₈ "	3 ³ / ₄ "	10'	5"	5 ¹ / ₄ "
6"	7"	4 ¹ / ₂ "	10 ¹ / ₄ "	5 ⁵ / ₈ "	11 ³ / ₄ "	5"	10'	6"	7 ¹ / ₄ "
9"	10"	6 ¹ / ₈ "	14"	7 ⁷ / ₈ "	15 ⁵ / ₈ "	7 ¹ / ₈ "	10'	8"	10 ¹ / ₄ "
12"	13"	7 ³ / ₄ "	18"	9 ⁵ / ₈ "	19"	8 ⁷ / ₈ "	12'	10"	13 ¹ / ₄ "
14"	15"	9 ¹ / ₄ "	20"	10 ⁷ / ₈ "	21 ³ / ₄ "	10 ¹ / ₈ "	12'	11"	15 ¹ / ₄ "
16"	17"	10 ⁵ / ₈ "	22"	12"	24 ¹ / ₄ "	11 ¹ / ₈ "	12'	12"	17 ¹ / ₄ "
18"	19"	12 ¹ / ₈ "	25"	13 ³ / ₈ "	27 ¹ / ₈ "	12 ³ / ₈ "	12'	13"	19 ¹ / ₄ "
20"	21"	13 ¹ / ₂ "	27"	15"	30 ¹ / ₈ "	13 ³ / ₈ "	12'	14"	21 ¹ / ₄ "
24"	25"	16 ¹ / ₂ "	31"	18 ¹ / ₈ "	36 ¹ / ₄ "	15 ³ / ₈ "	12'	16"	25 ¹ / ₄ "



HAWTHORNE-SEVING, INC.



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SCREW CONVEYORS

SCREW CONVEYORS & FEEDERS

HAWTHORNE-SEVING, INC. manufactures a complete line of **standard** and **custom built** screw conveyors and screw feeders designed to meet your specific requirements. A screw conveyor is a very versatile and reliable means of horizontally conveying most bulk materials.

INCLINED AND VERTICAL CONVEYING can be accomplished with a screw conveyor, however screws lose efficiency rapidly as the incline increases to 45°. Short pitch flights and tubular housings are used to improve efficiency. Conveyor speed must be increased considerably for steeply inclined and vertical screw conveyors.

SCREW FEEDERS are used to control the flow rate of a product from a bin or other source which choke loads (completely fills) the feeder inlet. Feeder screws typically use short pitch flights, varying pitch flights, tapered flights, variable speed drives or a combination of these items. Screw feeders can have a single screw or multiple screws can be used to provide a live bottom for unloading poorly flowing products from a bin.

ADVANTAGES OF SCREW CONVEYORS

- Completely enclosed, dust tight compact.
- Multiple inlets and outlets including open end outlet.
- Continuous open bottom for filling trucks, rail cars, dumpsters or open piles.
- Reversible or can convey two directions simultaneously by using right hand and left hand flights.
- Can convey at any angle from horizontal to vertical.
- Can be a feeder and a conveyor in one unit.
- Tubular feeder can be used as a vapor/heat lock by loading 100% full.
- Can be driven at either end.

SCREW CONVEYOR DESIGN

The physical characteristics of the product to be conveyed are the most important consideration in screw conveyor design. The following chart describes some conveyor features which might be employed for handling various types of products.

PRODUCT CHARACTERISTICS	CONVEYOR COMPONENT SUGGESTIONS
Dry, Granular, Free flowing	Use standard components
Dusty, Powder	Shaft seals, gaskets
Abrasive	Thicker or AR steel trough and flights, hard surfaced flights, lower loading, hard iron hanger bearings, eliminate hanger bearings
Corrosive	Stainless steel or polyurethane components
Food, Pharmaceuticals	Stainless steel or polypropylene components, grind welds smooth, shaft seals, drop-bottoms and clamped covers for ease of cleanout
Large lumps	Use larger conveyor with more space
High temperature	High temperature paint, stainless steel components, end bearings on outboard pedestals, hard iron hanger bearings
Requires mixing	Cut flights, cut & folded flights, paddles, ribbon flights
Aerable	Slower speed, gaskets, shaft seals
Wet, Sticky	Ribbon flights, shaft seals, gaskets
Easily damaged by abrasion and tumbling	Screw conveyor is NOT recommended
Complete emptying of conveyor is required after each batch	Screw conveyor is NOT recommended unless manual cleanout is acceptable
Inlet will be choke loaded	Incorporate a feeder section into the conveyor or add an external feeder

DRIVES are available in many configurations. The most common drive consists of a shaft mounted speed reducer bolted to the conveyor end plate with an integral output shaft bolted into the screw. The motor is mounted on the reducer and a V-belt drive connects the motor shaft to the reducer input shaft.

HANGER BEARINGS are used to support the screw in the trough at 10 ft. to 12 ft. intervals along the conveyor. Most hanger bearings are split sleeves which are easily replaceable without removing the screw or shaft. Bearings can be hard iron, plastic, wood, etc. depending on compatibility with product.

HORSEPOWER required is directly proportional to the weight of product handled and to the distance conveyed. Power requirement is also affected by product characteristics such as abrasiveness and stickiness and by conveyor components such as bearings and type of flights. Feeders require additional power to overcome head loads.

CAPACITY of a screw conveyor is determined volumetrically. If a given weight of product is to be conveyed in a specified time, the loose bulk density of the product must be known to determine the actual volume to be conveyed. Most products have a lower bulk density when agitated or aerated during conveying than when at rest. The lowest bulk density must be used to calculate the volume to be conveyed. Most products should be conveyed at 30% trough loading. Granular, free flowing, non-abrasive products such as plastic pellets and wheat can be conveyed at 45% loading. Short conveyors and feeders can operate at 100% full if the product will discharge without plugging. Very abrasive products such as sand should be conveyed at 15% loading. The following charts are guidelines for screw conveyor capacities.

STANDARD HORIZONTAL SCREW CAPACITIES

15% LOADING			
SCREW DIA.	MAX. RPM	CFH at 1 RPM	CFH at MAX. RPM
6"	60	0.74	45
9"	55	2.73	150
12"	50	6.47	323
14"	48	10.40	499
16"	46	15.57	716
18"	43	22.53	969
20"	42	31.23	1,281
24"	39	54.67	2,132

30% LOADING			
SCREW DIA.	MAX. RPM	CFH at 1 RPM	CFH at MAX. RPM
6"	120	1.49	178
9"	100	5.47	547
12"	90	12.93	1,164
14"	85	20.80	1,768
16"	80	31.13	2,491
18"	75	45.07	3,380
20"	72	62.47	4,498
24"	65	109.33	7,107

45% LOADING			
SCREW DIA.	MAX. RPM	CFH at 1 RPM	CFH at MAX. RPM
6"	165	2.23	368
9"	155	8.20	1,271
12"	145	19.40	2,813
14"	140	31.20	4,368
16"	130	46.70	6,071
18"	120	67.60	8,112
20"	110	93.70	10,307
24"	100	164.00	16,400

