



**Design  
Engineering  
Manufacturing**

# **SCREW CONVEYOR AND BUCKET ELEVATOR ENGINEERING GUIDE**



**KWS MANUFACTURING COMPANY, LTD.**

**3041 CONVEYOR DRIVE**

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**CATALOG #SC-1103**



KWS Manufacturing Company, Ltd. was founded in 1972 to manufacture and sell screw conveyors and other bulk material handling equipment. KWS quickly became recognized as a key supplier of standard and specialty equipment for a variety of industries. The plant and facilities are currently a combined 125,000 square feet. KWS provides complete engineered systems, screw conveyors and feeders, shaftless conveyors, vertical screw conveyors, bucket elevators, live bottom bins, elevator buckets, Dragon-Flite conveyors, hoppers, belt conveyors, hollow-flite screw processors and screw pumps.



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## INTRODUCTION

The engineering section of this catalog was compiled to aid you in the design of a conveyor system, yielding optimum performance and efficiency, for your individual conveying function.

Primary considerations for the selection of a screw conveyor are:

1. Type and condition of the material to be handled, including maximum particle size, and, if available, the specific bulk density of the material to be conveyed.
2. Quantity of transported material, expressed in pounds or tons per hour.
3. The distance for which the material is to be conveyed.

In the next pages is the necessary information for the selection of a screw conveyor system, presented in a series of five steps. These steps are arranged in logical order, and are divided into separate sections for simplicity.

The five steps are:

1. Establishing the characteristics of the material to be conveyed.
2. Locating conveyor capacity (conveyor size and speed) on capacity tables.
3. Selection of conveyor components.
4. Calculation of required horsepower.
5. Checking of component torque capacities (including selection of shaft types and sizes).

All necessary calculations are expressed in graphic and equation form, and use of all charts, graphs, etc. will be explained fully at the end of each section.

Engineering data regarding the design of screw feeders and their selection, is presented in a separate section, immediately following the screw conveyor data.

Any unusual applications, or special designs, should be referred to KWS Mfg's. Engineering Department.



# MATERIAL CHARACTERISTICS

The Material Tables on the following pages contain information regarding materials which may be effectively conveyed, using KWS Manufacturing Company's screw conveyor systems. For information on unlisted materials, refer to the Engineering Department of KWS Manufacturing Company, Inc.

"Conveyability" data for unlisted materials can, when necessary, be compiled by making a comparison of listed materials which have similar physical characteristics, such as weight and particle size. The following is a brief description of the information presented in the Materials Table.

## MAXIMUM PARTICLE SIZE

Conveyor size, speed, and horsepower requirements, are directly affected by bulk density and internal friction, which are relative to the particle size of conveyed material.

## AVERAGE WEIGHT PER CUBIC FOOT

This section of the Materials Table is supplied to enable you to convert the required capacity in pounds or tons per hour to volume in cubic feet per hour.

**NOTE** Since most typical applications of screw conveyors receive slightly aerated, gravity fed products, the weights listed in this table are averages and when possible, actual bulk densities should be used.

## CONVEYOR LOADING

The recommended percentages of conveyor loading is a prime factor in determining the size of conveyor, and is based on the maximum depth at which materials will flow through the conveyor without causing undue wear. Considerations should be made, for example, for materials with a high abrasiveness because wear indexes would normally be higher due to a larger contact area with component parts.

## HORSEPOWER FACTOR

The horsepower factor, representing the relative mobility of the material, is necessary for horsepower calculation.

## RECOMMENDED COMPONENT SERIES

This information is presented to assist in the selection of the proper materials of construction, component weights and other specifications best suited for the material to be conveyed. The alphabetical code refers to general component series, and the numerical code gives bearing and shaft type recommendations. See component series tables

## ABRASIVENESS, CORROSIVENESS AND "FLOWABILITY"

In addition to the above information, the Materials Table also presents graphically the relative abrasiveness, corrosiveness and "flowability" of the materials listed. These characteristics, as well as other special aspects of materials, are given further treatment in the Component Selection Section. The values of the graphic presentation used in the Materials Table are listed below.

Description	I	II	III
Abrasiveness	Not Abrasive	Mildly Abrasive	Highly Abrasive
Corrosiveness	Not Corrosive	Mildly Corrosive	Highly Corrosive
Flowability	Free Flowing	Relatively Free Flowing	Sluggish
	Angle of Repose		
	To 30°	30° - 45°	Beyond 45°

**NOTE** Some materials, while they are not corrosive under "normal" conditions, may become corrosive under certain other conditions, such as when heated or in the presence of moisture.

## SPECIAL CHARACTERISTICS NOTES

Notable unusual material characteristics are listed by numerical codes in the last column of the table where applicable. An explanation of these numerical codes is given below.

- 1 — Contains explosive dust.
- 2 — Fluidizes easily
- 3 — Absorbs moisture.
- 4 — Usage or value affected by contamination.
- 5 — Emits toxic fumes or dust.
- 6 — Usage or value affected by material degradation.
- 7 — Exceptionally light or fluffy.
- 8 — Tends to pack under pressure.
- 9 — Fibrous material which tends to mat.
- — Consult KWS Mfg. Engineering Department.

# MATERIALS TABLE

Material	Maximum Particle Size (IN.)	Average Weight Per Cu.Ft.	% Loading	H.P. Factor	Component Series	Abrasiveness	Corrosiveness	Flowability	NOTE
Acetylenogen (Calcium Carbide)	+1/2	70-80	30B	1.6	B4	II	I	II	1
Adipic Acid	-100M	45	30A	0.8	D3	I	II	II	3
Alfalfa Meal	-1/8	17	30A	0.9	B4	II	I	III	7
Alfalfa Seed	-1/8	48	30B	0.5	B4	II	I	I	1
Almonds	-1/2	28-30	30B	0.9	B4	II	I	II	6
Alum	-1/8	45-58	30A	0.6	A2	I	I	II	●
Alum, lumpy	+1/2	50-60	30A	1.4	B1	I	I	II	●
Alumina	-100M	60-120	15	1.8	C4	III	I	I	2
Aluminate Gell, dried	-100M	45	30B	1.7	B4	II	I	II	
Aluminum Chips	-1/2	7-15	30A	0.8	A2	I	I	III	9
Aluminum Hydrate (Aluminum Hydroxide)	-1/2	13-18	30A	1.4	A2	I	I	III	
Aluminum Oxide (Alumina)	-100M	60-120	15	1.8	C4	III	I	I	2
Aluminum Ore (Bauxite)	-3	75-85	15	1.8	D4	III	I	II	
Aluminum Silicate	-1/8	49	45	0.8	A2	I	I	II	
Aluminum Sulfate (Alum)	●	●	●	●	●	●	●	●	
Amianthus (Asbestos)	Fibers	20-40	30B	1.0	B4	II	I	III	5, 7, 8
Ammonium Chloride, Crystalline	-1/8	52	30A	0.8	A2	I	I	II	
Ammonium Nitrate	-1/8	45-62	●	●	●	●	●	●	● 1, 3
Ammonium Sulfate	●	40-58	●	●	●	●	●	III	●
Andalusite (Aluminum Silicate)	-1/8	49	45	0.8	A2	I	I	II	
Antimony	-100M	●	30B	●	B4	II	I	II	●
Apple Pomace, dry	-1/2	15	30B	0.5	B4	II	I	III	7
Arsenate of Lead (Lead Arsenate)	-1/8	72	30A	1.0	A2	I	I	III	2, 5
Arsenic	-100M	30	●	●	●	●	●	●	● 5
Arsenic Oxide (Arsenolite)	●	100-120	●	●	●	●	●	●	● 5
Asbestos, Ore	-1/2	81	15	1.2	C4	III	I	II	5
Asbestos, Shred	Fibers	20-40	30B	1.0	B4	II	I	III	5, 7, 8
Ashes, Coal, dry	-1/2	35-45	30B	2.0	B4	II	I	III	
Ashes, Coal, dry	-3	35-45	30B	2.0	B4	II	I	III	
Ashes, Coal, wet	-1/2	45-50	30B	3.0	D4	II	II	III	8
Ashes, Coal, wet	-3	40-50	15	4.0	D4	II	II	III	8
Asphalt, Crushed	-1/2	45	30A	2.0	A2	I	I	II	
Bagasse, dry	Fibers	7-10	30A	1.0	B1	I	I	III	5,7,8,9
Bakelite	-100M	30-40	30A	1.4	A2	I	I	III	
Baking Powder	-100M	41	30A	0.6	A2	I	I	II	
Baking Soda (Sodium Bicarbonate)	-100M	70-80	30A	1.0	A2	I	I	II	
Barite	+1/2	120-180	15	2.0	D4	III	I	II	
Barite	-100M	120-180	30B	2.6	B4	II	I	III	2
Barium Carbonate	-100M	72	30B	1.6	B4	II	I	III	5
Barium Sulfate (See Barite)	●	●	●	●	●	●	●	●	
Bark, wood	+1/2	10-20	30B	1.2	B4	II	I	III	9
Barley	-1/8	37-48	45	0.4	A2	I	I	I	1
Baryte (Barite)	●	●	●	●	●	●	●	●	
Basalt	-1/8	80-90	15	1.8	C4	III	I	I	
Bauxite, crushed	-3	75-85	15	1.8	D4	III	I	II	
Beans, Castor	-1/2	36	45	0.5	A2	I	I	I	
Beans, Castor, meal	-1/8	35-40	30A	1.2	A2	I	I	II	
Beans, Navy	-1/2	48	45	0.5	A2	I	I	I	
Beans, Soy	-1/2	45-50	45	0.5	A2	I	I	I	
Beet Pulp, dry	●	11-16	●	●	●	●	●	●	●
Beet Pulp, wet	●	25-45	●	●	●	●	●	●	●
Bentonite	+1/2	34-40	30B	1.2	B4	II	I	III	8
Bentonite	-100M	50-60	30B	0.7	B4	II	I	II	2
Benzene Hexachloride	-100M	56	30A	0.6	A2	I	I	III	5
Bicarbonate of Soda (Baking Powder)	-100M	41	30A	0.6	A2	I	I	II	
Blood, dried	+1/2	35-45	30B	1.7	B4	II	I	III	

Material	Maximum Particle Size (IN.)	Average Weight Per Cu.Ft.	% Loading	H.P. Factor	Component Series	Abrasiveness	Corrosiveness	Flowability	NOTE
Blood, ground	-100M	30	30A	0.6	A2	I	I	II	
Bluestone (Copper Sulfate)	+1/2	60-70	30A	0.6	B1	I	I	II	●
Bone Ash (Tricalcium Phosphate)	-100M	40-50	30A	1.6	A2	I	I	III	
Bones, crushed	-1/2	35-40	30B	2.0	B4	II	I	III	
Bones, ground	-1/8	50	30B	1.7	B4	II	I	II	
Boneblack	-100M	20-25	30B	1.7	B4	II	I	II	
Bonechar	-1/8	40	30B	1.8	B4	II	I	II	
Bonemeal	-1/8	50-60	30B	1.7	B4	II	I	II	
Borate of Lime	-1/8	●	30A	●	A2	I	I	II	●
Borax	-1/2	60	30B	1.0	B4	II	I	II	
Borax	-1/8	50-60	30B	0.7	B4	II	I	II	
Boric Acid	-1/8	55	30A	0.8	A2	I	I	II	
Boron	-100M	75	15	1.0	C4	III	I	II	
Bran	-1/8	10-20	30A	0.4	A2	I	I	II	1, 7
Braunite (Manganese Oxide)	-100M	120	30B	2.0	B4	II	I	II	
Brewers Grain, spent, dry	-1/2	14-30	30A	0.4	A2	I	I	III	
Brewers Grain, spent, wet	-1/2	55-60	30A	0.6	D3	I	II	III	
Bronze chips	-1/8	30-50	15	0.8	C4	III	I	III	
Buckwheat	-1/4	37-42	45	0.4	A2	I	I	I	1
Calcine, flour	-100M	75-85	30A	0.7	A2	I	I	II	
Calcium Carbide	+1/2	70-80	30B	1.6	B4	II	I	II	1
Calcium Carbonate (Limestone)	●	●	●	●	●	●	●	●	
Calcium Fluoride (Fluorspar)	-1/4	82	30B	2.0	B4	II	I	III	
Calcium Hydrate (Lime, hydrated)	●	●	●	●	●	●	●	●	
Calcium Hydroxide (Lime, hydrated)	●	●	●	●	●	●	●	●	
Calcium Lactate	+1/2	26-29	30A	0.6	B1	I	I	III	6, 8
Calcium Magnesium Carbonate	+1/2	90-100	30B	2.0	B4	II	I	II	
Calcium Oxide (Lime, unslaked)	●	●	●	●	●	●	●	●	
Calcium Phosphate	-100M	40-50	30A	1.6	A2	I	I	III	
Calcium Sulfate (Gypsum)	●	●	●	●	●	●	●	●	
Carbon, activated	-1/8	8-20	30B	1.2	B4	II	I	I	6
Carbon Black, fine	-100M	4-6	30A	0.4	A2	I	I	III	●, 8
Carbon Black, pelleted	-1/8	20-40	●	●	●	●	●	●	●, 3, 8
Carborundum*	-1/2	100	15	3.0	C4	III	I	II	
Casein	-1/8	36	30B	1.6	B4	II	I	II	
Cast Iron, chips	-1/2	130-200	30B	4.0	B4	II	I	III	
Caustic Soda	-1/8	88	30B	1.8	D4	II	III	II	3, 5
Caustic Soda, flakes	-1/4	47	30A	1.5	D4	I	III	III	3, 5, 6, 8
Celite (Diatomaceous Earth)	-100M	11-17	15	1.6	C4	III	I	II	●, 2, 8
Cement, clinker	+1/2	75-80	15	1.8	D4	III	I	II	
Cement, portland	-100M	75-85	30B	1.4	B4	II	I	II	2
Cerrusite (Lead Carbonate)	-100M	240-260	30B	1.0	B4	II	I	II	2, 5
Chalk, crushed	+1/2	85-90	30B	1.9	B4	II	I	III	8
Chalk, ground	-100M	70-75	30B	1.4	B4	II	I	III	2, 8
Charcoal	+1/2	18-25	30B	1.4	B4	II	I	III	6
Chips, pulpwood	+1/2	12-25	30A	1.0	B1	I	I	III	7, 9
Chrome Ore	-1/2	125-140	15	2.5	C4	III	I	II	
Cinders, blast furnace	+1/2	57	15	1.9	D4	III	I	III	
Cinders, Coal	+1/2	40	15	1.6	D4	III	I	II	
Clay, Ceramic, dry	-100M	65-80	30A	1.5	A2	I	I	II	
Clinker, cement	+1/2	75-80	15	1.8	D4	III	I	II	
Clover, seed	-1/8	48	45	0.4	A2	I	I	I	1
Coal, Anthracite	-1/2	52-60	30B	0.9	B4	II	II	II	1
Coal, pulverized	-100M	32-35	30A	0.6	D3	I	II	III	1, 2
Coal, sized	-1/2	50	30B	0.6	B4	II	II	II	1
Cocoa, beans	-1/2	30-45	30A	0.4	A2	I	I	II	6
Cocoa, nibs	-1/2	35	30A	0.5	A2	I	I	II	
Cocoa, powdered	-100M	30-35	30A	0.9	A2	I	I	III	2, 8

\* Trademark of Carborundum Co.

Material	Maximum Particle Size (IN.)	Average Weight Per Cu.Ft.	% Loading	H.P. Factor	Component Series	Abrasiveness	Corrosiveness	Flowability	NOTE
Cocconut	shred	20-22	30A	1.0	B1	I	I	III	
Coffee, chaff	-1/8	20	30A	0.5	A2	I	I	II	2, 7
Coffee, green bean	-1/2	32-45	30A	0.5	A2	I	I	II	6
Coffee, ground	-1/8	25	30A	0.6	A2	I	I	II	4
Coffee, roasted bean	-1/2	22-26	45	0.4	A2	I	I	I	
Coffee, soluble	-100M	19	15	0.8	A2	I	I	I	2,3,4,6
Coke, loose	+1/2	23-32	15	1.2	D4	III	I	III	6, 9
Coke, calcined	+1/2	35-45	15	1.3	D4	III	I	II	9
Coke, breeze	-1/4	25-35	15	1.2	C4	III	I	III	
Compost	●	28	●	●	●	I	III	III	● 8, 9
Copper Ore	+1/2	120-150	15	4.0	D4	III	I	II	
Copper Sulfate	+1/2	60-70	30A	0.6	B1	I	I	II	●
Copperas (Ferrous Sulfate)	-1/2	50-75	30B	1.0	B4	II	I	II	
Copra	+1/2	22-33	30A	1.0	B1	I	I	II	
Copra, cake	+1/2	25-30	30A	0.7	B1	I	I	II	
Copra, cake, ground	-1/8	40-45	30A	0.7	A2	I	I	II	
Copra, meal	-1/8	40-45	30A	0.7	A2	I	I	II	
Cork, ground	-1/8	5-15	30A	0.5	A2	I	I	III	
Cork, granulated	-1/2	5-15	30A	0.4	A2	I	I	III	
Corn, cracked	-1/2	40-50	30A	0.7	A2	I	I	II	
Corn, seed	-1/4	45	45	0.4	A2	I	I	I	1, 6
Corn, shelled	-1/4	45	45	0.4	A2	I	I	I	1
Corn, germ	-1/8	21	30A	0.4	A2	I	I	II	
Corn, grits	-1/8	40-45	30A	0.5	A2	I	I	II	
Corn, sugar	-1/8	31	30A	1.0	A2	I	I	II	
Corn, meal	-1/8	32-40	30A	0.5	A2	I	I	II	
Cottonseed, dry, delinted	-1/4	22-40	30A	0.9	A2	I	I	II	
Cottonseed, dry, undelinted	-1/4	18-25	30A	0.8	A2	I	I	III	
Cottonseed, cake	+1/2	40-45	30A	1.0	B1	I	I	II	
Cottonseed, flakes	-1/4	20-25	30A	0.8	A2	I	I	III	
Cottonseed, hulls	-1/8	12	30A	0.9	A2	I	I	III	7
Cottonseed, meal	-1/8	35-40	30A	0.4	A2	I	I	II	
Cottonseed, meats	-1/8	40	30A	0.6	A2	I	I	II	
Cracklings	-3	40-50	30A	1.3	B1	I	I	III	
Cryolite	-1/2	90-110	30B	1.8	B4	II	I	II	5
Cryolite	-100M	50-75	30B	2.0	B4	II	I	II	2, 5
Cullet	+1/2	80-120	15	2.0	D4	III	I	II	
Cupric Sulfate (Copper Sulfate)	+1/2	60-70	30A	0.6	B1	I	I	II	●
Diatomaceous Earth (Diatomite)	-100M	11-17	15	1.6	C4	III	I	II	●, 2, 8
Dicalcium Phosphate	-100M	40-50	30A	1.6	A2	I	I	III	
Disodium Phosphate	-1/8	25-31	30B	0.5	B4	II	I	II	6
Dolomite (Calcium Magnesium Carbonate)	+1/2	80-100	30B	2.0	B4	II	I	II	
Earth, loam, dry, loose	-1/8	76	30B	1.2	B4	II	I	III	
Ebonite	-1/2	65-70	30A	0.8	A2	I	I	II	
Epsom Salts	-1/8	40-50	30A	0.7	A2	I	I	II	
Ethanedioic Acid (Oxalic Acid)	-1/8	60	30A	1.0	A2	I	I	III	3
Feldspar	-1/8	100-160	30B	1.5	B4	II	I	II	
Feldspar	-100M	65-75	30B	2.0	B4	II	I	III	
Ferrous Sulphate	-1/2	50-75	30B	1.0	B4	II	I	II	
Ferrous Sulfide (Iron Sulfide)	●	●	●	●	●	●	●	●	
Fish Meal	-1/8	30-40	30A	0.9	A2	I	I	III	
Fish Scrap	●	40-50	30A	●	B1	I	I	III	●
Flaxseed	-1/8	43-45	45	0.4	A2	I	I	I	1
Flaxseed Cake	+1/2	48-50	30A	0.6	B1	I	I	II	
Flaxseed Meal	-1/8	25	30A	0.4	A2	I	I	II	
Floridin (Fuller's Earth)	●	●	●	●	●	●	●	●	
Flour, Wheat	-100M	30-46	30A	0.6	A2	I	I	III	1, 4
Flue Dust, boiler, dry	-100M	40-125	15	3.5	C4	III	I	II	2

Material	Maximum Particle Size (IN.)	Average Weight Per Cu.Ft.	% Loading	H.P. Factor	Component Series	Abrasiveness	Corrosiveness	Flowability	NOTE
Fluorspar (Fluorite)	-1/4	82-110	30B	2.0	B4	II	I	III	
Fly Ash, dry	-100M	35-45	30B	3.5	C4	III	I	I	2
Foundry Sand, dry	-1/8	90-100	15	2.0	C4	III	I	II	
Fuller's Earth, oil filter, burned	-1/8	40	15	1.5	C4	III	I	II	
Fuller's Earth, oil filter, raw	-1/8	35-40	30B	1.0	B4	II	I	II	
Fuller's Earth, oil filter, spent	35% oil	60-65	15	0.9	D4	III	I	III	
Galena (Lead Sulfide)	-100M	240-260	30B	1.0	B4	II	I	II	2, 5
Gelatin, granulated	-1/2	32	30A	0.8	A2	I	I	II	6
Gilsonite	-1/2	37	30B	1.5	D4	II	II	II	1, 5
Glass, batch	+1/2	80-100	15	1.8	D4	III	I	II	
Glue, ground	-1/8	40	30B	1.7	B4	II	I	II	
Glue, pearl	-1/2	40	45	0.5	A2	I	I	I	
Gluten, meal	-1/8	40	30A	0.6	A2	I	I	II	
Grains, distillery, spent, dry	lumps	30	30A	0.4	B1	I	I	II	7
Graphite Flake	-1/2	40	30A	0.4	A2	I	I	II	
Graphite Flour	-100M	28	45	0.4	A2	I	I	I	2
Graphite Ore	+1/2	65-75	30A	0.4	B1	I	I	I	
Granite, broken	+1/2	95-100	15	2.5	D4	III	I	II	
Grape Pomace	-1/2	15-20	30B	1.4	B4	II	I	III	7
Grass Seed	-1/8	10-32	30A	0.4	A2	I	I	II	1, 7
Green Vitriol (Ferrous Sulfate)	-1/2	50-75	30B	1.0	B4	II	I	II	
Gypsum, calcined	-1/2	55-60	30B	1.2	B4	II	I	II	
Gypsum, calcined	-100M	60-80	30B	0.8	B4	II	I	III	
Gypsum, raw	-1	90-100	30B	1.6	B4	II	I	II	
Hexanedioic Acid (Adipic Acid)	-100M	45	30A	0.8	D3	I	II	II	3
Hominy	-1/2	37-50	30A	0.4	A2	I	I	II	
Hops, spent, dry	Lumps	35	30A	0.8	B1	I	I	III	
Hops, spent, wet	Lumps	50-55	30A	1.0	D3	I	II	III	
Hydroxybenzoic Acid (Salicylic Acid)	-1/8	29	30A	0.6	A2	I	I	II	3
Ice, crushed	+1/2	35-45	30A	0.4	●	●	●	●	
Ilmenite Ore	-1/8	140	15	2.0	C4	III	I	II	
Iron Ore	-1/8	120-180	15	2.0	C4	III	I	II	
Iron Pyrites (Iron Sulfide)	●	●	●	●	●	●	●	●	
Iron Sulfate (Ferrous Sulfate)	-1/2	50-75	30B	1.0	B4	II	I	II	
Iron Sulfide	-1/2	120-135	●	●	A2	I	I	I	
Iron Sulfide	-100M	105-120	●	●	A2	I	I	I	
Iron Vitriol (Ferrous Sulfate)	-1/2	50-75	30B	1.0	B4	II	I	II	
Kaolin Clay	-3	163	30A	1.8	B1	I	I	II	
Kaolin Talc	-100M	42-56	30B	2.0	B4	II	I	III	
Kryolith (Cryolite)	●	●	●	●	●	●	●	●	
Lactose	-100M	32	30A	0.6	A2	I	I	II	4, 8
Lamp Black (Carbon Black)	●	●	●	●	●	●	●	●	
Lead Arsenate	-1/8	72	30A	1.4	A2	I	I	III	2, 5
Lead Arsenite	-1/8	72	30A	1.4	A2	I	I	III	2, 5
Lead Carbonate	-100M	240-260	30B	1.0	B4	II	I	II	2, 5
Lead Ore	-1/2	180-230	15	1.4	C4	III	I	III	5
Lead Oxide	-100M	30-150	30B	1.0	B4	II	I	II	2, 5
Lead Oxide	-200M	30-180	30B	1.2	B4	II	I	II	2, 5
Lead Sulfide	-100M	240-260	30B	1.0	B4	II	I	II	2, 5
Lignite, air dried	+1/2	45-55	30A	0.8	B1	I	I	II	
Limanite	-1/2	120	15	1.7	C4	III	I	III	
Lime, hydrated	-1/8	40	30A	0.8	A2	I	I	II	2, 8
Lime, hydrated	-200M	32-40	30A	0.6	A2	I	I	II	2, 8
Lime, unslaked	-1/8	60	30A	0.6	A2	I	I	III	8
Lime, pebble, unslaked	+1/2	53-56	30A	2.0	B1	I	I	III	
Limestone, agricultural	-1/8	68	30B	1.4	B4	II	I	II	
Limestone, crushed	+1/2	85-90	30B	1.6	B4	II	I	II	
Limestone, dust	-100M	55-95	30B	1.0	B4	II	I	III	2

Material	Maximum Particle Size (IN.)	Average Weight Per Cu.Ft.	% Loading	H.P. Factor	Component Series	Abrasiveness	Corrosiveness	Flowability	NOTE
Lindane (Benzene Hexachloride)	-100M	56	30A	0.6	A2	I	I	III	5
Linseed (Flaxseed)	●	●	●	●	●	●	●	●	
Litharge (lead Oxide)	-100M	30-150	30B	1.0	B4	II	I	II	2, 5
Lithopone	-100M	120-140	30A	1.0	A2	I	I	II	2, 5
Magnesium Chloride (Magnesite)	-1/2	33	30A	0.8	A2	I	I	III	
Magnesium Sulfate (Epsom Salts)	-1/8	40-50	30A	0.7	A2	I	I	II	
Maize	-1/4	45	45	0.4	A2	I	I	I	1
Malt, dry, ground	-1/8	22	30A	0.4	A2	I	I	II	1, 7
Malt, dry, whole	-1/2	27-30	30A	0.4	A2	I	I	II	1
Malt, wet or green	-1/2	60-65	30A	0.4	A2	I	I	III	
Malt, meal	-1/8	36-40	30A	0.4	A2	I	I	II	
Manganese Dioxide	●	80	●	●	●	●	●	●	●
Manganese Ore	-1/2	125-140	15	2.0	C4	III	I	III	
Manganese Oxide	-100M	120	30B	2.0	B4	II	I	II	
Manganese Sulfate	-1/2	70	15	2.0	C4	III	I	II	
Marble, crushed	-1/2	80-95	15	2.0	C4	III	I	II	
Marl	+1/2	80	30B	1.6	B1	I	I	II	
Meat, ground	-1/4	50-55	●	●	B4	II	I	I	●
Meat	Scraps	40	30B	●	D4	II	I	III	● 9
Mica, ground	-1/8	13-15	30B	0.7	B4	II	I	II	
Mica, pulverized	-100M	13-30	30B	0.9	B4	II	I	II	2
Mica, flakes	-1/8	17-22	30B	1.0	B4	II	I	I	7, 9
Milk, dried, flake	-1/8	5-6	30A	0.4	A2	I	I	II	4
Milk, malted	-100M	27-35	30A	0.4	A2	I	I	III	2, 4, 8
Milk, whole, dried	-100M	20	30A	0.4	A2	I	I	III	2,3,4,8
Milk Sugar (Lactose)	-100M	32	30A	0.6	A2	I	I	II	4, 8
Milo	-1/4	56	30A	0.4	A2	I	I	II	
Monosodium Phosphate	-1/8	50	30B	0.6	B4	II	I	II	
Muriate of Potash	-1/8	77	15	1.8	D4	III	III	II	
Mustard Seed	-1/8	45	45	0.4	A2	I	I	I	1
Nicotinic Acid (Niacin)	-1/8	35	30B	0.8	B4	II	I	II	
Niter (Potassium Nitrate)	●	●	●	●	●	●	●	●	●
Oakite (Trisodium Phosphate)	-1/8	60	30B	1.7	B4	II	I	II	
Oats	-1/2	25-35	45	0.4	A2	I	I	I	1
Oats, rolled	-1/2	19-24	30A	0.5	A2	I	I	II	1, 7
Oxalic Acid, crystals	-1/8	60	30A	1.0	A2	I	I	III	3
Oyster Shells, ground	-1/2	53	30B	0.9	B4	II	I	II	
Oyster Shells, whole	+1/2	80	30B	2.0	B4	II	I	II	
Paper Pulp, stock	5%	62	30A	0.9	●	●	●	●	9
Paper Pulp, stock	6-15%	60-62	30A	1.2	●	●	●	●	9
Paraffine Cake, broken	-1/2	30-45	30A	0.5	A2	I	I	II	
Peanuts, shelled	-1/4	35-45	30A	0.4	A2	I	I	II	6
Peanuts, unshelled	+1/2	15-24	30A	0.6	B1	I	I	II	6
Peas, dried	-1/2	45-50	45	0.5	A2	I	I	I	1, 6
Phosphate Acid	-100M	60	30A	1.4	A2	I	I	II	
Phosphate, crushed	+1/2	75-85	30B	1.8	B4	II	I	II	
Phosphate, granular	-1/8	90-100	15	1.7	C4	III	I	II	
Phosphate of Soda (Disodium Phosphate)	-1/8	25-31	30B	0.5	B4	II	I	II	6
Phosphoprotein (Casein)	-1/8	36	30B	1.6	B4	II	I	II	
Phosphoric Acid (Phosphate Acid)	-100M	60	30A	1.4	A2	I	I	II	
Plaster of Paris (Gypsum)	-200M	60-80	30B	0.9	B4	II	I	III	2
Plumbago (Graphite)	●	●	●	●	●	●	●	●	
Polyethylene, pellets	-1/8	35	30A	0.4	A2	I	I	II	4, 6
Polystyrene, pellets	-1/8	40	30A	0.4	A2	I	I	II	4, 6
Potash (Muriate of Potash)	-1/8	77	15	1.8	D4	III	III	II	
Potassium Carbonate	-1/8	50-80	30B	1.0	B4	II	II	II	
Potassium Chloride, pellets	-1/4	120-130	30B	1.6	B4	II	II	II	
Potassium Nitrate	-1/2	76	30B	1.0	B4	II	II	I	1

Material	Maximum Particle Size (IN.)	Average Weight Per Cu.Ft.	% Loading	H.P. Factor	Component Series	Abrasiveness	Corrosiveness	Flowability	NOTE
Potassium Nitrate	-1/8	80	30A	1.2	D3	I	II	II	1
Potassium Sulfate	-1/8	42-48	30B	1.0	B4	II	I	III	8
Pumice	-1/8	40-45	15	1.6	C4	III	I	III	
Pyrite, pellets	-1/2	120-130	30B	2.0	B4	II	I	II	
Quartz	-1/8	85	15	1.8	C4	III	I	II	
Quicklime (Lime, unslaked)	●	●	●	●	●	●	●	●	
Red Lead (Lead Oxide)	-100M	150-300	30B	1.0	B4	II	I	II	2, 5
Rice, hulled or polished	-1/8	45-48	45	0.4	A2	I	I	I	
Rice, rough	-1/8	32-36	30A	0.4	A2	I	I	II	1
Rice Bran	-1/8	16-20	30A	0.4	A2	I	I	II	1, 7
Rice Grits	-1/8	42-45	30A	0.4	A2	I	I	II	
Rubber, ground	-1/8	23-50	30A	0.8	A2	I	I	III	
Rye	-1/8	44-48	45	0.4	A2	I	I	I	1
Safflower	-1/8	45	45	0.4	A2	I	I	I	1
Safflower, cake	+1/2	50	30A	0.6	B1	I	I	II	
Safflower, meal	-1/8	50	30A	0.6	A2	I	I	II	
Saffron (Safflower)	●	●	●	●	●	●	●	●	
Sal Ammoniac (Ammonium Chloride)	-1/8	52	30A	0.8	A2	I	I	II	
Salicylic Acid	-1/8	29	30A	0.6	A2	I	I	II	3
Salt, Dry Coarse	-1/4	45-50	30B	1.0	B4	II	II	II	3
Salt, Dry Fine	-1/8	70-80	30B	1.7	B4	II	II	II	3
Salt Cake (Sodium Sulfate)	-1/4	85	30B	2.1	B4	II	II	II	3
Saltpeter (Potassium Nitrate)	-1/2	76	30B	1.2	C4	II	III	I	1
Sand, damp, bank	-1/8	110-130	15	2.8	C4	III	I	III	
Sand, dry, bank	-1/8	90-110	15	1.7	C4	III	I	II	
Sand, dry silica	-1/8	90-100	15	2.0	C4	III	I	I	
Sand, foundry, prepared	-1/8	90	15	3.0	C4	III	I	III	
Sand, foundry, shakeout	+1/2	90	15	2.6	D4	III	I	II	
Sawdust, dry	-1/8	10-13	30A	0.7	A2	I	I	III	
Shale, crushed	-1/2	85-90	30B	2.0	B4	II	I	II	
Shavings, wood, dry	+1/2	8-15	30A	0.5	B1	I	I	III	7, 9
Shellac	-1/8	31	30A	0.8	A2	I	I	II	4
Silica Gel (Silicic Acid)	-1/8	45	15	1.7	B4	III	I	II	3, 6
Silicon Dioxide (Quartz)	-1/8	85	15	1.8	C4	III	I	II	
Slag, furnace	1/2	160-180	15	1.2	C4	III	I	II	
Slag, furnace	+1/2	60-65	15	2.4	D4	III	I	II	
Slaked Lime (Lime, hydrated)	●	●	●	●	●	●	●	●	
Slate, crushed	-1/2	80-90	30B	2.0	B4	II	I	II	
Slate, ground	-1/8	82	30B	1.6	B4	II	I	II	
Sludge, sewage, dried	-1/8	45-55	30B	0.5	D4	II	III	III	
Snow, fresh	-1/8	5-12	30A	0.4	A2	I	I	III	
Snow, packed	+1/2	15-35	30A	0.8	B1	I	I	III	
Soap, beads or granules	-1/4	15-35	30A	0.6	A2	I	I	II	3
Soap, chips	1/2	15-25	30A	0.4	A2	I	I	II	3
Soap, flakes	-1/8	5-20	30A	0.6	A2	I	I	II	3
Soap, powder	-1/8	20-25	30A	0.8	A2	I	I	II	
Soapstone (Talc)	-100M	40-50	30B	0.9	B4	II	I	III	2, 8
Soda Ash, heavy	-1/8	55-65	30B	1.0	B4	II	I	II	
Soda Ash, light	-100M	20-35	30B	0.8	B4	II	I	II	2, 7
Sodium Aluminate	-1/8	72	30B	1.0	B4	II	I	II	
Sodium Aluminum Fluoride (Kryolith)	●	●	●	●	●	●	●	●	
Sodium Bicarbonate	-100M	70-80	30A	1.0	A2	I	I	II	
Sodium Borate (Borax)	●	●	●	●	●	●	●	●	
Sodium Carbonate (Soda Ash)	●	●	●	●	●	●	●	●	
Sodium Chloride (Salt)	●	●	●	●	●	●	●	●	
Sodium Hydrate (Caustic Soda)	●	●	●	●	●	●	●	●	
Sodium Hydroxide (Caustic Soda)	●	●	●	●	●	●	●	●	
Sodium Nitrate	-1/8	70-80	30A	1.2	A2	I	I	II	1



Material	Maximum Particle Size (IN.)	Average Weight Per Cu.Ft.	% Loading	H.P. Factor	Component Series	Abrasiveness	Corrosiveness	Flowability	NOTE
Sodium Phosphate	-1/8	50	30B	0.6	B4	II	I	II	
Sodium Sulfate, dry	+1/2	85	30B	0.8	B4	II	I	II	
Sodium Sulfate, dry	-1/8	65-85	30B	1.0	B4	II	I	II	
Sorghum seed	-1/8	32-52	45	0.5	A2	I	I	I	
Soybeans, cracked	-1/4	30-40	30B	0.5	B4	II	I	II	1
Soybeans, whole	-1/4	45-50	15	0.4	C4	III	I	I	1
Soybean, cake	+1/2	40-43	30A	1.0	B1	I	I	II	
Soybean Flakes, raw	-1/4	20-26	30A	0.8	A2	I	I	II	7
Soybean Flakes, spent	-1/4	18-20	30A	0.6	A2	I	I	II	7
Soybean Flour	-100M	27-30	30A	0.8	A2	I	I	II	1
Soybean Meal, cold	-1/8	40	30A	0.5	A2	I	I	II	
Soybean Meal, hot	-1/8	40	30A	0.5	D3	I	II	II	
Starch	-100M	25-50	●	●	●	●	●	●	●
Steatite (Talc)	●	●	●	●	●	●	●	●	
Steel, chips, crushed	+1/2	100-150	15	1.6	D4	III	I	II	
Stibium (Antimony)	●	●	●	●	●	●	●	●	
Sugar, granulated	-1/8	50-55	30A	0.7	A2	I	I	II	4, 6
Sugar, powdered	-200M	50-60	●	●	●	●	●	●	●
Sugar, raw, cane	-1/8	55-65	30A	1.0	A2	I	I	III	8
Sugar, wet, beet	-1/8	55-65	30A	1.4	A2	I	I	III	8
Sugar Beet, pulp, dry	-1/2	12-15	●	0.9	●	II	●	II	●
Sugar Beet, pulp, wet	-1/2	25-45	●	1.2	●	I	●	II	8
Sulphur, crushed	-1/2	50-60	30A	0.8	A2	I	I	II	1
Sulphur, ground	-1/8	50-60	30A	0.6	A2	I	I	II	1, 2
Sulphur, lumps	-3	80-85	30A	0.8	B1	I	I	II	1
Taconite, pellets	+1/2	116-130	15	2.0	D4	III	I	II	6
Talc	-100M	40-60	30B	0.8	B4	II	I	III	2, 8
Talc	-1/2	80-90	30B	0.9	B4	II	I	II	
Tanbark, ground	●	55	30A	0.7	●	●	●	●	●
Titanium Dioxide (Ilmenite)	-1/8	140	15	2.0	C4	III	I	II	
Thenardite (Sodium Sulfate)	●	●	●	●	●	●	●	●	
Tobacco, scraps	+1/2	15-25	30A	0.8	B1	I	I	III	7
Tobacco, snuff	-100M	30	30B	0.9	B4	II	I	III	1, 2, 6
Tricalcium Phosphate	-100M	40-50	30A	1.6	A2	I	I	III	
Trisodium Phosphate	-1/8	60	30B	1.7	B4	II	I	II	
Tung Nut Meats, crushed	+1/2	25	30A	0.8	B1	I	I	II	
Untaite (Bentonite)	●	●	●	●	●	●	●	●	
Vermiculite, expanded	-1/2	16	30B	0.5	B4	II	I	III	7
Vermiculite Ore	-1/2	80	30B	0.8	B4	II	I	II	
Vulcanite (Ebonite)	-1/2	65-70	30A	0.8	A2	I	I	II	
Walnut Shells, crushed	-1/8	35-40	15	1.0	B4	II	I	II	
Wheat	-1/4	45-48	45	0.4	A2	I	I	I	1
Wheat, cracked	-1/8	35-45	30A	0.4	A2	I	I	I	1
Wheat, germ	-1/8	18-28	30A	0.4	A2	I	I	I	
White Lead, dry	-100M	75-100	30B	1.0	B4	II	I	II	2, 5
Wilkinite (Bentonite)	●	●	●	●	●	●	●	●	
Wood Bark	+1/2	10-20	30B	1.2	B4	II	I	III	9
Wood Chips	+1/2	10-30	30A	0.6	B1	I	I	III	7, 9
Wood, flour	-200M	16-36	30A	0.4	A2	I	I	III	7, 8
Zinc, concentrate residue	-1/8	75-80	15	1.0	C4	III	I	II	
Zinc Oxide, heavy	-200M	30-35	30A	1.0	A2	I	I	III	2, 8
Zinc Oxide, light	-200M	10-15	30A	0.8	A2	I	I	III	2, 7, 8



## CAPACITY

A capacity table is provided on page 19 to aid you in calculation of proper conveyor size. To use this table, find the capacity at maximum RPM, opposite the recommended percentage of conveyor loading, that equals or exceeds the capacity of material required per hour. The recommended conveyor diameter will then be found in the appropriate column on the same line, as will the maximum particle size recommended for the screw diameter.

If the maximum particle size you plan to convey is larger than the maximum recommended particle size for the conveyor you've chosen from the table, you must then select a larger conveyor, adequate to handle the maximum particle size you intend to use.

### CALCULATION OF CONVEYOR SPEED

Conveyor speed can be most conveniently calculated, by use of the nomographs supplied on pages To use this nomograph first locate the two known values (screw diameter, and required capacity, in cu. ft. per hour) then with a straight edge connect these two points, and the appropriate conveyor speed will be the intersection point on the third value column marked "speed".

Maximum economical capacities will be listed for reference opposite their respective conveyor diameters, and should not be exceeded. Another method of calculating conveyor speed is:

$$CS = \frac{CFH}{CFH \text{ at } 1 \text{ RPM}}$$

#### Equation Symbols

CS = Conveyor Speed

CFH = Capacity in Cubic Feet per Hour

### CAPACITY FACTORS FOR SPECIAL PITCH OR MODIFIED FLIGHT CONVEYORS

Special conveyor types are selected in the same manner as standard conveyors, but the section capacity used for determining size and speed, must be modified to

compensate for different characteristics of special conveyors.

Calculation of special screw conveyor capacities is as follows:

$$SC = CFH \times CF$$

#### Equation Symbols

SC = Selection Capacity

CFH = Required Capacity in Cubic Feet per Hour

CF = Capacity Factor

### SPECIAL CONVEYOR PITCH CAPACITY FACTORS

Pitch	Description	Capacity Factor
Standard	Pitch = Diameter	1.00
Short	Pitch = 2/3 Diameter	1.50
Half	Pitch = 1/2 Diameter	2.00
Long	Pitch = 1-1/2 Diameters	0.67

### SPECIAL CONVEYOR FLIGHT CAPACITY FACTORS

Type	Conveyor Loading			
	15%	30%	45%	95%
Cut flight	1.92	1.57	1.43	*
Cut & folded flight	*	3.75	2.54	*

\* NOT RECOMMENDED

### FACTORS FOR CONVEYORS WITH PADDLES\*

Factor	Paddles Per Pitch			
	1	2	3	4
	1.08	1.16	1.24	1.32

\* Std. paddles at 45° reverse pitch

## RIBBON CONVEYOR CAPACITY FACTORS

Dia.	Ribbon Width	Conveyor Loading		
		15%	30%	45%
6	1	1.32	1.52	1.79
9	1-1/2	1.34	1.54	1.81
10	1-1/2	1.45	1.67	1.96
12	2	1.32	1.52	1.79
	2-1/2	1.11	1.27	1.50
14	2-1/2	1.27	1.45	1.71
16	2-1/2	1.55	1.69	1.90
18	3	1.33	1.53	1.80
20	3	1.60	1.75	1.96
24	3	2.02	2.14	2.28

### EXAMPLE:

A conveyor is required to transport 10 tons per hour of a material weighing 62 pounds per cubic foot and having a maximum particle size of 100 mesh. To further complicate the problem, we will require that the material be mixed in transit, using cut and folded flights. Since the distance the material is to be conveyed is relatively short, we want to use short pitch screws, to insure proper mixing of material. The materials table recommends a loading percentage of 30% A.

Actual calculated volume:

$$\frac{20,000 \text{ lbs.}}{62 \text{ lbs./cu. ft.}} = 323 \text{ cu. ft./hr.}$$

For proper calculation of size and speed, this volume must be corrected, by use of capacity factors, to compensate for cut and folded, and short (2/3) pitch flights.

These capacity factors, taken from the preceding charts are:

$$\begin{aligned} \text{Cut and folded flights 30\% loading} &= 3.75 \\ \text{Short pitch flights (2/3 pitch)} &= 1.50 \end{aligned}$$

With capacity factors included, capacity will now be calculated:

$$\begin{aligned} SC &= 3.75 \times 1.50 \times 323 \\ SC &= 1817 \text{ cu. ft.} \end{aligned}$$

This selection capacity value will be used in the capacity table, for calculating correct size and speed. In the appropriate column, under 30% A loading, we find that a 14" conveyor, at the maximum recommended speed will convey 2194 cu. ft. per hr. or 21.1 cu. ft. per revolution.

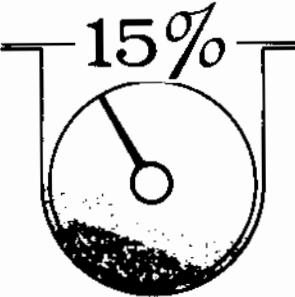
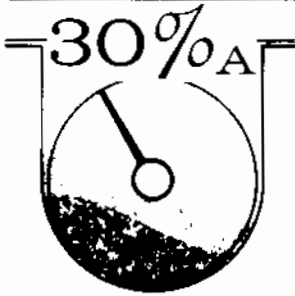
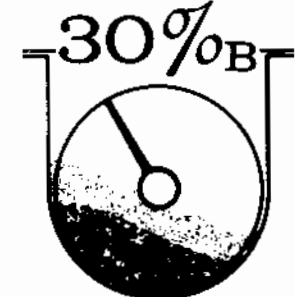
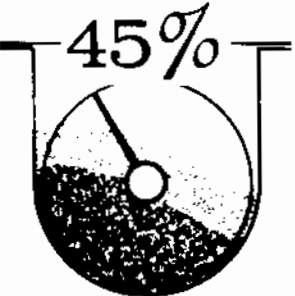
To calculate actual conveyor speed, the following formula should be used:

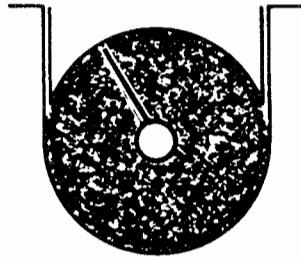
$$\frac{1817 \text{ cu. ft./hr.}}{21.1 \text{ cu. ft./hr. at 1 RPM}} = 86.1 \text{ RPM}$$

This is the correct speed at which the 14" conveyor with cut and folded, and short pitch flights will convey the actual capacity of 323 cu. ft. per hour.

Graphic selection of this conveyor could also be accomplished by use of the 30% A nomograph on page 22 and the selection capacity of 1817 cu. ft. per hour.

CAPACITY TABLE

Trough Loading	Screw Dia.	Max. Lump Size (In.)	Max. RPM	Capacity in Cu. Ft. Per Hr.	
				At Max. RPM	At 1 RPM
	4	1/2	69	14.5	.21
	6	3/4	66	49.5	.75
	9	1-1/2	62	173	2.8
	10	1-3/4	60	222	3.7
	12	2	58	389	6.7
	14	2-1/2	56	588	10.5
	16	3	53	832	15.7
	18	3-1/4	50	1,135	22.7
	20	3-1/2	47	1,462	31.1
	24	4	42	2,293	54.6
	4	1/2	139	57	.41
	6	3/4	132	198	1.5
	9	1-1/2	122	683	5.6
	10	1-3/4	118	849	7.2
	12	2	111	1,476	13.3
	14	2-1/2	104	2,194	21.1
	16	3	97	3,046	31.4
	18	3-1/4	90	4,086	45.4
	20	3-1/2	82	5,092	62.1
	24	4	68	7,426	109.2
	4	1/2	69	28	.41
	6	3/4	66	99	1.5
	9	1-1/2	62	347	5.6
	10	1-3/4	60	432	7.2
	12	2	58	771	13.3
	14	2-1/2	56	1,182	21.1
	16	3	53	1,664	31.4
	18	3-1/4	50	2,270	45.4
	20	3-1/2	47	2,919	62.1
	24	4	42	4,586	109.2
	4	1/2	190	116	.61
	6	3/4	182	413	2.27
	9	1-1/2	170	1,360	8.0
	10	1-3/4	165	1,782	10.8
	12	2	157	3,030	19.3
	14	2-1/2	148	4,558	30.8
	16	3	140	6,524	46.6
	18	3-1/4	131	8,659	66.1
	20	3-1/2	122	11,590	95.0
	24	4	105	17,535	167.0



95%

#### 95% LOADED CONVEYORS

Conveyor loadings may sometime exceed the recommended % of Loading, listed in the materials table. Considerations as to the material characteristics may justify up to 95% loading of tubular or shrouded conveyors. The following table lists maximum speeds limited with regard to the percentage of loading normally recommended for the specific listed materials.

**CAPACITY TABLE  
FOR 95% LOADED CONVEYORS**

Screw Dia.	Max. Lump Size (IN.)	Max. Recommended RPM				Capacity in Cubic Feet Per Hour				
		Normal % Loading *				Normal % Loading *				AT 1 RPM
		15	30A	30B	45	15	30A	30B	45	
4	1/4	76	89	80	96	96	113	101	122	1.27
6	3/8	67	78	70	84	318	370	332	399	4.75
9	3/4	58	68	61	73	974	1,142	1,024	1,226	16.8
10	7/8	55	65	58	70	1,309	1,547	1,380	1,666	23.8
12	1	49	58	52	62	1,999	2,366	2,122	2,530	40.8
14	1-1/4	43	51	46	55	2,804	3,325	2,999	3,586	65.2
16	1-1/2	38	45	40	48	3,762	4,455	3,960	4,752	99.0
18	1-3/4	32	38	34	41	4,512	5,358	4,794	5,781	141.0
20	2	26	31	28	34	5,226	6,231	5,628	6,834	201.0
24	3	21	25	23	28	7,434	8,850	8,142	9,912	354.0

\* From the materials table

# COMPONENT SELECTION

Proper selection of components is very important in the design of conveyor system. This section of the Engineering Catalogue explains the different designs of primary components, and their principle uses. Also, there is a list of special influencing factors for materials with special handling characteristics.

## CONVEYOR LOADING AND DISCHARGE

Conveyor loading should be regulated to prevent the components from exceeding their design limits.

### REGULATED OUTPUT DEVICES

When delivery to conveyor is from machinery with a regulated material output, the conveyor itself can be designed to handle the anticipated material volume.

Material is sometimes stored and released intermittently. In this situation, surge loads sometimes cause the conveyor to operate beyond it's recommended capacity. Screw feeders are very effective in regulating these intermittent loads, and should be used if at all possible. Otherwise conveyors must be designed for the maximum momentary or surge loads.

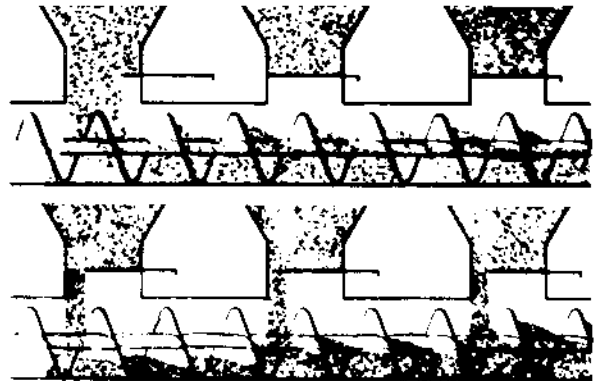


## STATIC STORAGE LOADING

When loading from static storage or from manually regulated inlets, a load indicating ammeter can be attached to the meter control, as a simple and effective tool for accomplishing maximum design loading.

### MULTIPLE INLET LOADING

When more than one inlet is feeding the screw conveyor, care must be taken to insure the collective total of the inlets does not exceed the conveyors design limits.



### LOADING THROUGH AUTOMATIC CONTROLS

Automatic devices are available to modulate inlet or feed devices to work within design limits of the conveyor at all times.

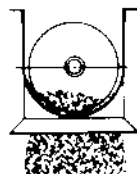
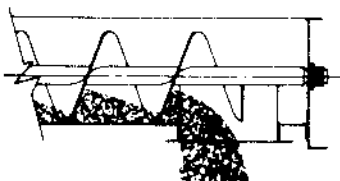
## DISCHARGE METHODS

Below are drawings of standard discharge components in a variety of designs. These configurations are listed for individual applications where the standard dis-

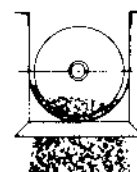
charge spouts are not necessarily appropriate. Cautions are inserted when necessary for particular discharge components.

### Standard Discharge Spout

This component provides a means of directly coupling most interconnecting spouts, processing machinery, other conveyors or storage facilities. Available with hand, rack and pinion or air actuated cut off gates.



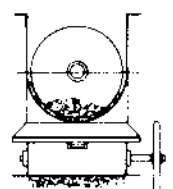
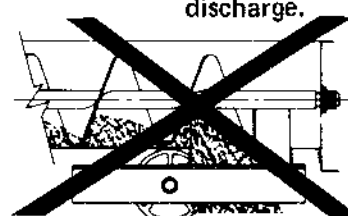
### Flush End Discharge

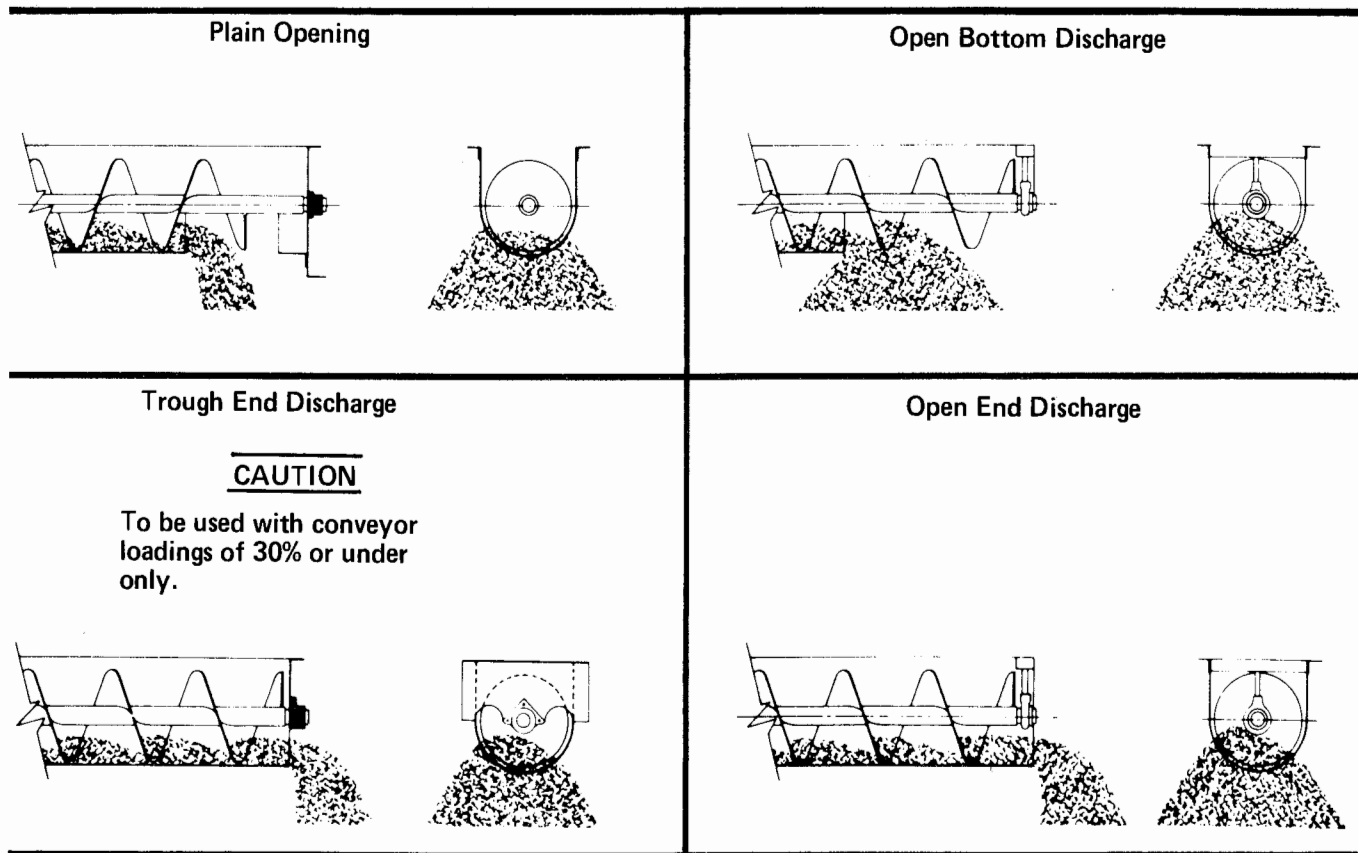


### Mechanically Operated Gates (Manual or Remote Controlled)

#### CAUTION

Not to be used on last discharge.





### FACTORS INFLUENCING MATERIALS OF CONSTRUCTION OR SPECIAL MECHANICAL ARRANGEMENT OF SCREW CONVEYOR COMPONENTS

#### Corrosive Materials

Corrosive materials, or materials which have a tendency to become corrosive under certain conditions, may necessitate the use of corrosion-resistant alloys such as stainless steel.

#### Abrasive Materials

Abrasive materials which may cause excessive wear of components should be conveyed at a nominal depth in the conveyor. It is often advisable to also specify KWS's Abrasion-Resistant Screw Conveyors or conveyors with flights formed of AR steel plate.

KWS's Abrasion-Resistant Screw Conveyors, which have a Rockwell C hardness of 68-70, are covered in the Component Section. A table listing the standard width of application of hard surfacing is included.

#### Contaminable Materials

Materials whose usefulness or value may be altered by contamination may require the use of non-lubricated bearings, as well as a tightly sealed system.

#### Hygroscopic Materials

Materials that readily absorb moisture require a tightly sealed conveyor. It may be necessary also to jacket the conveyor trough or housing with a circulating medium

to maintain an elevated temperature. Purging the system with dry gas or air may be necessary.

#### Interlocking Materials

Materials which tend to mat or interlock are sometimes effectively conveyed by using special devices to load the conveyor.

#### Fluidizing Materials

Some materials tend to assume hydraulic properties when aerated or mechanically agitated. Such materials may "flow" in the conveyor much the same as a liquid. These materials should be referred to KWS's engineering department for recommendations.

#### Explosive Materials

Dangerous explosive materials can be handled by sealing the system and/or the use of non-sparking components. It is also possible to utilize exhaust systems for hazardous dust removal.

#### Materials Which Tend to Pack

Materials that tend to pack under pressure can frequently be handled by using aerating devices (for fine materials) or special feeding devices (for large or fibrous particles).

#### Viscous or Sticky Materials

Viscous or sticky materials are transported most effectively by ribbon conveyors.

## Degradable Materials

Materials with particles that are easily broken may be effectively handled by selection of a larger, slower conveyor.

## Elevated Temperatures

Materials handled at elevated temperatures may require components manufactured of high-temperature alloys. If it is feasible to cool the material in transit, a jacketed trough used as a cooling device may also be employed.

## Toxic Materials

Materials which emit harmful vapors or dusts require tightly sealed systems. Exhaust devices may also be used to remove the vapors or dusts from the conveyor housing.

## DESCRIPTION OF COMPONENTS

### Conveyor Screws

The recommended screws listed in the Component Series Table are standard KWS helicoid and sectional screw conveyors. The use of helicoid or sectional conveyors is largely a matter of individual preference.

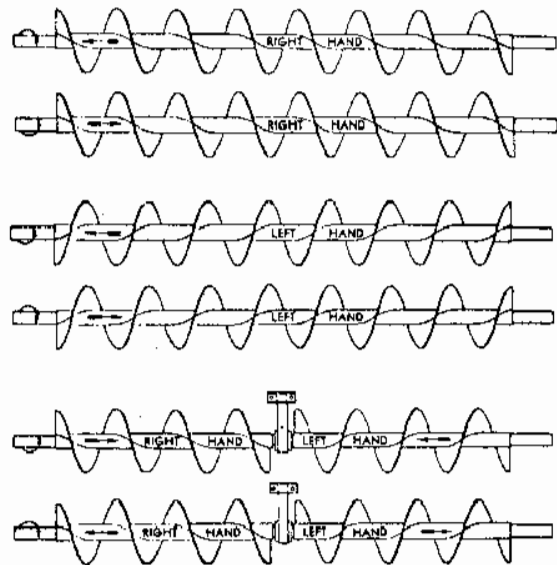
It is advisable to use, whenever possible, standard conveyors in standard lengths. When a special short length must be used to make up the total conveyor length, it is preferably located at the discharge end.

Screw conveyors are structurally reinforced at the ends by the use of end lugs which are welded to the non-carrying side of the flights so that material flow will not be obstructed.

Screw conveyors which move material in a single direction should not be turned end-for-end unless the direction of screw rotation is reversed. Likewise, the direction of rotation should not be reversed unless the conveyor is turned end-for-end. Requirements for reversible conveyors should be referred to KWS's Engineering Department. Flighting should be omitted at the final discharge, so that material will not carry past the discharge point.

To assure proper material flow past hanger bearing points, flight ends should be positioned to each other at 180 degrees.

The "hand" of a conveyor, in conjunction with the direction the conveyor is rotated, determines the direction of material flow. The diagram below illustrates flow direction for "right-hand" and "left-hand" conveyors when rotated clockwise or counterclockwise.



A right-hand screw conveyor pulls the material toward the end which is being rotated clockwise. The direction of flow is reversed when the direction of rotation is reversed.

A left-hand conveyor pushes the material away from the end which is being rotated clockwise. Again, the direction of material flow is reversed when the direction of rotation is reversed.

To determine the hand of a conveyor, observe the slope of the near side of the flighting. If the slope is downward to the right, the conveyor is right-hand. If the slope is downward to the left, the conveyor is left-hand. Right-hand conveyor is furnished unless otherwise specified.

### Troughs and Tubular Housings

KWS troughs and tubular housings are available in standard lengths. Special lengths are available when required. All conveyor troughs or tubular housings should be supported by flange feet or saddles at standard intervals. Extreme end flanges should be supported with feet so that the conveyor ends may be removed without disturbing trough or housing alignment.

### Inlets and Discharges

The proper methods of conveyor loading and discharge were covered previously in this section.

### Shafts

The primary consideration in determining the type and size of coupling and drive shafts is whether the shafts selected are adequate to transmit the horsepower required, including any overload. Normally, cold-rolled shafts are adequate. However, high-tensile shafts may

be required due to torque limitations. Also, stainless steel shafts may be necessary when corrosive or contaminable materials are to be handled. Conveyors equipped with non-lubricated iron hanger bearings require hardened coupling shafts, and hard-surfaced hanger bearings require hard-surfaced shafts. Specific shaft size determination is covered in the Torque Capacities Section.

#### Shaft Seals

Several conveyor end seal types are available to prevent contamination of the conveyed material or to prevent the escaped of material from the system.

#### Bearings

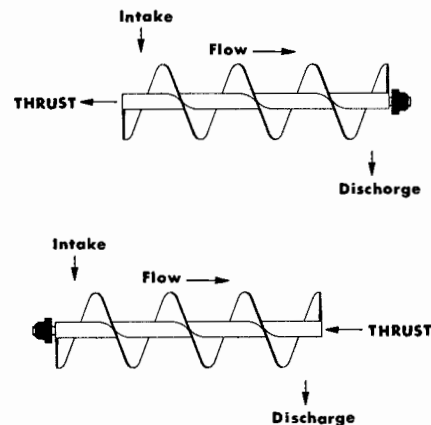
**Hanger Bearings** - The purpose of hanger bearings is to provide intermediate support when multiple screw sections are used. Hanger bearings are designed primarily for radial loads. Adequate clearance should be allowed between the bearings and the conveyor pipe ends to prevent damage by the thrust load which is transmitted through the conveyor pipe. The hanger bearing recommendations listed in the Component Series Table are generally adequate for the material to be handled. Often, however, unusual characteristics of the material or the conditions under which the conveyor must operate make it desirable to use special bearing materials. A list of available special bearing materials is provided in this section. For specific recommendations regarding the use of special bearing materials, consult KWS's Engineering Department.

**End Bearings** - Several end bearing types are available, and their selection depends on two basic factors: Radial load and thrust load. The relative values of these loads determines end bearing types.

Radial load is negligible at the conveyor tail shaft. However, drive ends (unless integrated with the conveyor end plate) are subject to radial loading due to overhung drive loads, such as chain sprockets or shaft-mounted speed reducers.

Thrust is the reaction, through the conveyor screw or screws, resulting from movement of the material. Therefore, the end bearing must prevent axial movement of the screw which would allow contact with hanger bearings or ends. Thrust bearings should be located at the discharge end of the conveyor. This places the conveyor in tension, preventing deflection

in the screws when the system is heavily loaded. The following diagrams illustrate discharge and inlet end positions of the thrust bearing.



#### COMPONENT SERIES

The recommended Component Series for the material to be conveyed may be found in the Materials Table at the beginning of the Engineering Section. The alphabetical code relates to the general component series, and the numerical code refers to bearings and coupling shafts. The Component Series Table follows on the next page. Bearing and coupling shaft recommendations are listed in the table below. The Component Series Table lists the screw conveyor numbers for both helicoid and sectional screws and gives the trough and cover thicknesses. The Bearing and Coupling Shaft Table lists the recommended materials of construction.

Series	Coupling Shaft	Bearing Material
1	Standard or High Torque	Babbitt Wood Bronze
2	Standard or High Torque	Babbitt Wood Bronze Ball
3	Standard or High Torque	Babbitt
4	Hardened or Hard Surfaced	Hard Iron Hard Surfaced



Other Bearing Materials Available

Graphite Bronze  
Graphite-Impregnated Plastic  
Machined Nylon

Molded Nylon  
Oil-Impregnated Bronze  
Plastic, Laminated Fabric-Base  
Teflon

COMPONENT SERIES TABLE

Screw Dia.	Shaft Dia.	Cover Thickness	Series A			Series B		
			Screw Number		Tube or Trough Thickness	Screw Number		Tube or Trough Thickness
			Helicoid	Sectional		Helicoid	Sectional	
4	1	16 Ga.	4H204		16 Ga.	4H206		14 Ga.
6	1½	16	6H304	6S309	16	6H308	6S309	14
9	1½ 2	16	9H306 9H406	9S309 9S409	14	9H312 9H412	9S309 9S409	10
10	1½ 2	16	10H306 10H412	10S309 10S409	14	10H306* 10H412	10S312 10S412	10
12	2 2⅞ 3	14	12H408 12H508 12H614	12S409 12S509 12S609	12	12H412 12H512 12H614	12S412 12S512 12S612	⅜"
14	2⅞ 3	14	14H508 14H614	14S509 14S609	12	14H508 14H614	14S512 14S612	⅜"
16	3	14	16H610	16S612	12	16H614	16S616	⅜"
18	3 3⅞	14		18S612 18S712	12		18S616 18S716	⅜"
20	3 3⅞	14		20S612 20S712	10		20S616 20S716	⅜"
24	3⅞	12		24S712	10		24S716	⅜"
Screw Dia.	Shaft Dia.	Cover Thickness	Series C			Series D		
			Screw Number		Tube or Trough Thickness	Screw Number		Tube or Trough Thickness
			Helicoid	Sectional		Helicoid	Sectional	
4	1	16 Ga.	4H206		14 Ga.	4H206*		
6	1½	16	6H312	6S312	14	6H312	6S316	10
9	1½ 2	16	9H312 9H414	9S312 9S412	10	9H312 9H414	9S316 9S416	⅜"
10	1½ 2	16	10H306* 10H412	10S312 10S412	10	10H306* 10H412*	10S316 10S416	⅜"
12	2 2⅞ 3	14	12H412 12H512 12H614	12S416 12S516 12S616	⅜"	12H412* 12H512* 12H614	12S424 12S524 12S624	¼"
14	2⅞ 3	14	14H508* 14H614	14S524 14S624	⅜"	14H508* 14H614*	14S524 14S624	¼"
16	3	14	16H614	16S616	⅜"	16H614*	16S624	¼"
18	3 3⅞	14		18S624 18S724	⅜"		18S624 18S724	¼"
20	3 3⅞	14		20S624 20S724	⅜"		20S624 20S724	¼"
24	3⅞	12		24S724	⅜"		24S724	¼"

\*Hard-Surfacing Recommended

# HORSEPOWER CALCULATION

## 1. Graphic Method of Calculation

The total horsepower (TSHP) required at the drive shaft to drive the loaded conveyor system may be calculated graphically by use of the nomographs, pages 24 and 25. The friction horsepower (FHP), determined with the first nomograph, added to the Material Horsepower (MHP), determined with the second nomograph, equals the Total Shaft Horsepower (TSHP).

**Friction Horsepower** — A straight edge placed at the first two known values, conveyor size (related to hanger bearing class as listed in hanger bearing factor table) and length, will intersect a reference point on the centerline. A straight edge placed from this reference point to the third known value, conveyor speed, will intersect the unknown value, Friction Horsepower, on the last line.

**Material Horsepower** — A straight edge placed at the first two known values, conveyor capacity and Material Horsepower Factor, will intersect a reference point on the centerline. A straight edge from the reference point to the third known value, conveyor length, will intersect the unknown value, Material Horsepower, on the last line.

## 2. Calculation by Equation

TSHP may also be calculated by equation using the following formulas:

### 1. FRICTION H.P. CALCULATION

$$FHP = \frac{DF \times HBF \times L \times S}{1,000,000}$$

### 2. MATERIAL H.P. CALCULATION

$$MHP = \frac{CFH \times W \times MF \times L}{1,000,000}$$

$$\text{OR}$$

$$MHP = \frac{CP \times MF \times L}{1,000,000}$$

**NOTE** If calculated Material Horsepower is less than 5 it should be corrected for potential overload. The corrected horsepower value corresponding to the calculated Material Horsepower will be found on the lower scale of the Material Horsepower Overload Correction Chart, page 23

### 3. TOTAL SHAFT H.P. CALCULATION

$$TSHP = FHP + MHP^*$$

\*Corrected if below 5 HP.

**NOTE** The actual motor horsepower required to drive the loaded conveyor system is dependent on the method used to reduce the speed the motor to the required speed of the conveyor. Drive losses must be taken into consideration when selecting the motor and drive equipment.

## EQUATION SYMBOLS

TSHP	=	Total Shaft H.P.
FHP	=	Friction H.P. (H.P. required to drive the conveyor empty)
MHP	=	Material H.P. (H.P. required to move the material)
L	=	Conveyor Length
S	=	Conveyor Speed
DF	=	Conveyor Diameter Factor
HBF	=	Hanger Bearing Factor
CFH	=	Conveyor Capacity
W	=	Weight per cu. ft.
CP	=	Capacity, lbs. per hr.
MF	=	Material H.P. Factor (From the Materials Table)

## DIAMETER FACTORS

Diameter	Factor
4	12
6	18
9	31
10	37
12	55
14	78
16	106
18	135
20	165
24	235

## HANGER BEARING FACTORS

Bearing Type	Bearing Factor	Bearing Class
Ball	1.0	I
Babbitt Bronze *Graphite Bronze Plastic, laminated fabric-base Nylon *Bronze, oil-impregnated Wood	1.7	II
*Plastic, graphite- impregnated *Nylon *Teflon	2.0	III
*Hard Iron *Hard-Surfaced	4.4	IV

\*Non-Lubricated

## CONVEYORS WITH MODIFIED FLIGHTS

The procedure for calculation of horsepower for conveyors with special or modified flights is identical to that used for standard conveyors except that the Material Horsepower must be multiplied by one or more of the following applicable factors.

### MODIFIED FLIGHT FACTORS

Flight Type	Conveyor Loading			
	15	30	45	95
Cut Flight	1.1	1.15	1.2	*
Cut & Folded Flight	*	1.5	1.7	*
Ribbon Flight	1.05	1.14	1.20	*

\*Not Recommended

### CONVEYORS WITH PADDLES\*

Factor	Paddles Per Pitch			
	1	2	3	4
	1.29	1.58	1.87	2.16

\* Std. paddles at 45° reverse pitch

Total Shaft Horsepower (TSHP) is calculated by adding Material Horsepower, multiplied by the appropriate modified flight factor or factors, to Friction Horsepower.

**NOTE** Conveyors which have deviation in pitch only do not require special consideration, and their horsepower calculations are as described for standard conveyors.

### EXAMPLE

A 10-inch conveyor 35 feet long with a capacity of 10 tons per hour at 45 RPM has been selected.

From the Materials Table, a Horsepower Factor of 0.8 is found for the material to be conveyed. The table also indicates Series 4 hanger bearings and shafts. Hard iron bearings and hardened coupling shafts have been selected to suit this requirement.

Friction Horsepower, the horsepower required to drive the conveyor empty, is calculated as follows:

$$\begin{aligned} \text{Diameter Factor} &= 37 \\ \text{Hanger Bearing Factor} &= 4.4 \\ \text{Length} &= 35 \\ \text{RPM} &= 45 \\ \text{FHP} &= \frac{37 \times 4.4 \times 35 \times 45}{1,000,000} = 0.256 \end{aligned}$$

Material Horsepower, the horsepower required to move the material, is calculated by the following equation:

$$\begin{aligned} \text{Capacity (in lbs. per hr.)} &= 20,000 \\ \text{Horsepower Factor} &= 4.4 \\ \text{Length} &= 35 \\ \text{RPM} &= 45 \\ \text{MHP} &= \frac{20,000 \times 0.8 \times 35}{1,000,000} = 0.560 \end{aligned}$$

Since the calculated Material Horsepower is less than 5, it is necessary to find the corrected horsepower value corresponding to 0.56 horsepower on the Overload Correction Chart below. This value is found to be 1.320 horsepower.

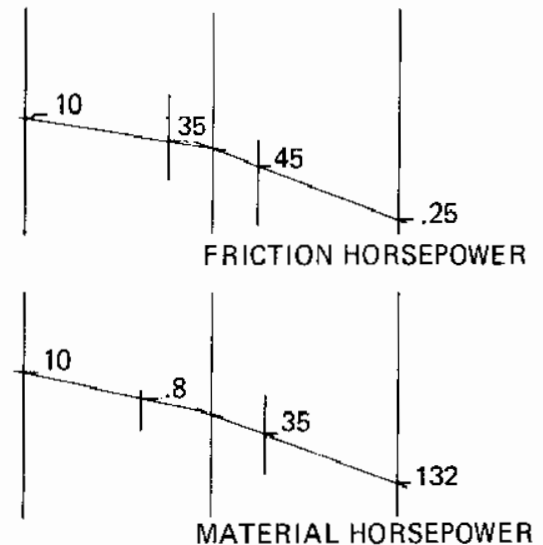
Total Shaft Horsepower (TSHP) is the sum of Friction horsepower and the corrected Material Horsepower.

Thus TSHP is calculated as follows:

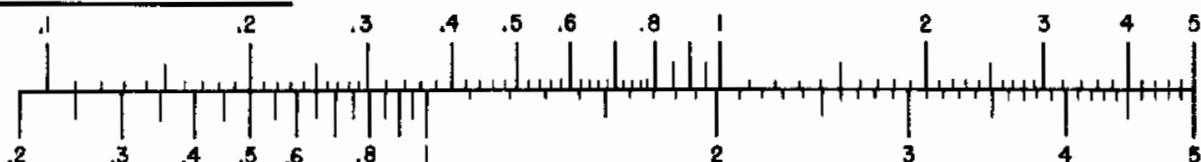
$$\text{TSHP} = 0.256 + 1.320 = 1.576 \text{ H.P.}$$

Assuming a drive efficiency of 85% resulting in a total drive horsepower of 1.853, a standard 2 horsepower motor would be selected for the drive input.

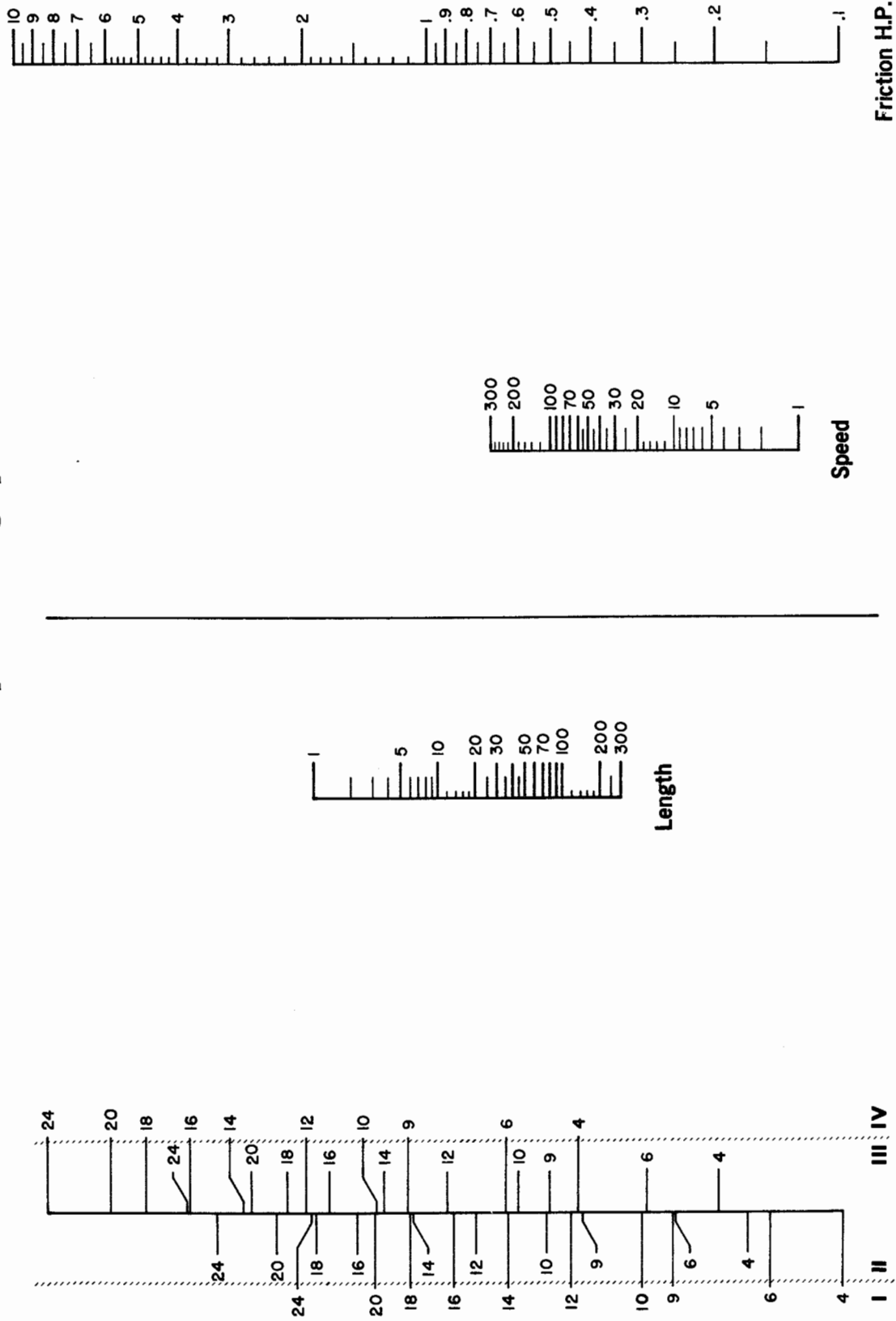
The horsepower required for the above conveyor may also be determined graphically by the use of the two horsepower nomographs. The first nomograph determines Friction Horsepower. The second determines Material Horsepower. Total Shaft Horsepower is determined by adding the two values.



### CORRECTED MATERIAL H.P.



# Friction Horsepower Nomograph



# Material Horsepower Nomograph



## TORQUE CAPACITIES

Although a given conveyor may be adequate insofar as material conveying capacity is concerned, the horsepower available to operate the system may exceed the torque capacities of standard components during overloaded or stalled conditions.

To insure adequate torque capacities without undue additional cost, means are provided in the Industrial standard series of conveyor components for more than one maximum allowable horsepower value. This is accomplished by not only a choice of power-transmitting component sizes but also of the materials of construction.

Analysis of a specific conveyor system with regard to component torque adequacy may be conveniently and quickly made by use of the two following nomographs.

### CARBON STEEL CONVEYORS

The first nomograph covers carbon and high-tensile steel coupling bolts and shafts (drive and coupling) and conveyor pipe (in Schedule 40 and for high capacity, Schedule 80).

These components are listed according to their associated standard conveyor shaft diameters.

The following table lists actual nominal pipe diameters corresponding to the standard conveyor shaft diameter.

Shaft Diameter	1	1-1/2	2	2-7/16	3	3-7/16
Nominal Pipe Size	1-1/4	2	2-1/2	3	3-1/2	4

### STAINLESS STEEL CONVEYORS

The second nomograph covers stainless steel coupling bolts, shafts and conveyor pipe. Coupling bolts are listed by the corresponding standard conveyor shaft diameter with which they are used.

Conveyor pipes are listed in both Schedule 40s and 80s by their nominal pipe sizes.

The pipe size selected should correspond to the standards listed for carbon steel pipe. Deviations from this standard are sometimes possible, in sectional conveyors, by the use of smaller pipe sizes (for economy) when the torque rating is adequate. This procedure requires reaming of the pipe bore for shaft insertion rather than the use of a bushing. It is recommended that requirements for such conveyors be referred to KWS's Engineering Department.

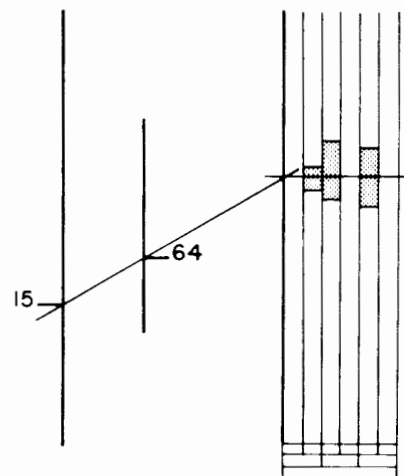
### NOTE

High starting torque motors must not be used without design verification by KWS's Engineering Department.

### EXAMPLE

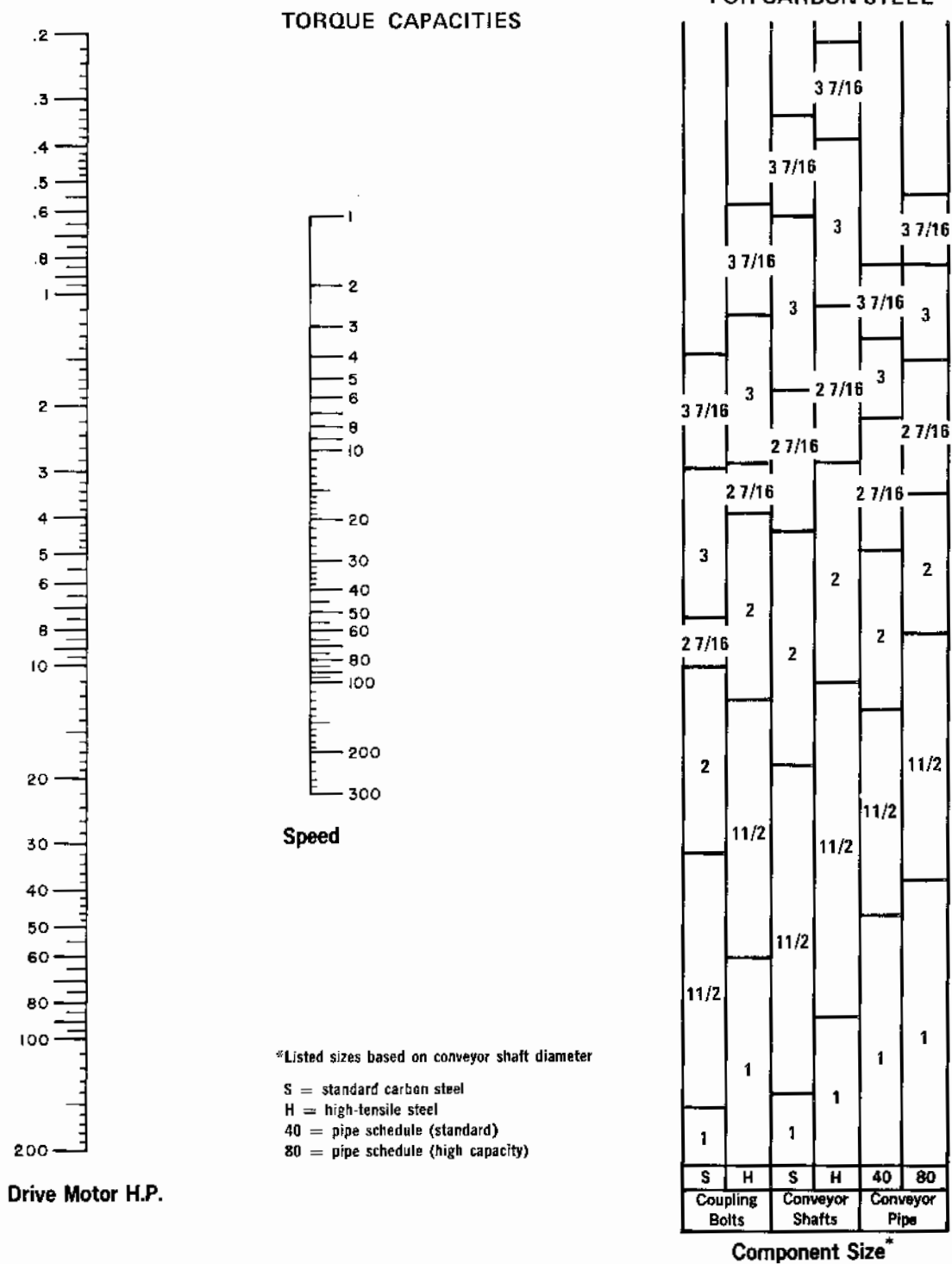
A 12-inch carbon steel conveyor has been selected with a required shaft horsepower of 8.9 and a speed of 64 RPM. The drive to be used has an efficiency of 85%, thus requiring a drive input of 10.46 horsepower. Therefore, a 15 horsepower motor must be used. This total motor horsepower could be transmitted to the conveyor components if overloaded or stalled.

Three standard shaft sizes are available for 12-inch conveyors. They are 2", 2-7/16" and 3".



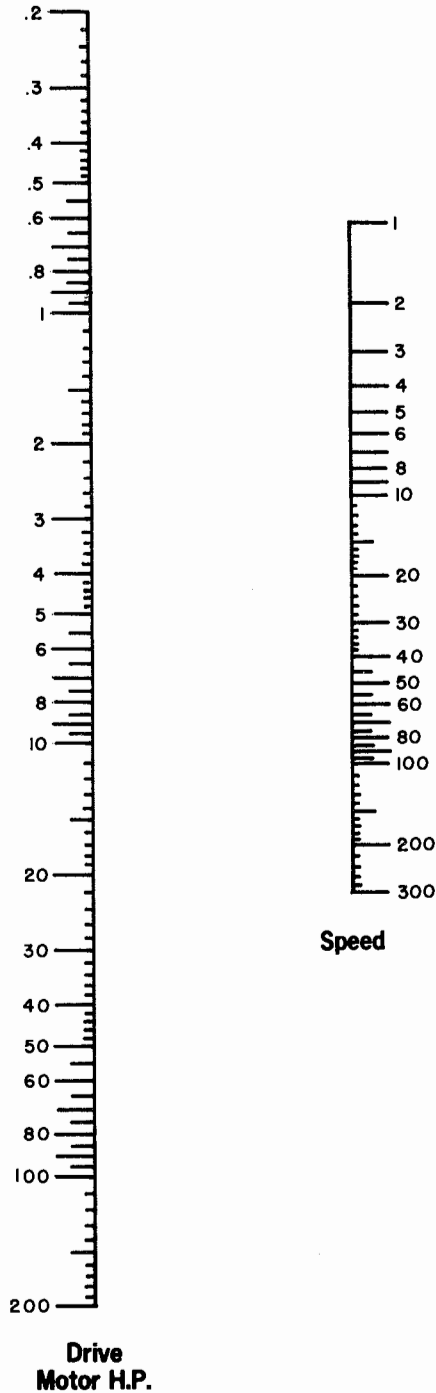
A straight edge is placed from 15 horsepower on the left scale to 64 RPM on the center scale. Project the straight line to the left vertical line of the chart at the right. A horizontal line from this point will pass through component groups suitable for the torque.

For the conveyor under consideration, it is found that standard components will be adequate, with the exception of coupling bolts which must be high tensile.



# TORQUE CAPACITIES

## FOR STAINLESS STEEL



△Coupling bolt sizes based on conveyor shaft diameters.  
Conveyor pipe listed as nominal pipe size.

Coupling Bolts	Conv. Shafts	40s	80s
		Conveyor Pipe	
	3-7/16	4	3-1/2
3-7/16	3		3
3	2-7/16	3	2-1/2
2-7/16		2-1/2	
2	2	2	2
			1-1/2
1-1/2	1-1/2	1-1/2	
1	1	1-1/4	1-1/4

Component Size<sup>△</sup>



# DRIVE ARRANGEMENTS

KWS offers a complete line of power-transmission equipment. Local distributors provide us with a large stock inventory.

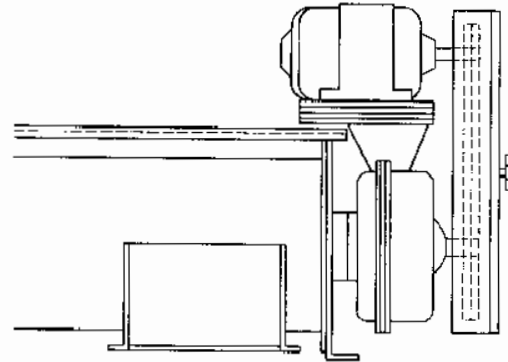
Numerous combinations and types of drives are available for screw conveyor equipment. Some of the more frequently used drives and mechanical arrangements are described below:

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## SCREW CONVEYOR DRIVES

A screw conveyor drive consists of a standard single or double reduction shaft-mounted speed reducer, a steel motor mounting bracket, an adapter with CEMA drilling containing shaft seals, and a removable steel shaft, all mounted on a screw conveyor trough end. The motor bracket is rigidly mounted with clearance over the trough end for easy trough cover removal without disassembling any part of the drive.

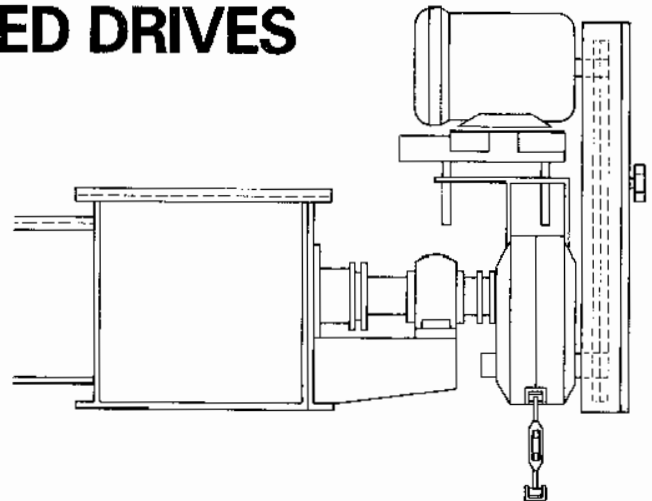
A variety of mounting arrangements makes it possible to locate the drive to avoid interference with other equipment. Correct V-belt tension can be easily maintained by simple adjustment of the motor mounting plate. The drive assembly can be quickly removed by removing the bracket mounting bolts.



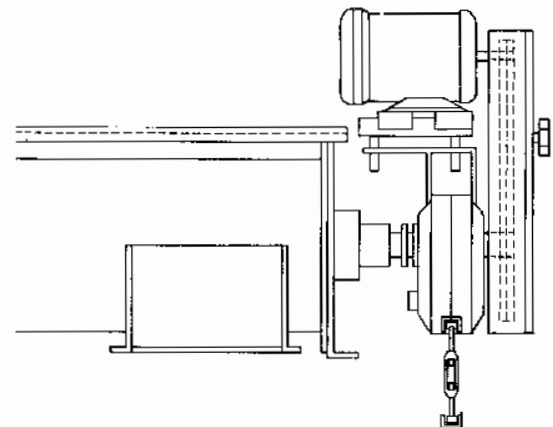
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## SHAFT MOUNTED DRIVES

The helical gear shaft mount speed reducer uses the screw conveyor drive shaft as an "output shaft," making a mounting base and low speed coupling unnecessary. Because it does not mount to the trough end it offers several advantages. It can be used in limited, higher temperature applications where damaging heat can be dissipated before it affects the reducer. You have a greater variety of seals and bearings to choose from. You can utilize heavy duty bearing for higher than usual bearing loads. The reducer can be rotated in any position around the shaft.



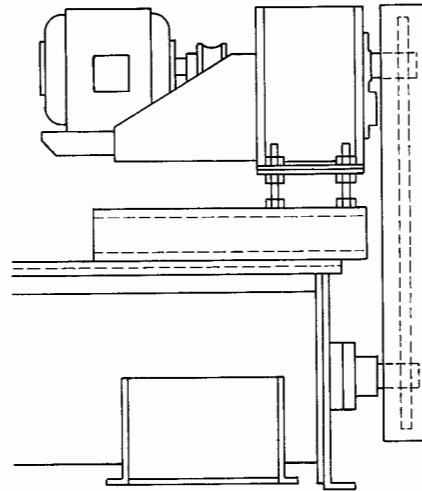
V-belt tension is maintained in the same manner as the screw conveyor drive when using the adjustable motor mount. A tie-rod turnbuckle locks the shaft-mounted reducer into position. (We believe this is best accomplished in the field, consequently we do not normally support the tie-rod from the conveyor.)



## COMBINATION MOTOR-REDUCER

Integral motor-reducer drives consist of a combination motor and speed reducer which may be mounted directly to the conveyor cover with an adapter base. The motor-reducer may also be mounted in other positions, depending on available space and accessibility.

The motor-reducer output shaft is connected to the conveyor drive shaft through roller chain and sprockets. Speed changes in the field are possible by replacement of one or both sprockets. Suitable conveyor drive end bearings are required for the overhung sprocket loads.



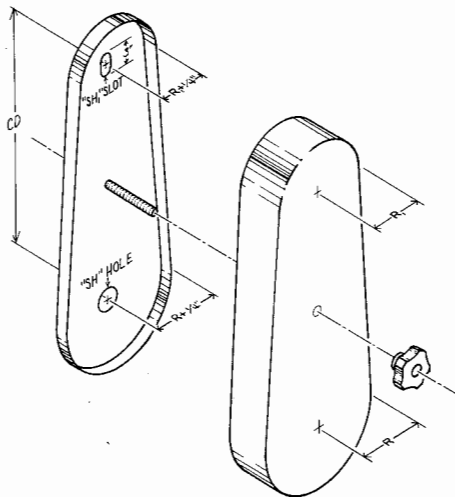
### OTHER DRIVES

Other drive equipment which may be required includes variable speed units which allow manual or automatic adjustment of conveyor capacity by speed deviation. Such drives are especially useful for regulating the flow of material into a process.

### NOTE

*Fluid, pneumatic or resilient couplings may be used for starting heavily loaded conveyors and to prevent drive component damage due to heavy intermittent overloads.*

## KWS BELT GUARDS



Our belt guards are custom designed to meet your specific requirements. They are O.S.H.A. approved and will accent the best of drives.

Our two piece construction provides you with the best available features. The back panel is designed to be securely supported. The front panel with sides is easily removable by loosening a hand knob. This permits complete access to sheaves, bushing and V-belts.

#### Standard Features

- Painted O.S.H.A. yellow enamel
- Slotted for belt adjustment
- 16 ga. steel construction
- Fully enclosed
- Safe—rounded ends

$R$ —Driver,  $\frac{1}{2}$ " P.D. + 2"

$SH$ —Shaft Diameter +  $\frac{1}{2}$ "

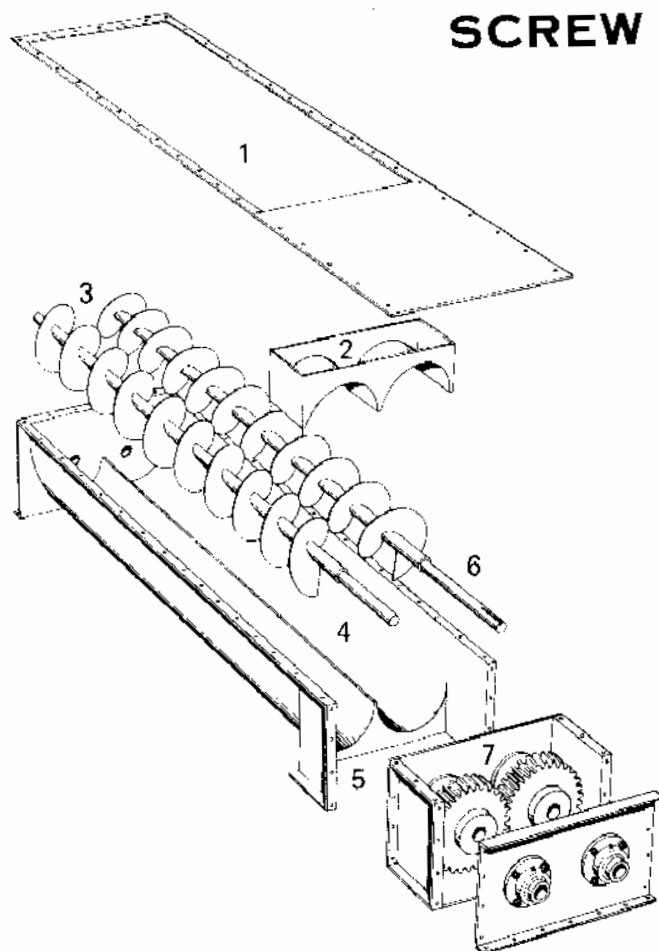
$W$ —Longest Hub + 2" (min 4")

$CD$ —Center Distance

$R_1$ —Driver,  $\frac{1}{2}$ " P.D. + 2"

$SH_1$ —Shaft Diameter + 1"

# SCREW FEEDERS



1. Inlet opening matches bin or hopper discharge.
2. Shroud cover prevents material flooding.
3. Twin tapered, variable pitch Screw Conveyor permits even draw off of material.
4. Twin tapered trough. Also available with drop bottom feature.
5. Discharge opening.
6. Solid shafting transmits rotary motion to driving gears.
7. Driving gears synchronize the action of the screw conveyors.

Normally short in length, Screw Feeders are designed to regulate the volumetric rate of material flow from a hopper, bin or storage unit.

The inlet is usually flooded with material (100% load capacity) but by incorporating changes in the construction of the flighting (diameter, pitch, etc.) and the speed of the feeder screw, the material discharge can be governed to the desired rate. Feeders can be built with variable diameter or stepped pitch or both in units composed of one, two or a multiple number of screws (i.e., Live Bottom Bin) depending on the application.

Screw Feeders are normally equipped with a shroud (curved) cover for a short distance beyond the inlet

opening. This prevents flooding of the conveyor with material. When handling very freely flowing materials, extended shroud covers, tubular housing construction or short pitch flights are occasionally required for positive control.

Screw Feeders with uniform diameter and pitch normally convey the material from the rear of the inlet opening first. To draw off material evenly across the full length of the inlet, a tapered screw or stepped pitch conveyor screw is required. While Screw Feeders are available in many designs to fit your particular requirements, several commonly used types are described below.

## MULTIPLE DIAMETER FEEDER

This is a combination feeder and conveyor and the physical dimensions are variable on each. The small diameter feed end will operate at a full cross sectional load. When the material reaches the larger section, the cross sectional load will be at a controlled safe maximum.

## SHORT PITCH FEEDER

This is also a combination feeder and conveyor. The short pitch end will handle full cross sectional loads. The material is then discharged into the standard section where the cross sectional load is reduced to the required maximum by the increase in screw pitch.

## VARIABLE PITCH TWIN-TAPERED FEEDER

This feeder is popularly used to unload bins or hoppers at a controlled rate. The feed opening under the bin is designed large enough to prevent material bridging and accepts materials uniformly across the length and width of the opening. This eliminates dead areas in the bin and reduces the chance of material bridging or spoiling.

## LIVE BOTTOM FEEDER

Designed for use on straight sided bins, this feeder is composed of a number of feeder screws in tandem which serve as the bottom of the bin. Material is, therefore, drawn out equally from the full width. The Live Bottom Feeder is used to its best advantage on materials which tend to pack or bridge easily.

## SCREW FEEDER CAPACITY

The capacity table on pg. 20 shows Screw Feeder Capacities in cubic feet per hour per RPM. This table relates to full pitch or standard conveyors only. Shorter pitch flighting will convey a capacity in direct ratio to the capacity of the full pitch. For instance, a 9" conveyor with standard pitch (9") flighting on a 2-1/2" standard pipe, will convey 16.8 cu. ft./hr./RPM.

The same conveyor, but with 3" pitch, will convey 1/3 this amount, or 5.6 cu. ft./hr./RPM. The capacity figure is theoretical. Actual capacity will often vary due to variation in head of material in the bin and variation in material characteristics.

#### SCREW FEEDER SPEED

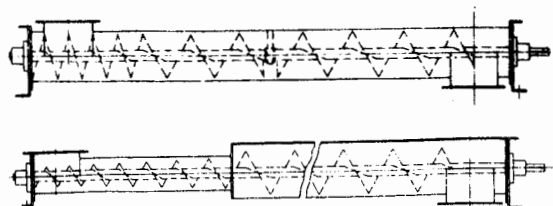
The speed of the feeder screw can be determined by dividing the desired capacity in cu. ft./hr. by the figure found in CAPACITY TABLE. For maximum efficiency, feeder screw speeds should be slower than standard screw conveyor speeds and allowances must be made for slippage of the material in the screw.

#### Factors Affecting the Design Of A Screw Feeder

1. The material class
2. The material physical characteristics

3. The capacity required
4. Material factor "F"
5. Weight of material resting on the Feeder Screw
6. The dimensions of the feeder opening..

In designing a Screw Feeder, virtually every situation is unique in one respect or another. For this reason, we recommend that you consult KWS Engineering Department for proper recommendations concerning your particular needs.



## INCLINED SCREW CONVEYORS

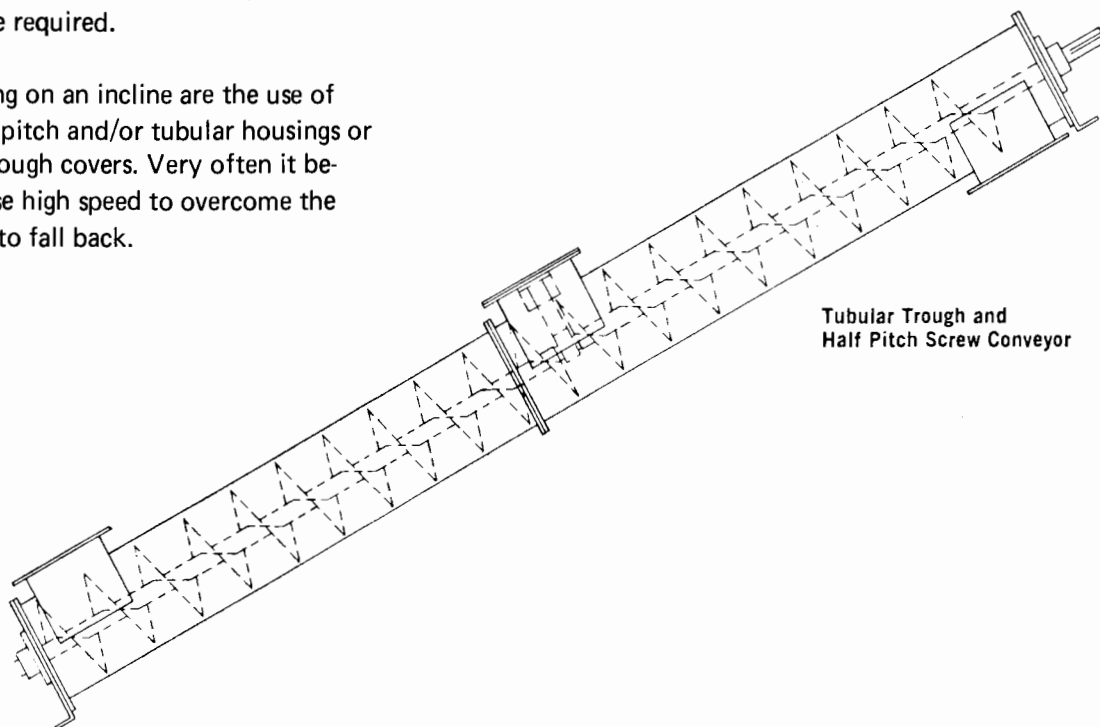
Screw Conveyors can be operated with the flow of material inclined upward. When space allows, this is a very economical method of elevating and conveying. It is important to understand, however, that as the angle of inclination increases, the allowable capacity of a given unit rapidly decreases.

A standard Screw Conveyor inclined 15° upward will carry 75% of its rated horizontal capacity. At an inclination of 25°, a standard conveyor may only handle 50% of its horizontal capacity. These are estimated figures and will vary with the characteristic of the material being handled. Inclined Screw Conveyor capacities can be increased over short distances, if no intermediate hangers are required.

Other aids in conveying on an incline are the use of shorter than standard pitch and/or tubular housings or shrouded conveyor trough covers. Very often it becomes necessary to use high speed to overcome the tendency of material to fall back.

The above aids are resorted to in order to overcome the tendency of a screw conveyor to become less efficient as the angle of incline increases. Vertical conveying by Screw Conveyor, on the other hand, is quite successful and it remains that a 45° incline or angles approaching this figure, are the most difficult on which to achieve successful conveying.

Additional power is needed to convey on an incline. This added power is a function of the power required to lift the material. Judgment and experience in the art of conveying are required.



Tubular Trough and  
Half Pitch Screw Conveyor

# Component Section

CONVEYOR SCREWS  
CONVEYOR SCREW  
COMPONENTS

SHAFTS

HANGERS

HANGER BEARINGS

HANGER POCKET

WEAR STRIPS

TROUGH ENDS

END BEARINGS

THRUST COLLAR

PNEUMATIC GATES

ROLLER THRUST  
BEARING

SEALS

FLANGE GASKETS

END FLANGES

TROUGHS

SADDLES AND FEET

RACK AND PINION  
GATES

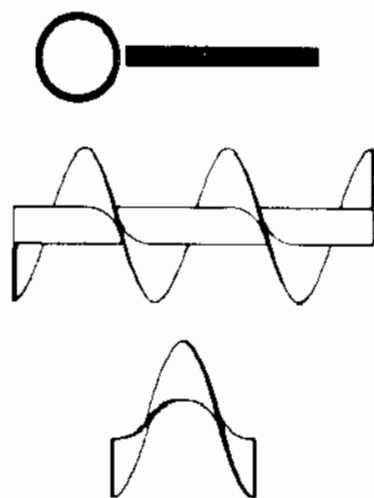
COVERS

INLETS

DISCHARGE SPOUTS

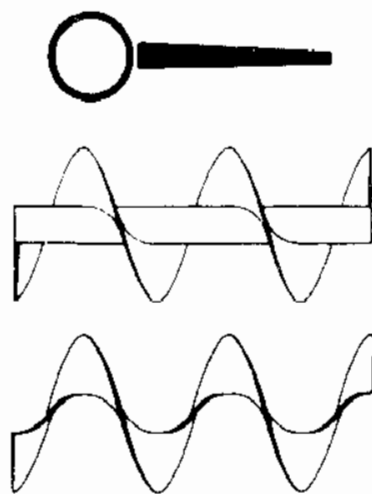
## CONVEYOR SCREWS

### SECTIONAL FLIGHT SCREW CONVEYORS



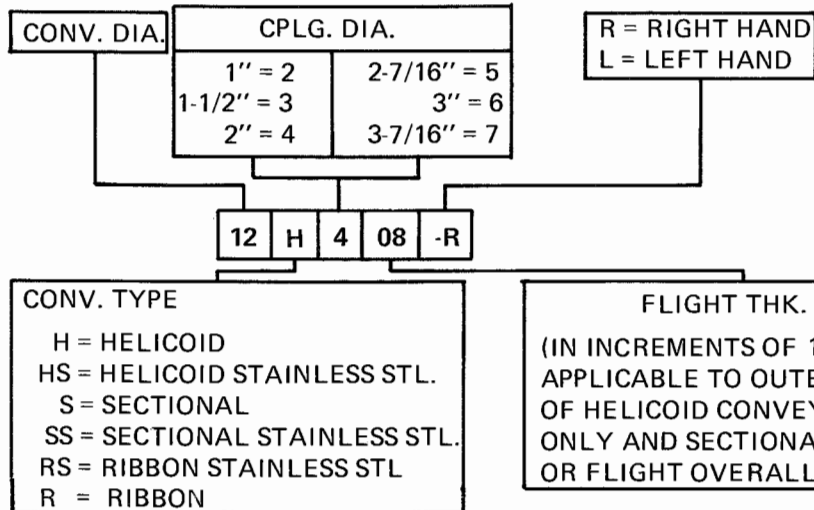
Each flight is blanked from a steel plate, formed into a helix and then butt welded together. Sectional flights are formed with a lead longer than their pitch to assure a tight gripping action along the pipe. The flights are then normally fastened to the pipe by intermittent welds and welded steel end lugs. They may be continuously welded on either one or both sides. The pipe has seamless internal collars in each end to accommodate the shafts. Sectional Flight screw conveyors are available in special diameters, thicknesses, pitches, and pipe sizes. They also can be obtained in stainless steel, Monel, brass, copper and other metals.

### HELICOID SCREW CONVEYORS



Cold rolling of special analysis strip steel into a continuous helix produces a work-hardened, smoothly finished flying surface. Helicoid flying is of superior strength with its diameter, pitch and thickness closely controlled. The flying is then normally fastened to the pipe by intermittent welds and welded steel end lugs. Or they may be continuously welded on either one or both sides. The pipe has seamless internal collars inserted in both ends of the pipe to accommodate the shafts. Helicoid and Sectional flying of the same diameter and shaft size are interchangeable. Helicoid flying of special diameters and pipe sizes can be furnished upon request.

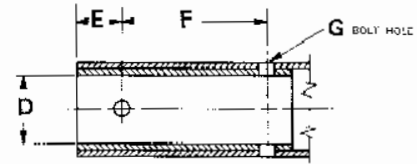
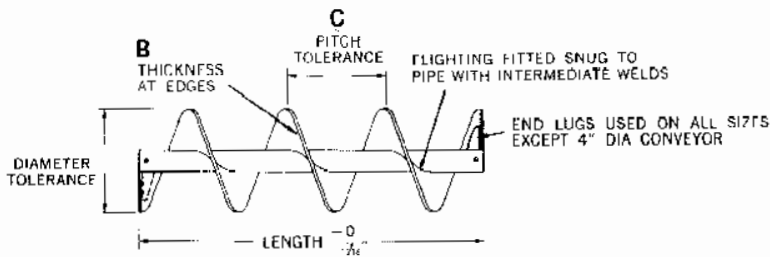
## SCREWS



Screw Dia.	Coupling Size	Nominal Pipe Size *	HELICOID				SECTIONAL	
			Part Number	Former Designation	Flight Thickness		Part Number	Flight Thickness
					Root	Tip		
4	1	1-1/4	4H204	4 Std.	1/8	1/16	X	X
			4H206	4 x	3/16	3/32		
6	1-1/2	2	6H304	6 Std.	1/8	1/16	6S309 6S312	10 ga. 3/16
			6H308	6 x	1/4	1/8		
			6H312	6 xx	3/8	3/16		
9	1-1/2	2	9H306	9 Std.	3/16	3/32	9S309 9S312	10 ga. 3/16
			9H312	9 x	3/8	3/16		
	2	2-1/2	9H406	9 Spec.	3/16	3/32	9S409 9S412 9S416	10 ga. 3/16 1/4
			9H412	9 xx	3/8	3/16		
			9H414	9 xxx	7/16	7/32		
10	1-1/2	2	10H306	10 Std.	3/16	3/32	10S309	10 ga.
	2	2-1/2	10H412	10 xx	3/8	3/16	10S412	3/16
12	2	2-1/2	12H408	12 Std.	1/4	1/8	12S409 12S412	10 ga. 3/16
			12H412	12 x	3/8	3/16		
	2-7/16	3	12H508	12 Spec.	1/4	1/8	12S509 12S512 12S616	10 ga. 3/16 1/4
			12H512	12 xx	3/8	3/16		
			12H614	12 xxx	7/16	7/32		
14	2-7/16	3	14H508	14 Std.	1/4	1/8	14S509	10 ga.
	3	3-1/2	14H614	14 xx	7/16	7/32	14S616	1/4
16	3	3-1/2	16H610	16 Std.	5/16	5/32	16S609 16S616	10 ga. 1/4
			16H614 □	16 xxx	7/16	7/32		

\* Schedule 40 Pipe    □ 4" Nominal Pipe Size

# STANDARDS FOR KWS HELICOID SCREW CONVEYORS



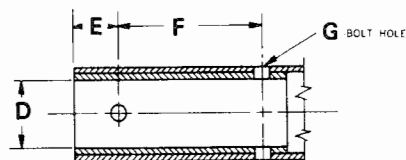
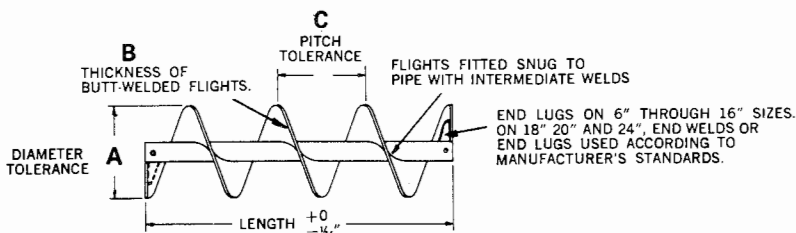
- R For Right Hand Flight
- L For Left Hand Flight
- Length
- SP Short Pitch (2/3)
- HP Half Pitch (1/2)
- LP Long Pitch (1-1/2)
- VP1 Variable Pitch (1/2 to Std.)
- VP2 Variable Pitch (2/3 to Std.)
- VP3 Variable Pitch (3/4 to Std.)
- CF Cut Flight
- CFD Cut & Folded Flight
- DF Double Flight
- CW1 Continuous Welded One Side
- CW2 Continuous Welded Both Sides
- P With Standard Paddles
- AR-235-BN Abrasion Resistant Sectional Flights
- AR-400-BN Abrasion Resistant Sectional Flights
- WS Detachable Wear Shoes
- TIX Length
- T2X Taper From Full Dia. to 1/2 Dia. Length
- HS Standard Hard Surface
- PAD4, 6, 9 etc. Standard Paddles
- 3H Standard (3) Bolt Drilling
- HDG Hot Dip Galvanizing
- 304, 304L, 316, etc., Stainless Steel Type
- 80, XX, 160, etc. Heavier than Standard Pipe which is SCH40
- QR Quick Release
- OK Quick Key
- \* Thickness on Sectional Flights only. In 1/64 increments. Example: 9SF312-12 is 3/16" thick, 9" sectional flight for 2" standard pipe.

Example: 9H306-R-9' 10"-SP-CF-CW2-T2x5'-0"-304-80.  
Standard 9" Flighting, R.H., 9'-10" Long, Short Pitch (6"). Cut Flight, Continuous Welded Both Sides. Taper From 9" Dia. to 6" Dia. in 5'-0". All Type 304 Stainless Steel Mounted On 2" Sch. 80 Pipe.

In Ordering: Specify per above code as much as possible. Specify length from end to end of pipe. If flight shorter than pipe, specify cut back from end of pipe.

Listed Screw Dia. and Pitch	Cplng. Dia.	Size Designa- tion	Pipe Size Schedule 40	Length Feet and Inches	A		B		C		D		E	F	G
					Diameter Tolerance		Thickness		Pitch Tolerance		Bushing Bore Inside Tolerance		Spacing 1st Bolt	Centers 2nd Bolt	Nominal Bolt Hole Size
					Plus	Minus	Inner Edge	Outer Edge	Plus	Minus	Min.	Max.			
4	1	4H204 *	1-1/4	9 10%	1/16	1/8	1/8	1/16	1/2	1/4	1.005	1.016	1/2	2	13/32
	1	4H206 *	1-1/4	9 10%	1/16	1/8	3/16	3/32	1/2	1/4	1.005	1.016	1/2	2	13/32
6	1-1/2	6H304 *	2	9-10	1/16	3/16	1/8	1/16	1/2	1/4	1.505	1.516	7/8	3	17/32
	1-1/2	6H308 *	2	9-10	1/16	3/16	1/4	1/8	3/4	1/4	1.505	1.516	7/8	3	17/32
	1-1/2	6H312 *	2	9-10	1/16	3/16	3/8	3/16	3/4	1/4	1.505	1.516	7/8	3	17/32
9	1-1/2	9H306 *	2	9-10	1/16	3/16	3/16	3/32	3/4	1/4	1.505	1.516	7/8	3	17/32
	1-1/2	9H312 *	2	9-10	1/16	3/16	3/8	3/16	3/4	1/4	1.505	1.516	7/8	3	17/32
	2	9H406 *	2-1/2	9-10	1/16	3/16	3/16	3/32	3/4	1/4	2.005	2.016	7/8	3	21/32
	2	9H412 *	2-1/2	9-10	1/16	1/4	3/8	3/16	3/4	1/4	2.005	2.016	7/8	3	21/32
	2	9H414 *	2-1/2	9-10	1/16	1/4	7/16	7/32	3/4	1/4	2.005	2.016	7/8	3	21/32
10	1-1/2	10H306 *	2	9-10	1/16	3/16	3/16	3/32	3/4	1/4	1.505	1.516	7/8	3	17/32
	2	10H412 *	2-1/2	9-10	1/16	1/4	3/8	3/16	3/4	1/4	2.005	2.016	7/8	3	21/32
12	2	12H408 *	2-1/2	11-10	1/8	5/16	1/4	1/8	1	1/4	2.005	2.016	7/8	3	21/32
	2	12H412 *	2-1/2	11-10	1/8	5/16	3/8	3/16	1	1/4	2.005	2.016	7/8	3	21/32
	2-7/16	12H508 *	3	11-9	1/8	5/16	1/4	1/8	1	1/4	2.443	2.458	15/16	3	21/32
	2-7/16	12H512 *	3	11-9	1/8	5/16	3/8	3/16	1	1/4	2.443	2.458	15/16	3	21/32
	3	12H614 *	3-1/2	11-9	1/8	3/8	7/16	7/32	1	1/4	3.005	3.025	1	3	25/32
14	2-7/16	14H508 *	3	11-9	1/8	5/16	1/4	1/8	1	1/4	2.443	2.458	15/16	3	21/32
	3	14H614 *	3-1/2	11-9	1/8	3/8	7/16	7/32	1	1/4	3.005	3.025	1	3	25/32
16	3	16H610 *	3-1/2	11-9	1/8	3/8	5/16	5/32	1-1/2	1/4	3.005	3.025	1	3	25/32
	3	16H614 *	4	11-9	1/8	3/8	7/16	7/32	1-1/2	1/4	3.005	3.025	1	3	25/32

# STANDARDS FOR KWS SECTIONAL SCREW CONVEYORS

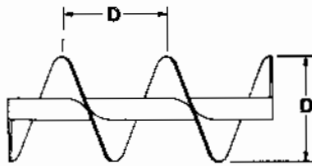


Listed Screw Dia. And Pitch	Cplng. Dia.	Size Designa- tion	Pipe Size Schedule 40	Length Feet And Inches	A		B	C		D		E	F	G
					Diameter Tolerance			Pitch Tolerance	Bushing Bore Inside Diameter					
					Plus	Minus	Plus		Minus	Min.	Max.			
6	1-1/2	6S307	2	9-10	1/16	3/16	12 Ga.	3/8	1/4	1.505	1.516	7/8	3	17/32
	1-1/2	6S309	2	9-10	1/16	3/16	10	3/8	1/4	1.505	1.516	7/8	3	17/32
	1-1/2	6S312	2	9-10	1/16	3/16	3/16	3/8	1/4	1.505	1.516	7/8	3	17/32
9	1-1/2	9S307	2	9-10	1/16	3/16	12	1/2	1/4	1.505	1.516	7/8	3	17/32
	1-1/2	9S309	2	9-10	1/16	3/16	10	1/2	1/4	1.505	1.516	7/8	3	17/32
	1-1/2	9S312	2	9-10	1/16	3/16	3/16	1/2	1/4	1.505	1.516	7/8	3	17/32
	2	9S407	2-1/2	9-10	1/16	3/16	12	1/2	1/4	2.005	2.016	7/8	3	21/32
	2	9S409	2-1/2	9-10	1/16	3/16	10	1/2	1/4	2.005	2.016	7/8	3	21/32
	2	9S412	2-1/2	9-10	1/16	3/16	3/16	1/2	1/4	2.005	2.016	7/8	3	21/32
	2	9S414	2-1/2	9-10	1/16	1/4	1/4	1/2	1/4	2.005	2.016	7/8	3	21/32
10	1-1/2	10S309	2	9-10	1/16	3/16	10	1/2	1/4	1.505	1.516	7/8	3	17/32
	2	10S412	2-1/2	9-10	1/16	3/16	3/16	1/2	1/4	2.006	2.016	7/8	3	21/32
12	2	12S409	2-1/2	11-10	1/8	5/16	10	3/4	1/4	2.005	2.016	7/8	3	21/32
	2	12S412	2-1/2	11-10	1/8	5/16	3/16	3/4	1/4	2.005	2.016	7/8	3	21/32
	2-7/16	12S509	3	11-9	1/8	5/16	10	3/4	1/4	2.443	2.458	15/16	3	21/32
	2-7/16	12S512	3	11-9	1/8	5/16	3/16	3/4	1/4	2.443	2.458	15/16	3	21/32
	2-7/16	12S516	3	11-9	1/8	5/16	1/4	3/4	1/4	2.443	2.458	15/16	3	21/32
	3	12S616	3-1/2	11-9	1/8	5/16	1/4	3/4	1/4	3.005	3.025	1	3	25/32
	3	12S624	3-1/2	11-9	1/8	3/8	3/8	3/4	1/4	3.005	3.025	1	3	25/32
14	2-7/16	14S509	3	11-9	1/8	5/16	10	3/4	1/4	2.443	2.458	15/16	3	21/32
	2-7/16	14S512	3	11-9	1/8	5/16	3/16	3/4	1/4	2.443	2.458	15/16	3	21/32
	3	14S616	3-1/2	11-9	1/8	5/16	1/4	3/4	1/4	3.005	3.025	1	3	25/32
	3	14S624	3-1/2	11-9	1/8	3/8	3/8	3/4	1/4	3.005	3.025	1	3	25/32
16	3	16S609	3-1/2	11-9	1/8	3/8	10	3/4	1/4	3.005	3.025	1	3	25/32
	3	16S612	3-1/2	11-9	1/8	3/8	3/16	3/4	1/4	3.005	3.025	1	3	25/32
	3	16S616	3-1/2	11-9	1/8	3/8	1/4	3/4	1/4	3.005	3.025	1	3	25/32
	3	16S624	3-1/2	11-9	1/8	3/8	3/8	3/4	1/4	3.005	3.025	1	3	25/32
	3	16S632	3-1/2	11-9	1/8	1/2	1/2	3/4	1/4	3.005	3.025	1	3	25/32
18	3	18S612	3-1/2	11-9	3/16	3/8	3/16	3/4	1/2	3.005	3.025	1	3	25/32
	3	18S616	3-1/2	11-9	3/16	3/8	1/4	3/4	1/2	3.005	3.025	1	3	25/32
	3	18S624	3-1/2	11-9	3/16	3/8	3/8	3/4	1/2	3.005	3.025	1	3	25/32
	3	18S632	3-1/2	11-9	3/16	1/2	1/2	3/4	1/2	3.005	3.025	1	3	25/32
	3-7/16	18S716	4	11-8	3/16	3/8	1/4	3/4	1/2	3.443	3.467	1-1/2	4	29/32
	3-7/16	18S724	4	11-8	3/16	3/8	3/8	3/4	1/2	3.443	3.467	1-1/2	4	29/32
	3-7/16	18S732	4	11-8	3/16	1/2	1/2	3/4	1/2	3.443	3.467	1-1/2	4	29/32
20	3	20S612	3-1/2	11-9	3/16	3/8	3/16	7/8	1/2	3.005	3.025	1	3	25/32
	3	20S616	3-1/2	11-9	3/16	3/8	1/4	7/8	1/2	3.005	3.025	1	3	25/32
	3	20S624	3-1/2	11-9	3/16	3/8	3/8	7/8	1/2	3.005	3.025	1	3	25/32
	3-7/16	20S716	4	11-8	3/16	3/8	1/4	7/8	1/2	3.443	3.467	1-1/2	4	29/32
	3-7/16	20S724	4	11-8	3/16	3/8	3/8	7/8	1/2	3.443	3.467	1-1/2	4	29/32
	3-7/16	20S732	4	11-8	3/16	1/2	1/2	7/8	1/2	3.443	3.467	1-1/2	4	29/32
24	3-7/16	24S716	4	11-8	3/16	3/8	1/4	7/8	1/2	3.443	3.467	1-1/2	4	29/32
	3-7/16	24S724	4	11-8	3/16	3/8	3/8	7/8	1/2	3.443	3.467	1-1/2	4	29/32
	3-7/16	24S732	4	11-8	3/16	1/2	1/2	7/8	1/2	3.443	3.467	1-1/2	4	29/32



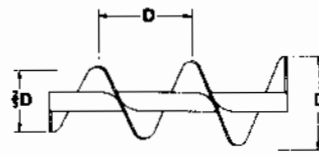
## BASIC CONVEYOR FLIGHT AND PITCH TYPES

### STANDARD PITCH, SINGLE FLIGHT



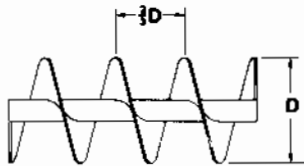
Conveyor screws with pitch equal to screw diameter are considered standard. They are suitable for a wide range of materials in most conventional applications.

### TAPERED, STANDARD PITCH, SINGLE FLIGHT



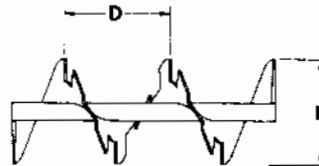
Screw flights increase from  $\frac{1}{3}$  to full diameter. Used in screw feeders to provide uniform withdrawal of lumpy materials. Generally equivalent to and more economical than variable pitch.

### SHORT PITCH, SINGLE FLIGHT



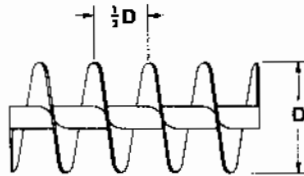
Flight pitch is reduced to  $\frac{3}{4}$  diameter. Recommended for inclined or vertical applications. Used in screw feeders. Shorter pitch retards flushing of materials which fluidize.

### SINGLE CUT-FLIGHT, STANDARD PITCH



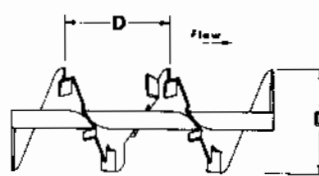
Screws are notched at regular intervals at outer edge. Affords mixing action and agitation of material in transit. Useful for moving materials which tend to pack.

### HALF PITCH, SINGLE FLIGHT



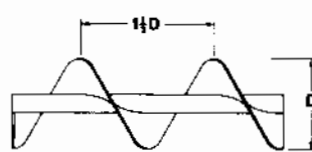
Similar to short pitch, except pitch is reduced to  $\frac{1}{2}$  standard pitch. Useful for vertical or inclined applications, for screw feeders and for handling extremely fluid materials.

### CUT & FOLDED FLIGHT, STANDARD PITCH



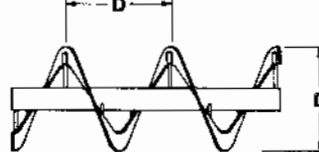
Folded flight segments lift and spill the material. Partially retarded flow provides thorough mixing action. Excellent for heating, cooling or aerating light substances.

### LONG PITCH, SINGLE FLIGHT



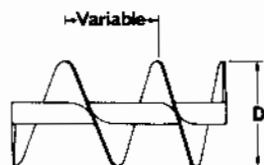
Pitch is equal to  $1\frac{1}{2}$  diameters. Useful for agitating fluid materials or for rapid movement of very free-flowing materials.

### SINGLE FLIGHT RIBBON



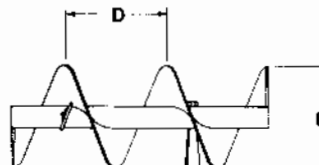
Excellent for conveying sticky or viscous materials. Open space between flights and pipe eliminates collection and build-up of the material.

### VARIABLE PITCH, SINGLE FLIGHT



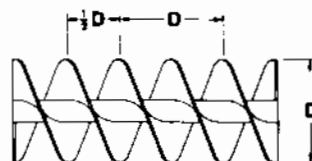
Flights have increasing pitch and are used in screw feeders to provide uniform withdrawal of fine, free-flowing materials over the full length of the inlet opening.

### STANDARD PITCH WITH PADDLES



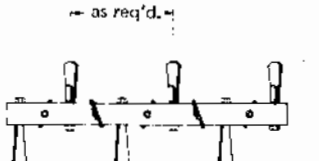
Adjustable paddles positioned between screw flights oppose flow to provide gentle but thorough mixing action.

### DOUBLE FLIGHT, STANDARD PITCH

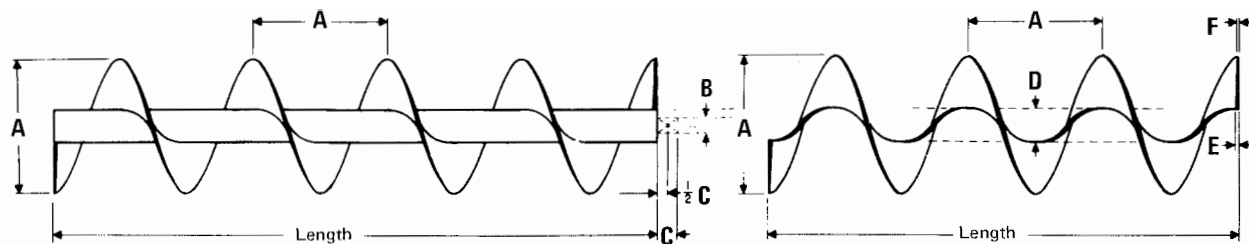


Double flight, standard pitch screws provide smooth, regular material flow and uniform movement of certain types of materials.

### PADDLE



Adjustable paddles provide complete mixing action, and controlled material flow.



Helicoid Conveyor Screw

Flighting

A Dia. & Pitch	B Cplg. Dia.	Part Number	Flight Thickness		Pipe Size		C Bearing Length	G Coupling Bolts	Average Weight				
			E Root	F Tip	Inside	D Outside			Complete screw			Flight Only	
									Std.Lgth. Ft.-In.	Std. Lgth.	Per Ft.	Std. Lgth.	Per Ft.
4	1	4H204 * 4H206 *	1/8 3/16	1/16 3/32	1-1/4	1-5/8	1-1/2	3/8x2-1/16	9-10½	31 40	3 4	11 16	1.1 2.0
6	1-1/2	6H304 * 6H308 * 6H312 *	1/8 1/4 3/8	1/16 1/8 3/16	2	2-3/8	2	1/2x3	9-10	52 62 72	5 6 7	14 28 42	1.4 2.8 4.3
9	1-1/2	9H306 * 9H312 *	3/16 3/8	3/32 3/16	2	2-3/8	2	1/2x3	9-10	70 101	7 10	31 65	3.2 6.6
	2	9H406 *	3/16	3/32	2-1/2	2-7/8	2	5/8x3-5/8	9-10	91	9	30	3.0
		9H412 *	3/8	3/16						121	12	60	6.1
		9H414 *	7/16	7/32						131	13	71	7.1
10	1-1/2 2	10H306 * 10H412 *	3/16 3/8	3/32 3/16	2 2-1/2	2-3/8 2-7/8	2 2	1/2x3 5/8x3-5/8	9-10	81 130	8 13	48 76	4.9 7.7
12	2	12H408 * 12H412 *	1/4 3/8	1/8 3/16	2-1/2	2-7/8	2	5/8x3-5/8	11-10	140 180	12 15	67 102	5.7 8.6
	2-7/16	12H508 * 12H512 *	1/4 3/8	1/8 3/16	3	3-1/2	3	5/8x4-3/8	11-9	168 198	14 17	64 96	5.4 8.2
		3	12H614 *	7/16	7/32	3-1/2	4	3	3/4x5	11-9	220	19	105
14	2-7/16 3	14H508 * 14H614 *	1/4 7/16	1/8 7/32	3 3-1/2	3-1/2 4	3	5/8x4-3/8 3/4x5	11-9	170 254	14 22	84 132	7.1 11.2
16	3	16H610 * 16H614 *	5/16 7/16	5/32 7/32	3-1/2 4	4 4-1/2	3	3/4x5 3/4x5-1/2	11-9	228 285	19 24	120 154	10.2 13.0

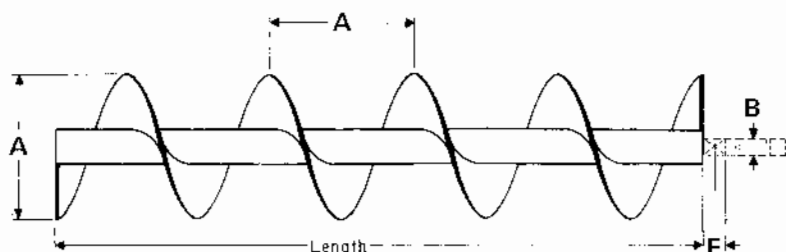
NOTE: When ordering stainless steel, add suffix "S" to first letter in part number (ref. part no, assignments system, pg. 47. The above screws are available in a (Q.R.) Quick Release on either end of screw (preferred location is on drive end).

\* R - Right Hand Flight

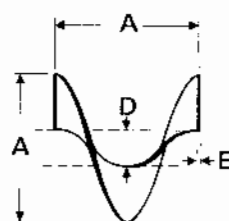
L - Left Hand Flight

For flighting only, add suffix "F" to first letter in part number.

For special screw conveyor weld finishes see page 48



SECTIONAL

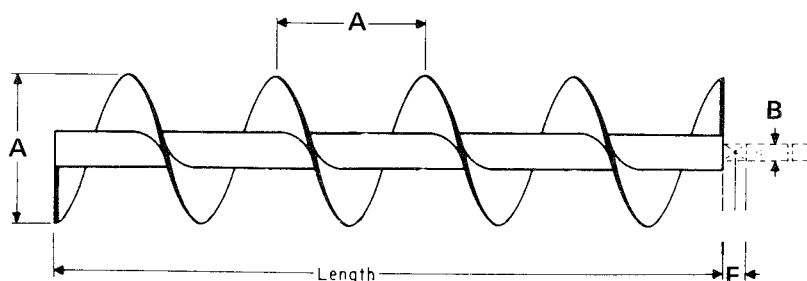


FLIGHTING

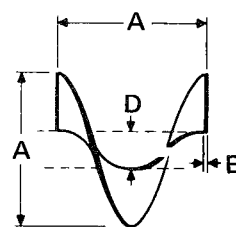
A Screw Diam.	B Coupling Diam.	Size Part No. Mounted Conveyor	Size Part No. Flighting Only	Pipe Size		E Flight Thick- ness	F Cplng. Bearing Length	Std. Length Ft.-In.	Average Weight			Approx. Flights per Ft.
				C Inside	D Outside				Std. Length	per Ft.	Flight Each	
6	1-1/2	6S307-*	6SF307-*	2	2-3/8	12 Ga.	2	9-10	62	6.0	1.0	2.0
	1-1/2	6S309-*	6SF309-*	2	2-3/8	10 Ga.	2	9-10	65	6.5	1.3	2.0
	1-1/2	6S312-*	6SF312-*	2	2-3/8	3/16	2	9-10	75	7.5	1.7	2.0
	1-1/2	6S316-*	6SF316-*	2	2-3/8	1/4	2	9-10	87.6	8.9	2.4	2.0
9	1-1/2	9S307-*	9SF307-*	2	2-3/8	12 Ga.	2	9-10	73	7.5	2.5	1.33
	1-1/2	9S309-*	9SF309-*	2	2-3/8	10 Ga.	2	9-10	80	8.0	3.3	1.33
	1-1/2	9S312-*	9SF312-*	2	3-3/8	3/16	2	9-10	95	9.5	4.3	1.33
	1-1/2	9S316-*	9SF316-*	2	2-3/8	1/4	2	9-10	116	11.8	5.5	1.33
	1-1/2	9S324-*	9SF324-*	2	2-3/8	3/8	2	9-10	155	15.9	8.8	1.33
	2	9S407-*	9SF407-*	2-1/2	2-7/8	12 Ga.	2	9-10	90	9.0	2.5	1.33
	2	9S409-*	9SF409-*	2-1/2	2-7/8	10 Ga.	2	9-10	100	10.0	3.3	1.33
	2	9S412-*	9SF412-*	2-1/2	2-7/8	3/16	2	9-10	115	11.5	4.3	1.33
	2	9S416-*	9SF416-*	2-1/2	2-7/8	1/4	2	9-10	130	13.0	5.5	1.33
	2	9S424-*	9SF424-*	2-1/2	2-7/8	3/8	2	9-10	177	18.0	8.8	1.33
10	1-1/2	10S309-*	10SF309-*	2	2-3/8	10 Ga.	2	9-10	85	8.5	3.9	1.2
	1-1/2	10S312-*	10SF312-*	2	2-3/8	3/16	2	9-10	108	11.0	5.0	1.2
	1-1/2	10S316-*	10SF316-*	2	2-3/8	1/4	2	9-10	132	13.4	7.7	1.2
	1-1/2	10S324-*	10SF324-*	2	2-3/8	3/8	2	9-10	178	18.1	11.6	1.2
	2	10S409-*	10SF409-*	2-1/2	2-7/8	10 Ga.	2	9-10	107	11.0	3.9	1.2
	2	10S412-*	10SF412-*	2-1/2	2-7/8	3/16	2	9-10	120	12.0	5.0	1.2
	2	10S416-*	10SF416-*	2-1/2	2-7/8	1/4	2	9-10	153	15.7	7.7	1.2
	2	10S424-*	10SF424-*	2-1/2	2-7/8	3/8	2	9-10	199	21.2	11.6	1.2
12	2	12S409-*	12SF409-*	2-1/2	2-7/8	10 Ga.	2	11-10	140	12.0	5.7	1.0
	2	12S412-*	12SF412-*	2-1/2	2-7/8	3/16	2	11-10	156	13.0	7.2	1.0
	2	12S416-*	12SF416-*	2-1/2	2-7/8	1/4	2	11-10	232	19.6	13.3	1.0
	2	12S424-*	12SF424-*	2-1/2	2-7/8	3/8	2	11-10	306	25.8	19.5	1.0
	2-7/16	12S509-*	12SF509-*	3	3-1/2	10 Ga.	3	11-9	160	14.0	5.7	1.0
	2-7/16	12S512-*	12SF512-*	3	3-1/2	3/16	3	11-9	178	14.8	7.2	1.0
	2-7/16	12S516-*	12SF516-*	3	3-1/2	1/4	3	11-9	210	17.5	9.7	1.0
	2-7/16	12S524-*	12SF524-*	3	3-1/2	3/8	3	11-9	265	22.4	14.6	1.0
	3	12S612-*	12SF612-*	3-1/2	4	3/16	3	11-9	184	15.4	7.2	1.0
	3	12S616-*	12SF616-*	3-1/2	4	1/4	3	11-9	216	21.4	9.7	1.0
	3	12S624-*	12SF624-*	3-1/2	4	3/8	3	11-9	280	26.7	12.7	1.0

NOTE: When ordering stainless steel, add suffix "S" to first letter in part number (ref. part no. assignments system, pg.34). The above screws are available in a (Q.R.) Quick Release on either end of screw (preferred location is on drive end).

\* R - Right Hand Flight  
L - Left Hand Flight



SECTIONAL



FLIGHTING

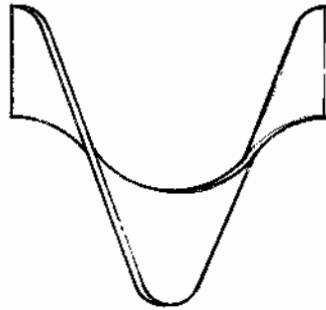
A Screw Diam.	B Coupling Diam.	Size Part No. Mounted Conveyor	Size Part No. Flighting Only	Pipe Size		E Flight Thick- ness	F Cplng. Bearing Length	Std. Length Ft.-In.	Average Weight			Approx. Flights per Ft.
				C Inside	D Outside				Std. Length	per Ft.	Flight Each	
14	2-7/16	14S509-*	14SF509-*	3	3-1/2	10 Ga.	3	11-9	185	16	7.1	.86
	2-7/16	14S512-*	14SF512-*	3	3-1/2	3/16	3	11-9	216	18.0	9.9	.86
	2-7/16	14S516-*	14SF516-*	3	3-1/2	1/4	3	11-9	250	21.3	13.2	.86
	2-7/16	14S524-*	14SF524-*	3	3-1/2	3/8	3	11-9	334	28.4	19.8	.86
	3	14S612-*	14SF612-*	3-1/2	4	3/16	3	11-9	231	19.6	10.9	.86
	3	14S616-*	14SF616-*	3-1/2	4	1/4	3	11-9	246	20.5	13.2	.86
	3	14S614-*	14SF624-*	3-1/2	4	3/8	3	11-9	342	28.5	19.8	.86
16	3	16S609-*	16SF609-*	3-1/2	4	10 Ga.	3	11-9	210	18	10	.75
	3	16S612-*	16SF612-*	3-1/2	4	3/16	3	11-9	234	19.5	14.0	.75
	3	16S616-*	16SF616-*	3-1/2	4	1/4	3	11-9	282	24	18.0	.75
	3	16S624-*	16SF624-*	3-1/2	4	3/8	3	11-9	365	30.4	25.5	.75
	3	16S632-*	16SF632-*	3-1/2	4	1/2	3	11-9	420	36	34.5	.75
18	3	18S612-*	18SF612-*	3-1/2	4	3/16	3	11-9	246	20.5	18.0	.67
	3	18S616-*	18SF616-*	3-1/2	4	1/4	3	11-9	294	24.5	24.0	.67
	3	18S624-*	18SF624-*	3-1/2	4	3/8	3	11-9	425	35.5	34.5	.67
	3	18S632-*	18SF632-*	3-1/2	4	1/2	3	11-9	530	44	46.0	.67
	3-7/16	18S712-*	18SF712-*	4	4-1/2	3/16	4	11-8	293	24.4	18.0	.67
	3-7/16	18S716-*	18SF716-*	4	4-1/2	1/4	4	11-8	345	28.8	24.0	.67
	3-7/16	18S724-*	18SF724-*	4	4-1/2	3/8	4	11-8	470	39.2	34.5	.67
	3-7/16	18S732-*	18SF732-*	4	4-1/2	1/2	4	11-8	570	47.5	46.0	.67
20	3	20S612-*	20SF612-*	3-1/2	4	3/16	3	11-9	300	25.0	20.0	.60
	3	20S616-*	20SF616-*	3-1/2	4	1/4	3	11-9	360	30.0	28.0	.60
	3	20S624-*	20SF624-*	3-1/2	4	3/8	3	11-9	410	33.4	40.0	.60
	3	20S632-*	20SF632-*	3-1/2	4	1/2	3	11-9	506	42.2	56	.60
	3-7/16	20S712-*	20SF712-*	4	4-1/2	3/16	4	11-8	346	28.8	20.0	.60
	3-7/16	20S716-*	20SF716-*	4	4-1/2	1/4	4	11-8	410	34.2	28.0	.60
	3-7/16	20S724-*	20SF724-*	4	4-1/2	3/8	4	11-8	455	37.9	40.0	.60
	3-7/16	20S732-*	20SF732-*	4	4-1/2	1/2	4	11-8	550	45.9	56	.60
24	3-7/16	24S712-*	24SF712-*	4	4-1/2	3/16	4	11-8	440	37	38.0	.50
	3-7/16	24S716-*	24SF716-*	4	4-1/2	1/4	4	11-8	510	43	42.0	.50
	3-7/16	24S724-*	24SF724-*	4	4-1/2	3/8	4	11-8	595	50	63.0	.50
	3-7/16	24S732-*	24SF732-*	4	4-1/2	1/2	4	11-8	690	60	84	.50

NOTE: When ordering stainless steel, add suffix "S" to first letter in part number (ref. part no, assignments system, pg. 47). The above screws are available in a (Q.R.) Quick Release on either end of screw (preferred location is on drive end).

\* R - Right Hand Flight

L - Left Hand Flight

## HEAVY DUTY SECTIONAL FLIGHTS



RIGHT HAND SHOWN

Available in right hand or left hand.

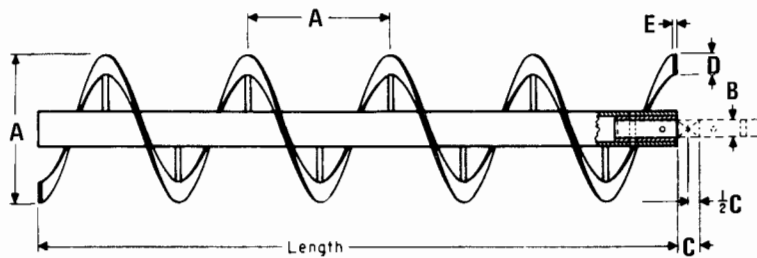
Heavy-duty flighting is cold formed from steel up to two inch thick in a special process to obtain uniform stresses to assure long life, accuracy in diameter and

pitch. Conveyor flighting is based on 24" pitch - other flight pitches are available or can be fabricated on special order.

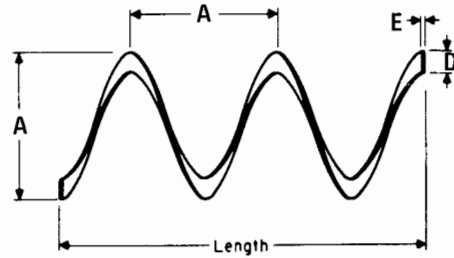
## DIMENSIONS AND WEIGHTS

Outside Dia. Of Flights *	PLATE THICKNESS - WEIGHT					
	1/4"	3/8"	1/2"	5/8"	3/4"	1"
24"	41 lbs.	61 lbs.	82 lbs.	102 lbs.	122 lbs.	164 lbs.
30"	64	96	127	159	191	255
32"	72	109	145	181	217	290
36"	92	138	184	229	275	366
38"	102	154	205	256	307	409
40"	113	170	226	283	340	453
42"	124	188	250	313	374	500
44"	137	205	274	342	410	549
46"	150	225	300	374	450	600
48"	163	245	326	408	490	652
50"	176	264	352	440	532	707
52"	191	287	383	481	576	766
54"	207	310	413	517	621	828
56"	222	333	444	555	666	888
58"	238	357	510	640	764	1020
62"	272	408	544	681	816	1088
64"	290	435	581	724	870	1162
66"	308	463	616	770	924	1232
68"	327	491	656	821	979	1307
70"	347	521	694	869	1043	1388
72"	367	551	732	918	1104	1470

\* Other flight sizes are available up to 240" outside diameter.



Ribbon Conveyor Screw



Flighting

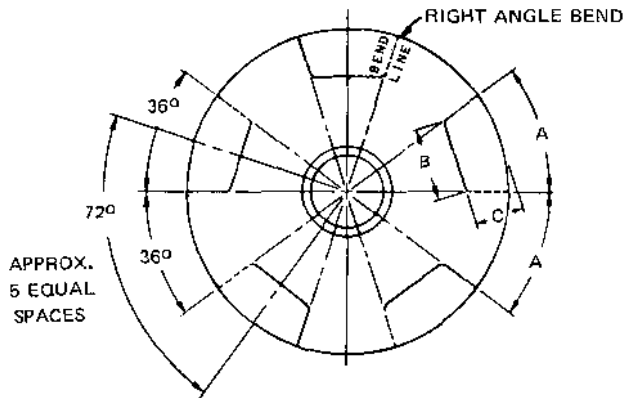
A Dia. & Pitch	B Cplg. Dia.	Part Number	Flight		Pipe Size		C Bearing Length	F Coupling Bolts	Std. Lgth. Ft.-In.	Average Weight			
			D Width	E Thick.	Inside	Outside				Complete Screw		Flight Only	
										Std. Lgth.	Per Ft.	Std. Lgth.	Per Ft.
6	1-1/2	6R312	1	3/16	2	2-3/8	2	1/2x3	9'-10"	65	6.5	25	2.5
9	1-1/2	9R316	1-1/2	1/4	2	2-3/8	2	1/2x3	9'-10"	100	10	50	5.1
10	1-1/2	10R316	1-1/2	1/4	2	2-3/8	2	1/2x3	9'-10"	110	11	60	6.1
12	2	12R416 12R424	2 2-1/2	1/4 3/8	2-1/2	2-7/8	2	5/8x3-5/8	11'-10"	180 216	15 18	71 120	6.0 10.2
	2-7/16	12R524	2-1/2	3/8	3	3-1/2	3	5/8x4-3/8	11'-9"	240	20	120	10.2
14	2-7/16	14R524	2-1/2	3/8	3	3-1/2	3	5/8x4-3/8	11'-9"	264	22	120	10.2
	3	14R624	2-1/2	3/8	3-1/2	4	3	3/4 x 5	11'-9"	288	25	120	10.2
16	3	16R616 16R624	2-1/2 2-1/2	1/4 3/8	3-1/2	4	3	3/4x5	11'-9"	276 324	24 28	96 132	8.2 11.2
18	3	18R624	3	3/8	3-1/2	4	3	3/4x5	11'-9"	384	33	156	13.3
20	3-7/16	20R724	3	3/8	4	4-1/2	4	7/8x5-1/2	11'-8"	408	35	168	14.4
24	3-7/16	24R724	3	3/8	4	4-1/2	4	7/8x5-1/2	11'-8"	424	36	180	15.4

NOTE: When ordering stainless steel, add suffix "S" to first letter in part number (ref. part no, assignments system, pg. . The above screws are available in a (Q.R.) Quick Release on either end of screw (preferred location is on drive end).

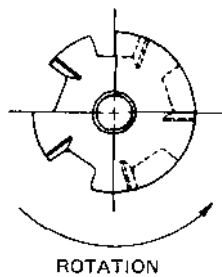
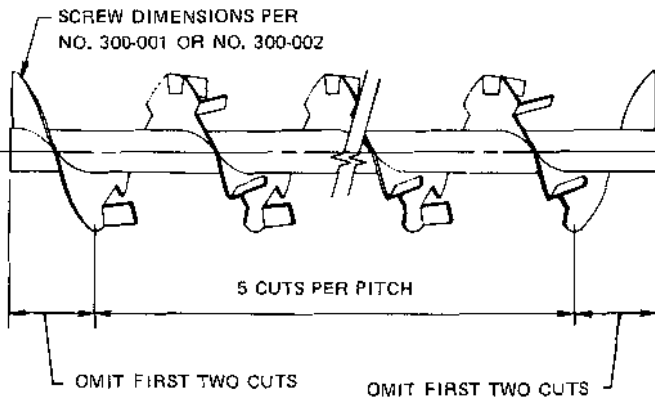
\* R - Right Hand Flight

L - Left Hand Flight

### CONVEYOR SCREW WITH CUT AND FOLDED FLIGHTS

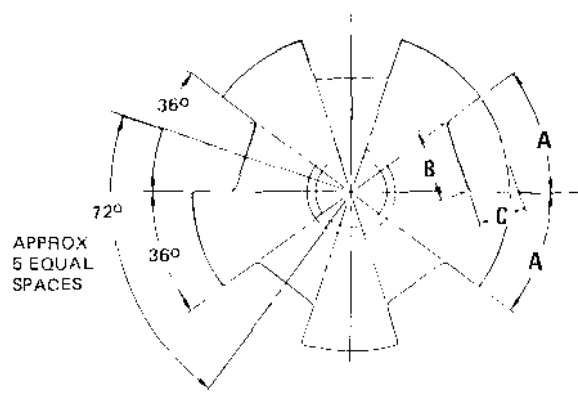


DEPTH OF CUT "C" IS ONE HALF THE FLIGHT WIDTH FOR NORMAL MAXIMUM PIPE SIZE. LENGTHS "A" & "B" ARE CALCULATED FROM THE DEVELOPED O. D. FOR A STANDARD PITCH.

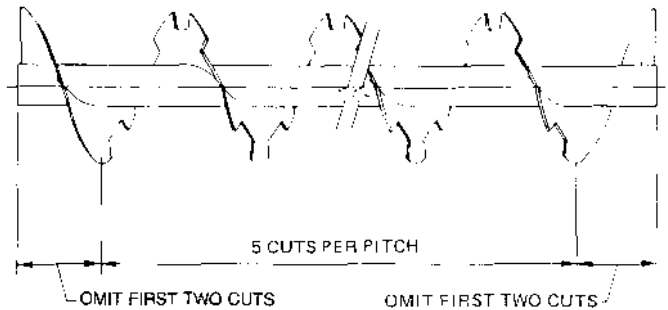


Screw dia. and pitch	A	B	C
Inches			
6	2	1-1/2	7/8
9	3	2-1/8	1-1/2
10	3-3/8	2-1/4	1-3/4
12	4	2-3/4	2
14	4-5/8	3-1/8	2-1/2
16	5-1/4	3-1/2	3
18	6	3-7/8	3-3/8
20	6-5/8	4-1/4	3-7/8
24	7-7/8	4-7/8	4-7/8

### CONVEYOR SCREW WITH CUT FLIGHTS



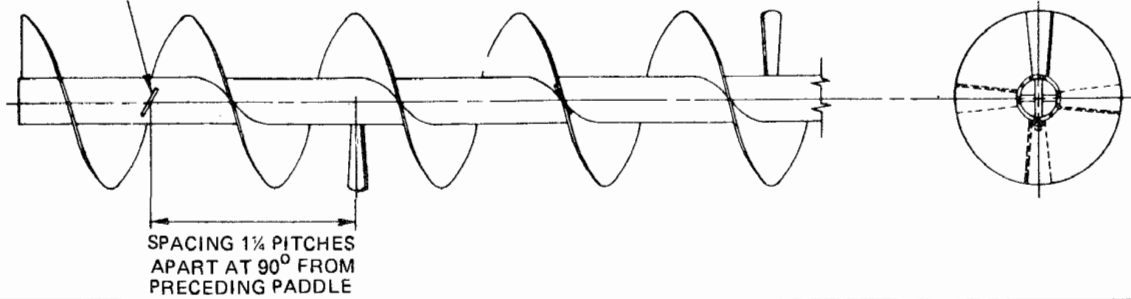
DEPTH OF CUT "C" IS ONE HALF THE FLIGHT WIDTH FOR NORMAL MAXIMUM PIPE SIZE. LENGTHS "A" & "B" ARE CALCULATED FROM THE DEVELOPED O.D. FOR A STANDARD PITCH.



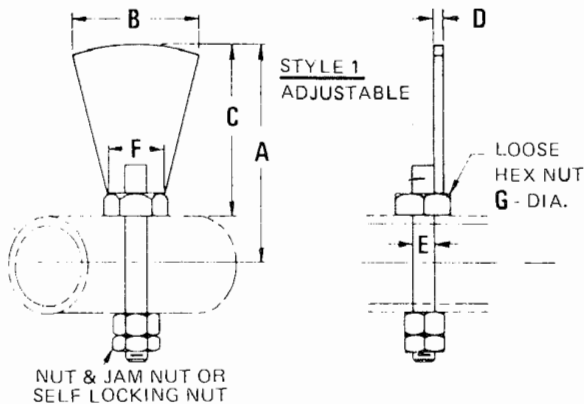
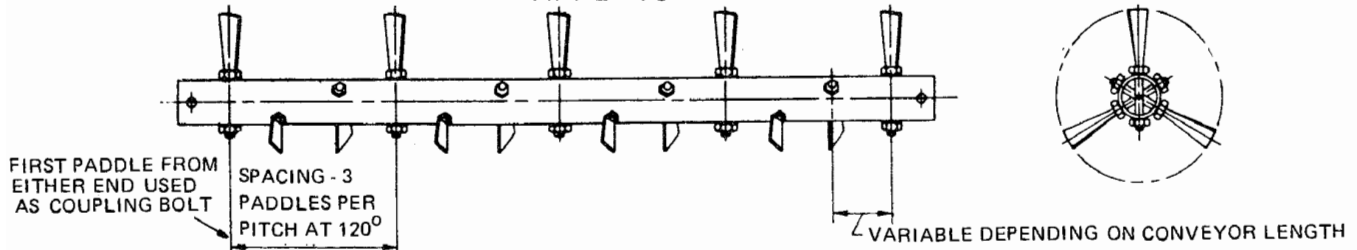
Screw dia. and pitch	A	B	C
Inches			
6	2	1-1/2	7/8
9	3	2-1/8	1-1/2
10	3-3/8	2-1/4	1-3/4
12	4	2-3/4	2
14	4-5/8	3-1/8	2-1/2
16	5-1/4	3-1/2	3
18	6	3-7/8	3-3/8
20	6-5/8	4-1/4	3-7/8
24	7-7/8	4-7/8	4-7/8

## CONVEYOR SCREW WITH PADDLES

PADDLES TO BE MOUNTED OPPOSITE HAND OF FLIGHTING



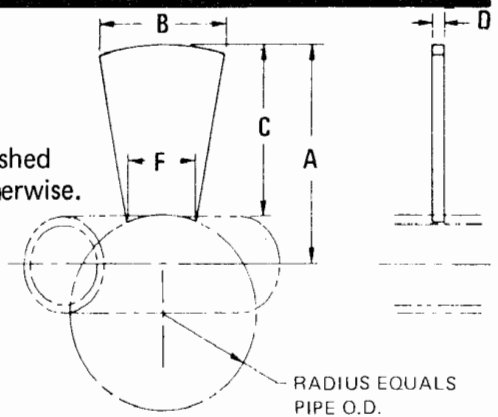
## PADDLE CONVEYOR SCREW



## PADDLES

### STYLE 2 WELDED

Note: Style 2 furnished unless specified otherwise.



Screw Dia.	Part Number		Cplng. Dia.	Pipe Size		A	B	C	D	E	F	G	Wt. Each
	Carbon Steel	Stainless Steel		Inside	Outside								
4	PAD42-*	PAD42S-*	1	1-1/4	1-5/8	2	1-1/2	1-3/16	3/16	3/8	7/8	1/2	.25
6	PAD63-*	PAD63S-*	1-1/2	2	2-3/8	3	2-1/16	1-13/16	1/4	1/2	1-7/16	5/8	.50
9	PAD93-*	PAD93S-*	1-1/2	2	2-3/8	4-1/2	2-3/4	3-5/16		1/2	1-1/2	5/8	.50
	PAD94-*	PAD94S-*	2	2-1/2	2-7/8			3-1/16	1/4	5/8	1-5/8	3/4	.75
10	PAD103-*	PAD103S-*	1-1/2	2	2-3/8	5		3-13/16	1/4	1/2	1-1/2	5/8	.75
	PAD104-*	PAD104S-*	2	2-1/2	2-7/8		3-1/8	3-9/16		5/8	1-5/8	3/4	1.00
12	PAD124-*	PAD124S-*	2	2-1/2	2-7/8	6		4-9/16		5/8	1-3/4	3/4	1.50
	PAD125-*	PAD125S-*	2-7/16	3	3-1/2		3-11/16	4-1/4	3/8	5/8	1-7/8	3/4	1.75
	PAD126-*	PAD126S-*	3	3-1/2	4			4		3/4	2	7/8	2.00
14	PAD145-*	PAD145S-*	2-7/16	3	3-1/2	7		5-1/4	3/8	5/8	2	3/4	2.25
	PAD146-*	PAD146S-*	3	3-1/2	4		4-1/4	5		3/4	2-1/8	7/8	2.50
16	PAD166-*	PAD166S-*	3	3-1/2	4		4-15/16	6	3/8	3/4	2-1/4	7/8	3.25
	PAD166X-*	PAD166XS-*	3	4	4-1/2	8		5-3/4		7/8	2-3/8	1	3.50
18	PAD186-*	PAD186S-*	3	3-1/2	4			7	3/8	3/4	2-1/8	7/8	4.00
	PAD187-*	PAD187S-*	3-7/16	4	4-1/2	9	5-3/8	6-3/4		7/8	2-1/4	1	4.25
20	PAD206-*	PAD206S-*	3	3-1/2	4	10		8		3/4	2-7/16	7/8	4.75
	PAD207-*	PAD207S-*	3-7/16	4	4-1/2		6-1/8	7-3/4	3/8	7/8	2-9/16	1	5.00
24	PAD247-*	PAD247S-*	3-7/16	4	4-1/2	12	7-3/8	9-3/4	1/2	7/8	2-11/16	1	6.75

-\*1 = style 1    -\*2 = style 2    ("X" IN PAD166X-\* MEANS 4" SCH 40 PIPE)



# KWS QUICK-KEY

## ***QUICK DISCONNECT FOR ALL SCREW CONVEYORS***

Our Quick-Key option now allows you to quickly perform conveyor screw repairs or replacement without the inconvenience and time-consuming task of dismantling your entire conveyor. Available on all of our conveyor screw models, the Quick-Key is usually supplied on one end only; however, screw sections with Quick-Key on both ends can be provided when specific applications require them.

The Quick-Key is bolted to the end of the screw pipe with coupling bolts. A complete screw section may be disconnected by unbolting the clamping key and hanger, allowing the section to be lifted out without disturbing the rest of the conveyor.

To replace the section simply bolt the Quick-Key and hanger into place and you're back in business . . . with minimum down-time and loss of production. You also eliminate the need for removing the conveyor drive unit with a Quick-Key on the screw pipe attached to the drive . . . saving even more of your valuable time.

To order a screw conveyor with the Quick-Key disconnect add the suffix "QK1" or "QK2." For example:

For a Helicoid Conveyor Screw with a diameter and pitch of 9"; a flight thickness of  $\frac{3}{16}$ " tapered to  $\frac{3}{32}$ "; a right hand flight and a standard 9'10" length; the number is

**9H306-R-9-10 (see page 51)**

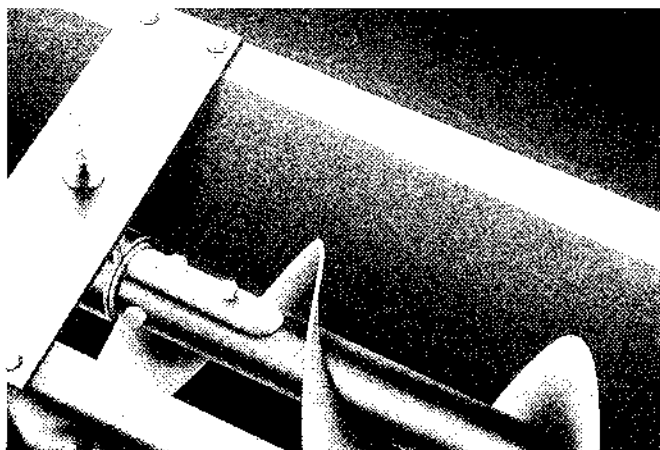
To indicate Quick-Key option for one end of screw only, the number would be:

**9H306-R-9-10-QK1**

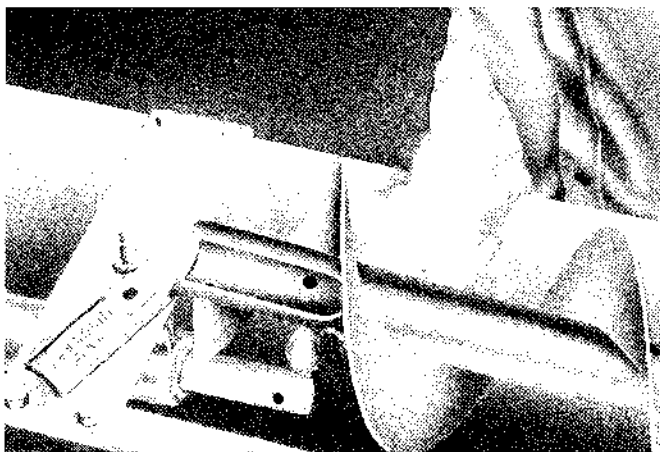
When ordering "QK1" the Quick-Key will be on the Drive End (Discharge End) of the screw unless specified otherwise.

To indicate Quick-Key disconnectors for both ends of the screw, the number would be:

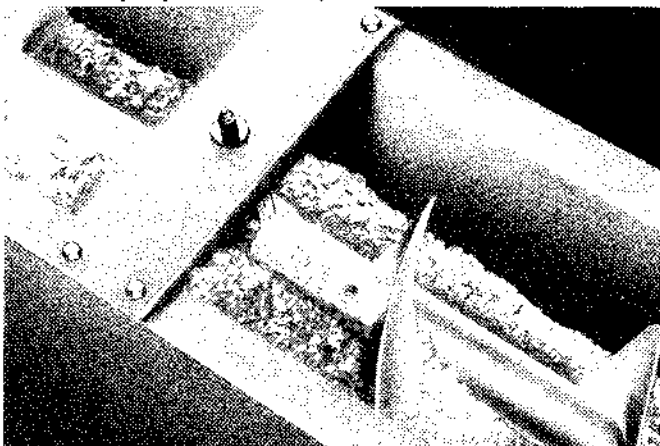
**9H306-R-9-10-QK2**



**Remove coupling bolts . . .**



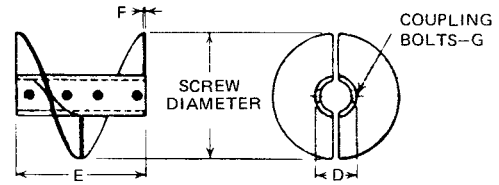
**Lift conveyor screw out to perform  
necessary repairs or to replace . . .**



**Replace the conveyor screw and bolt  
the Quick-Key in place.**

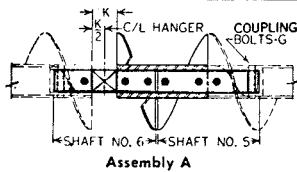
## SPLIT FLIGHT COUPLINGS AND SHAFTS

Split flight couplings consist of a pipe or tubing of appropriate inside and outside diameters, split longitudinally and jig-drilled for coupling bolts, with a half flight of heavy gauge material continuously welded on both sides of each half. Use of split flight couplings permits installation or removal of individual conveyor screws without disturbing adjoining sections or hangers. Quick-removable conveyor screws also permit the removal of individual conveyor screw sections without disturbing other sections. Regular couplings and coupling bolts are used with these screws.

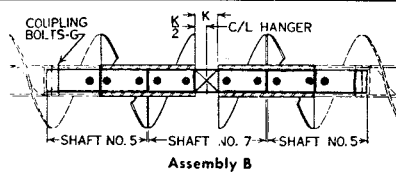


SPLIT FLIGHT COUPLING

Screw Diameter Inches	Coupling Diameter, Inches	Split Flight Coupling Number		Weight, Pounds	D	E	F	G
		Right Hand	Left Hand					
4	1	SFC41R	SFC41L	3	1-5/8	4-11/16	10 Ga.	3/8
6	1-1/2	SFC6112R	SFC6112L	9	2-3/8	6-11/16	1/4 IN.	1/2
9	1-1/2	SFC9112R	SFC9112L	14	2-3/8	9-11/16	3/16 IN.	1/2
	2	SFC92R	SFC92L	17	2-7/8	9-11/16	1/4 IN.	5/8
10	1-1/2	SFC10112R	SFC10112L	16	2-3/8	10-11/16	10 Ga.	1/2
	2	SFC102R	SFC102L	21	2-7/8	10-11/16	1/4 IN.	5/8
	2	SFC122R	SFC122L	29	2-7/8	12-11/16	1/4 IN.	5/8
12	2-7/16	SFC122716R	SFC122716L	31	3-1/2	12-11/16	3/16 IN.	5/8
	3	SFC123R	SFC123L	40	4	12-11/16	3/8 IN.	3/4
14	2-7/16	SFC142716R	SFC142716L	45	3-1/2	14-3/4	3/16 IN.	5/8
	3	SFC143R	SFC143L	51	4	14-3/4	3/8 IN.	3/4
16	3	SFC163R	SFC163L	61	4	16-3/4	3/8 IN.	3/4
	3	SFC183R	SFC183L	75	4	18-3/4	3/8 IN.	3/4
18	3-7/16	SFC183716R	SFC183716L	76	4-1/2	18-3/4	3/8 IN.	7/8
	3	SFC203R	SFC203L	75	4	20-3/4	1/4 IN.	3/4
20	3-7/16	SFC203726R	SFC203716L	81	4-1/2	20-7/8	3/8 IN.	7/8
24	3-7/16	SFC243716R	SFC243716L	114	4-1/2	24-7/8	3/8 IN.	7/8



Assembly A



Assembly B

## SPLIT FLIGHT COUPLING SHAFTS

Split Flight Coupling Shafts are used to transmit rotation and to position accurately and support the split flight couplings. Shafts are jig-drilled to assure proper alignment of adjacent flights.

## SPLIT FLIGHT COUPLING SHAFTS

Screw Dia., Inches	Coupling Dia., Inches	Split Flight Coupling Shaft Number			Weight, Pounds			Length, Inches			G	K
		* Shaft No. 5	Shaft No. 6	Shaft No. 7	Shaft No. 5	Shaft No. 6	Shaft No. 7	Shaft No. 5	Shaft No. 6	Shaft No. 7		
4	1	SFC41-5S	SFC41-6S	SFC41-7S	1	2	2	5-1/4	6-3/4	6	3/8	1-1/2
6	1-1/2	SFC6112-5S	SFC6112-6S	SFC6112-7S	4	5	4	8	10	8-1/2	1/2	2
9	1-1/2	SFC9112-5S	SFC9112-6S	SFC9112-7S	5	6	6	9-1/2	11-1/2	11-1/2	1/2	2
	2	SFC92-5S	SFC92-6S	SFC92-7S	9	10	10	9-1/2	11-1/2	11-1/2	5/8	2
10	1-1/2	SFC10112-5S	SFC10112-6S	SFC10112-7S	5	6	6	10	12	12-1/2	1/2	2
	2	SFC102-5S	SFC102-6S	SFC102-7S	9	11	11	10	12	12-1/2	5/8	2
	2	SFC122-5S	SFC122-6S	SFC122-7S	10	12	13	11	13	14-1/2	5/8	2
12	2-7/16	SFC122716-5S	SFC122716-6S	SFC122716-7S	15	19	21	11-1/8	14-1/8	15-1/2	5/8	3
	3	SFC123-5S	SFC123-6S	SFC123-7S	23	29	31	11-1/4	14-1/4	15-1/2	3/4	3
14	2-7/16	SFC122716-5S	SFC142716-6S	SFC142716-7S	16	20	23	12-1/8	15-1/8	17-1/2	5/8	3
	3	SFC143-5S	SFC143-6S	SFC143-7S	25	21	35	12-1/4	15-1/4	17-1/2	3/4	3
16	3	SFC163-5S	SFC163-6S	SFC163-7S	27	33	39	13-1/4	16-1/4	19-1/2	3/4	3
	3	SFC183-5S	SFC183-6S	SFC183-7S	29	35	43	14-1/4	17-1/4	21-1/2	3/4	3
18	3-7/16	SFC183716-5S	SFC183716-6S	SFC183716-7S	41	50	56	16-1/4	20-1/4	22-1/2	7/8	4
	3	SFC203-5S	SFC203-6S	SFC203-7S	31	37	47	15-1/4	18-1/4	23-1/2	3/4	3
20	3-7/16	SFC203716-5S	SFC203716-6S	SFC203716-7S	45	56	65	17-1/4	21-1/4	24-1/2	7/8	4
24	3-7/16	SFC243716-5S	SFC243716-6S	SFC243716-7S	51	62	75	19-1/4	23-1/4	28-1/2	7/8	4

Have dimensions certified for installation purposes. Coupling bolt are not included. Coupling shafts No. 6 and No. 7 can be furnished with bearing length K hardened.

Shaft No. 5 drilled standard for conveyor screw coupling bolts or

one end only. Holes for the split flight coupling bolts on other end must be drilled in assembly to insure alignment of flight.

Orders covering split flight couplings with conveyor screws and assembled shafts, for Shaft No. 5, use the drilled price.

Add Suffix "D" to part No. if Drilled. Example: SFC41-5SD.

## KWS HARD-SURFACED SCREW CONVEYORS

KWS hard-surfaced screw conveyors are designed to eliminate excessive wear on flights while handling abrasive materials. An alloy is permanently fused to the carrying side (of a width in relation to the cross-sectional load, see chart) of the flighting face.

### ADDITIONAL TYPES OF ABRASION RESISTANT SCREW CONVEYORS AND ACCESSORIES

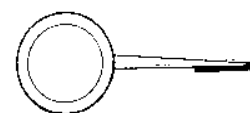
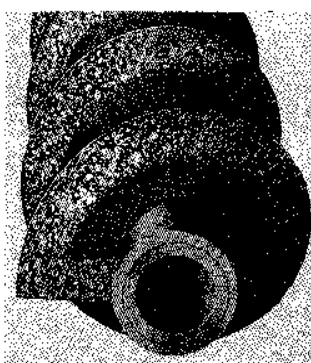
If desired, screw conveyors may be furnished in abrasion resistant metals, such as 40/50 carbon, T-1, nickel steel, A.R. Plate from 210 to 460 Brinell or may be coated with Stellite, Hardex, Airco, etc.

When handling abrasive materials, consideration should be given to protecting screw conveyor accessories. Hardened couplings, outboard bearings, trough ends and hangers with white iron or hardened surface bearings can be furnished. Troughs of heavy abrasion resistant metals are also available.

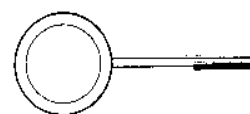
Notes: Other hard surfaces available upon request.  
Consult KWS Manufacturing Co., Inc.

WIDTH OF APPLICATION CHART

Screw Diameter	Width of Application
6	1
9	1-1/2
10	1-1/2
12	2
14	2
16	2-1/2
18	2-1/2
20	3
24	3



Helicoid



Sectional

## CONVEYOR SCREWS – SPECIAL

### WEAR SHOES

High carbon steels capable of heat treatment, or abrasion resistant alloys are used to an ever increasing extent as materials for flights. CONSULT FACTORY FOR DETAILS.

### CORROSION-RESISTANT CONVEYOR SCREWS

Corrosion is manifested in so many different ways that no one choice of material will suit all requirements. To withstand the effects of corrosion encountered in many fields of industry, conveyor screws are fabricated of stainless steel, copper, brass, bronze, nickel, monel, corten, aluminum, and other materials.

Galvanizing, tinning, chrome plating and other coating methods have proved effective under mildly corrosive conditions. Vulcanized or bonded rubber covering of the entire conveyor is frequently satisfactory for resistance to extremely corrosive action.

### HEAT-RESISTANT CONVEYOR SCREWS

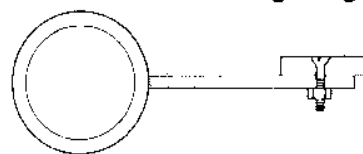
Conveyor screws for high temperature applications are made of many of the available heat-resistant alloys. Several of the stainless steels and other high-chrome alloys are particularly suitable for this service.

### NON-SPARKING SCREW CONVEYORS

Screw conveyors are available for use in areas which

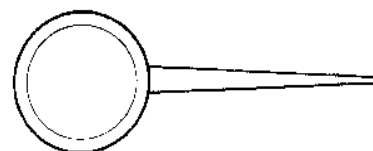
require a non-sparking composition. Metals, such as aluminum, brass, copper or bronze and certain stainless steel analyses are normally used for this application. Caution should be exercised in the selection of other components as well.

### Detachable hardened flight segment



Detachable hardened flight segments, or wearing sunk bolts to the conveyor shoes, bolted with counter-flights are preferred in many applications for quick and easy replacement.

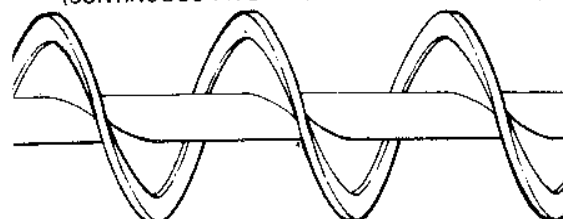
### Rubber covered screw



Rubber covering with its inherent tough resilience, bonded or vulcanized to a conveyor screw, offers excellent abrasion-resistant properties.

### WEAR STRIPS

(CONTINUOUS TYPE — BOLT ON CONSTRUCTION)



Conveyor Diameter	Part Number	A	B
6	WS6-*	6	7
9	WS9-*	9	10
10	WS10-*	10	11
12	WS12-*	12	13
14	WS14-*	14	15
16	WS16-*	16	17
18	WS18-*	18	19
20	WS20-*	20	21
24	WS24-*	24	25

\*UHMWV or  
T for Teflon

# SPECIAL SCREW CONVEYOR WELD FINISHES

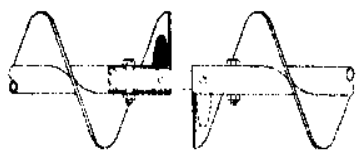
Specifications on screw conveyor occasionally include the term “grind smooth” when referring to the finish on welds. This specification is usually used for stainless steel, but occasionally it will appear in carbon steel specifications as well.

“Grind smooth” is a general term and subject to various interpretations. This section establishes K.W.S. recommended classes of finishes, which should be used to help you find the class required for an application.

- 1A — Weld Spatter and Slag removed (CEMA I)
- 1B — Weld Spatter and Slag removed and Sand Blasted
- 2A — Weld Spatter and Slag removed and rough grind welds to remove heavy weld ripple or unusual roughness (equivalent to a 40-50 grit finish) (CEMA II)
- 2B — Weld Spatter and Slag removed and rough grind welds to remove heavy weld ripple or unusual roughness (equivalent to a 40-50 grit finish) and sandblasted
- 3A — Weld Spatter and Slag removed and medium grind welds — leaving some pits and crevices (equivalent to a 80-100 grit finish) (CEMA III)
- 3B — Weld Spatter and Slag removed and medium grind welds — leaving some pits and crevices (equivalent to a 80-100 grit finish) and sandblasted
- 4 — Weld Spatter and Slag removed and fine grind welds — no pits or crevices permissible (equivalent to a 140-150 grit finish) (CEMA IV)
- 5 — Weld Spatter and Slag removed and fine grind weld — no pits or crevices permissible (equivalent to a 140-150 grit finish) and polish to a bright uniform finish (CEMA V)

# CONVEYOR SCREW COMPONENTS

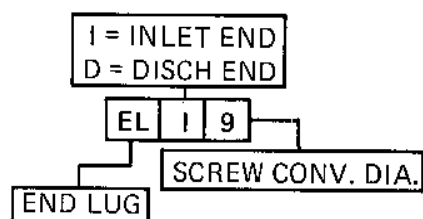
## END LUGS



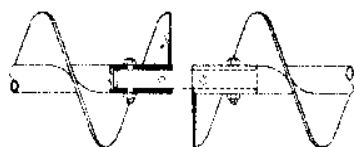
End lugs are manufactured of heavy-gauge steel. They are designed to provide maximum support with the least obstruction of material flow. They are welded securely to both flight and pipe. Manufactured for both right or left hand conveyors for intake or discharge ends of the conveyor.

Conveyor Diameter	Part Number		Weight Each Lbs.
	Intake End	Discharge End	
6	ELI6-*	ELD6-*	.06
9	ELI9-*	ELD9-*	.15
10	ELI10-*	ELD10-*	.15
12	ELI12-*	ELD12-*	.43
14	ELI14-*	ELD14-*	.43
16	ELI16-*	ELD16-*	.68
18	ELI18-*	ELD18-*	.68
20	ELI20-*	ELD20-*	.68
24	ELI24-*	ELD24-*	.68

\*Specify hand of Conveyor R = Right Hand  
L = Left Hand



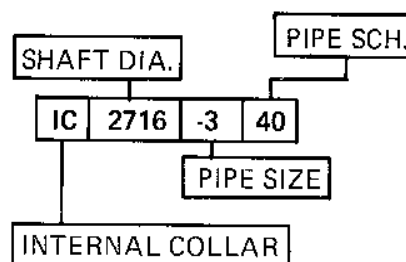
## INTERNAL COLLARS



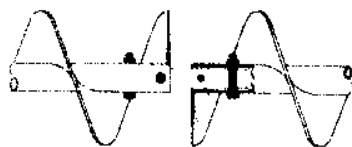
KWS internal collars are manufactured from special seamless tubing. Close-tolerance collars are pressure-inserted in the pipe end by means of a special fixture and plug-welded for maximum efficiency and service life. Coupling bolt holes are jig-drilled for perfect alignment. Replacement collars are furnished undrilled and should be drilled to match in the field.

Coupling	Pipe Size <input type="checkbox"/>	Part Number	Weight Each Lbs.
1	1-1/4	IC1-114-40	.7
1-1/2	2	IC112-2-40	2.2
2	2-1/2	IC2-212-40	2.4
2-7/16	3	IC2716-3-40	4.1
3	3-1/2	IC3-312-40	4.3
3	4	IC3-4-40	8.3
3-7/16	4	IC3716-4-40	7.3

☐ Schedule 40 Pipe



## STD. COUPLING BOLTS

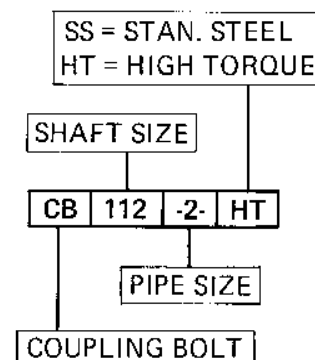


Coupling bolts are manufactured from special-analysis steels. Bolts have short thread length designed especially for use with conveyor screws. Each bolt is furnished with special type lock nut. Bolts are manufactured to close tolerances for perfect fit in coupling bolt holes. They are designed for maximum torque capacities and service life.

Coupling Dia.	Outside Pipe Dia.	Inside Pipe Dia. <input type="checkbox"/>	Bolt Size	Part Number	Weight Each Lbs.
1	1-5/8	1-1/4	3/8x2-1/16	CB1-114-*	.13
1-1/2	2-3/8	2	1/2x3	CB112-2-*	.25
2	2-7/8	2-1/2	5/8x3-5/8	CB2-212-*	.50
2-7/16	3-1/2	3	5/8x4-3/8	CB2716-3-*	.56
3	4	3-1/2	3/4x5	CB3-312-*	.75
3	4-1/2	4	3/4x5-1/2	CB3-4-*	.88
3-7/16	4-1/2	4	7/8x5-1/2	CB3716-4-*	1.25

☐ Schedule 40 Pipe

\* Add SS = For Stainless Steel  
HT = For Hi-Torque

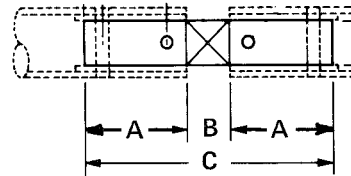
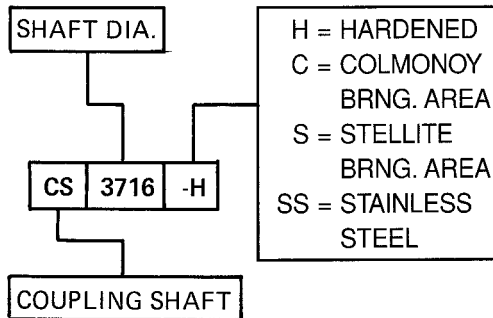


# SHAFTS

Coupling shafts are designed to transmit rotation between individual conveyor screw sections and to provide intermediate radial support through hanger bearings. Two basic types are available: Standard shafts, for use with hanger bearings, and close-coupling shafts, designed for applications where the omission of hanger bearings is desirable. Cautions should be exercised in the use of close-

coupling shafts to prevent deflection. KWS coupling shafts are manufactured of cold-drawn C-1045 medium-carbon steel which has an average tensile strength of 112,000 psi. Stainless shafts with an average tensile strength of 100,000 psi., are available in several types, including 303 and 316. All coupling bolt holes are jig-drilled for perfect alignment.

## COUPLING SHAFT



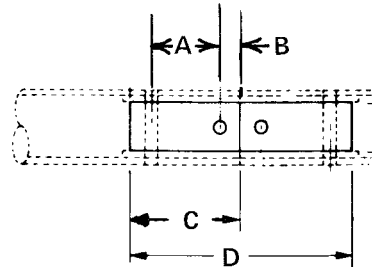
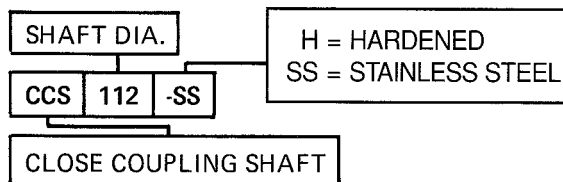
Shaft Dia.	Part Number	A	B	C
1	CS1-*	3	1-1/2	7-1/2
1-1/2	CS112-*	4-3/4	2	11-1/2
2	CS2-*	4-3/4	2	11-1/2
2-7/16	CS2716-*	4-7/8	3	12-3/4
3	CS3-*	5	3	13
3-7/16	CS3716-*	7	4	18

\*Specify Shaft Material (no suffix required on std.)

(H) Hardened (C) Colmonoy Brng. Area

(S) Stellite Brng. Area (SS) Stainless Steel

## CLOSE COUPLING SHAFT

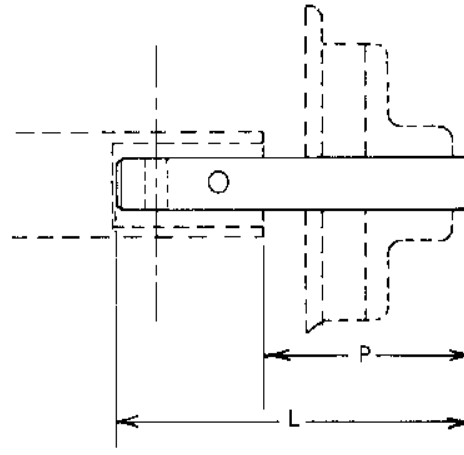
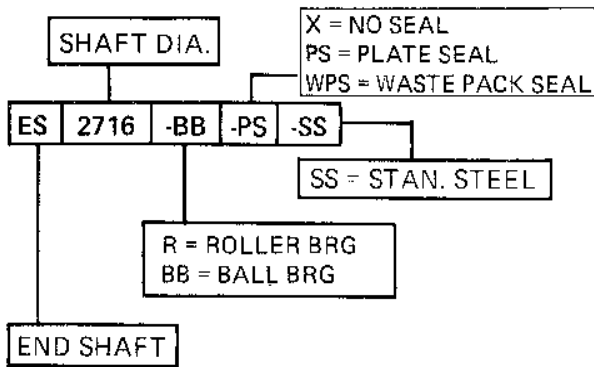


Shaft Dia.	Part Number	A	B	C	D
1	CCS1-*	2	1/2	3	6
1-1/2	CCS112-*	3	7/8	4-3/4	9-1/2
2	CCS2-*	3	7/8	4-3/4	9-1/2
2-7/16	CCS2716-*	3	15/16	4-7/8	9-3/4
3	CCS3-*	3	1	5	10
3-7/16	CCS3716-*	4	1-1/2	7	14

\*Specify Shaft Material (no suffix required on std.)

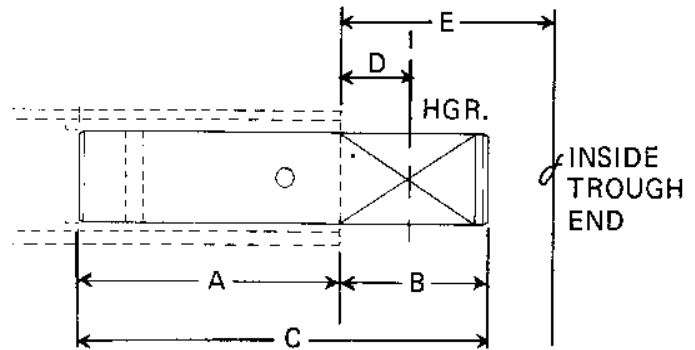
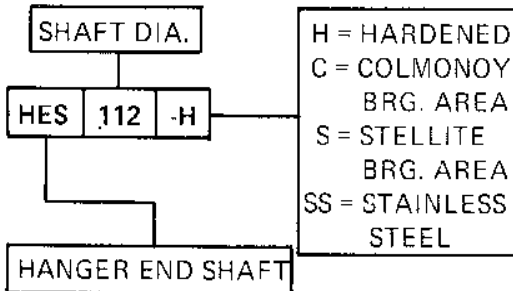
(SS) Stainless Steel (H) Hardened

## END SHAFT



Shaft Dia.    Part Number		For Std. Fig. Roller Brg.						Std. Fig. Ball Brg.						WT.
		L DIM.			P DIM.			L DIM.			P DIM.			
		X	PS	WPS	X	PS	WPS	X	PS	WPS	X	PS	WPS	
1	ES1-*	---	---	---	---	---	---	5-3/4	6-1/2	7-1/2	2-3/4	3-1/2	4-1/2	2
1-1/2	ES112*	10-1/4	11	12	5-1/2	6-1/4	7-1/4	8-3/4	9-1/2	10-1/4	4	4-3/4	5-1/2	6
2	ES2-*	10-5/8	11	12-3/8	5-7/8	6-1/4	7-5/8	9-3/8	10	11	4-5/8	5-1/4	6-1/4	11
2-7/16	ES2716*	12	12-5/8	13-1/2	7-1/8	7-3/4	8-5/8	10-3/8	11	12	5-1/2	6-1/8	7-1/8	18
3	ES3*	12-7/8	13-1/2	14-1/2	7-7/8	8-1/2	9-1/2	11-3/4	12-1/4	13-1/2	6-3/4	7-1/4	8-1/2	29
3-7/16	ES3716*	16-1/8	17	18-3/8	9-1/8	10	11-3/8	15	15-1/2	17	8	8-1/2	10	48

## HANGER END SHAFT



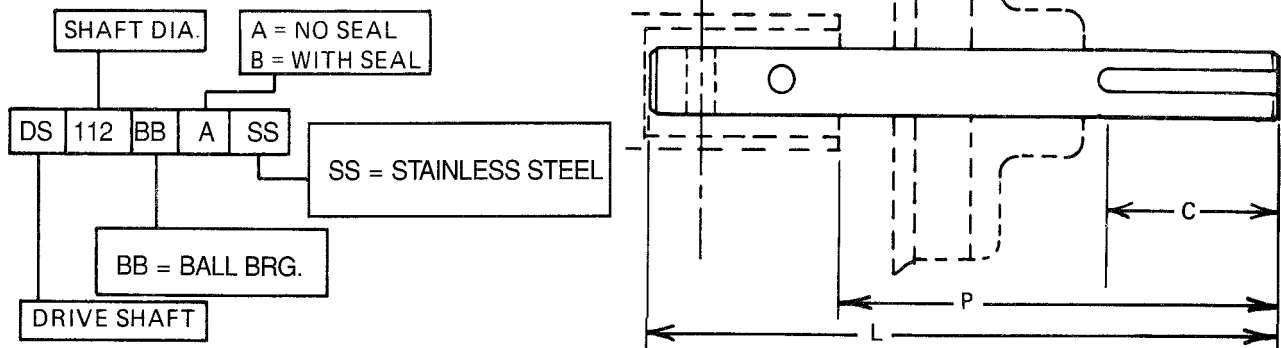
Shaft Dia.	Part Number	A	B	C	D	E	WT
1	HES1-*	3	1-5/8	4-5/8	3/4	2-3/8	1
1-1/2	HES112-*	4-3/4	2-1/8	6-7/8	1	3-1/8	3.5
2	HES2-*	4-3/4	2-1/8	6-7/8	1	3-1/8	6
2-7/16	HES2716-*	4-7/8	3-1/4	8-1/8	1-1/2	4-3/4	11
3	HES3-*	5	3-1/4	8-1/4	1-1/2	4-3/4	16.5
3-7/16	HES3716-*	7	4-1/4	11-1/4	2	6-1/4	30

\*Specify Shaft Material (no suffix required on std.)

(H) Hardened (C) Colmonoy Brng. Area

(S) Stellite Brng. Area (SS) Stainless Steel

## DRIVE SHAFT



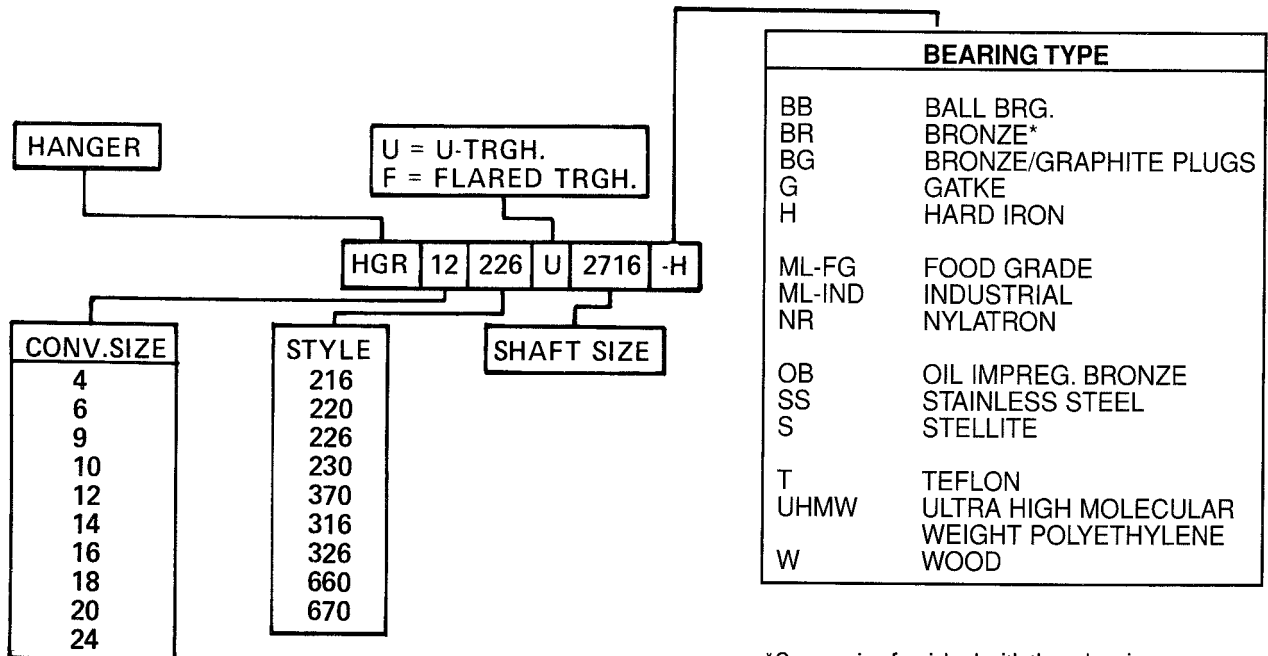
Shaft Dia.	Part Number	L DIM.		P DIM.		L DIM.		P DIM.		C	Weight in lbs
		Babbitt Bearing		Babbitt Bearing		Ball Bearing		Ball Bearing			
		W/Seal B-B	Without Seal B-A	W/Seal B-B	Without Seal B-A	W/Seal BB-B	Without Seal BB-A	W/Seal BB-B	Without Seal BB-A		
1	DS1*†	11-1/4	9-1/2	8-1/4	6-1/2	10-5/8	8-7/8	7-5/8	5-7/8	2-1/4	2.5
1-1/2	DS112*†	14-3/4	13	10	8-1/4	13-3/4	12	9	7-1/4	2-3/4	7.4
2	DS2*†	16-3/4	15	12	10-1/4	15-1/8	13-3/8	10-3/8	8-5/8	3-1/4	17.2
2-7/16	DS2716*†	19-3/8	17-5/8	14-1/2	12-3/4	16-7/8	15-1/8	12	10-1/4	4-1/4	25.6
3	DS3*†	21-5/8	19-7/8	16-5/8	14-7/8	19-1/8	17-3/8	14-1/8	12-3/8	4-3/4	43.3
3-7/16	DS3716*†	26-5/8	24-3/8	19-5/8	17-3/8	23-5/8	21-3/8	16-5/8	14-3/8	5-3/4	70.0

\*Specify bearing (B) Babbitt (BB) Ball Bearing †

† Specify (A) No Seal (B) With Seal

(SS) Stainless Steel (no suffix required on std.)

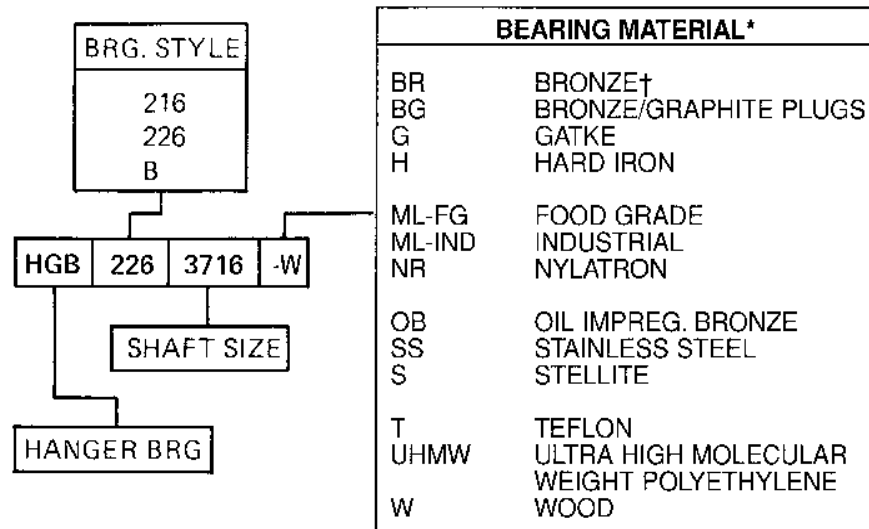
## HANGERS

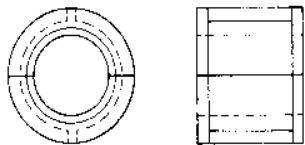
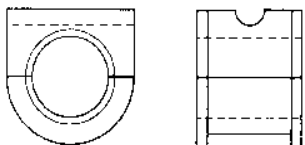
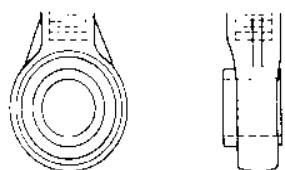


\*Grease pipe furnished with these bearings.



# HANGER BEARINGS



	Part Number	Bore	Bearing Materials*	Hanger
	HGB2261*	1	SEE LIST	220 226 326
	HGB226112*	1-1/2		
	HGB2262*	2		
	HGB2262716*	2-7/16		
	HGB2263*	3		
	HGB2263716*	3-7/16		
	HGB216112*	1-1/2	SEE LIST	216 230 316
	HGB2162*	2		
	HGB2162716*	2-7/16		
	HGB2163*	3		
	HGB2163716*	3-7/16		
	HGB21631516**	3-15/16		
	HGB2164716**	4-7/16		
	HGBB112	1-1/2	Ball †	370 660 670
	HGBB2	2		
	HGBB2716	2-7/16		
	HGBB3	3		
	HGBB3716	3-7/16		

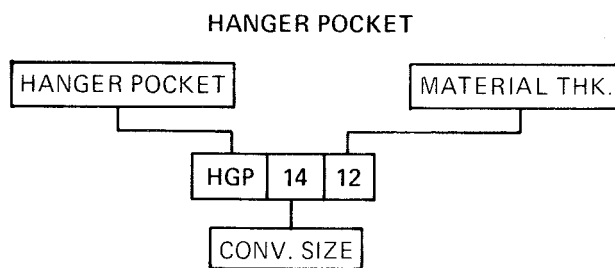
\*NOT ALL MATERIALS ARE AVAILABLE FOR ALL STYLES AND SIZES.

\*\*AVAILABLE IN HARD IRON AND BRONZE ONLY.

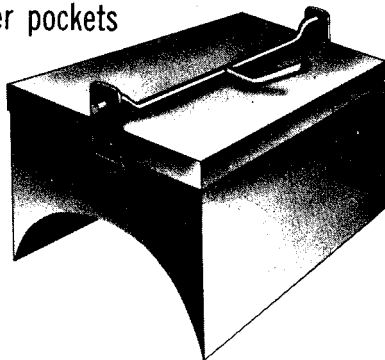
† THESE BEARINGS ARE DRILLED AND TAPPED FOR GREASE PIPE AS STANDARD.

# HANGER POCKET

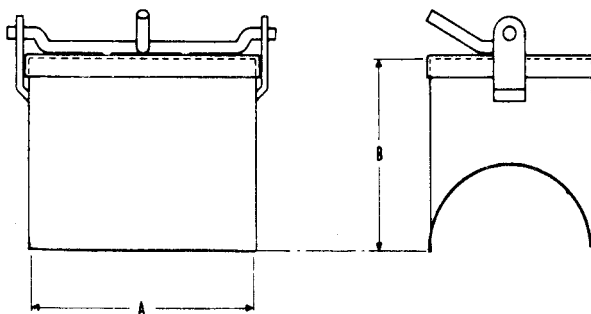
Hanger bearing support for conveyors with tubular housings is accomplished by means of a hanger pocket mounted on top of the housing at hanger bearing points. The hanger bolts to the straight sides of the pocket. Any standard hanger designed for inside mounting may be used. The pocket is sealed by a quick access cover with weather-proof, turned-down edges. It may be gasketed for dust-tight operation. Standard pockets are of the same gauge as the housings to which they are fitted.



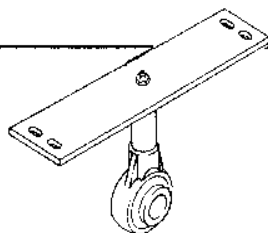
Hanger pockets



Screw	Part Number	A	B	Material Thickness	Wt.
4	HGP414	12	3-3/4	14	3
	HGP412			12	5
	HGP410			10	7
6	HGP614	12	5	14	5
	HGP612			12	7
	HGP610			10	9
9	HGP914	12	7-1/8	14	8
	HGP912			12	10
	HGP910			10	13
	HGP9316			3/16"	18
10	HGP1012	12	7-7/8	12	11
	HGP1010			10	14
	HGP10316			3/16"	19
12	HGP1212	18	8-7/8	12	15
	HGP1210			10	20
	HGP12316			3/16"	27
	HGP12250			1/4"	36
14	HGP1412	18	10-1/8	12	19
	HGP1410			10	24
	HGP14316			3/16"	33
	HGP14250			1/4"	44
16	HGP1612	18	11-1/8	12	23
	HGP1610			10	30
	HGP16316			3/16"	41
	HGP16250			1/4"	55
18	HGP1810	18	12-3/8	10	37
	HGP18316			3/16"	51
	HGP18250			1/4"	68
20	HGP2010	18	14	10	46
	HGP20316			3/16"	63
	HGP20250			1/4"	84
24	HGP2410	18	17	10	61
	HGP24316			3/16"	83
	HGP24250			1/4"	111

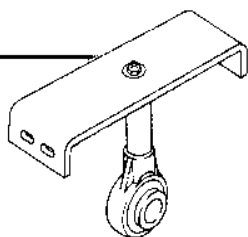


**NO. 660**



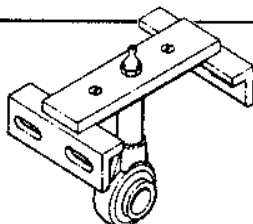
The No. 660 hanger is designed to mount on top flanged troughs. Supplied with a dust tight sealed ball bearing, this hanger has a 4° shaft alignment compensation and is operable in a temperature range up to 240°. This hanger is fitted with a lubrication fitting.

**NO. 670**



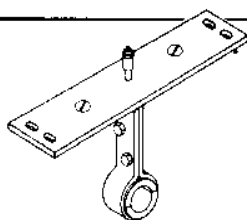
Basically the same hanger bearing design and availability as the No. 660, the 670 is used where flush mounting is necessary to permit dust proofing or weather sealing conveyor housings.

**NO. 370**



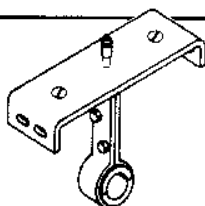
The No. 370 hanger also has the thermal expansion feature of the No. 316 hanger, but is supplied with a ball bearing assembly similar to the No. 660 and 670 hangers.

**NO. 220**



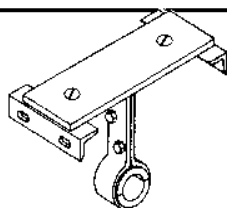
Designed for high capacity conveyors, the No. 220 hanger is a low profile hanger and bearing housing allowing minimum flow obstruction.

**NO. 226**



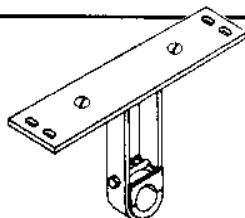
The No. 226 hanger incorporates all the advantages of the No. 220 but is designed for inside flush mounting with the trough top flange.

**NO. 326**



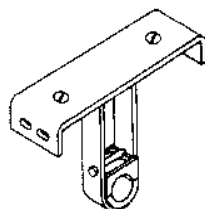
Designed for flush inside mounting, the No. 326 hanger has the same self adjusting assembly as the No. 316. Available only with hard iron or hard surfaced bearings. Hardened or hard surfaced shafts are required.

**NO. 230**



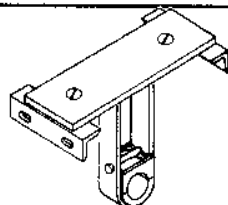
No. 230 hangers are designed for top mounting on trough flanges. The bearing and assembly frame are for heavy duty applications and are interchangeable with the No. 216 and 316 top frames.

**NO. 216**



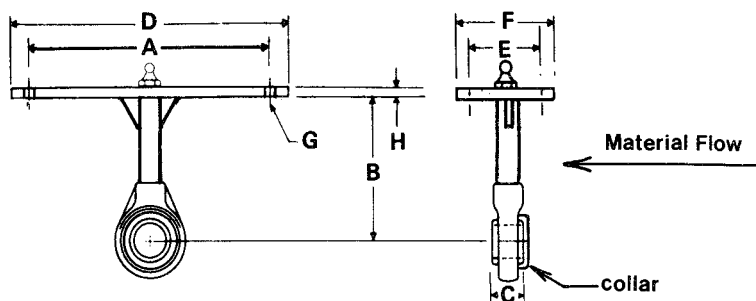
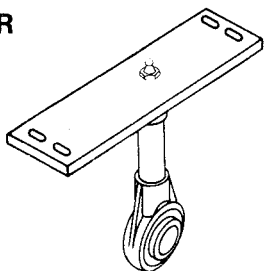
The No. 216 hanger is an inside flush mounted hanger recommended for use in heavy duty or high abrasion applications, especially where dust proofing is necessary.

**NO. 316**



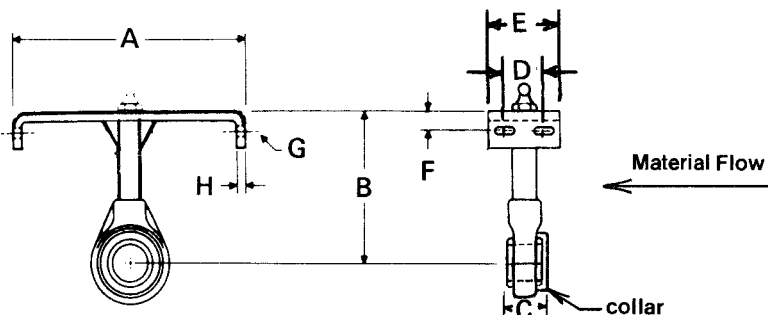
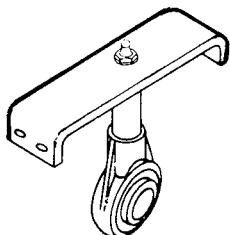
The No. 316 hanger provides the ruggedness of the No. 216 hanger bearings and the flexibility of the 326 hanger mounting brackets. The mounting bracket is self adjusting to compensate for thermal expansion of components in high heat situations.

# **660 HANGER U - TROUGH**



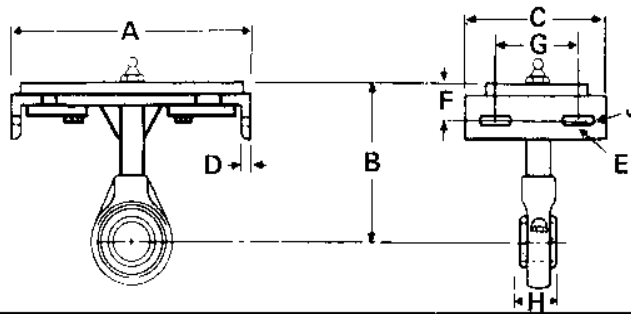
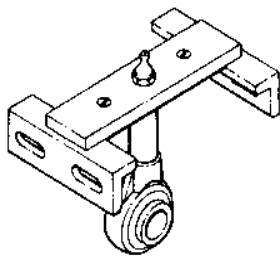
Screw Dia.	Shaft Dia.	Part Number	A	B	C	D	E	F	G Bolts	H	Wt.
6	1-1/2	HGR6660U112-BB	8-3/4	4-1/2	2	9-3/4	2-1/2	4	3/8	1/4	7
9	1-1/2 2	HGR9660U112-BB	12-1/4	6-1/8	2	13-1/2	2-1/2	4	3/8	1/4	8
		HGR9660U2-BB			2						9
10	1-1/2 2	HGR10660U112-BB	13-1/4	6-3/8	2	14-1/2	2-1/2	4	3/8	1/4	9
		HGR10660U2-BB			2						10
12	2	HGR12260U2-BB	15-3/4	7-3/4	2	17-1/2	2-1/2	4	1/2	1/2	12
	2-7/16	HGR12660U2716-BB			3						20
	3	HGR12660U3-BB			3						30
14	2-7/16 3	HGR14660U2716-BB	17-3/4	9-1/4	3	19-1/2	2-1/2	4	1/2	1/2	21
		HGR14660U3-BB			3						32
16	3	HGR16660U3-BB	19-3/4	10-5/8	3	21-1/2	2-1/2	4	1/2	1/2	35
18	3	HGR18660U3-BB	22-1/4	12-1/8	3	24-1/2	3-1/2	5	5/8	1/2	40
20	3	HGR20660U3-BB	24-1/2	13-1/2	3	26-1/2	3-1/2	5	5/8	1/2	45
24	3-7/16	HGR24660U3716-BB	28-1/4	16-1/2	4	30-1/2	3-1/2	5	5/8	1/2	69

# **670 HANGER U-TRGH**



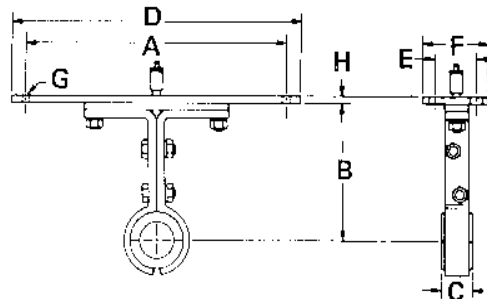
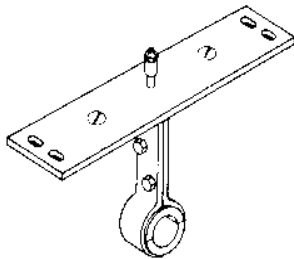
Screw Dia.	Shaft Dia.	Part Number *	A	B	C	D	E	F	G Bolts	H	Wt.
6	1-1/2	HGR6670U112-BB	7	4-1/2	2	2-1/2	4	3/4	3/8	1/4	7
9	1-1/2 2	HGR9670U112-BB	10	6-1/8	2	2-1/2	4	1	3/8	1/4	8
		HGR9670U2-BB			2						9
10	1-1/2 2	HGR10670U112-BB	11	6-3/8	2	2-1/2	4	1	3/8	1/4	9
		HGR10670U2-BB			2						10
12	2	HGR12670U2-BB	13	7-3/4	2	2-1/2	4	1-1/4	1/2	3/8	12
	2-7/16	HGR12670U2716-BB			3						20
	3	HGR12670U3-BB			3						30
14	2-7/16 3	HGR14670U2716-BB	15	9-1/4	3	2-1/2	4	1-3/8	1/2	3/8	21
		HGR14670U3-BB			3						32
16	3	HGR16670U3-BB	17	10-5/8	3	2-1/2	4	1-3/8	1/2	3/8	35
18	3	HGR18670U3-BB	19	12-1/8	3	3-1/2	5	1-5/8	5/8	1/2	40
20	3	HGR20670U3-BB	21	13-1/2	3	3-1/2	5	1-5/8	5/8	1/2	45
24	3-7/16	HGR14670U2716-BB	25	16-1/2	4	3-1/2	5	1-3/4	5/8	1/2	70

### 370 HANGER U-TRGH



Conveyor Diameter	Shaft Dia.	Part Number *	A	B	C	D	E	F	G	H	J Slot
6	1-1/2	HGR6370U112-BB	7	4-1/2	6	1/8	3/8	3/4	1-1/2	2	7/16 x 7/8
9	1-1/2 2	HGR9370U112-BB HGR9370U2-BB	10	6-1/8	6	3/16	3/8	1	2-1/2	2 2	7/16 x 7/8
10	1-1/2 2	HGR10370U112-BB HGR10370U2-BB	11	6-3/8	6	3/16	3/8	1	2-1/2	2 2	7/16 x 7/8
12	2 2-7/16 3	HGR12370U2-BB HGR12370U2716-BB HGR12370U3-BB	13	7-3/4	6-1/2	3/16	1/2	1-1/4	2-1/2	2 3 3	9/16 x 3/4
14	2-7/16 3	HGR14370U2716-BB HGR14370U3-BB	15	9-1/4	6-1/2	1/4	1/2	1-3/8	2-1/2	3 3	9/16 x 3/4
16	3	HGR16370U3-BB	17	10-5/8	6-1/2	1/4	1/2	1-3/8	2-1/2	3	9/16 x 3/4
18	3	HGR18370U3-BB	19	12-1/8	6-1/2	1/4	5/8	1-5/8	3-1/2	3	11/16 x 7/8
20	3	HGR20370U3-BB	21	13-1/2	6-1/2	1/4	5/8	1-5/8	3-1/2	3	11/16 x 7/8

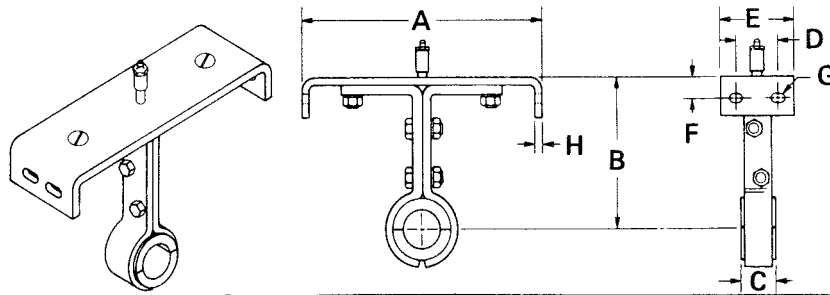
### 220 HANGER U-TRGH



Screw Dia.	Shaft Dia.	Part Number *	A	B	C	D	E	F	G Bolts	H	Wt.
4	1	HGR4220U1 *	6-1/4	3-5/8	1-1/2	7-1/4	2	4	1/4	1/4	5
6	1-1/2	HGR6220U112 *	8-3/4	4-1/2	2	9-3/4	2-1/2	4	3/8	1/4	7
9	1-1/2 2	HGR9220U112 * HGR9220U2 *	12-1/4	6-1/8	2 2	13-1/2	2-1/2	4	3/8	1/4	9 11
10	1-1/2 2	HGR10220U112 * HGR10220U2 *	13-1/4	6-3/8	2 2	14-1/2	2-1/2	4	3/8	1/4	10 12
12	2 2-7/16 3	HGR12220U2 * HGR12220U2716 * HGR12220U3 *	15-3/4	7-3/4	2 3 3	17-1/2	2-1/2	5	1/2	3/8	16 21 28
14	2-7/16 3	HGR14220U2716 * HGR14220U3 *	17-3/4	9-1/4	*3 3	19-1/2	2-1/2	5	1/2	3/8	26 33
16	3	HGR16220U3 *	19-3/4	10-5/8	3	21-1/2	2-1/2	5	1/2	3/8	39
18	3 3-7/16	HGR18220U3 * HGR18220U3716 *	22-1/4	12-1/8	3 4	24-1/2	3-1/2	5	5/8	1/2	41 49
20	3 3-7/16	HGR20220U3 * HGR20220U3716 *	24-1/2	13-1/2	3 4	26-1/2	3-1/2	5	5/8	1/2	43 51
24	3-7/16	HGR24220U3716 *	28-1/4	16-1/2	4	30-1/2	3-1/2	5	5/8	1/2	57

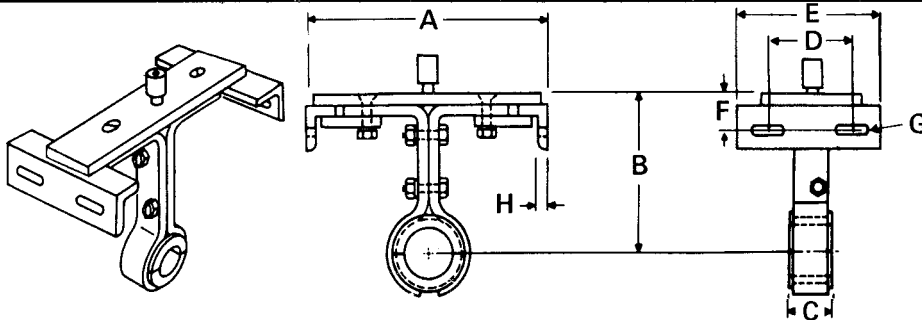
\* See pages 69 and 70 for bearing selection.

**226 HANGER  
U-TRGH**



Screw Dia.	Shaft Dia.	Part Number *	A	B	C	D	E	F	G Bolts	H	Wt.
4	1	HGR4226U1 *	5	3-5/8	1-1/2	2	4	5/8	1/4	1/4	4
6	1-1/2	HGR6226U112 *	7	4-1/2	2	2-1/2	4	3/4	3/8	1/4	6
9	2	HGR9226U112 *	10	6-1/8	2	2-1/2	4	1	3/8	1/4	8
		HGR9226U2 *			2						9
10	2	HGR10226U112 *	11	6-3/8	2	2-1/2	4	1	3/8	1/4	9
		HGR10226U2 *			2						11
12	2	HGR12226U2	13	7-3/4	2	2-1/2	5	1-1/4	1/2	3/8	13
	2-7/16	HGR12226U2716 *			3						18
	3	HGR12226U3 *			3						24
14	3	HGR14226U2716 *	15	9-1/4	3	2-1/2	5	1-3/8	1/2	3/8	22
		HGR14226U3 *			3						29
16	3	HGR16226U3 *	17	10-5/8	3	2-1/2	5	1-3/8	1/2	3/8	34
18	3	HGR18226U3 *	19	12-1/8	3	3-1/2	5	1-5/8	5/8	1/2	35
	3-7/16	HGR18226U3716 *			4						46
20	3	HGR20226U3 *	21	13-1/2	3	3-1/2	5	1-5/8	5/8	1/2	41
	3-7/16	HGR20226U3716 *			4						52
24	3-7/16	HGR24226U3716 *	25	16-1/2	4	3-1/2	5	1-3/4	5/8	1/2	63

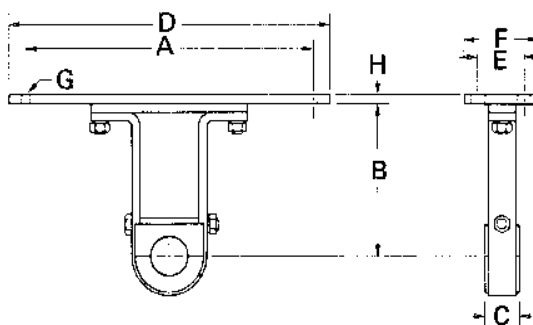
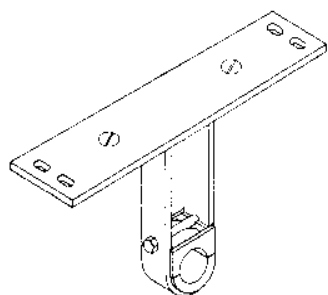
**326 HANGER  
U-TRGH**



Screw Dia.	Shaft Dia.	Part Number *	A	B	C	D	E	F	G Bolts	H	Wt.
4	1	HGR4326U1 *	5	3-5/8	1-1/2	2	5	5/8	1/4	1/8	5
6	1-1/2	HGR6326U112 *	7	4-1/2	2	2-1/2	6	3/4	3/8	1/8	7
9	2	HGR9326U112 *	10	6-1/8	2	2-1/2	6	1	3/8	3/16	9
		HGR9326U2 *			2						10
10	2	HGR10326U112 *	11	6-3/8	2	2-1/2	6	1	3/8	3/16	10
		HGR10326U2 *			2						12
12	2	HGR12326U2 *	13	7-3/4	2	2-1/2	6-1/2	1-1/4	1/2	3/16	14
	2-7/16	HGR12326U2716 *			3						19
	3	HGR12326U3 *			3						25
14	3	HGR14326U2716 *	15	9-1/4	3	2-1/2	6-1/2	1-3/8	1/2	1/4	23
		HGR14326U3 *			3						31
16	3	HGR16326U3 *	17	10-5/8	3	2-1/2	6-1/2	1-3/8	1/2	1/4	36
18	3	HGR18326U3 *	19	12-1/8	3	3-1/2	6-1/2	1-5/8	5/8	1/4	36
	3-7/16	HGR18326U3716 *			4						48
20	3	HGR20326U3 *	21	13-1/2	3	3-1/2	6-1/2	1-5/8	5/8	1/4	38
	3-7/16	HGR20326U3716 *			4						51
24	3-7/16	HGR24326U3716 *	25	16-1/2	4	3-1/2	7	1-3/4	5/8	5/16	58

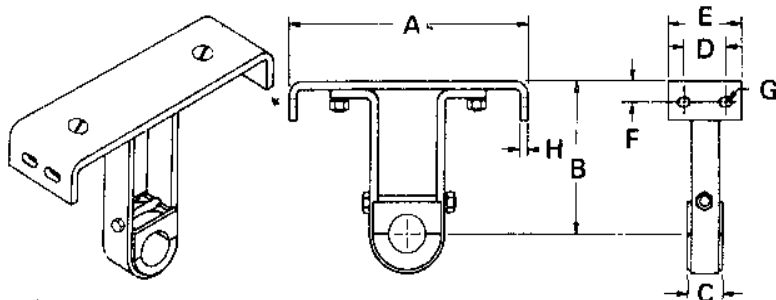
\* See pages 69 and 70 for bearing selection.

**230 HANGER  
U-TRGH**



Screw Dia.	Shaft Dia.	Part Number *	A	B	C	D	E	F	G Bolts	H	Wt.
6	1-1/2	HGR6230U112 *	8-3/4	4-1/2	2	9-3/4	2-1/2	4	3/8	1/4	7
9	1-1/2	HGR9230U112 *	12-1/4	6-1/8	2	13-1/2	2-1/2	4	3/8	1/4	9
	2	HGR9230U2 *			2						11
10	1-1/2	HGR10230U112 *	13-1/4	6-3/8	2	14-1/2	2-1/2	4	3/8	1/4	10
	2	HGR10230U2 *			2						12
12	2	HGR12230U2 *	15-3/4	7-3/4	2	17-1/2	2-1/2	5	1/2	3/8	16
	2-7/16	HGR12230U2716 *			3						21
	3	HGR12230U3 *			3						28
14	2-7/16	HGR14230U2716 *	17-3/4	9-1/4	3	19-1/2	2-1/2	5	1/2	3/8	26
	3	HGR14230U3 *			3						33
16	3	HGR16230U3 *	19-3/4	10-5/8	3	21-1/2	2-1/2	5	1/2	3/8	39
18	3	HGR18230U3 *	22-1/4	12-1/8	3	24-1/2	3-1/2	5	5/8	1/2	41
	3-7/16	HGR18230U3716 *			4						49
20	3	HGR20230U3 *	24-1/2	13-1/2	3	26-1/2	3-1/2	5	5/8	1/2	43
	3-7/16	HGR20230U3716 *			4						51
24	3-7/16	HGR24230U3716 *	28-1/4	16-1/2	4	30-1/2	3-1/2	5	5/8	1/2	57

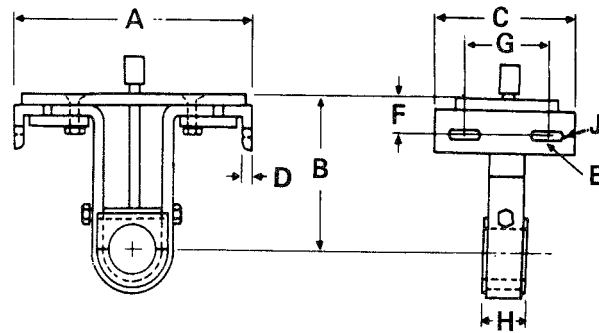
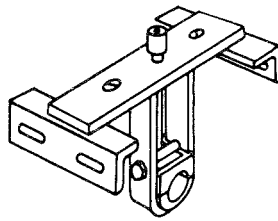
**216 HANGER  
U-TRGH**



Screw Dia.	Shaft Dia.	Part Number *	A	B	C	D	E	F	G Bolts	H	Wt.
6	1-1/2	HGR6216U112 *	7	4-1/2	2	2-1/2	4	3/4	3/8	1/4	5
9	1-1/2	HGR9216U112 *	10	6-1/8	2	2-1/2	4	1	3/8	1/4	7
	2	HGR9216U2 *			2						9
10	1-1/2	HGR10216U112 *	11	6-3/8	2	2-1/2	4	1	3/8	1/4	8
	2	HGR10216U2 *			2						10
12	2	HGR12216U2 *	13	7-3/4	2	2-1/2	5	1-1/4	1/2	3/8	14
	2-7/16	HGR12216U2716 *			3						18
	3	HGR12216U3 *			3						21
14	2-7/16	HGR14216U2716 *	15	9-1/4	3	2-1/2	5	1-3/8	1/2	3/8	23
	3	HGR14216U3 *			3						25
16	3	HGR16216U3 *	17	10-5/8	3	2-1/2	5	1-3/8	1/2	3/8	28
18	3	HGR18216U3 *	19	12-1/8	3	3-1/2	5	1-5/8	5/8	1/2	34
	3-7/16	HGR18216U3716 *			4						44
20	3	HGR20216U3 *	21	13-1/2	3	3-1/2	5	1-5/8	5/8	1/2	36
	3-7/16	HGR20216U3716 *			4						47
24	3-7/16	HGR24216U3716 *	25	16-1/2	4	3-1/2	5	1-3/4	5/8	1/2	53

\* See pages 69 and 70 for bearing selection.

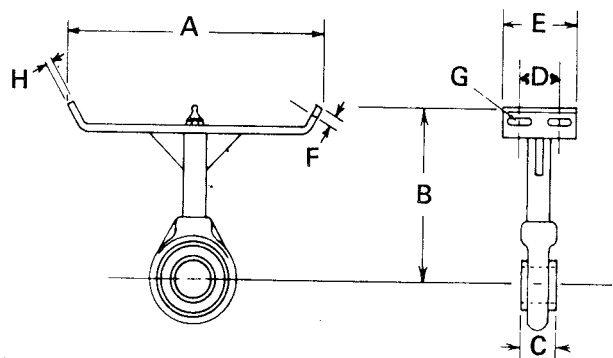
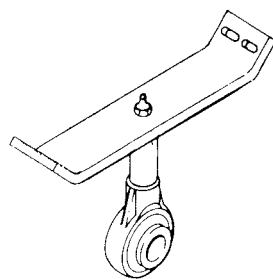
# 316 HANGER U-TRGH



Conveyor Diameter	Shaft Dia.	Part Number *	A	B	C	D	E	F	G	H	J Slot
6	1-1/2	HGR6316U112 *	7	4-1/2	6	1/8	3/8	3/4	2-1/2	2	7/16 x 7/8
9	1-1/2 2	HGR9316U112 * HGR9316U2 *	10	6-1/8	6	3/16	3/8	1	2-1/2	2	7/16 x 7/8
10	1-1/2 2	HGR10316U112 * HGR10316U2 *	11	6-3/8	6	3/16	3/8	1	2-1/2	2	7/16 x 7/8
12	2 2-7/16 3	HGR12316U2 * HGR12316U2716 * HGR12316U3 *	13	7-3/4	6-1/2	3/16	1/2	1-1/4	2-1/2	2 3 3	9/16 x 3/4
14	2-7/16 3	HGR14316U2716 * HGR14316U3 *	15	9-1/4	6-1/2	1/4	1/2	1-3/8	2-1/2	3 3	9/16 x 3/4
16	3	HGR16316U3 *	17	10-5/8	6-1/2	1/4	1/2	1-3/8	2-1/2	3	9/16 x 3/4
18	3 3-7/16	HGR18316U3 * HGR18316U3716 *	19	12-1/8	6-1/2 7	1/4	5/8	1-5/8	3-1/2	3 4	11/16 x 7/8
20	3 3-7/16	HGR20316U3 * HGR20316U3716 *	21	13-1/2	6-1/2 7	1/4	5/8	1-5/8	3-1/2	3 4	11/16 x 7/8
24	3-7/16	HGR24316U3716 *	25	16-1/2	7	5/16	5/8	1-3/4	3-1/2	4	11/16 x 7/8

# 670 HANGER FLARED TRGH

14" DIA. AND ABOVE  
TO HAVE TOP BAR  
CONSTRUCTED  
FROM CHANNEL



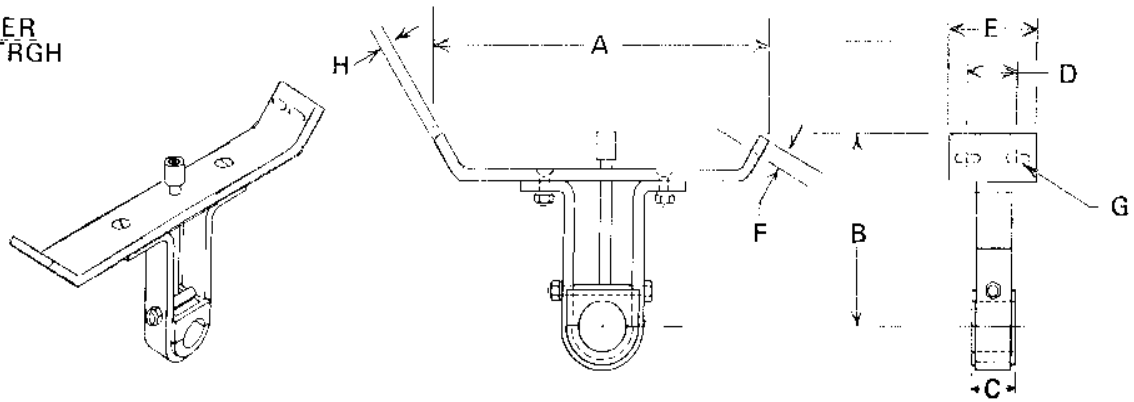
Screw Dia.	Shaft Dia.	Part Number *	A	B	C	D	E	F	G Bolts	H
6	1-1/2	HGR6670F112-BB	14	7	2	2-1/2	4	3/4	3/8	1/4
9	1-1/2 2	HGR9670F112-BB HGR9670F2-BB	18	9	2 2	2-1/2	4	1"	3/8	1/4
12	2 2-7/16 3	HGR12670F2-BB HGR12670F2716-BB HGR12670F3-BB	22	10	2 3 3	2-1/2	5	1-1/4	1/2	3/8
14	2-7/16 3	HGR14670F2716-BB HGR14670F3-BB	24	11	3 3	2-1/2	5	1-3/8	1/2	1/4
16	3	HGR16670F3-BB	28	11-1/2	3	2-1/2	5	1-3/8	1/2	1/4
18	3	HGR18670F3-BB	31	12-1/8	3	3-1/2	6	1-5/8	5/8	3/8
20	3	HGR20670F3-BB	34	13-1/2	3	3-1/2	6	1-5/8	5/8	3/8
24	3-7/16	HGR12670F3716-BB	40	16-1/2	4	3-1/2	6	1-3/4	5/8	3/8

\* See pages 68 and 69 for bearing selection.



14" DIA. AND ABOVE TO HAVE TOP BAR CONSTRUCTED FROM CHANNEL

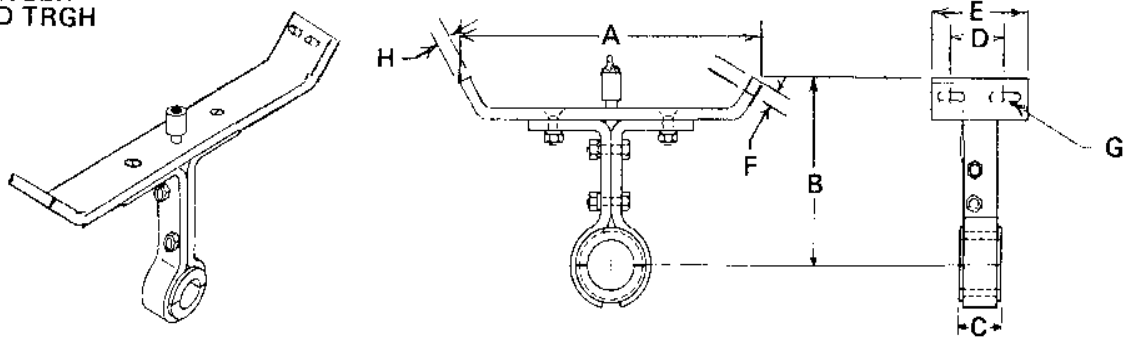
216 HANGER  
FLARED TRGH



Screw Dia.	Shaft Dia.	Part Number *	A	B	C	D	E	F	G Bolts	H
6	1-1/2	HGR6216F112 *	14	7	2	2-1/2	4	3/4	3/8	1/4
9	1-1/2	HGR9216F112 *	18	9	2	2-1/2	4	1	3/8	1/4
	2	HGR9216F2 *			2					
12	2	HGR12216F2 *	22	10	2	2-1/2	5	1-1/4	1/2	3/8
	2-7/16	HGR12216F2716 *			3					
	3	HGR12216F3 *			3					
14	2-7/16	HGR14216F2716 *	24	11	3	2-1/2	5	1-3/8	1/2	1/4
	3	HGR14216F3 *			3					
16	3	HGR16216F3 *	28	11-1/2	3	2-1/2	5	1-3/8	1/2	1/4
18	3	HGR18216F3 *	31	12-1/8	3	3-1/2	6	1-5/8	5/8	3/8
	3-7/16	HGR18216F3716 *			4					
20	3	HGR20216F3 *	34	13-1/2	3	3-1/2	6	1-5/8	5/8	3/8
	3-7/16	HGR20216F3716 *			4					
24	3-7/16	HGR24216F3716 *	40	16-1/2	4	3-1/2	6	1-5/8	5/8	3/8

226 HANGER  
FLARED TRGH

14" DIA. AND ABOVE TO HAVE TOP BAR CONSTRUCTED FROM CHANNEL



Screw Dia.	Shaft Dia.	Part Number *	A	B	C	D	E	F	G Bolts	H
6	1-1/2	HGR6226F112 *	14	7	2	2-1/2	4	3/4	3/8	1/4
9	1-1/2	HGR9226F112 *	18	9	2	2-1/2	4	1	3/8	1/4
	2	HGR9226F2 *			2					
12	2	HGR12226F2 *	22	10	2	2-1/2	5	1-1/4	1/2	3/8
	2-7/16	HGR12226F2716 *			3					
	3	HGR12226F3 *			3					
14	2-7/16	HGR14226F2716 *	24	11	3	2-1/2	5	1-3/8	1/2	1/4
	3	HGR14226F3 *			3					
16	3	HGR16226F3 *	28	11-1/2	3	2-1/2	5	1-3/8	1/2	1/4
18	3	HGR18226F3 *	31	12-1/8	3	3-1/2	6	1-5/8	5/8	3/8
	3-7/16	HGR18226F3716 *			4					
20	3	HGR20226F3 *	34	13-1/2	3	3-1/2	6	1-5/8	5/8	3/8
	3-7/16	HGR20226F3716 *			4					
24	3-7/16	HGR24226F3716 *	40	16-1/2	4	3-1/2	6	1-5/8	5/8	3/8

\* See pages 68 and 69 for bearing selection

# TROUGH ENDS

All KWS trough ends are manufactured to very close tolerances from quality heavy gauge steel. All assembly and mounting holes are jig drilled to insure correct alignment with housing end flanges. Housings are also available in stainless steel.

Ball bearings are standard with trough ends, however, ends may also be ordered with roller or babbit bearings or without any bearings.

Standard trough ends are furnished in six basic types, most of which are available for U or flared trough and tubular or rectangular housings.

## TROUGH ENDS WITHOUT FEET

Support is provided by separate flange foot or saddle.

## TROUGH ENDS WITH FEET

End manufactured with an integral bottom flanged foot.

## OUTBOARD BEARING ENDS

Components for bearing and seal or double bearing arrangements. An integral pedestal supports the pillow block bearing.

## FLUSH DISCHARGE ENDS

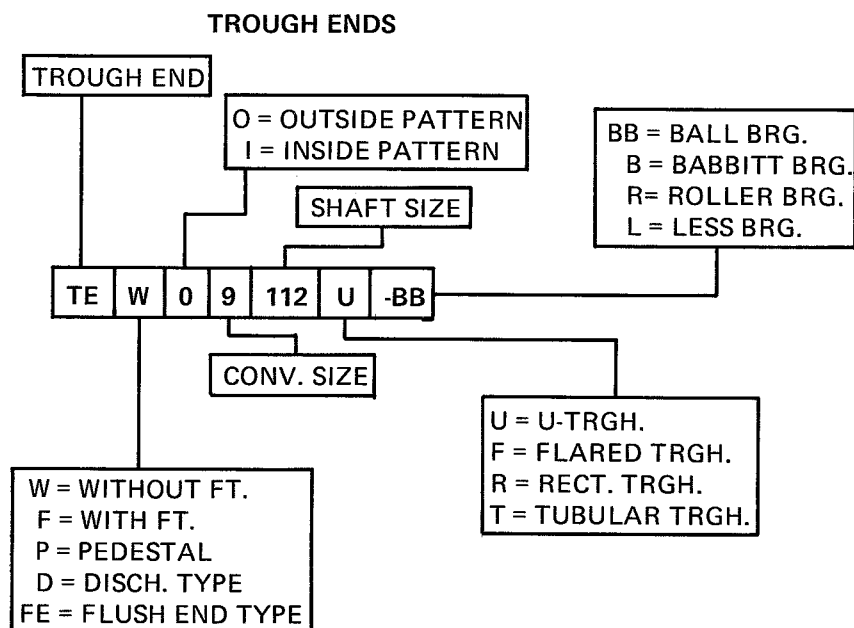
Primarily for use with flush end discharges, the bottom of ends are jig drilled for standard discharge flange pattern.

## DISCHARGE ENDS

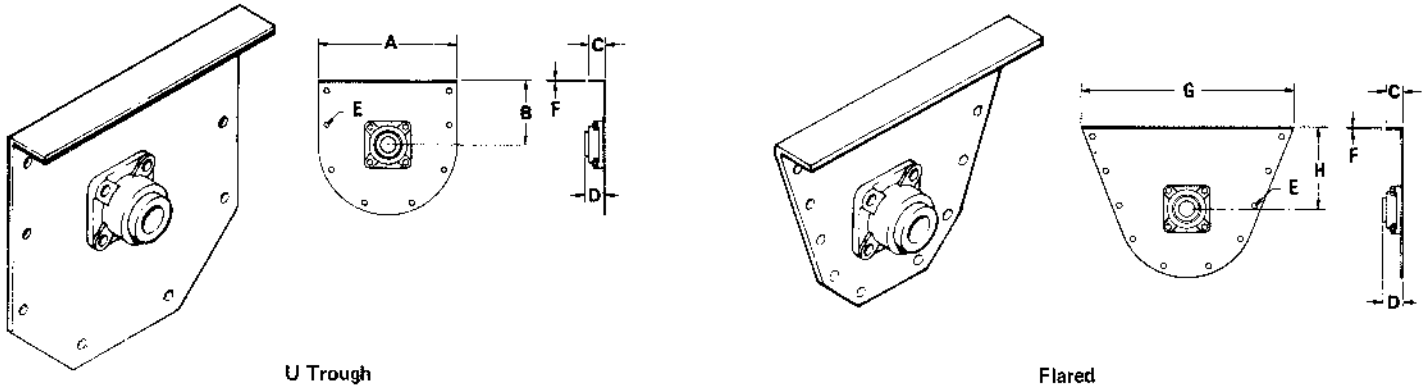
Designed to allow discharge directly from trough end.

## INSIDE TROUGH END

Manufactured for inside assembly, this end supplies support, and the standard trough flanges must be omitted.



# U TROUGH AND FLARED TROUGH ENDS WITHOUT FEET



Screw Dia.	Shaft Dia.	Part Numbers		Weights	
		U-Trough	Flared	U-Trough	Flared
4	1	TEWO41U	X	5	X
6	1-1/2	TEWO6112U	TEWO6112F	10	13
9	1-1/2 2	TEWO9112U TEWO92U	TEWO9112F TEWO92F	15 18	19 24
10	1-1/2 2	TEWO10112U TEWO102U	X X	22 26	X X
12	2 2-7/16 3	TEWO122U TEWO122716U TEWO123U	TEWO122F TEWO122716F TEWO123F	29 31 43	36 37 49
14	2-7/16 3	TEWO142716U TEWO143U	TEWO142716F TEWO143F	36 48	43 55
16	3	TEWO163U	TEWO163F	62	72
18	3 3-7/16	TEWO183U TEWO183716U	TEWO183F TEWO183716F	74 84	83 89
20	3 3-7/16	TEWO203U TEWO203716U	TEWO203F TEWO203716F	96 102	103 109
24	3-7/16	TEWO243716U	TEWO243716F	128	132

Screw Dia.	Shaft Dia.	A	B	C	D†			E Bolts	F	G	H
					Ball	Roller†	Friction*				
4	1	7-3/4	3-5/8	1-7/16	1-5/8	x	2-3/16	3/8	3/16	x	x
6	1-1/2	9-3/4	4-1/2	1-1/2	2-1/4	3-3/4	3-3/16	3/8	3/16	16-5/8	7
9	1-1/2 2	13-3/4	6-1/8	1-5/8	2-1/4 2-1/2	3-3/4 3-7/8	3-1/4 4-1/4	3/8	1/4	21-1/4	9
10	1-1/2 2	14-3/4	6-3/8	1-3/4	2-1/4 2-1/2	3-3/4 3-7/8	3-1/4 4-1/4	3/8	1/4	x	x
12	2 2-7/16 3	17-1/4	7-3/4	2	2-5/8 3 3-3/4	3-7/8 4-1/2 5	4-1/4 5-1/4 6-1/4	1/2	1/4	26-3/8	10
14	2-7/16 3	19-1/4	9-1/4	2	3 3-3/4	4-1/2 5	5-5/16 6-5/16	1/2	5/16	28-3/8	11
16	3	21-1/4	10-5/8	2-1/2	3-7/8	5	6-5/16	5/8	5/16	32-1/2	11-1/2
18	3 3-7/16	24-1/4	12-1/8	2-1/2	3-7/8 4-3/8	5 5-5/8	6-3/8 7-3/8	5/8	3/8	36-1/2	12-1/8
20	3 3-7/16	26-1/4	13-1/2	2-1/2	3-7/8 4-3/8	5-1/8 5-5/8	6-3/8 7-3/8	5/8	3/8	39-1/2	13 1/2
24	3-7/16	30-1/4	16-1/2	2-1/2	4-3/8	5-5/8	7-3/8	5/8	3/8	45-1/2	16-1/2

NOTE: † Add seal thickness if PS or WPS seal is used.  
\* Specify babbitt or bronze.

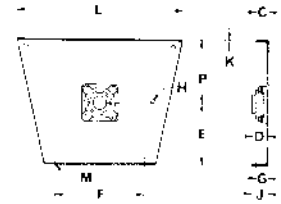
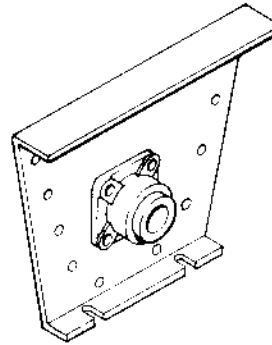
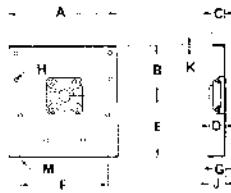
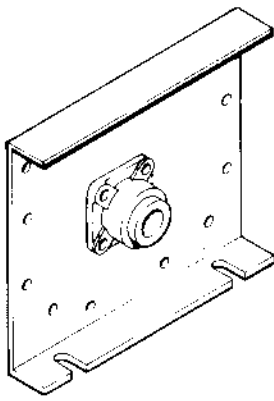
The image contains two sets of technical drawings for mounting brackets. The left set, labeled 'Tubular', shows a perspective view of a circular plate with a central tubular fitting and a side view with dimensions: A (plate diameter), A/2 (radius), E (flange thickness), F (flange height), and D (flange width). The right set, labeled 'Rectangular', shows a perspective view of a rectangular plate with a central rectangular fitting and a side view with dimensions: A (plate width), B (plate height), E (flange thickness), F (flange height), C (flange width), and D (flange depth).

Screw Dia.	Shaft Dia.	Part Numbers		Weights	
		Tubular	Rectangular	Tubular	Rectangular
4	1	TEWO41T	X	4	X
6	1-1/2	TEWO6112T	TEWO6112R	9	11
9	1-1/2 2	TEWO9112T	TEWO9112R	12	16
		TEWO92T	TEWO92R	15	21
10	1-1/2 2	TEWO10112T	X	20	X
		TEWO102T		24	X
12	2	TEWO122T	TEWO122R	29	32
	2-7/16	TEWO122716T	TEWO122716R	24	33
	3	TEWO123T	TEWO123R	36	51
14	2-7/16 3	TEWO142716T	TEWO142716R	30	39
		TEWO143T	TEWO143R	42	57
16	3	TEWO163T	TEWO163R	52	72
18	3	TEWO183T	TEWO183R	63	79
	3-7/16	TEWO183716T	TEWO183716R	74	86
20	3	TEWO203T	TEWO203R	85	104
	3-7/16	TEWO203716T	TEWO203716R	97	110
24	3-7/16	TEWO243716T	TEWO243716R	116	138

Screw Dia.	Shaft Dia.	A	B	C	D†			E Bolts	F
					Ball	Roller	Friction*		
4	1	7-3/4	3-5/8	1-7/16	1-5/8	X	2-3/16	3/8	3/16
6	1-1/2	9-3/4	4-1/2	1-1/2	2-1/4	3-3/4	3-3/16	3/8	3/16
9	2-2/2 2	13-3/4	6-1/8	1-5/8	2-1/4 2-1/2	3-3/4 3-7/8	3-1/4 4-1/4	3/8	1/4
10	1-1/2 2	14-3/4	6-3/8	1-3/4	2-1/4 2-1/2	3-3/4 3-7/8	3-1/4 4-1/4	3/8	1/4
12	2 2-7/16 3	17-1/4	7-3/4	2	2-5/8 3 3-3/4	3-7/8 4-1/2 5	4-1/4 5-1/4 6-1/4	1/2	1/4
14	2-7/16 3	19-1/4	9-1/4	2	3 3-3/4	4-1/2 5	5-5/16 6-5/16	1/2	5/16
16	3	21-1/4	10-5/8	2-1/2	3-7/8	5	6-5/16	5/8	5/16
18	3 3-7/16	24-1/4	12-1/8	2-1/2	3-7/8 4-3/8	5 5-5/8	6-3/8 7-3/8	5/8	3/8
20	3 3-7/16	26-1/4	13-1/2	2-1/2	3-7/8 4-3/8	5-1/8 5-5/8	6-3/8 7-3/8	5/8	3/8
24	3-7/16	30-1/4	16-1/2	2-1/2	4-3/8	5-5/8	7-3/8	5/8	3/8

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# U TROUGH AND FLARED TROUGH ENDS WITH FEET



U-Trough

Flared

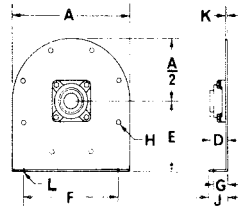
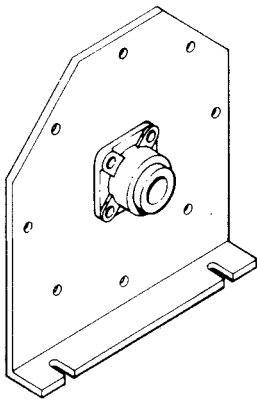
Screw Dia.	Shaft Dia.	Part Numbers		Weights	
		U-Trough	Flared	U-Trough	Flared
4	1	TEF041U	X	7	X
6	1-1/2	TEF06112U	TEF06112F	12	15
9	1-1/2 2	TEF09112U TEF092U	TEF09112F TEF092F	18 21	22 27
10	1-1/2 2	TEF010112U TEF0102U	X	27 31	X X
12	2 2-7/16 3	TEF0122U TEF0122716U TEF0123U	TEF0122F TEF0122716F TEF0123F	36 38 50	43 44 56
14	2-7/16 3	TEF0142716U TEF0143U	TEF0142716F TEF0143F	45 57	52 64
16	3	TEF0163U	TEF0163F	75	85
18	3 3-7/16	TEF0183U TEF0183716U	TEF0183F TEF0183716F	89 99	98 104
20	3 3-7/16	TEF0203U TEF0203716U	TEF0203F TEF0203716F	126 132	133 139
24	3-7/16	TEF0243716U	TEF0243716F	169	173

Screw Dia.	Shaft Dia.	A	B	C	D†			E	F	G	H Bolts	J	K	L	M Bolts	P
					Ball	Roller	Friction*									
4	1	7-3/4	3-5/8	1-7/16	1-5/8	x	2-3/16	4-5/8	5-3/4	1	3/8	1-5/8	3/16	x	3/8	x
6	1-1/2	9-3/4	4-1/2	1-1/2	2-1/4	3-3/4	3-3/16	5-5/8	8-1/8	1	3/8	1-3/4	3/16	16-5/8	3/8	7
9	1-1/2 2	13-3/4	6-1/8	1-5/8	2-1/4 2-1/2	3-3/4 3-7/8	3-1/4 4-1/4	7-7/8	9-3/8	1-1/2	3/8	2-5/8	1/4	21-1/4	1/2	9
10	1-1/2 2	14-3/4	6-3/8	1-3/4	2-1/4 2-1/2	3-3/4 3-7/8	3-1/4 4-1/4	8-7/8	9-1/2	1-3/4	3/8	2-7/8	1/4	x	1/2	x
12	2 2-7/16 3	17-1/4	7-3/4	2	2-5/8 3 3-3/4	3-7/8 4-1/2 5	4-1/4 5-1/4 6-1/4	9-5/8	12-1/4	1-5/8	1/2	2-3/4	1/4	26-3/8	5/8	10
14	2-7/16 3	19-1/4	9-1/4	2	3 3-3/4	4-1/2 5	5-5/16 6-5/16	10-7/8	13-1/2	1-5/8	1/2	2-7/8	5/16	28-3/8	5/8	11
16	3	21-1/4	10-5/8	2-1/2	3-7/8	5	6-5/16	12	14-7/8	2	5/8	3-1/4	5/16	32-1/2	5/8	11-1/2
18	3 3-7/16	24-1/4	12-1/8	2-1/2	3-7/8 4-3/8	5 5-5/8	6-3/8 7-3/8	13-3/8	16	2	5/8	3-1/4	3/8	36-1/2	5/8	12-1/8
20	3 3-7/16	26-1/4	13-1/2	2-1/2	3-7/8 4-3/8	5-1/8 5-5/8	6-3/8 7-3/8	15	19-1/4	2-1/4	5/8	3-3/4	3/8	39-1/2	3/4	13-1/2
24	3-7/16	30-1/4	16-1/2	2-1/2	4-3/8	5-5/8	7-3/8	18-1/8	20	2-1/2	5/8	4-1/8	3/8	45-1/2	3/4	16-1/2

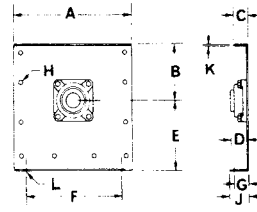
NOTE: † Add seal thickness if PS or WPS seal is used.

\* Specify babbitt or bronze.

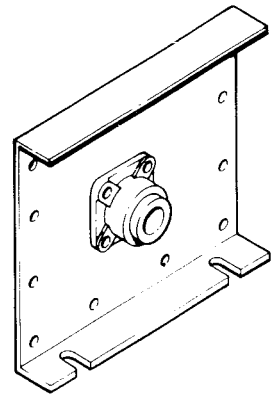
# TUBULAR AND RECTANGULAR TROUGHS ENDS WITH FEET



Tubular



Rectangular

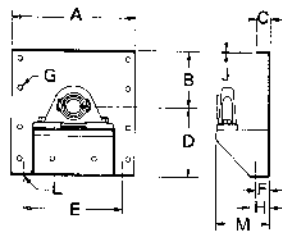
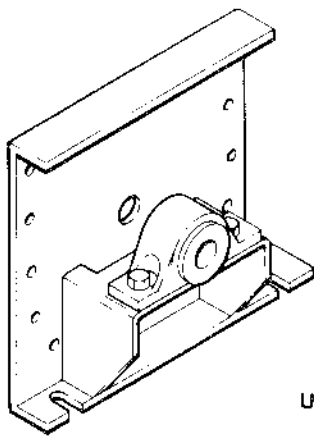


Screw Dia.	Shaft Dia.	Part Number		Weights	
		Tubular	Rectangular	Tubular	Rectangular
4	1	TEFO41T	X	6	X
6	1-1/2	TEFO6112T	TEFO6112R	11	13
9	1-1/2 2	TEFO9112T	TEFO9112R	15	19
		TEFO92T	TEFO92R	18	24
10	1-1/2 2	TEFO10112T	X	25	X
		TEFO102T		29	X
12	2	TEFO122T	TEFO122R	29	39
	2-7/16	TEFO122716T	TEFO122716R	31	40
	3	TEFO123T	TEFO123R	43	58
14	2-7/16	TEFO142716T	TEFO142716R	39	48
	3	TEFO143T	TEFO143R	51	66
16	3	TEFO163T	TEFO163R	65	85
18	3	TEFO183T	TEFO183R	78	94
	3-7/16	TEFO183716T	TEFO183716R	89	101
20	3	TEFO203T	TEFO203R	115	134
	3-7/16	TEFO203716T	TEFO203716R	127	140
24	3-7/16	TEFO243716T	TEFO243716R	157	179

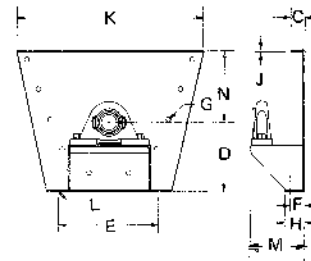
Screw Dia.	Shaft Dia.	A	B	C	D†			E	F	G	H Bolts	J	K	L Bolts
					Ball	Roller	Friction*							
4	1	7-3/4	3-5/8	1-7/16	1-5/8	X	2-3/16	4-5/8	5-3/4	1	3/8	1-5/8	3/16	3/8
6	1-1/2	9-3/4	4-1/2	1-1/2	2-1/4	3-3/4	3-3/16	5-5/8	8-1/8	1	3/8	1-3/4	3/16	3/8
9	1-1/2 2	13-3/4	6-1/8	1-5/8	2-1/4	3-3/4	3-1/4	7-7/8	9-3/8	1-1/2	3/8	2-5/8	1/4	1/2
					2-1/2	3-7/8	4-1/4							
10	1-1/2 2	14-3/4	6-3/8	1-3/4	2-1/4	3-3/4	3-1/4	8-7/8	9-1/2	1-3/4	3/8	2-7/8	1/4	1/2
					2-1/2	3-7/8	4-1/4							
12	2	17-1/4	7-3/4	2	2-5/8	3-7/8	4-1/4	9-5/8	12-1/4	1-5/8	1/2	2-3/4	1/4	5/8
	2-7/16				3	4-1/2	5-1/4							
	3				3-3/4	5	6-1/4							
14	2-7/16	19-1/4	9-1/4	2	3	4-1/2	5-5/16	10-7/8	13-1/2	1-5/8	1/2	2-7/8	5/16	5/8
	3				3-3/4	5	6-5/16							
16	3	21-1/4	10-5/8	2-1/2	3-7/8	5	6-5/16	12	14-7/8	2	5/8	3-1/4	5/16	5/8
18	3	24-1/4	12-1/8	2-1/2	3-7/8	5	6-3/8	13-3/8	16	2	5/8	3-1/4	3/8	5/8
	3-7/16				4-3/8	5-5/8	7-3/8							
20	3	26-1/4	13-1/2	2-1/2	3-7/8	5-1/8	6-3/8	15	19-1/4	2-1/4	5/8	3-3/4	3/8	3/4
	3-7/16				4-3/8	5-5/8	7-3/8							
24	3-7/16	30-1/4	16-1/2	2-1/2	4-3/8	5-5/8	7-3/8	18-1/8	20	2-1/2	5/8	4-1/8	3/8	3/4

NOTE: † Add seal thickness if PS or WPS seal is used  
\* Specify babbit or bronze

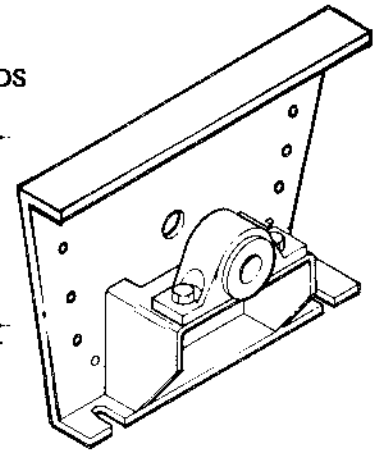
# U TROUGH AND FLARED OUTBOARD PEDESTAL TROUGH ENDS



U TROUGH



FLARED

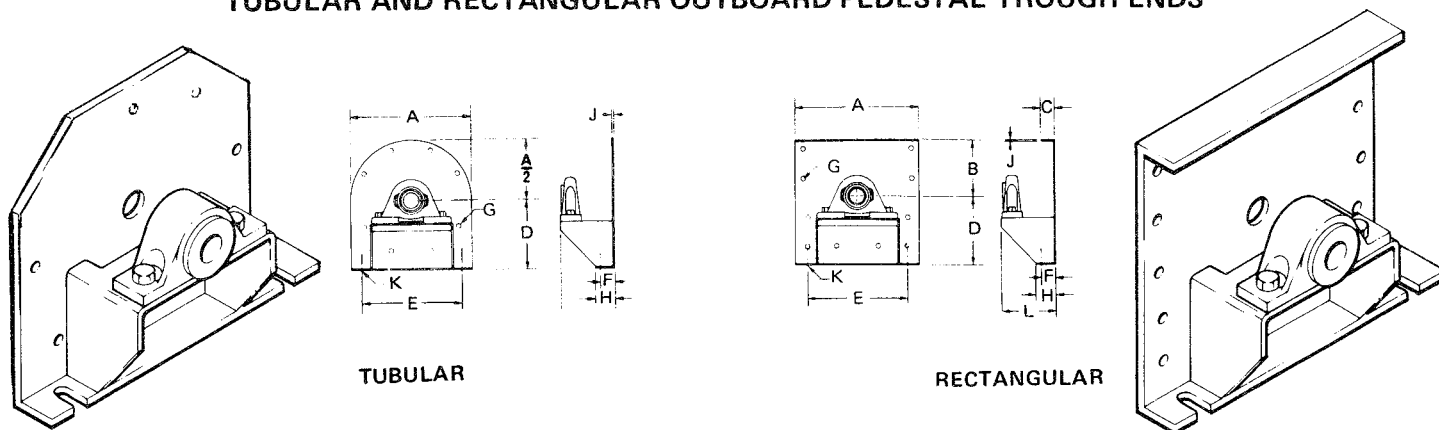


Screw Dia.	Shaft Dia.	Part Numbers		Weights	
		U-Trough	Flared	U-Trough	Flared
4	1	TEPO41U	X	14	X
6	1-1/2	TEPO6112U	TEPO6112F	19	22
9	1-1/2	TEPO9112U	TEPO9112F	27	31
	2	TEPO92U	TEPO92F	30	36
10	1-1/2	TEPO10112U	X	37	X
	2	TEPO102U		41	X
12	2	TEPO122U	TEPO122F	56	63
	2-7/16	TEPO122716U	TEPO122716F	58	64
	3	TEPO123U	TEPO123F	70	76
14	2-7/16	TEPO142716U	TEPO142716F	68	75
	3	TEPO143U	TEPO143F	80	87
16	3	TEPO163U	TEPO163F	115	125
18	3	TEPO183U	TEPO183F	129	138
	3-7/16	TEPO183716U	TEPO183716F	139	144
20	3	TEPO203U	TEPO203F	189	196
	3-7/16	TEPO203716U	TEPO203716F	195	202
24	3-7/16	TEPO243716U	TEPO243716F	246	250

Screw Dia.	Shaft Dia.	A	B	C	D	E	F	G Bolts	H	J	K	L Bolts	M *	N
4	1	7-3/4	3-5/8	1-7/16	4-5/8	5-3/4	1	3/8	1-5/8	3/16	X	3/8	5	X
6	1-1/2	9-3/4	4-1/2	1-1/2	5-5/8	8-1/8	1	3/8	1-3/4	3/16	16-5/8	3/8	5-3/4	7
9	1-1/2	13-3/4	6-1/8	1-5/8	7-7/8	9-3/8	1-1/2	3/8	2-5/8	1/4	21-1/4	1/2	5-3/4	9
	2												6-1/4	
10	1-1/2	14-3/4	6-3/8	1-3/4	8-7/8	9-1/2	1-3/4	3/8	2-7/8	1/4	X	1/2	5-3/4	X
	2												6-1/4	
12	2	17-1/4	7-3/4	2	9-5/8	12-1/4	1-5/8	1/2	2-3/4	1/4	26-3/8	5/8	6-1/4	10
	2-7/16												8	
14	2-7/16	19-1/4	9-1/4	2	10-7/8	13-1/2	1-5/8	1/2	2-7/8	5/16	28-3/8	5/8	8	11
	3												7-3/4	
16	3	21-1/4	10-5/8	2-1/2	12	14-7/8	2	5/8	3-1/4	5/16	32-1/2	5/8	7-3/4	11-1/2
18	3	24-1/4	12-1/8	2-1/2	13-3/8	16	2	5/8	3-1/4	3/8	36-1/2	5/8	7-3/4	12-1/8
	3-7/16												9-1/2	
20	3	26-1/4	13-1/2	2-1/2	15	19-1/4	2-1/4	5/8	3-3/4	3/8	39-1/2	3/4	7-3/4	13-1/2
	3-7/16												9-1/2	
24	3-7/16	30-1/4	16-1/2	2-1/2	18-1/8	20	2-1/2	5/8	4-1/8	3/8	45-1/2	3/4	9-1/2	16-1/2

\* Add 5" when using flanged gland seal

## TUBULAR AND RECTANGULAR OUTBOARD PEDESTAL TROUGH ENDS



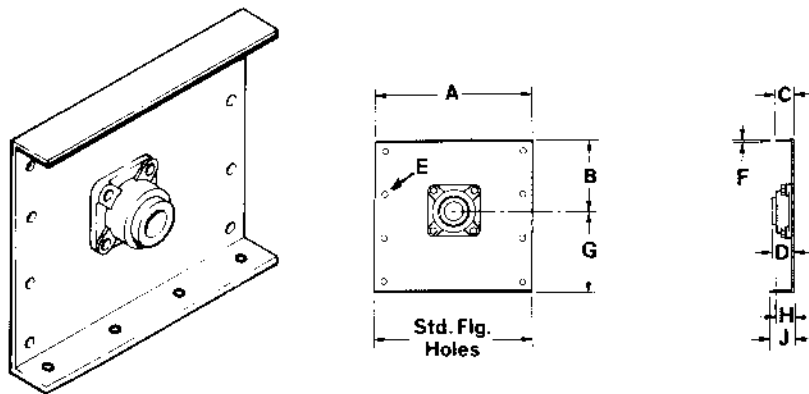
Screw Dia.	Shaft Dia.	Part Numbers		Weights	
		Tubular	Rectangular	Tubular	Rectangular
4	1	TEPO41T	X	13	X
6	1-1/2	TEPO6112T	TEPO6112R	18	20
9	1-1/2	TEPO9112T	TEPO9112R	24	28
	2	TEPO92T	TEPO92R	27	33
10	1-1/2	TEPO10112T	X	35	X
	2	TEPO102T		39	X
12	2	TEPO122T	TEPO122R	49	59
	2-7/16	TEPO122716T	TEPO122716R	51	60
	3	TEPO123T	TEPO123R	63	78
14	2-7/16	TEPO142716T	TEPO142716R	62	71
	3	TEPO143T	TEPO143R	74	89
16	3	TEPO163T	TEPO163R	105	125
18	3	TEPO183T	TEPO183R	118	134
	3-7/16	TEPO183716T	TEPO183716R	149	141
20	3	TEPO203T	TEPO203R	178	197
	3-7/16	TEPO203716T	TEPO203716R	190	203
24	3-7/16	TEPO243716T	TEPO243716R	234	256

Screw Dia.	Shaft Dia.	A	B	C	D	E	F	G Bolts	H	J	K Bolts	L *
4	1	7-3/4	X	X	4-5/8	5-3/4	1	3/8	1-5/8	3/16	3/8	5
6	1-1/2	9-3/4	4-1/2	1-1/2	5-5/8	8-1/8	1	3/8	1-3/4	3/16	3/8	5-3/4
9	1-1/2	13-3/4	6-1/8	1-5/8	7-7/8	9-3/8	1-1/2	3/8	2-5/8	1/4	1/2	5-3/4
	2											6-1/4
10	1-1/2	14-3/4	6-3/8	1-3/4	8-7/8	9-1/2	1-3/4	3/8	2-7/8	1/4	1/2	5-3/4
	2											6-1/4
12	2	17-1/4	7-3/4	2	9-5/8	12-1/4	1-5/8	1/2	2-3/4	1/4	5/8	6-1/4
	2-7/16											8
	3											7-3/4
14	2-7/16	19-1/4	9-1/4	2	10-7/8	13-1/2	1-5/8	1/2	2-7/8	5/16	5/8	8
	3											7-3/4
16	3	21-1/4	10-5/8	2-1/2	12	14-7/8	2	5/8	3-1/4	5/16	5/8	7-3/4
18	3	24-1/4	12-1/8	2-1/2	13-3/8	16	2	5/8	3-1/4	3/8	5/8	7-3/4
	3-7/16											9-1/2
20	3	26-1/4	13-1/2	2-1/2	15	19-1/4	2-1/4	5/8	3-3/4	3/8	3/4	7-3/4
	3-7/16											9-1/2
24	3-7/16	30-1/4	16-1/2	2-1/2	18-1/8	20	2-1/2	5/8	4-1/8	3/8	3/4	9-1/2

\*Add 5" when using flanged gland seal



# U TROUGH AND RECTANGULAR FLUSH END DISCHARGE TROUGH ENDS



U-TROUGH OR RECTANGULAR

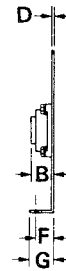
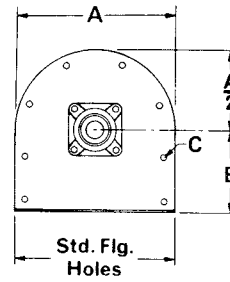
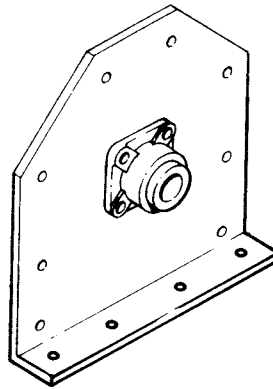
Screw Dia.	Shaft Dia.	Part Numbers		Weights	
		U-Trough	Rectangular	U-Trough	Rectangular
4	1	TEFE041U	X	7	X
6	1-1/2	TEFE06112U	TEFE06112R	12	13
9	1-1/2	TEFE09112U	TEFE09112R	18	19
	2	TEFE092U	TEFE092R	21	24
10	1-1/2	TEFE010112U	X	27	X
	2	TEFE0102U		31	X
12	2	TEFE0122U	TEFE0122R	36	39
	2-7/16	TEFE0122716U	TEFE0122716R	38	40
	3	TEFE0123U	TEFE0123R	50	58
14	2-7/16	TEFE0142716U	TEFE0142716R	45	48
	3	TEFE0143U	TEFE0143R	57	66
16	3	TEFE0163U	TEFE0163R	75	85
18	3	TEFE0183U	TEFE0183R	89	94
	3-7/16	TEFE0183716U	TEFE0183716R	99	101
20	3	TEFE0203U	TEFE0203R	126	134
	3-7/16	TEFE0203716U	TEFE0203716R	132	140
24	3-7/16	TEFE0243716U	TEFE0243716R	169	179

Screw Dia.	Shaft Dia.	A	B	C	D †			E Bolts	F	G	H	J
					Ball	Roller	Friction*					
4	1	7-3/4	3-5/8	1-7/16	1-5/8	x	2-3/16	3/8	3/16	3-3/4	7/8	1-1/4
6	1-1/2	10	4-1/2	1-1/2	2-1/4	3-3/4	3-3/16	3/8	3/16	5	13/16	1-1/2
9	1-1/2	13-1/4	6-1/8	1-5/8	2-1/4	3-3/4	3-1/4	3/8	1/4	7-1/8	1	1-5/8
	2				2-1/2	3-7/8	4-1/4					
10	1-1/2	14-1/4	6-3/8	1-3/4	2-1/4	3-3/4	3-1/4	3/8	1/4	7-7/8	1	1-5/8
	2				2-1/2	3-7/8	4-1/4					
12	2	17-1/4	7-3/4	2	2-5/8	3-7/8	4-1/4	1/2	1/4	8-7/8	1-1/4	2-1/8
	2-7/16				3	4-1/2	5-1/4					
	3				3-3/4	5	6-1/4					
14	2-7/16	19-1/4	9-1/4	2	3	4-1/2	5-5/16	1/2	5/16	10-1/8	1 1/4	2-1/8
	3				3-3/4	5	6-5/16					
16	3	21-1/4	10-5/8	2-1/2	3-7/8	5	6-5/16	5/8	5/16	11-1/8	1-1/4	2-1/8
18	3	24-1/4	12-1/8	2-1/2	3-7/8	5	6-3/8	5/8	3/8	12-3/8	1-1/2	2-5/8
	3-7/16				4-3/8	5-5/8	7-3/8					
20	3	26-1/4	13-1/2	2-1/2	3-7/8	5-1/8	6-3/8	5/8	3/8	13-3/8	1-1/2	2-5/8
	3-7/16				4-3/8	5-5/8	7-3/8					
24	3-7/16	30-1/4	16-1/2	2-1/2	4-3/8	5-5/8	7-3/8	5/8	3/8	15-3/8	1-1/2	2-5/8

NOTE: † Add seal thickness if PS or WPS seal is used.

\* Specify babbitt or bronze.

# TUBULAR FLUSH END DISCHARGE TROUGH ENDS



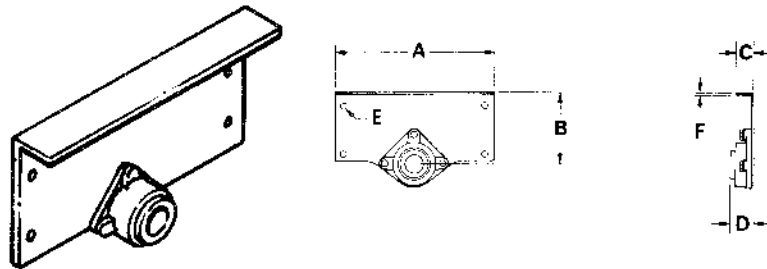
Screw Dia.	Shaft Dia.	Part Numbers	Weights
4	1	TEFE041T	6
6	1-1/2	TEFE06112T	11
9	1-1/2 2	TEFE09112T TEFE092T	15 18
10	1-1/2 2	TEFE010112T TEFE0102T	25 29
12	2 2-7/16 3	TEFE0122T TEFE0122716T TEFE0123T	29 31 43
14	2-7/16 3	TEFE0142716T TEFE0143T	39 51
16	3	TEFE0163T	65
18	3 3-7/16	TEFE0183T TEFE0183716T	78 89
20	3 3-7/16	TEFE0203T TEFE0203716T	115 127
24	3-7/16	TEFE0243716T	157

Screw Dia.	Shaft Dia.	A	B †			C Bolts	D	E	F	G
			Ball	Roller	Friction*					
4	1	7-3/4	1-5/8	X	2-3/16	3/8	3/16	3-3/4	7/8	1-1/4
6	1-1/2	10	2-1/4	3-3/4	3-3/16	3/8	3/16	5	13/16	1-1/2
9	1-1/2 2	13-3/4	2-1/4 2-1/2	3-3/4 3-7/8	3-1/4 4-1/4	3/8	1/4	7-1/8	1	1-5/8
10	1-1/2 2	14-3/4	2-1/4 2-1/2	3-3/4 3-7/8	3-1/4 4-1/4	3/8	1/4	7-7/8	1	1-5/8
12	2 2-7/16 3	17-1/4	2-5/8 3 3-3/4	3-7/8 4-1/2 5	4-1/4 5-1/4 6-1/4	1/2	1/4	8-7/8	1-1/4	2-1/8
14	2-7/16 3	19-1/4	3 3-3/4	4-1/2 5	5-5/16 6-5/16	1/2	5/16	10-1/8	1-1/4	2-1/8
16	3	21-1/4	3-7/8	5	6-5/16	5/8	5/16	11-1/8	1-1/4	2-1/8
18	3 3-7/16	24-1/4	3-7/8 4-3/8	5 5-5/8	6-3/8 7-3/8	5/8	3/8	12-3/8	1-1/2	2-5/8
20	3 3-7/16	26-1/4	3-7/8 4-3/8	5-1/8 5-5/8	6-3/8 7-3/8	5/8	3/8	13-3/8	1-1/2	2-5/8
24	3-7/16	30-1/4	4-3/8	5-5/8	7-3/8	5/8	3/8	15-3/8	1-1/2	2-5/8

NOTE: † Add seal thickness if PS or WPS seal is used

\* Specify babbitt or bronze

# U TROUGH AND RECTANGULAR DISCHARGE TROUGH ENDS

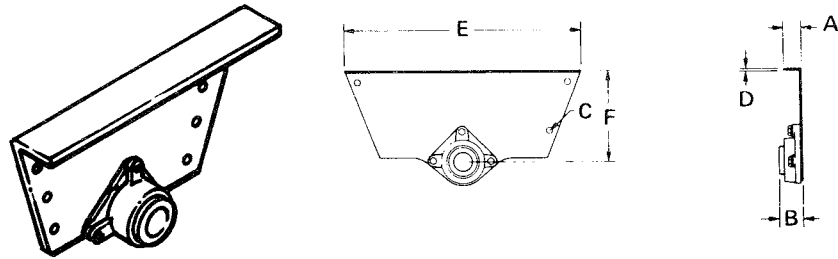


Screw Dia.	Shaft Dia.	Part Numbers		Weights	
		U-Trough	Rectangular	U-Trough	Rectangular
4	1	TEDO41U	X	4	X
6	1-1/2	TEDO6112U	TEDO6112R	8	8
9	1-1/2 2	TEDO9112U	TEDO9112R	11	11
		TEDO92U	TEDO92R	14	14
10	1-1/2 2	TEDO10112U	X	11	X
		TEDO102U		15	
12	2	TEDO122U	TEDO122R	21	21
	2-7/16	TEDO122716U	TEDO122716R	23	23
	3	TEDO123U	TEDO123R	34	34
14	3-7/16	TEDO142716U	TEDO142716R	26	26
	3	TEDO143U	TEDO143R	38	38
16	3	TEDO163U	TEDO163R	47	47
18	3	TEDO183U	TEDO183R	54	54
	3-7/16	TEDO183716U	TEDO183716R	65	65
20	3	TEDO203U	TEDO203R	77	77
	3-7/16	TEDO203716U	TEDO203716R	89	89
24	3-7/16	TEDO243716U	TEDO243716R	109	109

Screw Dia.	Shaft Dia.	A	B	C	D†			E Bolts	F
					Ball	Roller	Friction*		
4	1	7-3/4	3-5/8	1-7/16	1-5/8	X	2-3/16	3/8	3/16
6	1-1/2	9-3/4	4-1/2	1-1/2	2-1/4	3-3/4	3-3/16	3/8	3/16
9	1-1/2 2	13-3/4	6-1/8	1-5/8	2-1/4	3-3/4	3-1/4	3/8	1/4
					2-1/2	3-7/8	4-1/4		
10	1-1/2 2	14-3/4	6-3/8	1-3/4	2-1/4	3-3/4	3-1/4	3/8	1/4
					2-1/2	3-7/8	4-1/4		
12	2	17-1/4	7-3/4	2	2-5/8	3-7/8	4-1/4	1/2	1/4
	2-7/16				3	4-1/2	5-1/4		
	3				3-3/4	5	6-1/4		
14	2-7/16	19-1/4	9-1/4	2	3	4-1/2	5-5/16	1/2	5/16
	3				3-3/4	5	6-5/16		
16	3	21-1/4	10-5/8	2-1/2	3-7/8	5	6-5/16	5/8	5/16
18	3	24-1/4	12-1/8	2-1/2	3-7/8	5	6-3/8	5/8	3/8
	3-7/16				4-3/8	5-5/8	7-3/8		
20	3	26-1/4	13-1/2	2-1/2	3-7/8	5-1/8	6-3/8	5/8	3/8
	3-7/16				4-3/8	5-5/8	7-3/8		
24	3-7/16	30-1/4	16-1/2	2-1/2	4-3/8	5-5/8	7-3/8	5/8	3/8

NOTE: † Add seal thickness if PS or WPS seal is used.  
\* Specify babbitt or bronze

# FLARED DISCHARGE TROUGH ENDS



Screw Dia.	Shaft Dia.	Part Numbers	Weights
4	1	X	X
6	1-1/2	TEDO6112F	11
9	1-1/2 2	TEDO9112F TEDO92F	15 20
10	1-1/2 2	X	X
12	2 2-7/16 3	TEDO122F TEDO122716F TEDO123F	28 29 41
14	2-7/16 3	TEDO142716F TEDO143F	33 45
16	3	TEDO163F	56
18	3 3-7/16	TEDO183F TEDO183716F	63 69
20	3 3-7/16	TEDO203F TEDO203716F	75 81
24	3-7/16	TEDO243716F	96

Screw Dia.	Shaft Dia.	A	B†			C Bolts	D	E	F
			Ball	Roller	Friction*				
4	1	X	X	X	X	X	X	X	X
6	1-1/2	1-1/2	2-1/4	3-3/4	3-3/16	3/8	3/16	16-5/8	7
9	1-1/2 2	1-5/8	2-1/4 2-1/2	3-3/4 3-7/8	3-1/4 4-1/4	3/8	1/4	21-1/4	9
10	1-1/2 2	X	X	X	X	X	X	X	X
12	2 2-7/16 3	2	2-5/8 3 3-3/4	3-7/8 4-1/2 5	4-1/4 5-1/4 6-1/4	1/2	1/4	26-3/8	10
14	2-7/16 3	2	3 3-3/4	4-1/2 5	5-5/16 6-5/16	1/2	5/16	28-3/8	11
16	3	2-1/2	3-7/8	5	6-5/16	5/8	5/16	32-1/2	11-1/2
18	3 3-7/16	2-1/2	3-7/8 4-3/8	5 5-5/8	6-3/8 7-3/8	5/8	3/8	36-1/2	12-1/8
20	3 3-7/16	2-1/2	3-7/8 4-3/8	5-1/8 5-5/8	6-3/8 7-3/8	5/8	3/8	39-1/2	13-1/2
24	3-7/16	2-1/2	4-3/8	5-5/8	7-3/8	5/8	3/8	45-1/2	16-1/2

NOTE: † Add seal thickness if PS or WPS seal is used.  
\* Specify babbitt or bronze.

# END BEARINGS

END BEARING      SHAFT SIZE

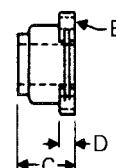
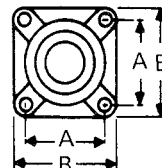
EB F 112 -BB

F = FLANGED  
P = PILLOW BLK.  
D = DISCH. TYPE

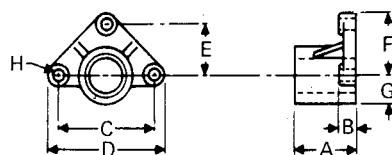
BB = BALL BEARING  
B = BABBITT  
R = ROLLER  
BR = BRONZE  
BG = BRONZE GRAPHITE  
PLUGS

## ROLLER BEARING FLANGE UNIT

Includes 1/8" Alemite Fitting

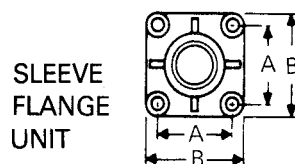


Bore	Part Number	A	B	C	D	E	Wt.
1-1/2	EBF112-R	4-1/8	5-3/8	3-1/2	1-3/16	1/2	10.0
2	EBF2-R	4-3/8	5-5/8	3-5/8	1-3/16	1/2	12.0
2-7/16	EBF2716-R	5-3/8	6-7/8	4-3/16	1-1/2	5/8	21.0
3	EBF3-R	6	7-3/4	4-11/16	1-5/8	3/4	28.0
3-7/16	EBF3716-R	7	9-1/4	5-1/4	1-7/8	3/4	46.0



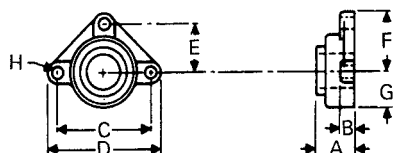
## BABBITT DISCHARGE UNIT

Bore	Part Number	A	B	C	D	E	F	G	H
1	EBD1-*	2	1/2	3-7/8	5-3/8	1-15/16	2-11/16	1	3/8
1-1/2	EBD112-*	3	3/4	5-5/8	7-1/4	2-13/16	3-5/8	1-1/4	1/2
2	EBD2-*	4	3/4	6-1/4	8	3-1/8	4	1-5/8	5/8
2-7/16	EBD2716-*	5	1	8	9-7/8	4	4-15/16	1-7/8	5/8
3	EBD3-*	6	1	8-1/2	11	4-1/4	5-1/2	2-1/8	3/4
3-7/16	EBD3716-*	7	1-1/4	9-1/2	12	4-3/4	6	2-1/2	3/4



## SLEEVE FLANGE UNIT

Bore	Part Number	A	B	C	D	E
1	EBF1-*	2-3/4	3-3/4	2	1/2	3/8
1-1/2	EBF112-*	4	5-3/8	3	1/2	1/2
2	EBF2-*	5-1/8	6-1/2	4	5/8	5/8
2-7/16	EBF2716-*	5-5/8	7-3/8	5	3/4	5/8
3	EBF3-*	6	7-3/4	6	3/4	3/4
3-7/16	EBF3716-*	6-3/4	9-1/4	7	3/4	3/4

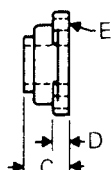
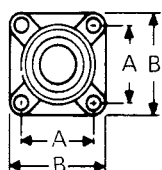


## BALL BEARING DISCHARGE UNIT

Bore	Part Number	A	B	C	D	E	F	G	H
1	EBD1-BB	1-3/8	1/2	3-7/8	5-3/8	1-15/16	2-11/16	2	3/8
1-1/2	EBD112-BB	2	5/16	5-5/8	7-1/4	2-13/16	3-5/8	2-1/2	1/2
2	EBD2-BB	2-1/8	5/8	6-1/4	8	3-1/8	4	3	1/2
2-7/16	EBD2716-BB	2-1/2	11/16	8	9-7/8	4	4-15/16	3-1/2	5/8
3	EBD3-BB	3-1/2	7/8	8-1/2	11	4-1/4	5-1/2	4	3/4
3-7/16	EBD3716-BB	4	1	9-1/2	12	4-3/4	6	4-1/2	3/4

## BALL BEARING FLANGE UNIT

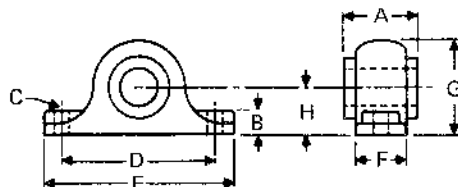
Includes 1/8" Alemite Fitting



Bore	Part Number	A	B	C	D	E	Wt.
1	EBF1-BB	2-3/4	3-3/4	1-3/8	1/2	3/8	3.0
1-1/2	EBF112-BB	4	5-1/8	2	9/16	1/2	4.0
2	EBF2-BB	5-1/8	6-1/2	2-3/8	11/16	5/8	10.0
2-7/16	EBF2716-BB	5-5/8	7	2-1/2	11/16	5/8	12.0
3	EBF3-BB	6	7-3/4	3-1/2	7/8	3/4	21.0
3-7/16	EBF3716-BB	6-3/4	8-7/16	4	1	3/4	28.0

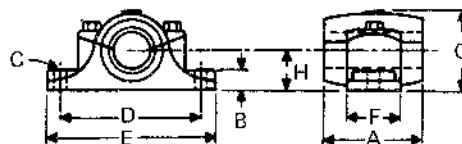
\*Specify (B) Babbitt (BR) Bronze  
(BG) Bronze Graphite Plugs

## ROLLER BEARING PILLOW BLOCK



Bore	Part Number	A	B	C	D	E	F	G	H
1-1/2	EBP112-R	3-3/8	1-1/4	1/2	6-1/4	7-7/8	2-3/8	4-1/4	2-1/8
2	EBP2-R	3-1/2	1-5/16	5/8	7	8-7/8	2-1/2	4-1/2	2-1/4
2-7/16	EBP2716-R	4	1-5/8	5/8	8-1/2	10-1/2	2-7/8	5-1/2	2-3/4
3	EBP3-R	4-1/2	1-7/8	3/4	9-1/2	12	3	6-1/4	3-1/8
3-7/16	EBP3716-R	5	2-1/4	7/8	11	14	3-5/8	7-1/2	3-3/4

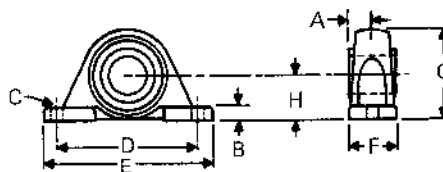
## BABBITTED PILLOW BLOCK



Bore	Part Number	A	B	C	D	E	F	G	H
1	EBP1-*	1-7/8	9/16	3/8	3-5/8	4-3/4	1-1/2	2	1
1-1/2	EBP112-*	2-7/8	11/16	1/2	4-7/8	6-1/4	2	2-3/4	1-3/8
2	EBP2-*	3-7/8	13/16	5/8	6	7-1/2	2-1/2	3-1/2	1-3/4
2-7/16	EBP2716-*	4-7/8	1	5/8	7	9-1/4	3	4-1/4	2-1/8
3	EBP3-*	5-7/8	1-1/8	3/4	8-1/2	10-3/4	3-1/2	5	2-1/2
3-7/16	EBP3716-*	6-7/8	1-3/8	7/8	9-1/4	12	4	5 3/4	2-7/8

\*Specify (B) Babbitt (BR) Bronze (BG) Bronze Graphite Plugs

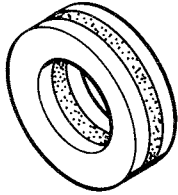
## BALL BEARING PILLOW BLOCK



Bore	Part Number	A	B	C	D	E	F	G	H
1	EBP1-BB	13/16	3/4	3/8	4-1/8	5-1/2	1-3/8	2-13/16	1-7/16
1-1/2	EBP112-BB	1-3/16	1-3/16	1/2	5-1/2	7-1/4	2	4-3/16	2-1/8
2	EBP2-BB	1-5/16	1-7/16	5/8	6-7/8	8-7/8	2-3/8	4-9/16	2-1/2
2-7/16	EBP2716-BB	1-1/2	1-11/16	5/8	7-3/8	9-5/8	2-1/2	5-7/16	2-3/4
3	EBP3-BB	1-7/8	2-3/16	7/8	9	12	3-1/4	7	3-1/2
3-7/16	EBP3716-BB	2-1/16	2-1/2	7/8	11	14	3-7/16	8-3/16	4

## THRUST UNITS

### Thrust Washers

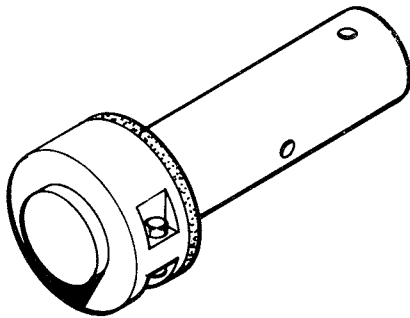


Thrust washers are intended for light thrust loads at the intake end of the conveyor. Precision steel washers transfer the conveyor load through a bronze washer to the conveyor end with a minimum of friction.

Provision should be made for frequent lubrication of this bearing and it is not recommended for conveyors carrying abrasive materials.

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### Thrust Collar



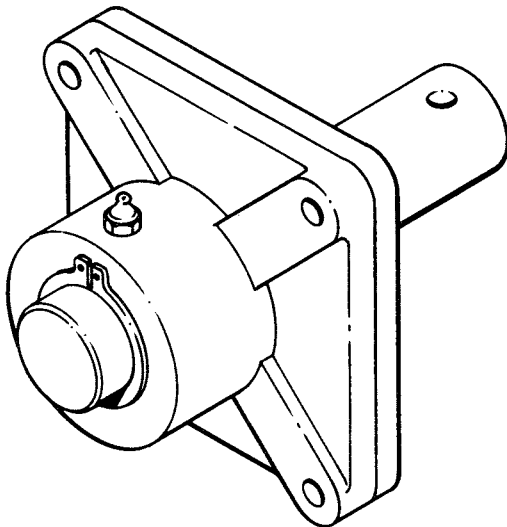
Thrust collars are intended for service similar to the thrust washer assembly at the discharge end of the conveyor.

A specially grooved shaft is fitted with a split iron set collar to transfer the thrust load through a bronze washer to the conveyor end bearing.

Since this unit is installed outside the conveyor, it may be used when conveying abrasive materials.

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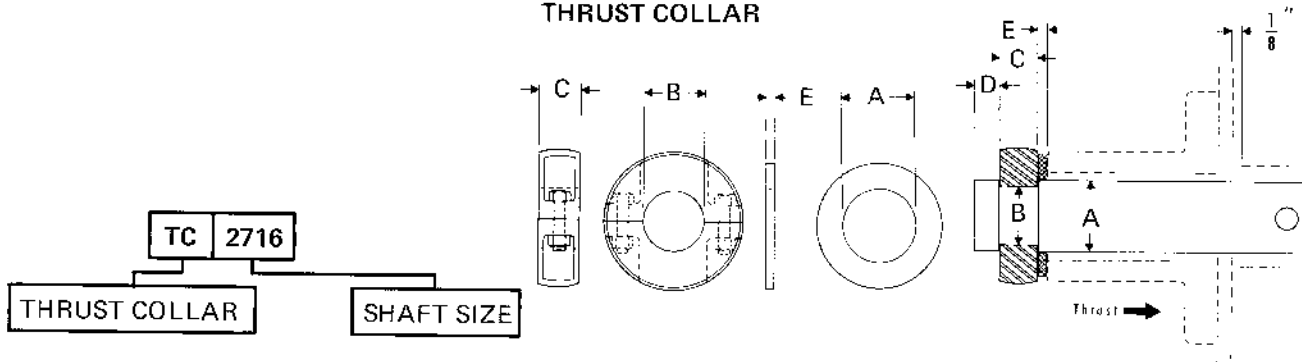
### Type RTB Roller Bearing



Type RTB roller bearing thrust units provide an economical anti-friction combination bearing for medium to heavy thrust loads.

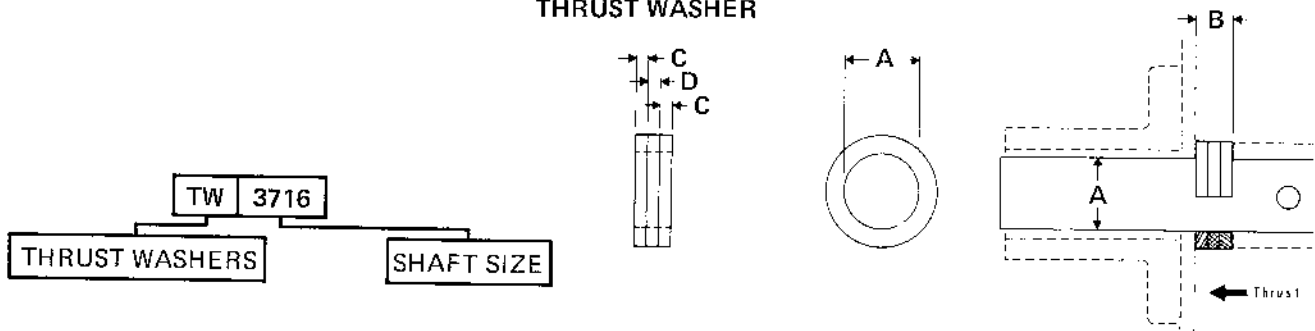
This unit is unidirectional in thrust loading together with relatively great radial capacity. A separate seal plate is provided for the protection of the bearing from the conveyed material. This plate may be reversed to prevent contamination of the material. This bearing is furnished with a drive shaft, or end shaft.

### THRUST COLLAR



A Shaft Dia.	Part Number	B	C	D	E	Weight
1-1/2	TC 112	1-1/4	1-1/2	1/2	1/4	2
2	TC 2	1-3/4	1-1/2	1/2	1/4	2-1/2
2-7/16	TC 2716	2-3/16	1-7/8	5/8	3/8	3-1/2
3	TC 3	2-11/16	1-7/8	5/8	3/8	6
3-7/16	TC 3716	2-15/16	1-7/8	7/8	1/2	8

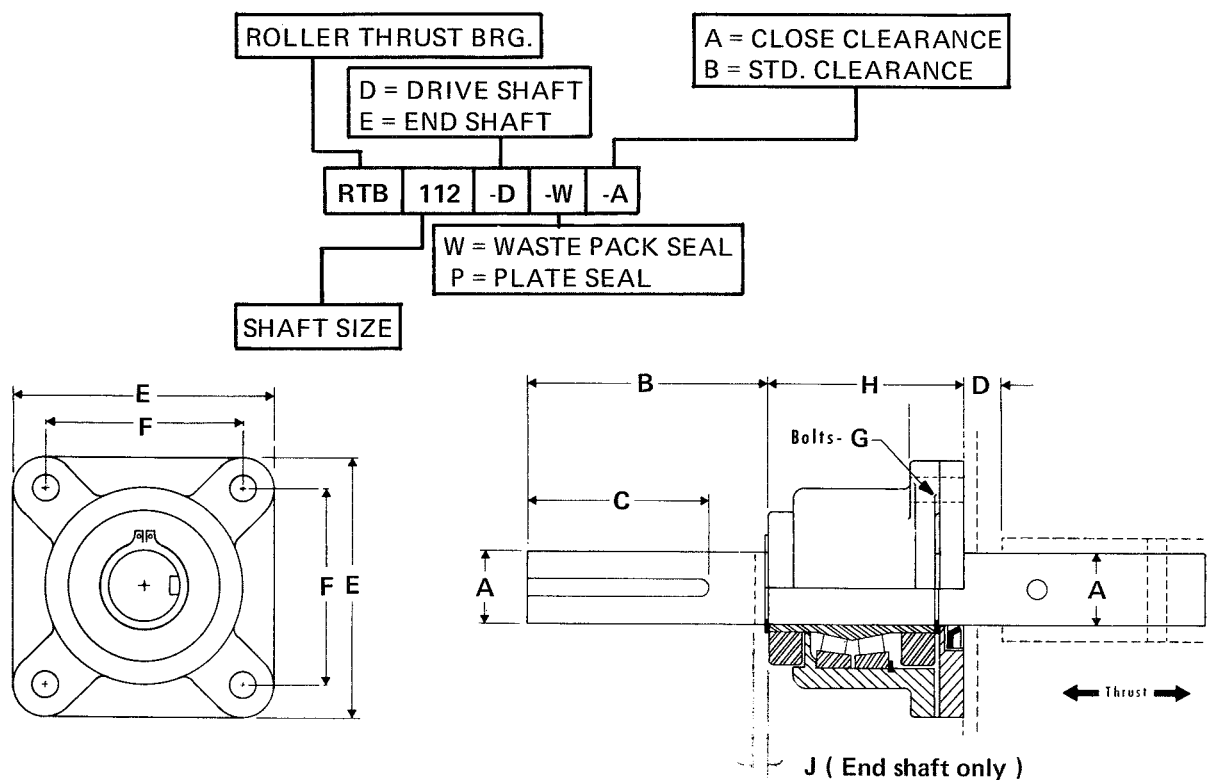
### THRUST WASHER



A Shaft Dia.	Part Number	B	C Steel	D Bronze	Total Weight
1	TW 1	5/8	1/4	1/8	1
1-1/2	TW 112	3/4	1/4	1/4	1
2	TW 2	3/4	1/4	1/4	1
2-7/16	TW 2716	7/8	1/4	3/8	1-1/2
3	TW 3	7/8	1/4	3/8	2
3-7/16	TW 3716	1	1/4	1/2	3



## ROLLER THRUST BEARING

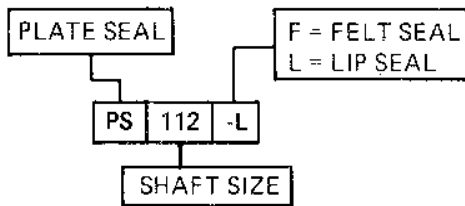


A Shaft Size	Part Number	B	C	D	E	F	G Bolts	H	J
1-1/2	RTB112*-P-A	4-1/4	2-3/4	1/2	5-3/8	4-1/8	1/2	4-1/8	1/2
1-1/2	RTB112*-W-A	4-1/4	2-3/4	1/2	5-3/8	4-1/8	1/2	5-1/8	1/2
1-1/2	RTB112*-P-B	4-1/4	2-3/4	1-1/4	5-3/8	4-1/8	1/2	4-1/4	1/2
1-1/2	RTB112*-W-B	4-1/4	2-3/4	1-1/4	5-3/8	4-1/8	1/2	5-3/8	1/2
2	RTB2*-P-A	4-3/4	3-1/4	1/2	5-5/8	4-3/8	1/2	4-1/4	1/2
2	RTB2*-W-A	4-3/4	3-1/4	1/2	5-5/8	4-3/8	1/2	5-3/8	1/2
2	RTB2*-P-B	4-3/4	3-1/4	1-1/4	5-5/8	4-3/8	1/2	4-3/8	1/2
2	RTB2*-W-B	4-3/4	3-1/4	1-1/4	5-5/8	4-3/8	1/2	5-1/2	1/2
2-7/16	RTB2716*-P-A	5-3/4	4-1/4	9/16	6-7/8	5-3/8	5/8	4-13/16	1/2
2-7/16	RTB2716*-W-A	5-3/4	4-1/4	9/16	6-7/8	5-3/8	5/8	5-15/16	1/2
2-7/16	RTB2716*-P-B	5-3/4	4-1/4	1-3/4	6-7/8	5-3/8	5/8	4-13/16	1/2
2-7/16	RTB2716*-W-B	5-3/4	4-1/4	1-3/4	6-7/8	5-3/8	5/8	5-15/16	1/2
3	RTB3*-P-A	6-1/4	4-3/4	5/8	7-3/4	6	3/4	5-5/16	1/2
3	RTB3*-W-A	6-1/4	4-3/4	5/8	7-3/4	6	3/4	6-7/16	1/2
3	RTB3*-P-B	6-1/4	4-3/4	1-3/4	7-3/4	6	3/4	5-5/16	1/2
3	RTB3*-W-B	6-1/4	4-3/4	1-3/4	7-3/4	6	3/4	6-7/16	1/2
3-7/16	RTB3716*-P-A	7-1/4	5-3/4	5/8	9-1/4	7	3/4	5-7/8	3/4
3-7/16	RTB3716*-W-A	7-1/4	5-3/4	5/8	9-1/4	7	3/4	7-1/2	3/4
3-7/16	RTB3716*-P-B	7-1/4	5-3/4	2-1/4	9-1/4	7	3/4	5-7/8	3/4
3-7/16	RTB3716*-W-B	7-1/4	5-3/4	2-1/4	9-1/4	7	3/4	7-1/2	3/4

\* D- Drive Shaft  
E- End Shaft

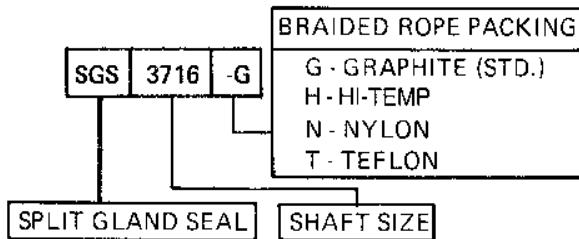
# SEALS

## PLATE SEAL



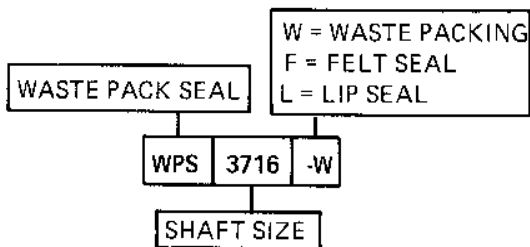
The plate seal is an economical, effective sealing device designed for exterior mounting between the end bearing and the conveyor housing end. Standard units include lip-type seals, but other types of commercial seal cartridges may also be used. The plate seal and the end bearing are attached by means of common bolts. The plate may also be attached independently when outboard bearing ends are used.

## SPLIT GLAND SEAL



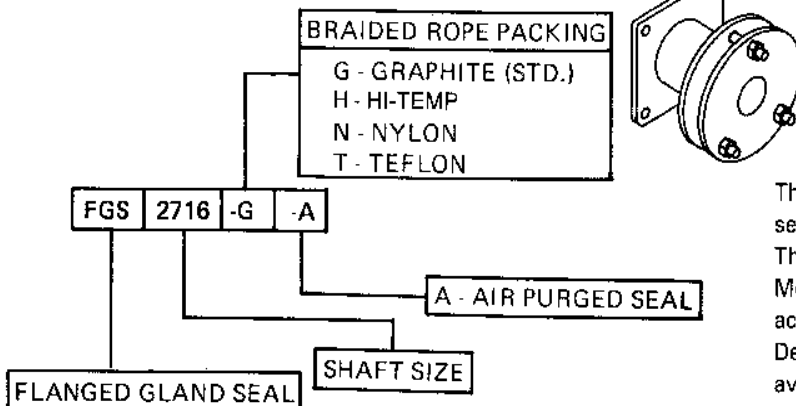
This unit, designed for interior or exterior mounting, provides an effective seal by compression of the packing. Packing pressure may be adjusted by means of two exposed nuts at the top half of the seal housing.

## WASTE PACK SEAL



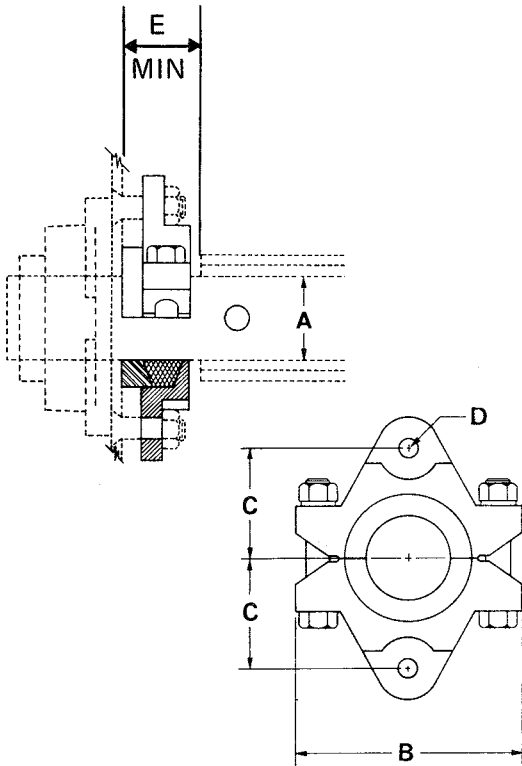
This universal type seal is designed for use with waste packing or cartridge-type lip or felt seals. An opening at the top of the housing facilitates waste repacking. The packing material is partially exposed for oiling. The waste pack seal is mounted outside between the end bearing and the conveyor end. It may also be mounted independently for use with the outboard bearing end.

## FLANGED GLAND SEAL



The flanged gland seal is a highly effective means of sealing the conveyor both internally and externally. This seal also is suitable for pressure or vacuum service. Mechanical compression of the packing material is accomplished by means of three compression bolts. Designed for use with outboard bearing ends. Also available in an air purged type.

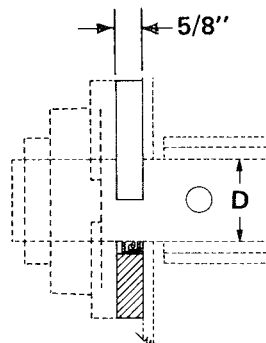
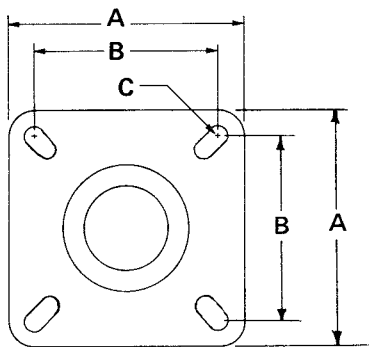
## SPLIT GLAND SEAL



A Shaft Dia.	Part Number*	B	C	D Bolts	E
1	SGS1-*	4-1/8	1-3/4	3/8	3
1-1/2	SGS112-*	4-5/8	2-3/16	1/2	3
2	SGS2-*	5-3/8	2-5/8	1/2	3
2-7/16	SGS2716-*	6-1/8	3-1/16	5/8	3
3	SGS3-*	6-3/4	3-9/16	5/8	3
3-7/16	SGS3716-*	8-3/4	4-1/8	3/4	4
3-15/16	SGS31516-*	9-1/2	4-1/2	3/4	4
4-7/16	SGS4716-*	10	4-5/8	3/4	4
4-15/16	SGS41516-*	10-1/2	4-3/4	3/4	4
5-7/16	SGS5716-*	12	5-5/8	3/4	4
5-15/16	SGS51516-*	12	5-5/8	3/4	4
6-7/16	SGS6716-*	13	5-3/4	3/4	4
6-15/16	SGS61516-*	13	5-3/4	3/4	4

\*Specify packing G-Graphite, H-Hi-Temp, N-Nylon, T-Teflon,

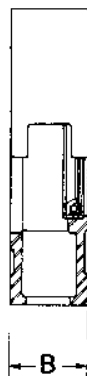
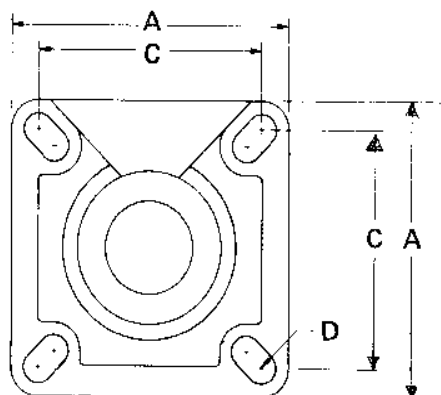
## PLATE SEAL



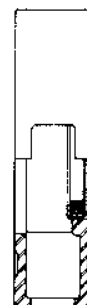
D Shaft Dia.	Part Number*	A	B		C-Bolts
			Min.	Max.	
1	PS1-*	4	2-3/4	2-3/4	3/8
1-1/2	PS112-*	5-3/8	4	4-1/8	1/2
2	PS2-*	6-1/2	4-3/8	5-1/8	5/8
2-7/16	PS2716-*	7-3/8	5-3/8	5-5/8	5/8
3	PS3-*	7-3/4	6	6	3/4
3-7/16	PS3716-*	9-1/4	6-3/4	7	3/4

\*Specify Seal L-Lip Seal F-Felt Seal

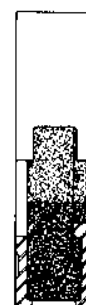
## WASTE PACK SEAL



With lip seal



With felt seal

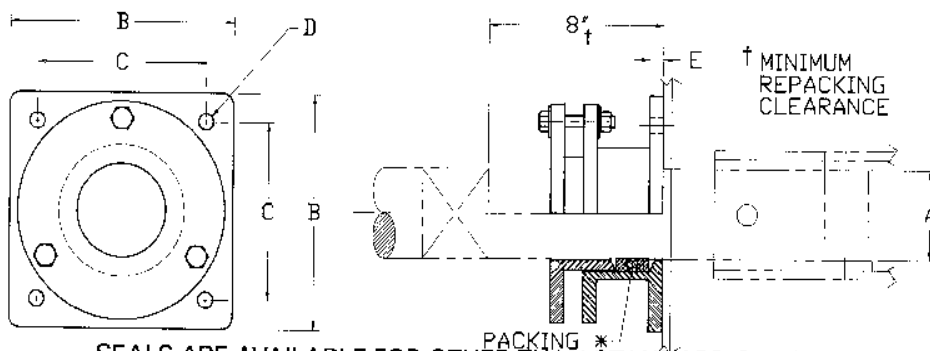


With waste packing

Shaft Dia.	Part Number *	A	B	C		D Bolts	Weight
				Minimum	Maximum		
1	WPS1*	3-3/4	1-3/4	2-3/4	2-3/4	3/8	4
1-1/2	WPS112*	5-3/8	1-3/4	4	4-1/8	1/2	6
2	WPS2*	6-1/2	1-3/4	4-3/8	5-1/8	5/8	8
2-7/16	WPS2716*	7-3/8	1-3/4	5-3/8	5-5/8	5/8	9
3	WPS3*	7-3/4	1-3/4	6	6	3/4	13
3-7/16	WPS3716*	9-1/4	2-1/4	6-3/4	7	3/4	17

NOTE: \* Specify seal, L (Lip), W (Waste Pack), F (Felt)

## FLANGED GLAND SEAL

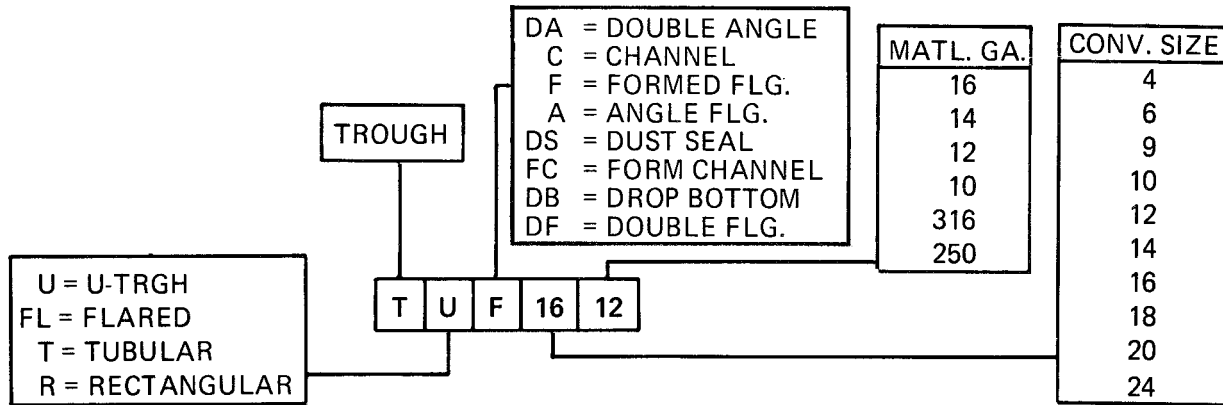


SEALS ARE AVAILABLE FOR OTHER THAN STANDARD SIZES

A Shaft Dia.	Part Number*	B	C	D Bolts	E	Weight
1	FGS1*	4	2-3/4	1/2	3/8	10
1-1/2	FGS112*	5-3/8	4	1/2	3/8	14
2	FGS2*	6-1/2	5-1/8	1/2	3/8	18
2-7/16	FGS2716*	7-3/8	5-5/8	1/2	3/8	21
3	FGS3*	7-3/4	6	1/2	3/8	27
3-7/16	FGS3716*	9-1/4	6-3/4	5/8	1/2	30
3-15/16	FGS31516*	10-1/4	7-3/4	5/8	1/2	35
4-7/16	FGS4716*	10-3/4	8-1/4	5/8	1/2	40
4-15/16	FGS41516*	11-1/2	9	5/8	1/2	45
5-7/16	FGS5716*	11-1/2	9	5/8	1/2	50

\*Specify packing G-Graphite, H-Hi-Temp, N-Nylon, T-Teflon, Add suffix "A" for air purged seal.  
We supply Graphite packing as our standard.

# CONVEYOR TROUGHS

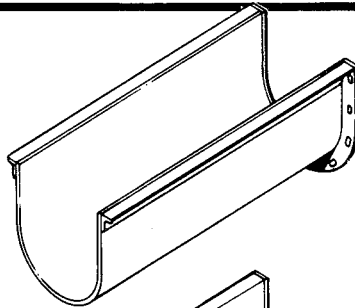


All KWS conveyor troughs are available in stainless steel. All troughs may also be furnished hot-dipped

galvanized. For specific alloy materials available, consult the Engineering Department.

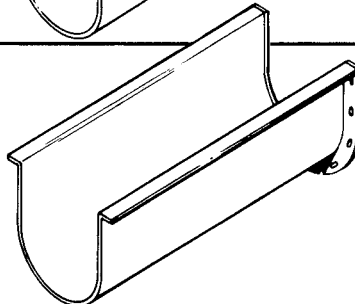
## U-TROUGH

### Angle Flange



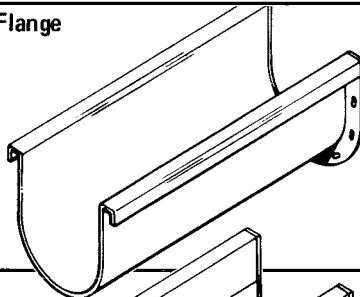
The most commonly employed U-trough is the angle-flanged type. The top flange is fabricated with heavy-duty structural steel angles welded flush with the top trough edge. End flanges are jig-welded to insure proper alignment with other trough sections.

### Formed Flange



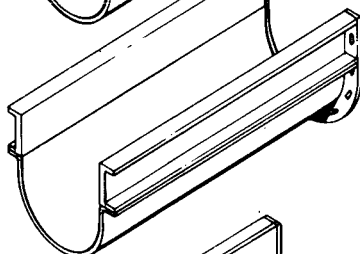
The top flange is formed from the same sheet as the trough, resulting in a lightweight, yet rigid, housing section. End flanges are jig-welded for perfect alignment with other sections.

### Double Formed Flange



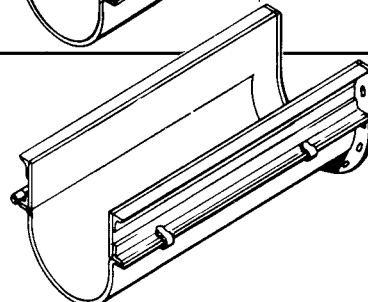
The top flange of the double-formed flange trough is also formed from the same sheet as the trough, and its unique design adds considerable strength and rigidity to the trough. The double-formed flange provides an effective dust-tight seal when used in conjunction with the flanged-type covers and appropriate gasket material.

### Channel



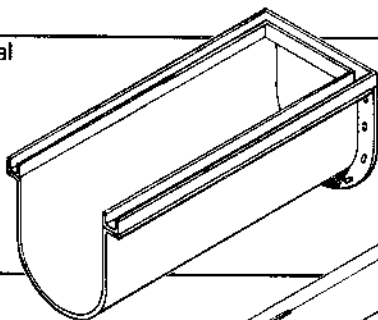
The channel U-trough is well suited for applications requiring long distances between conveyor supports. Upper trough sides are fabricated with structural steel channels to which the lower contoured section may be bolted or spring clamped. Useful for abrasive applications where frequent replacement of the lower formed section is anticipated.

### Drop Bottom



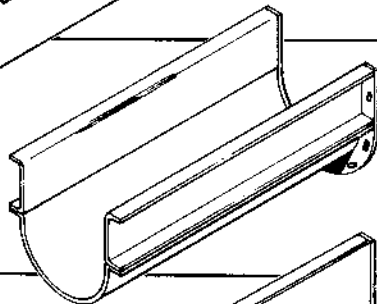
Intended for applications where quick, convenient access to the conveyor interior is required, the drop bottom trough consists of rigid upper side channels to which a lower contoured section is attached. One side of the lower formed section is hinged while the other is attached by use of spring clamps or other type of quick-opening device.

### Dust Seal



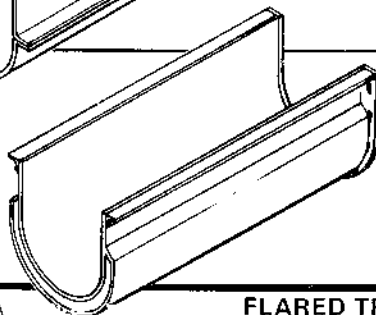
Dust seal conveyor troughs are produced with a continuous channel pocket extending along the sides and across the ends of each trough section. Special covers are required having formed flanges which project down into the channel pockets. After installation, sand, grease, the material being conveyed or other materials are placed in the channelled pockets to effect an efficient dust seal.

### Formed Channel



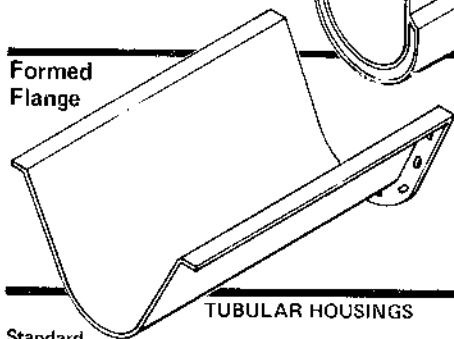
The formed channel U-trough is well suited for applications requiring long distances between conveyor supports. Upper trough sides are fabricated with formed steel channels to which the lower contoured section may be bolted or spring clamped. Useful for abrasive applications where frequent replacement of the lower formed section is anticipated.

### Jacketed



For application on jacketed conveyor troughs consult KWS Engineering Department.

### Formed Flange



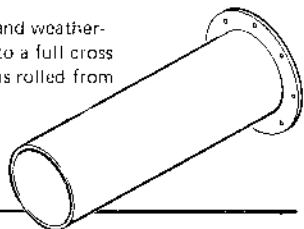
### FLARED TROUGH

Intended primarily for sticky or slightly viscous materials, the flared trough is most often employed with ribbon conveyors. Top flanges are formed from the same sheet as the housing. End flanges are jig-welded for perfect alignment with other sections.

### Standard

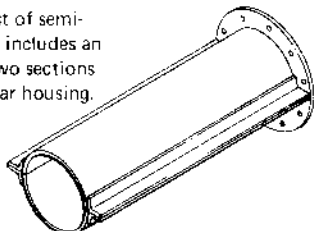
Tubular housings are inherently dust and weather-tight, rigid and may be readily loaded to a full cross section. The standard tubular housing is rolled from a single sheet and continuously welded at the seam.

### TUBULAR HOUSINGS



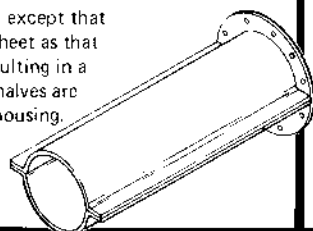
### Angle Flange

Angle flanged tubular housings consist of semi-circular formed halves, each of which includes an angle flange of structural steel. The two sections are bolted together to form the tubular housing.



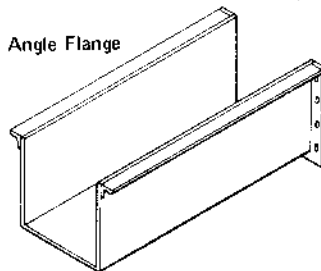
### Formed Flange

This type is similar to the angle flanged except that the flanges are formed from the same sheet as that of the contoured half sections, thus resulting in a rigid, lightweight tubular section. The halves are bolted together to form the complete housing.

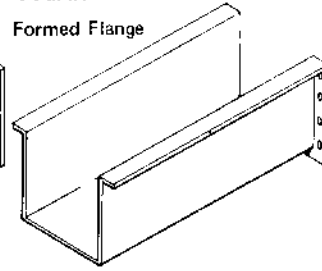


### RECTANGULAR

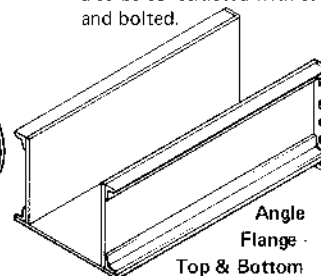
#### Angle Flange



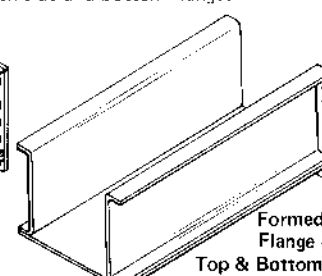
#### Formed Flange



Rectangular conveyor troughs are particularly applicable to the conveying of abrasive materials since conveyed material tends to form its own trough by sliding over the static material in the bottom and corners of the trough thus protecting it from severe wear. These troughs may be fabricated from one sheet with formed top flanges, or angle top flanges; they may also be constructed with each side and bottom flanged and bolted.

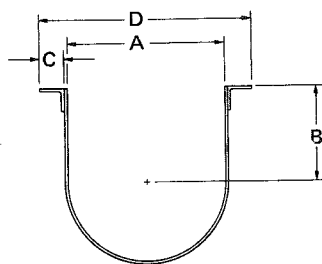


Angle Flange -  
Top & Bottom

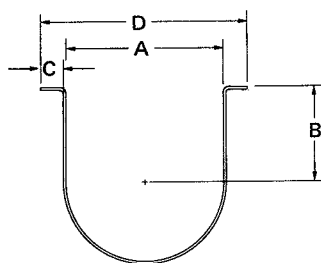


Formed Flange -  
Top & Bottom

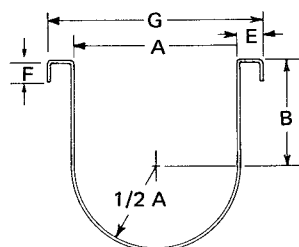
## U TROUGHS



Angle Flange



Formed Flange

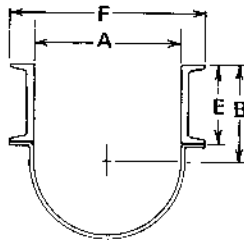


Double Formed Flange

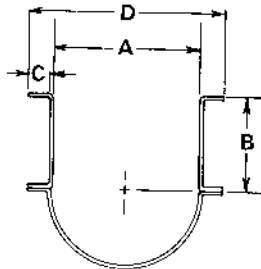
Conv. Dia.	Trough Thickness	Part Number Angle Flange	Wt. Per Length	Part Number Formed Flange	Wt. Per Length	Part Number Double Formed Flange	Wt. Per Length
4	16	TUA416	53	TUF416	41	TUDF416	41
	14	TUA414	60	TUF414	50	TUDF414	50
	12	TUA412	78	TUF412	70	TUDF412	70
	10	TUA410	98	TUF410	93	TUDF410	93
6	16	TUA616	67	TUF616	55	TUDF616	55
	14	TUA614	78	TUF614	67	TUDF614	67
	12	TUA612	98	TUF612	92	TUDF612	92
	10	TUA610	123	TUF610	117	TUDF610	117
9	14	TUA914	127	TUF914	99	TUDF914	99
	12	TUA912	156	TUF912	132	TUDF912	132
	10	TUA910	176	TUF910	164	TUDF910	164
	3/16	TUA9316	230	TUF9316	214	TUDF9316	214
10	14	TUA1014	152	TUF1014	118	TUDF1014	118
	12	TUA1012	187	TUF1012	158	TUDF1012	158
	10	TUA1010	211	TUF1010	196	TUDF1010	196
	3/16	TUA10316	276	TUF10316	256	TUDF10316	256
12	12	TUA1212	256	TUF1212	215	TUDF1212	215
	10	TUA1210	305	TUF1210	266	TUDF1210	266
	3/16	TUA12316	371	TUF12316	342	TUDF12316	342
	1/4	TUA12250	462	TUF12250	443	TUDF12250	443
14	12	TUA1412	276	TUF1412	234	TUDF1412	234
	10	TUA1410	330	TUF1410	292	TUDF1410	292
	3/16	TUA14316	407	TUF14316	378	TUDF14316	378
	1/4	TUA14250	515	TUF14250	496	TUDF14250	496
16	12	TUA1612	320	TUF1612	277	TUDF1612	277
	10	TUA1610	373	TUF1610	334	TUDF1610	334
	3/16	TUA16316	458	TUF16316	428	TUDF16316	428
	1/4	TUA16250	580	TUF16250	559	TUDF16250	559
18	12	TUA1812	373	TUF1812	334	TUDF1812	334
	10	TUA1810	443	TUF1810	408	TUDF1810	408
	3/16	TUA18316	558	TUF18316	534	TUDF18316	534
	1/4	TUA18250	684	TUF18250	672	TUDF18250	672
20	10	TUA2010	503	TUF2010	463	TUDF2010	463
	3/16	TUA20316	622	TUF20316	587	TUDF20316	587
	1/4	TUA20250	763	TUF20250	751	TUDF20250	751
24	10	TUA2410	550	TUF2410	553	TUDF2410	553
	3/16	TUA24316	702	TUF24316	702	TUDF24316	702
	1/4	TUA24250	899	TUF24250	899	TUDF24250	899

Conv. Dia.	Trough Thickness	A	B	C	D	E	F	G
4	16	5	3-5/8	1	7-1/8	1-1/8	1/2	7 1/4
	14				7-1/4	1-1/4		7 1/2
	12							
	10							
6	16	7	4-1/2	1-1/4	9-5/8	1-3/8	5/8	9 3/4
	14				9-11/16	1-7/16		9 7/8
	12				9-3/4			
	10				9-3/4			
9	14	10	6-1/8	1-1/2	13-3/16	1-11/16	5/8	13-3/8
	12				13-3/16			
	10				13-1/4			
	3/16				13-3/8			
10	14	11	6-3/8	1-1/2	14-3/8	1-7/8	5/8	14 3/4
	12				14-1/2			
	10				14-5/8			
	3/16				14-3/4			
12	12	13	7-3/4	2	17-3/16	2-1/8	5/8	17-1/4
	10				17-1/4			
	3/16				17-3/8			
	1/4				17-1/2			
14	12	15	9-1/4	2	19-3/16	2-1/8	5/8	19-1/4
	10				19-1/4			
	3/16				19-3/8			
	1/4				19-1/2			
16	12	17	10-5/8	2	21-3/16	2-1/8	5/8	21-1/4
	10				21-1/4			
	3/16				21-3/8			
	1/4				21-1/2			
18	12	19	12-1/8	2-1/2	24-3/16	2-5/8	5/8	24-1/4
	10				24-1/4			
	3/16				24-3/8			
	1/4				24-1/2			
20	10	21	13-1/2	2-1/2	26-1/4	2-5/8	5/8	26-1/4
	3/16				26-3/8			
	1/4				26-1/2			
	1/4				30-1/4			
24	10	25	16-1/2	2-1/2	30-1/4	2-5/8	5/8	30-1/4
	3/16				30-3/8			
	1/4				30-1/2			
	1/4							

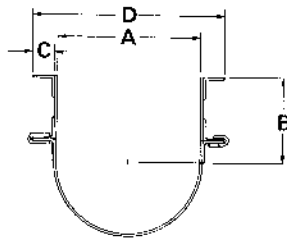
## U-TROUGH



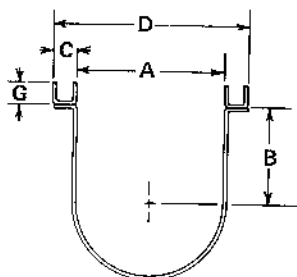
**Channel Trough**



**Formed Channel Trough**



**Drop Bottom Trough**



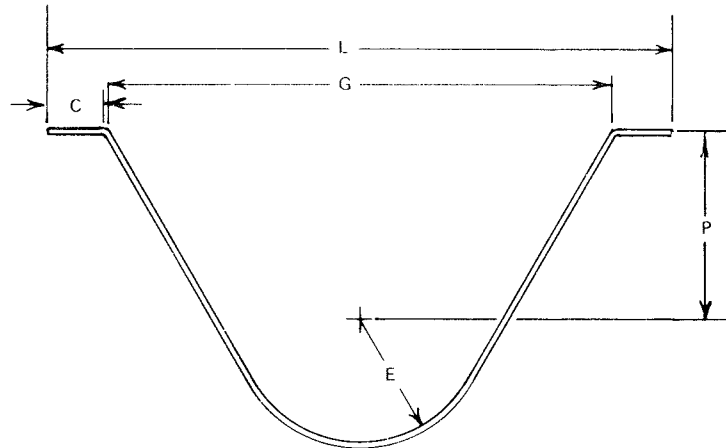
**Dust Seal Trough**

Screw Dia.	Trough Thickness	Part Number Channel Trough	Wt. Per Std. Length	Part Number Formed Channel Trough	Wt. Per Std. Length	Part Number Drop Bottom Trough	Wt. Per Std. Length	Part Number Dust Seal Trough	Wt. Per Std. Length
6	16	TUC614	149	TUFC614	149	TUDB616	106	TUDS616	
	14	TUC612	164	TUFC612	164	TUDB614	117	TUDS614	
	12	TUC610	178	TUFC610	178	TUDB612	140	TUDS612	
	3/16	TUC6316	203	TUFC6316	203	TUDB610	162	TUDS610	
9	14	TUC914	239	TUFC914	239	TUDB914	174	TUDS914	
	12	TUC912	259	TUFC912	259	TUDB912	203	TUDS912	
	10	TUC910	292	TUFC910	292	TUDB910	223	TUDS910	
	3/16	TUC9316	332	TUFC9316	332	TUDB9316	277	TUDS9316	
10	14	TUC1414	387	TUFC1414	387	TUDB1414	294	TUDS1414	
	12	TUC1412	415	TUFC1412	415	TUDB1412	339	TUDS1412	
	10	TUC1410	456	TUFC1410	456	TUDB1410	403	TUDS1410	
	3/16	TUC14316	526	TUFC14316	526	TUDB14316	493	TUDS14316	
12	12	TUC1212	333	TUFC1212	333	TUDB1212	277	TUDS1212	
	10	TUC1210	359	TUFC1210	359	TUDB1210	318	TUDS1210	
	3/16	TUC12316	403	TUFC12316	403	TUDB12316	373	TUDS12316	
	1/4	TUC12250	455	TUFC12250	455	TUDB12250	449	TUDS12250	
14	12	TUC1412	387	TUFC1412	387	TUDB1412	294	TUDS1412	
	10	TUC1410	415	TUFC1410	415	TUDB1410	339	TUDS1410	
	3/16	TUC14316	456	TUFC14316	456	TUDB14316	403	TUDS14316	
	1/4	TUC14250	526	TUFC14250	526	TUDB14250	493	TUDS14250	
16	12	TUC1612	472	TUFC1612	472	TUDB1612	331	TUDS1612	
	10	TUC1610	529	TUFC1610	529	TUDB1610	375	TUDS1610	
	3/16	TUC16316	596	TUFC16316	596	TUDB16316	446	TUDS16316	
	1/4	TUC16250	666	TUFC16250	666	TUDB16250	547	TUDS16250	
18	12	TUC1812	603	TUFC1812	603	TUDB1812	393	TUDS1812	
	10	TUC1810	666	TUFC1810	666	TUDB1810	451	TUDS1810	
	3/16	TUC18316	741	TUFC18316	741	TUDB18316	547	TUDS18316	
	1/4	TUC18250	803	TUFC18250	803	TUDB18250	652	TUDS18250	
20	12	TUC2012	619	TUFC2012	619	TUDB2012	403	TUDS2012	
	10	TUC2010	687	TUFC2010	687	TUDB2010	467	TUDS2010	
	3/16	TUC20316	769	TUFC20316	769	TUDB20316	501	TUDS20316	
	1/4	TUC20250	831	TUFC20250	831	TUDB20250	578	TUDS20250	
24	12	TUC2412	1002	TUFC2412	1002	TUDB2412	543	TUDS2412	
	10	TUC2410	1097	TUFC2410	1097	TUDB2410	667	TUDS2410	
	3/16	TUC24316	1097	TUFC24316	1097	TUDB24316	831	TUDS24316	
	1/4	TUC24250	1097	TUFC24250	1097	TUDB24250	831	TUDS24250	

Screw Dia.	Trough Thickness	A	B	C	D	E	F	G
6	16	7	4-1/2	1-1/4	9-5/8	4	10-1/4	1/2
	14				9-11/16			
	12				9-3/4			
	3/16				9-13/16			
9	14	10	6-1/8	1-1/2	13-3/16	6	13-3/4	3/4
	12				13-1/4			
	10				13-5/16			
	3/16				13-3/8			
10	14	11	6-3/8	1-1/2	13-1/2			
	12				14-3/16			
	10				14-1/4			
	3/16				14-5/16			
12	12	13	7-3/4	2	14-3/8			
	10				14-1/2			
	3/16				17-1/4	8	17-1/2	1
	1/4				17-5/16			
14	12	15	9-1/4	2	17-3/8			
	10				17-1/2			
	3/16				19-1/4	9	19-3/4	1
	1/4				19-5/16			
16	12	17	10-5/8	2	19-3/8			
	10				19-1/2			
	3/16				21-1/4	10	22-1/4	1
	1/4				21-5/16			
18	12	19	12-1/8	2-1/2	21-3/8			
	10				21-1/2			
	3/16				24-1/4	12	25	1
	1/4				24-5/16			
20	12	21	13-1/2	2-1/2	24-3/8			
	10				24-1/2			
	3/16				26-5/16	12	27	1
	1/4				26-3/8			
24	12	25	16-1/2	2-1/2	26-1/2			
	10				30-5/16	15	31-3/4	1
	3/16				30-3/8			
	1/4				30-1/2			



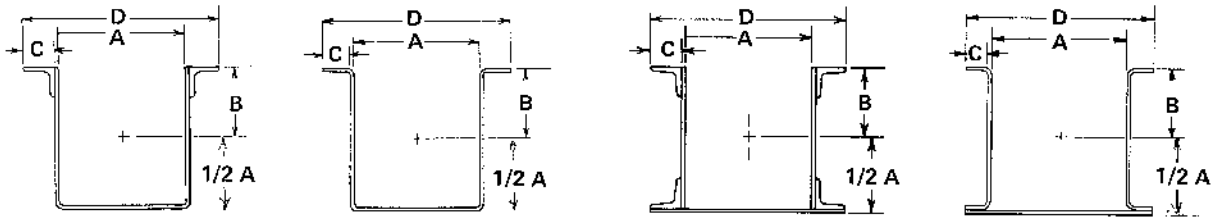
# FLARED TROUGH



Screw Dia.	Trough Thickness	Part Number	* Weight Per Foot	C	E	G	L	P
6	14 12	TFLF614 TFLF612	7.6 10.6	1-1/4	3-1/2	14	16-5/8 16-5/8	7
9	14 10	TFLF914 TFLF910	10 17.9	1-1/2	5	18	21-1/4 21-1/4	9
12	12 10 3/16	TFLF1212 TFLF1210 TFLF12316	16.9 21.7 29.5	2	6-1/2	22	26-1/4 26-1/4 26-3/8	10
14	12 10 3/16	TFLF1412 TFLF1410 TFLF14316	18.7 24.0 32.7	2	7-1/2	24	28-1/4 28-1/4 28-3/8	11
16	10 3/16 1/4	TFLF1610 TFLF16316 TFLF16250	26.2 35.7 47.6	2	8-1/2	28	32-1/4 32-3/8 32-1/2	11-1/2
18	3/16 1/4	TFLF18316 TFLF18250	39.4 52.5	2-1/2	9-1/2	31	36-3/8 36-1/2	12-1/8
20	3/16 1/4	TFLF20316 TFLF20250	43.3 57.8	2-1/2	10-1/2	34	39-3/8 39-1/2	13-1/2
24	3/16 1/4	TFLF24316 TFLF24250	51.2 68.2	2-1/2	12-1/2	40	45-3/8 45-1/2	16-1/2

\*Weight does not include plate end flanges

## RECTANGULAR TROUGHS



Angle Flange

Formed Flange

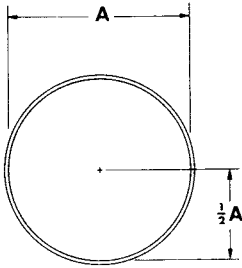
Angle Flange  
Top & Bottom

Formed Flange  
Top & Bottom

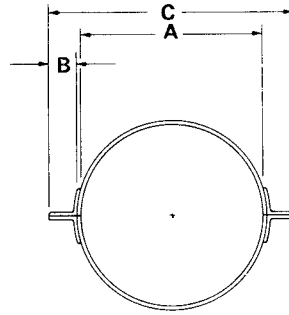
Screw Dia.	Trough Thickness	Angle Flanged Part Number	Wt. Per Std. Length	Formed Flange Part Number	Wt. Per Std. Length	Double Angle Part Number	Wt. Per Std. Length	Formed Channel Part Number	Wt. Per Std. Length
6	16	TRA616	89	TRF616	51	TRDA616	127	TRFC616	56
	14	TRA614	103	TRF614	66	TRDA614	143	TRFC614	72
9	14	TRA914	130	TRF914	98	TRDA914	162	TRFC914	107
	12	TRA912	161	TRF912	134	TRDA912	188	TRFC912	147
12	14	TRA1214	176	TRF1214	124	TRDA1214	228	TRFC1214	136
	12	TRA1212	218	TRF1212	170	TRDA1212	266	TRFC1212	187
	10	TRA1210	260	TRF1210	216	TRDA1210	304	TRFC1210	237
14	14	TRA1414	192	TRF1414	140	TRDA1414	244	TRFC1414	154
	12	TRA1412	240	TRF1412	192	TRDA1412	288	TRFC1412	211
	10	TRA1410	288	TRF1410	245	TRDA1410	331	TRFC1410	269
16	12	TRA1612	262	TRF1612	214	TRDA1612	310	TRFC1612	235
	10	TRA1610	316	TRF1610	273	TRDA1610	359	TRFC1610	300
	3/16	TRA16316	411	TRF16316	375	TRDA16316	447	TRFC16316	412
18	12	TRA1812	311	TRF1812	248	TRDA1812	374	TRFC1812	272
	10	TRA1810	373	TRF1810	315	TRDA1810	431	TRFC1810	346
	3/16	TRA18316	482	TRF18316	432	TRDA18316	532	TRFC18316	475
20	12	TRA2012	346	TRF2012	283	TRDA2012	409	TRFC2012	311
	10	TRA2010	418	TRF2010	360	TRDA2010	476	TRFC2010	396
	3/16	TRA20316	544	TRF20316	495	TRDA20316	593	TRFC20316	544
24	12	TRA2412	434	TRF2412	374	TRDA2412	494	TRFC2412	411
	10	TRA2410	530	TRF2410	475	TRDA2410	585	TRFC2410	522
	3/16	TRA24316	698	TRF24316	653	TRDA24316	743	TRFC24316	718

Screw Dia.	Trough Thickness	A	B	C	D
6	16	7	4-1/2	1-1/4	9-5/8
	14				9-11/16
9	14	10	6-1/8	1-1/2	13-3/16
	12				13-1/4
12	14	13	7-3/4	2	17-1/8
	12				17-1/4
	10				17-5/16
14	14	15	9-1/4	2	19-1/8
	12				19-1/4
	10				19-5/16
16	12	17	10-5/8	2	21-1/4
	10				21-5/16
	3/16				21-3/8
18	12	19	12-1/8	2-1/2	24-1/4
	10				24-5/16
	3/16				24-3/8
20	12	21	13-1/2	2-1/2	26-1/4
	10				26-3/8
	3/16				26-1/2
24	12	25	16-1/2	2-1/2	30-1/4
	10				30-3/8
	3/16				30-1/2

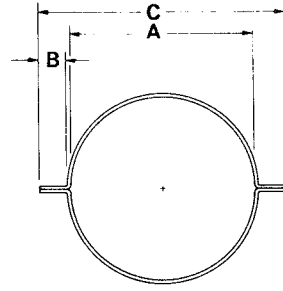
# TUBULAR TROUGHS



STANDARD



ANGLE FLANGE



FORMED FLANGE

Screw Dia.	Housing Thickness	Std. Housing Part Number	Wt.	Angle Flange Part Number	Wt.	Formed Flange Part Number	Wt.	A	B	C
4	16	TT416	35	TTA416	81	TTF416	43	5	1	7-1/8 7-3/16 7-1/4
	14	TT414	43	TTA414	89	TTF414	53			
	12	TT412	60	TTA412	106	TTF412	74			
6	16	TT616	50	TTA616	110	TTF616	60	7	1-1/4	9-5/8 9-11/16 9-3/4 9-13/16 9-7/8
	14	TT614	62	TTA614	122	TTF614	75			
	12	TT612	85	TTA612	145	TTF612	103			
	10	TT610	110	TTA610	187	TTF610	133			
	3/16	TT6316	145	TTA6316	205	TTF6316	168			
9	14	TT914	89	TTA914	161	TTF914	104	10	1-1/2	13-3/16 13-1/4 13-5/16 13-3/8 13-1/2
	12	TT912	122	TTA912	194	TTF912	143			
	10	TT910	155	TTA910	227	TTF910	182			
	3/16	TT9316	208	TTA9316	280	TTF9316	245			
	1/4	TT9250	275	TTA9250	347	TTF9250	324			
10	14	TT1014	97	TTA1014	169	TTF1014	112	11	1-1/2	14-3/16 14-1/4 14-5/16 14-3/8 14-1/2
	12	TT1012	133	TTA1012	205	TTF1012	154			
	10	TT1010	169	TTA1010	241	TTF1010	196			
	3/16	TT10316	227	TTA10316	299	TTF10316	264			
	1/4	TT10250	301	TTA10250	373	TTF10250	350			
12	12	TT1212	163	TTA1212	261	TTF1212	193	13	2	17-1/4 27-5/16 17-3/8 17-1/2
	10	TT1210	208	TTA1210	306	TTF1210	247			
	3/16	TT12316	275	TTA12316	373	TTF12316	328			
	1/4	TT12250	362	TTA12250	460	TTF12250	432			
14	12	TT1412	187	TTA1412	285	TTF1412	217	15	2	19-1/4 19-5/16 19-3/8 19-1/2
	10	TT1410	236	TTA1410	334	TTF1410	275			
	3/16	TT14316	316	TTA14316	414	TTF14316	369			
	1/4	TT14250	416	TTA14250	514	TTF14250	486			
16	12	TT1612	212	TTA1612	310	TTF1612	242	17	2	21-1/4 21-5/16 21-3/8 21-1/2
	10	TT1610	268	TTA1610	366	TTF1610	307			
	3/16	TT16316	358	TTA16316	456	TTF16316	411			
	1/4	TT16250	472	TTA16250	570	TTF16250	542			
18	12	TT1812	242	TTA1812	365	TTF1812	280	19	2-1/2	24-1/4 24-5/16 24-3/8 24-1/2
	10	TT1810	304	TTA1810	427	TTF1810	353			
	3/16	TT18316	405	TTA18316	528	TTF18316	472			
	1/4	TT18250	533	TTA18250	656	TTF18250	622			
20	10	TT2010	335	TTA2010	458	TTF2010	382	21	2-1/2	26-5/16 26-3/8 26-1/2
	3/16	TT20316	446	TTA20316	569	TTF20316	510			
	1/4	TT20250	586	TTA20250	709	TTF20250	672			
24	10	TT2410	399	TTA2410	522	TTF2410	446	25	2-1/2	30-5/16 30-3/8 30-1/2
	3/16	TT24316	531	TTA24316	654	TTF24316	595			
	1/4	TT24250	699	TTA24250	822	TTF24250	785			

# FLANGE GASKETS

U - U-TRGH  
F - FLARED  
R - RECTANGULAR  
T - TUBULAR

FLANGE GSKT.

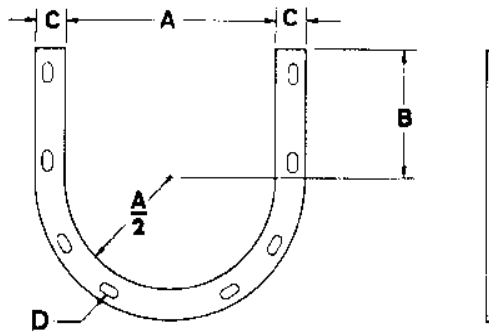
CONV. SIZE

GSKT. THICKNESS  
1/16 - 1/16"  
1/8 - 1/8" (STD.)  
3/16 - 3/16"  
1/4 - 1/4"

\* SPECIFY TYPE

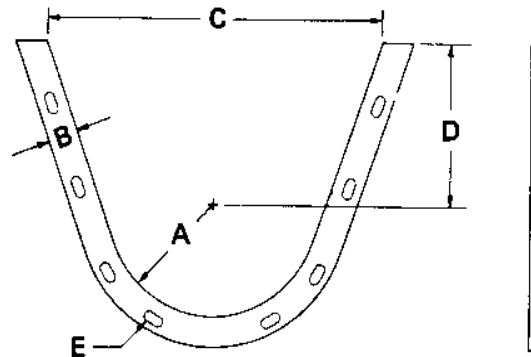
P - POLYURETHANE (STD.)  
R - RED RUBBER  
H - HI-TEMP  
F - FELT  
BN - BLACK NEOPRENE  
WN - WHITE NEOPRENE

FG U 12 -P- 1/8



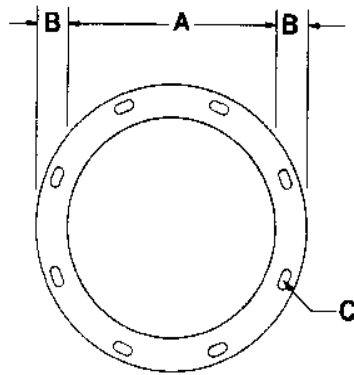
Screw Dia.	Part Number	A	B	C	D Bolts
4	FGU4*	5-1/4	3-5/8	1-1/4	3/8
6	FGU6*	7-1/4	4-1/2	1-3/8	3/8
9	FGU9*	10-1/4	6-1/8	1-3/4	3/8
10	FGU10*	11-1/4	6-3/8	1-3/4	3/8
12	FGU12*	13-1/4	7-3/4	2	1/2
14	FGU14*	15-1/4	9-1/4	2	1/2
16	FGU16*	17-1/4	10-5/8	2	5/8
18	FGU18*	19-1/4	12-1/8	2-1/2	5/8
20	FGU20*	21-1/4	13-1/2	2-1/2	5/8
24	FGU24*	25-1/4	16-1/2	2-1/2	5/8

\* Specify gasket material and thickness required.



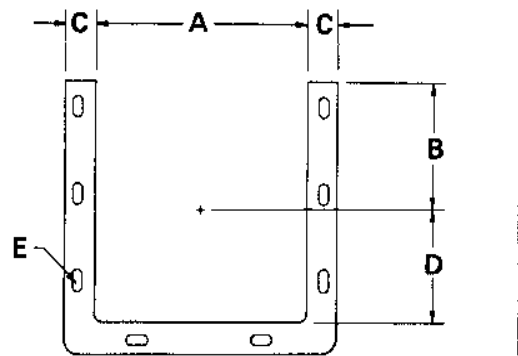
Screw Dia.	Part Number	A	B	C	D	E
6	FGF6*	3-1/2	1-3/8	14-1/4	7	3/8
9	FGF9*	5	1-3/4	18-1/4	9	3/8
12	FGF12*	6-1/2	2	22-1/4	10	1/2
14	FGF14*	7-1/2	2	24-1/4	11	1/2
16	FGF16*	8-1/2	2	28-1/4	11-1/2	5/8
18	FGF18*	9-1/2	2-1/2	31-1/4	12-1/8	5/8
20	FGF20*	10-1/2	2-1/2	34-1/4	13-1/2	5/8
24	FGF24*	12-1/2	2-1/2	40-1/4	16-1/2	5/8

\* Specify gasket material and thickness required.



Screw Dia.	Part Number	A	B	C
4	FGT4*	5-1/4	1	3/8
6	FGT6*	7-1/4	1-1/4	3/8
9	FGT9*	10-1/4	1-1/2	3/8
10	FGT10*	11-1/4	1-1/2	3/8
12	FGT12*	13-1/4	2	1/2
14	FGT14*	15-1/4	2	1/2
16	FGT16*	17-1/4	2	5/8
18	FGT18*	19-1/4	2-1/2	5/8
20	FGT20*	21-1/4	2-1/2	5/8
24	FGT24*	25-1/4	2-1/2	5/8

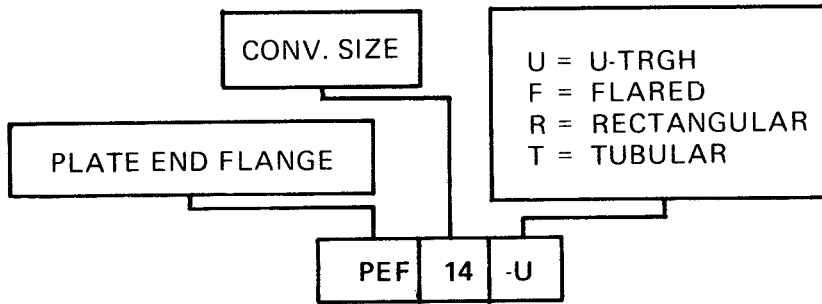
\* Specify gasket material and thickness required.



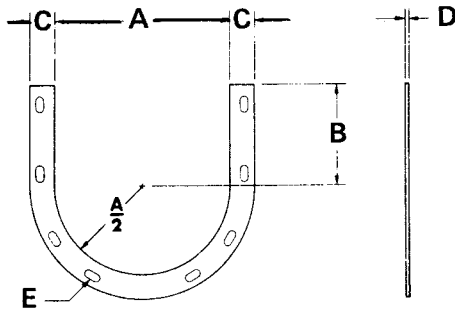
Screw Dia.	Part Number	A	B	C	D	E
6	FGR6*	7-1/4	4-1/2	1-1/4	3-5/8	3/8
9	FGR9*	10-1/4	6-1/8	1-1/2	5-1/8	3/8
12	FGR12*	13-1/4	7-3/4	2	6-5/8	1/2
14	FGR14*	15-1/4	9-1/4	2	7-5/8	1/2
16	FGR16*	17-1/4	10-5/8	2	8-5/8	5/8
18	FGR18*	19-1/4	12-1/8	2-1/2	9-5/8	5/8
20	FGR20*	21-1/4	13-1/2	2-1/2	10-5/8	5/8
24	FGR24*	25-1/4	16-1/2	2-1/2	12-5/8	5/8

\* Specify gasket material and thickness required.

# PLATE END FLANGES

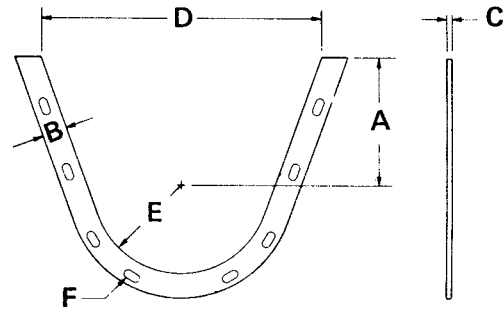


## U-Trough



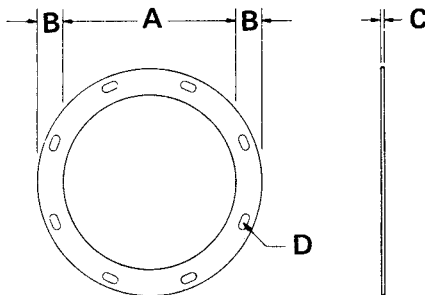
Screw Dia.	Part Number	Trough Thickness A		B	C	D	E Bolts	Wt.
		Thru 10 Ga.	3/16-1/4					
4	PEF4U	5-1/4	5-1/2	3-5/8	1-1/4	3/16	3/8	1
6	PEF6U	7-1/4	7-1/2	4-1/2	1-3/8	3/16	3/8	1.5
9	PEF9U	10-1/4	10-1/2	6-1/8	1-3/4	1/4	3/8	2.4
10	PEF10U	11-1/4	11-1/2	6-3/8	1-3/4	1/4	3/8	3.1
12	PEF12U	13-1/4	13-1/2	7-3/4	2	1/4	1/2	5.5
14	PEF14U	15-1/4	15-1/2	9-1/4	2	1/4	1/2	6.5
16	PEF16U	17-1/4	17-1/2	10-5/8	2	1/4	5/8	7.4
18	PEF18U	19-1/4	19-1/2	12-1/8	2-1/2	1/4	5/8	10.4
20	PEF20U	21-1/4	21-1/2	13-1/2	2-1/2	1/4	5/8	11.5
24	PEF24U	25-1/4	25-1/2	16-1/2	2-1/2	1/4	5/8	13.5

## Flared Trough



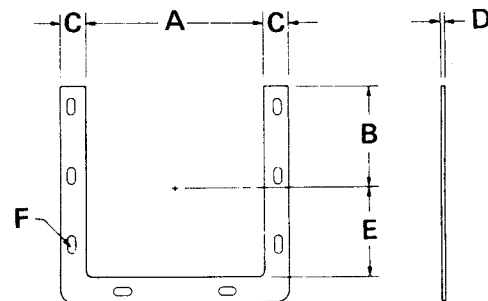
Screw Dia.	Part Number	A	B	C	Trough Thickness D		Trough Thickness E		F Bolts	Wt.
					Thru 10 Ga.	3/16-1/4	Thru 10 Ga.	3/16-1/4		
6	PEF6F	7	1-3/8	3/16	14-1/4	14-1/2	3-5/8	3-11/16	3/8	1.9
9	PEF9F	9	1-3/4	1/4	18-1/4	18-1/2	5-1/8	5-1/4	3/8	3.0
12	PEF12F	10	2	1/4	22-1/4	22-1/2	6-5/8	6-3/4	1/2	6.4
14	PEF14F	11	2	1/4	24-1/4	24-1/2	7-5/8	7-3/4	1/2	7.3
16	PEF16F	11-1/2	2	1/4	28-1/4	28-1/2	8-5/8	8-3/4	5/8	7.9
18	PEF18F	12-1/8	2-1/2	1/4	31-1/4	31-1/2	9-5/8	9-3/4	5/8	10.8
20	PEF20F	13-1/2	2-1/2	1/4	34-1/4	34-1/2	10-5/8	10-3/4	5/8	11.4
24	PEF24F	16-1/2	2-1/2	1/4	40-1/4	40-1/2	12-5/8	12-3/4	5/8	13.0

## Tubular Housing



Screw Dia.	Part Number	Trough Thickness A		B	C	D Bolts	Wt.
		Thru 10 Ga.	3/16-1/4				
4	PEF4T	5-1/4	5-1/2	1-1/2	3/16	3/8	1
6	PEF6T	7-1/4	7-1/2	1-1/2	3/16	3/8	1.8
9	PEF9T	10-1/4	10-1/2	1-3/4	1/4	3/8	3.0
10	PEF10T	11-1/4	11-1/2	1-3/4	1/4	3/8	3.2
12	PEF12T	13-1/4	13-1/2	2	1/4	1/2	6.9
14	PEF14T	15-1/4	15-1/2	2	1/4	1/2	7.8
16	PEF16T	17-1/4	17-1/2	2	1/4	5/8	8.7
18	PEF18T	19-1/4	19-1/2	2-1/2	1/4	5/8	12.3
20	PEF20T	21-1/4	21-1/2	2-1/2	1/4	5/8	13.4
24	PEF24T	25-1/4	25-1/2	2-1/2	1/4	5/8	15.6

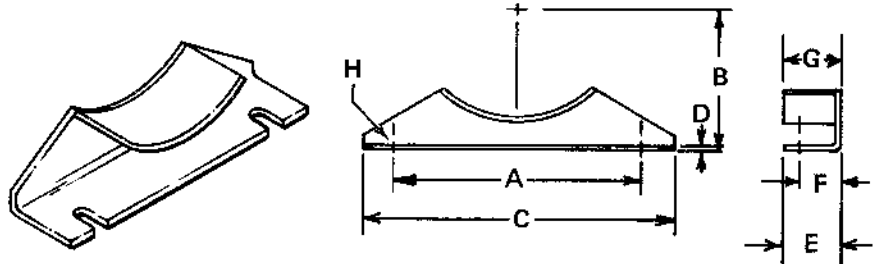
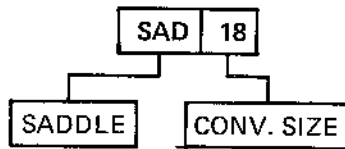
## Rectangular Trough



Screw Dia.	Part Number	Trough Thickness A		B	C	D	Trough Thickness E		F Bolts	Wt.
		Thru 10 Ga.	3/16-1/4				Thru 10 Ga.	3/16-1/4		
6	PEF6R	7-1/4	7-3/8	4-1/2	1-1/4	3/16	3-5/8	3-11/16	3/8	1.7
9	PEF9R	10-1/4	10-1/2	6-1/8	1-1/2	1/4	5-1/8	5-1/4	3/8	2.9
12	PEF12R	13-1/4	13-1/2	7-3/4	2	1/4	6-5/8	6-3/4	1/2	6.6
14	PEF14R	15-1/4	15-1/2	9-1/4	2	1/4	7-5/8	7-3/4	1/2	7.6
16	PEF16R	17-1/4	17-1/2	10-5/8	2	1/4	8-5/8	8-3/4	5/8	8.5
18	PEF18R	19-1/4	19-1/2	12-1/8	2-1/2	1/4	9-5/8	9-3/4	5/8	12.1
20	PEF20R	21-1/4	21-1/2	13-1/2	2-1/2	1/4	10-5/8	10-3/4	5/8	13.3
24	PEF24R	25-1/4	25-1/2	16-1/2	2-1/2	1/4	12-5/8	12-3/4	5/8	15.8

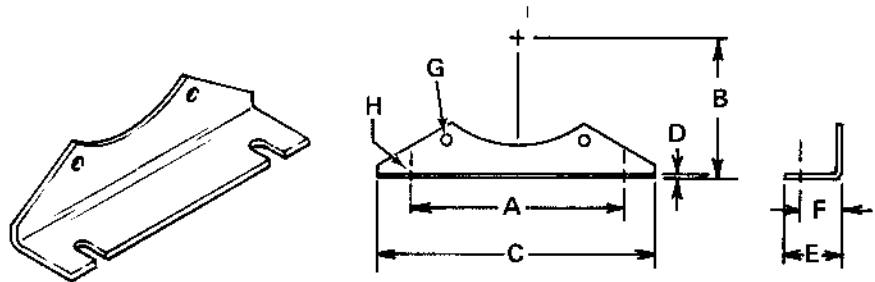
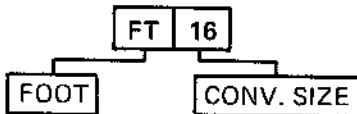
## Saddles & Feet

### SADDLE



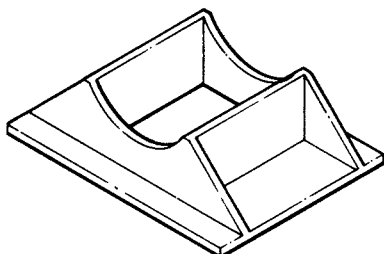
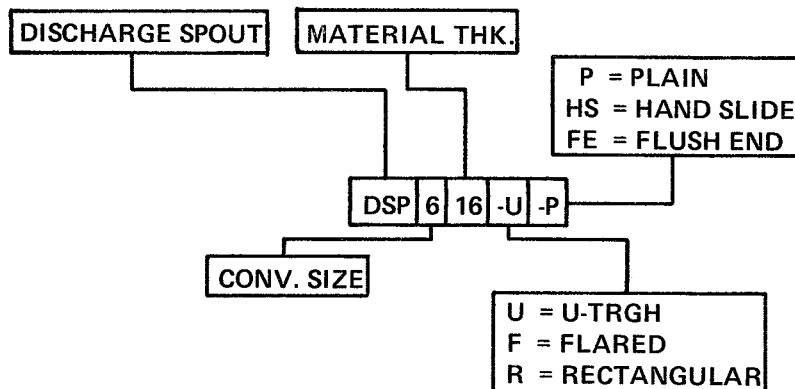
Screw Dia.	Part Number	A	B	C	D	E	F	G	H Bolts	Weight
4	SAD4	5-3/4	4-5/8	7-3/8	3/16	1-1/2	7/8	1-3/8	3/8	2.0
6	SAD6	8-1/8	5-5/8	10	3/16	1-1/2	13/16	1-3/4	3/8	3.0
9	SAD9	9-3/8	7-7/8	12	3/16	2-1/2	1-5/16	2	1/2	4.0
10	SAD10	9-1/2	8-7/8	12-3/8	3/16	2-1/2	1-9/16	2	1/2	5.0
12	SAD12	12-1/4	9-5/8	15	1/4	2-1/2	1-3/8	2-1/4	5/8	6.0
14	SAD14	13-1/2	10-7/8	16-1/2	1/4	2-1/2	1-3/8	2-3/4	5/8	8.0
16	SAD16	14-7/8	12	18	1/4	3	1-3/4	2-3/4	5/8	9.5
18	SAD18	16	13-3/8	19-1/8	1/4	3	1-3/4	2-3/4	5/8	11.0
20	SAD20	19-1/4	15	22-3/4	1/4	3-1/2	2	2-3/4	3/4	14.5
24	SAD24	20	18-1/8	24	1/4	4	2-1/4	2-3/4	3/4	17.0

### FLANGED FOOT



Screw Dia.	Part Number	A	B	C	D	E	F	G Bolts	H Bolts	Weight
4	FT4	5-3/4	4-5/8	7-3/8	3/16	1-1/2	7/8	3/8	3/8	1.5
6	FT6	8-1/8	5-5/8	10	3/16	1-1/2	13/16	3/8	3/8	2.0
9	FT9	9-3/8	7-7/8	12	3/16	2-1/2	1-5/16	3/8	1/2	3.0
10	FT10	9-1/2	8-7/8	12-3/8	3/16	2-1/2	1-9/16	3/8	5/8	5.0
12	FT12	12-1/4	9-5/8	15	1/4	2-1/2	1-5/8	1/2	5/8	6.0
14	FT14	13-1/2	10-7/8	16-1/2	1/4	2-1/2	1-3/8	1/2	5/8	7.0
16	FT16	14-7/8	12	18	1/4	3	1-3/4	5/8	5/8	7.5
18	FT18	16	13-3/8	19-1/8	1/4	3	1-3/4	5/8	5/8	9.5
20	FT20	19-1/4	15	22-3/4	1/4	3-1/2	2	5/8	3/4	12.5
24	FT24	20	18-1/8	24	1/4	4	2-1/4	5/8	3/4	14.5

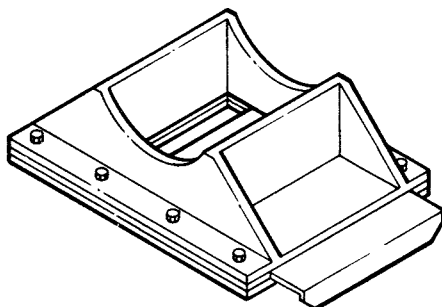
# DISCHARGE SPOUTS



## Fixed

Discharge spouts are shop welded to the conveyor trough.

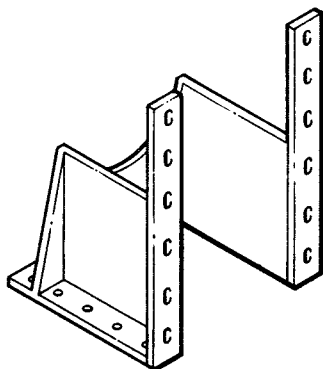
Gauges are proportioned to the size and material thickness of troughs.



## Fixed – Flat Slide

Fixed discharge spouts are available with hand slide gate assemblies.

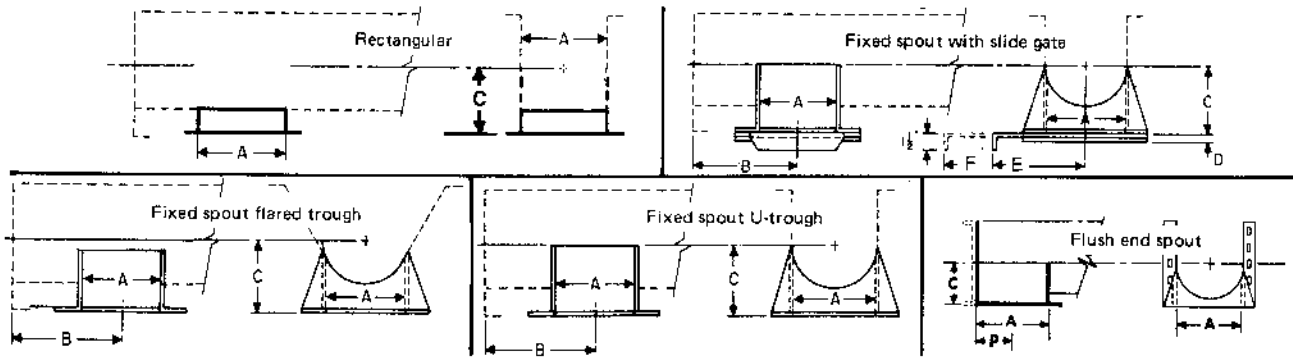
The slide gate assemblies are bolted to the discharge flange and may be assembled for either side or longitudinal opening. Slide gates are fabricated from the same gauge as the discharge spout.



## Flush End Discharge Spout

This spout is designed for use at the final discharge point. The end of the spout is comprised of a housing end with bottom flange drilled with standard discharge flange bolt pattern. Because it is located at the extreme end of the conveyor, there is no carryover of material past the final discharge point. The flush end arrangement eliminates the unnecessary extension of trough and interior components beyond the actual discharge point.

# DISCHARGE SPOUTS



Screw Diameter	A	B minimum	C	D	E	F	P
4	5	4-1/2	3-3/4	5/16	5-5/8	11	2-1/2
6	7	6	5	5/16	6-5/8	14	3-1/2
9	10	8	7-1/8	5/16	8	19	5
10	11	9	7-7/8	5/16	8-3/8	20	5-1/2
12	13	10-1/2	8-7/8	5/16	10-1/8	24	6-1/2
14	15	11-1/2	10-1/8	5/16	11-1/4	27	7-1/2
16	17	13-1/2	11-1/8	5/16	12-3/8	30	8-1/2
18	19	14-1/2	12-3/8	5/16	13-3/8	33	9-1/2
20	21	15-1/2	13-3/8	3/8	14-3/8	36	10-1/2
24	25	17-1/2	15-3/8	3/8	16-3/8	42	12-1/2

Screw Diam.	Trough Thickness ga.	Spout and Gate Thickness ga.	Part Number			Weight		
			Fixed Spout		Flush End Spout	Fixed Spout		Flush End Spout
			Plain	With Slide		Plain	Slide	
4	16-14	16	DSP416*P	DSP416*-HS	DSP416*-FE	1	6	1.5
	12	12	DSP412*P	DSP412*-HS	DSP412*-FE	3	7	2.25
6	16-14-12	16	DSP616*P	DSP616*-HS	DSP616*-FE	4	11	3.0
	3/16	12	DSP612*P	DSP612*-HS	DSP612*-FE	6	13	4.50
9	16-14-12-10	14	DSP914*P	DSP914*-HS	DSP914*-FE	8	18	6.0
	3/16-1/4	10	DSP910*P	DSP910*-HS	DSP910*-FE	13	22	9.75
10	16-14-12-10	14	DSP1014*P	DSP1014*-HS	DSP1014*-FE	10	21	7.5
	3/16-1/4	10	DSP1010*P	DSP1010*-HS	DSP1010*-FE	16	27	12.0
12	12-10	12	DSP1212*P	DSP1212*-HS	DSP1212*-FE	17	36	12.75
	3/16-1/4	3/16	DSP12316*P	DSP12316*-HS	DSP12316*-FE	29	48	21.75
14	12-10	12	DSP1412*P	DSP1412*-HS	DSP1412*-FE	22	46	16.50
	3/16-1/4	3/16	DSP14316*P	DSP14316*-HS	DSP14316*-FE	38	62	28.50
16	12-10	12	DSP1612*P	DSP1612*-HS	DSP1612*-FE	21	49	15.75
	3/16-1/4	3/16	DSP16316*P	DSP16316*-HS	DSP16316*-FE	40	68	30.0
18	12-10	12	DSP1812*P	DSP1812*-HS	DSP1812*-FE	32	69	24.0
	3/16-1/4	3/16	DSP18316*P	DSP18316*-HS	DSP18316*-FE	60	97	45.0
20	10	12	DSP2012*P	DSP2012*-HS	DSP2012*-FE	40	91	30.0
	3/16-1/4	3/16	DSP20316*P	DSP20316*-HS	DSP20316*-FE	67	118	50.25
24	10	12	DSP2412*P	DSP2412*-HS	DSP2412*-FE	52	116	39.0
	3/16-1/4	3/16	DSP24316*P	DSP24316*-HS	DSP24316*-FE	87	151	65.25

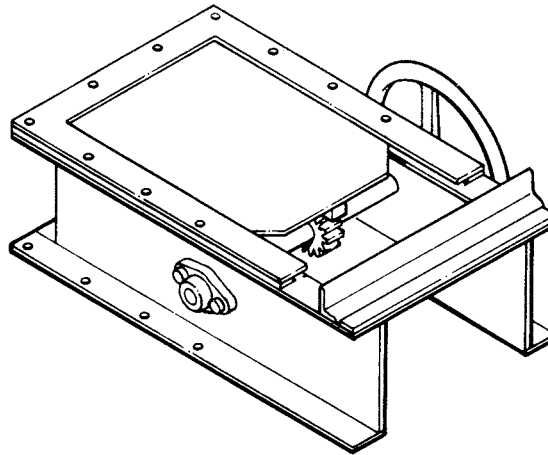
\*Specify Trough Style



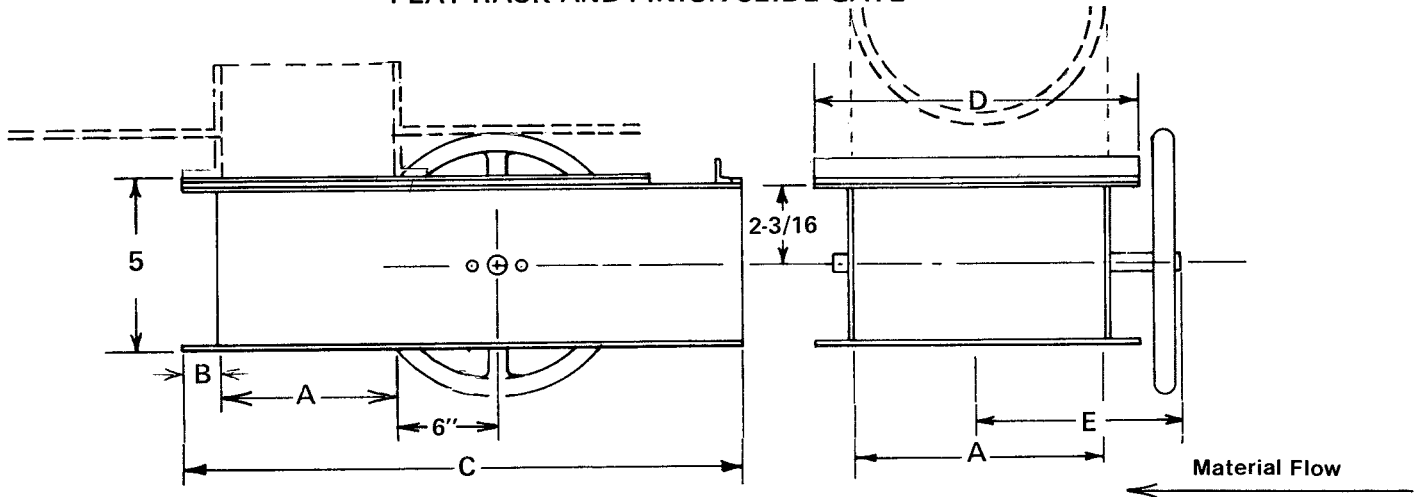
# RACK AND PINION GATES

KWS rack and pinion slide gates are manufactured from heavy gauge steel and incorporate cut steel rack and pinion gears for smooth, effortless operation.

Other outstanding features include standard flanged ball bearing handwheel shafts and adjustable gates.



FLAT RACK AND PINION SLIDE GATE



Conv. Dia.	Part Number	A	B	C	D	E
4	RPG4*F†	5	1-1/4	20-3/4	7-1/2	7
6	RPG6*F†	7	1-1/2	25	10	8
9	RPG9*F†	10	1-5/8	31	13-1/4	11
10	RPG10*F†	11	1-5/8	33-1/8	14-1/4	11-1/2
12	RPG12*F†	13	2-1/8	37-5/8	17-1/4	13
14	RPG14*F†	15	2-1/8	41-5/8	19-1/4	14
16	RPG16*F†	17	2-1/8	45-5/8	21-1/4	15
18	RPG18*F†	19	2-5/8	50-1/8	24-1/4	16-1/2
20	RPG20*F†	21	2-5/8	54-1/8	26-1/4	17-1/2
24	RPG24*F†	25	2-5/8	62-1/8	30-1/4	19-1/2

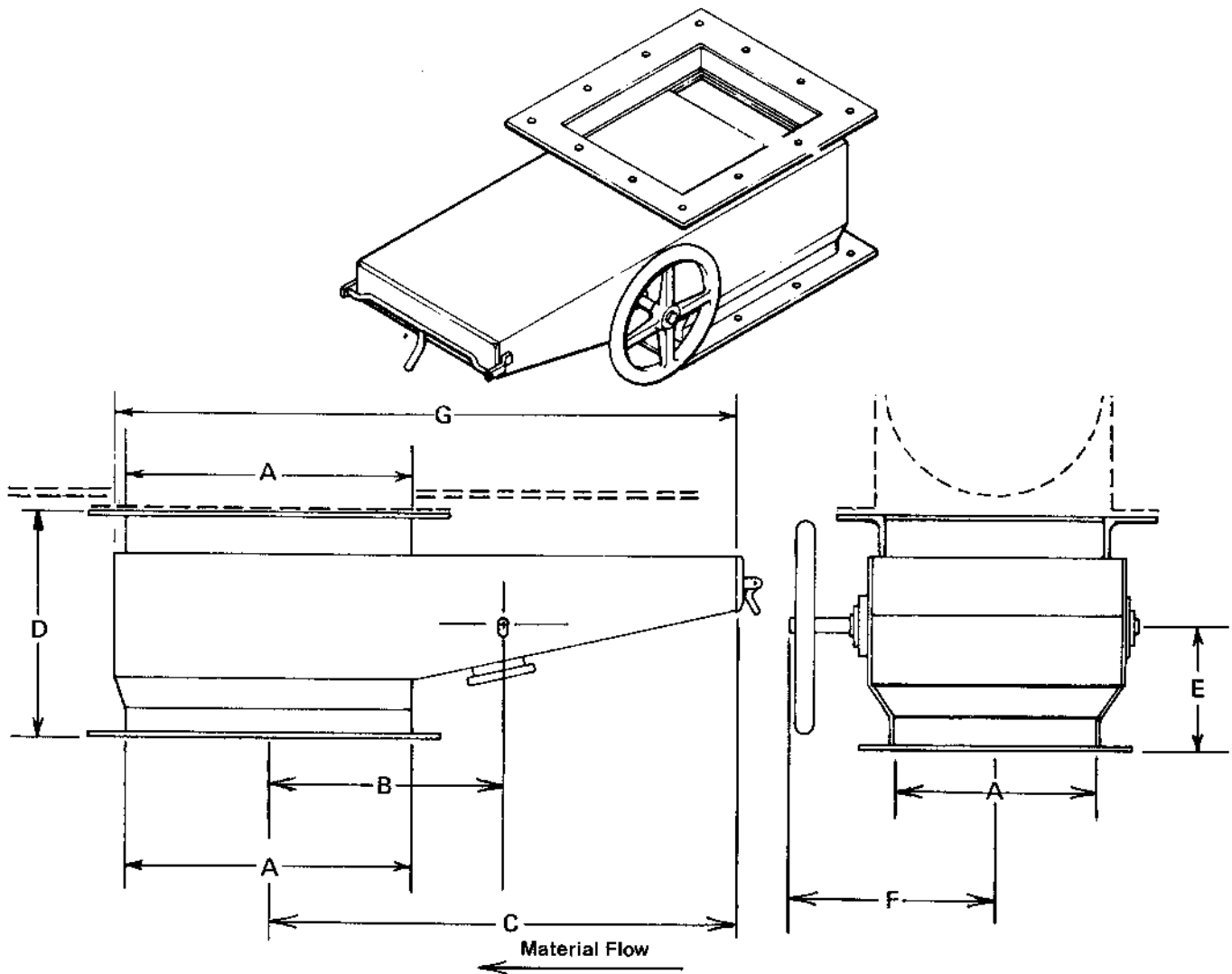
\* Specify metal thickness: 16 = 16 Ga. 14 = 14 Ga. 12 = 12 Ga. 10 = 10 Ga.  
316 = 3/16" Plt. 250 = 1/4" Plt.

† H - Handwheel - Supplied as Std. Assy.

C - Chainwheel

R - Ropewheel

# FLAT DUST TITE RACK AND PINION GATE



Conv. Size	Part Number	A	B	C	D	E	F	G
4	RPG4*FD†	5	6	14-1/2	7-1/2	4-1/8	7	18
6	RPG6*FD†	7	7-1/2	18	9	5-3/8	8	22-1/2
9	RPG9*FD†	10	9	22-1/2	10	6-3/8	11	28-1/2
10	RPG10*FD†	11	10	24-1/2	10-1/2	6-7/8	11-1/2	31
12	RPG12*FD†	13	11-1/2	28	10-1/2	6	13	35-1/2
14	RPG14*FD†	15	12-1/2	31	10-1/2	6	14	39-1/2
16	RPG16*FD†	17	13-1/2	34	10-1/2	6	15	43-1/2
18	RPG18*FD†	19	15	37-1/2	11-1/2	6-1/4	16-1/2	48
20	RPG20*FD†	21	16	40-1/2	12	6-3/4	17-1/2	52
24	RPG24*FD†	25	18	44-1/2	13	7-3/4	19-1/2	58

\* Specify metal thickness: 16 = 16 Ga. 14 = 14 Ga. 12 = 12 Ga. 10 = 10 Ga. 316 = 3/16 Plt.

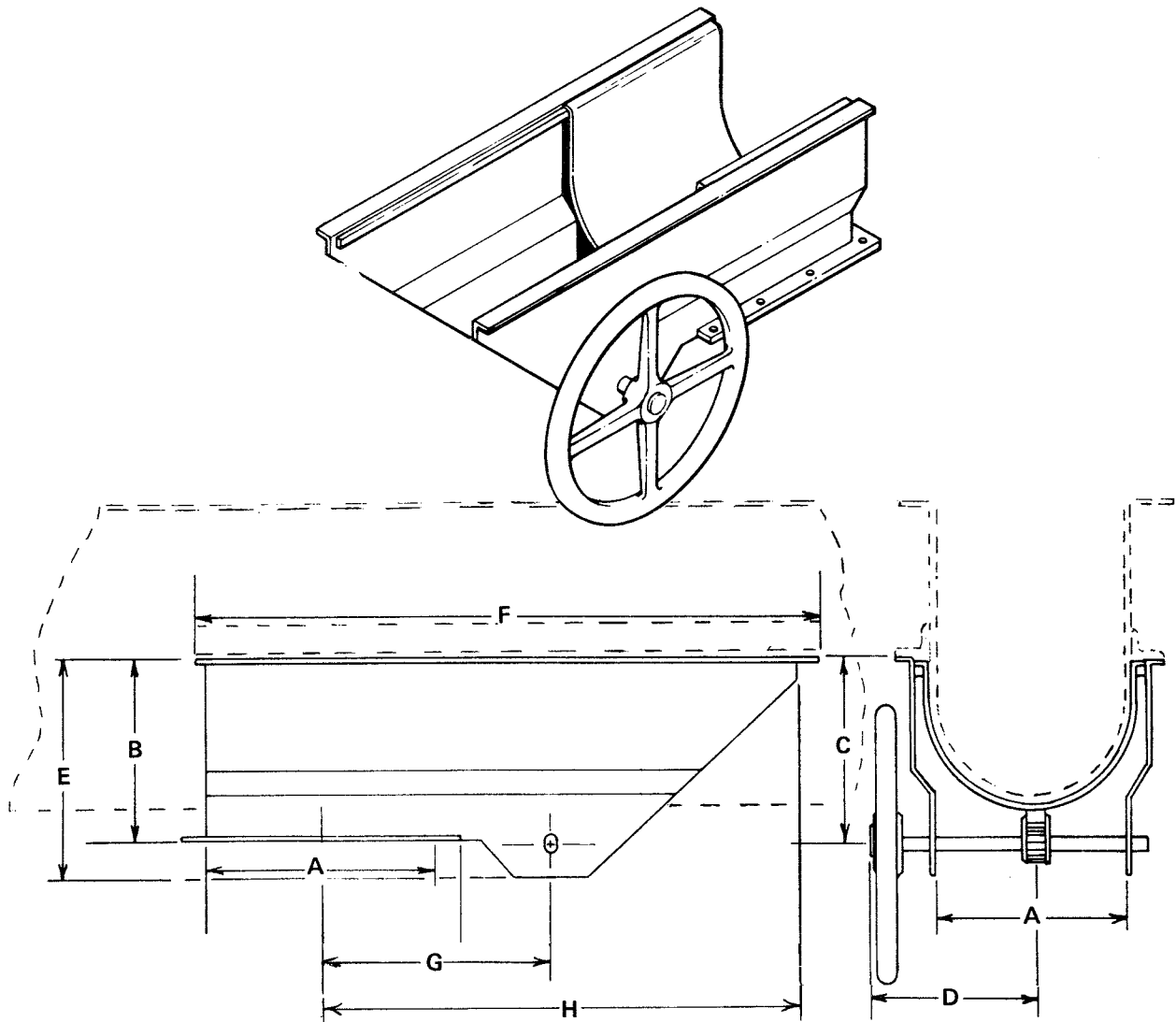
250 = 1/4 Plt.

† H - Handwheel - Supplied as Std. Assy.

C - Chainwheel

R - Ropewheel

CURVED GATE FURNISHED ONLY WHEN MOUNTED ON TROUGH BY KWS  
CURVED SLIDE RACK AND PINION GATE

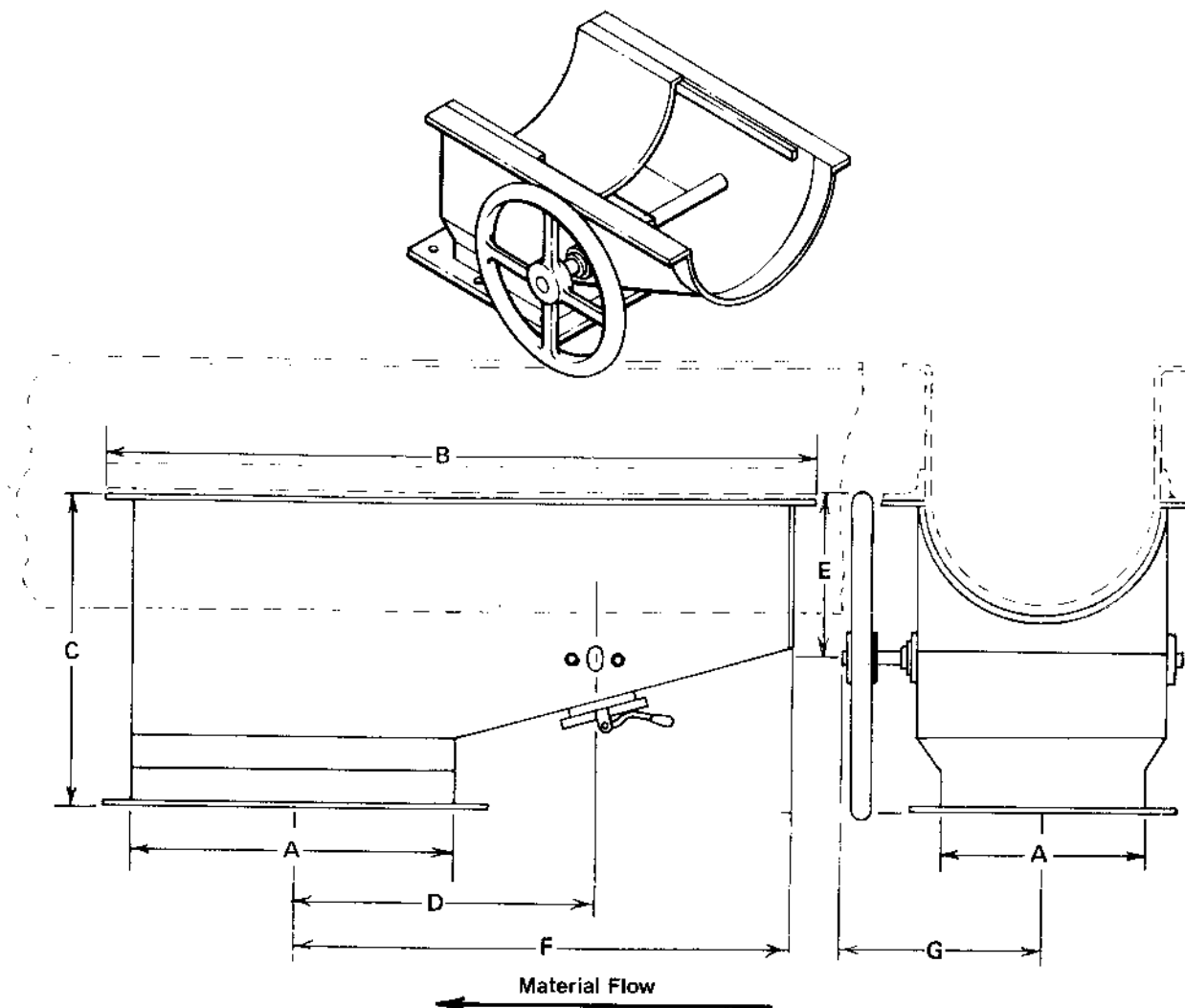


Conv. Size	Part Number	A	B	C	D	E	F	G	H
4	RPG4*C† RPG4*C†	5	3-3/4	4-1/8 4-1/4	7	6	20	8-1/2	15-1/2
6	RPG6*C† RPG6*C†	7	5	5-1/4 5-1/4	8	7	24	9-1/2	18-1/2
9	RPG9*C† RPG9*C†	10	7-1/8	7-1/8 7-1/4	11	9	30	11	23
10	RPG10*C† RPG10*C†	11	7-7/8	7-5/8 7-11/16	11-1/2	9-1/2	32	11-1/2	24-1/2
12	RPG12*C† RPG12*C†	13	8-7/8	8-15/16 9	13	10-3/4	36	12-1/2	27-1/2
14	RPG14*C† RPG14*C†	15	10-1/8	9-7/8 10	14	11-3/4	40	13-1/2	30-1/2
16	RPG16*C† RPG16*C†	17	11-1/8	10-7/8 11	15	12-3/4	44	14-1/2	33-1/2
18	RPG18*C† RPG18*C†	19	12-3/8	12-7/16 12-9/16	16-1/2	14-1/4	48	15-1/2	36-1/2
20	RPG20*C† RPG20*C†	21	13-3/8	13-1/2 13-5/8	17-1/2	15-1/4	52	16-1/2	39-1/2
24	RPG24*C† RPG24*C†	25	15-3/8	15-1/2 15-5/8	19-1/2	17-1/4	60	18-1/2	45-1/2

\* Specify metal thickness: 16 = 16 Ga. 14 = 14 Ga. 12 = 12 Ga. 10 = 10 Ga. 316 = 3/16 Plt. 250 = 1/4" Plt.

† \* Handwheel (H) supplied as standard assembly. Chainwheel (C) or Ropewheel (R) available also.

**CURVED GATE FURNISHED ONLY WHEN MOUNTED ON TROUGH BY KWS  
CURVED DUST TITE RACK AND PINION GATE**



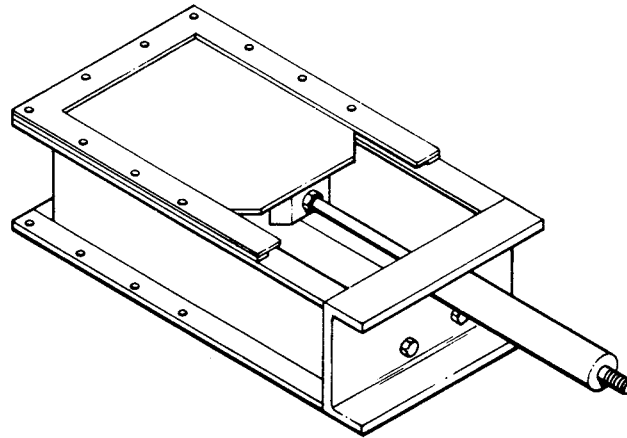
Conv. Size	Part Number	A	B	C	D	E	F	G
4	RPG4*CD† RPG4*CD†	5	19	7-1/2	7-1/2	4-1/2	14-1/2	7
6	RPG6*CD† RPG6*CD†	7	23	10	8-1/2	5-9/16	17-1/2	8
9	RPG9*CD† RPG9*CD†	10	29	12-1/2	10	7-1/16	22	11
10	RPG10*CD† RPG10*CD†	11	31	13	10-1/2	7-5/8	23-1/2	11-1/2
12	RPG12*CD† RPG12*CD†	13	35	15	11-1/2	9	26-1/2	13
14	RPG14*CD† RPG14*CD†	15	39	15-1/2	12-1/2	10	29-1/2	14
16	RPG16*CD† RPG16*CD†	17	43	16-1/2	13-1/2	11	32-1/2	15
18	RPG18*CD† RPG18*CD†	*19	47	18-1/2	14-1/2	12-1/2	35-1/2	16-1/2
20	RPG20*CD† RPG20*CD†	21	51	20	15-1/2	13-1/2	38-1/2	17-1/2
24	RPG24*CD† RPG24*CD†	25	59	23	17-1/2	15-1/2	44-1/2	19-1/2

\* Specify metal thickness: 16 = 16 Ga. 14 = 14 Ga. 12 = 12 Ga. 10 = 10 Ga. 316 = 3/16 Plt. 250 = 1/4" Plt.

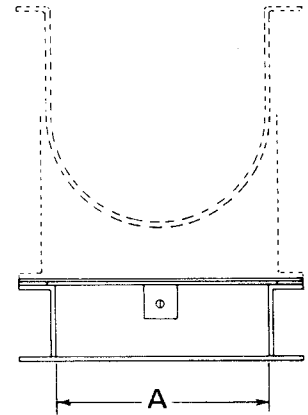
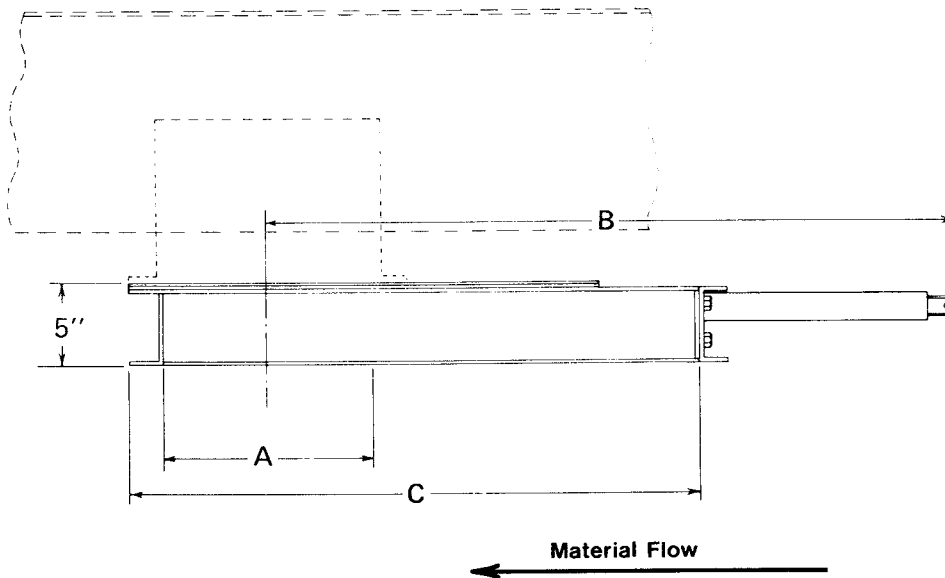
† \* Handwheel (H) supplied as standard assembly. Chainwheel (C) or Ropewheel (R) available also.

NOTE: 4" thru 16" use a single rack and pinion gear. 18" thru 24" use a double rack and pinion gear.

# PNEUMATIC GATES



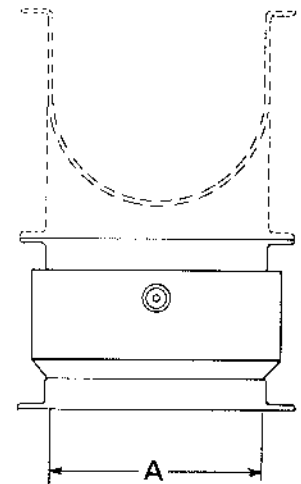
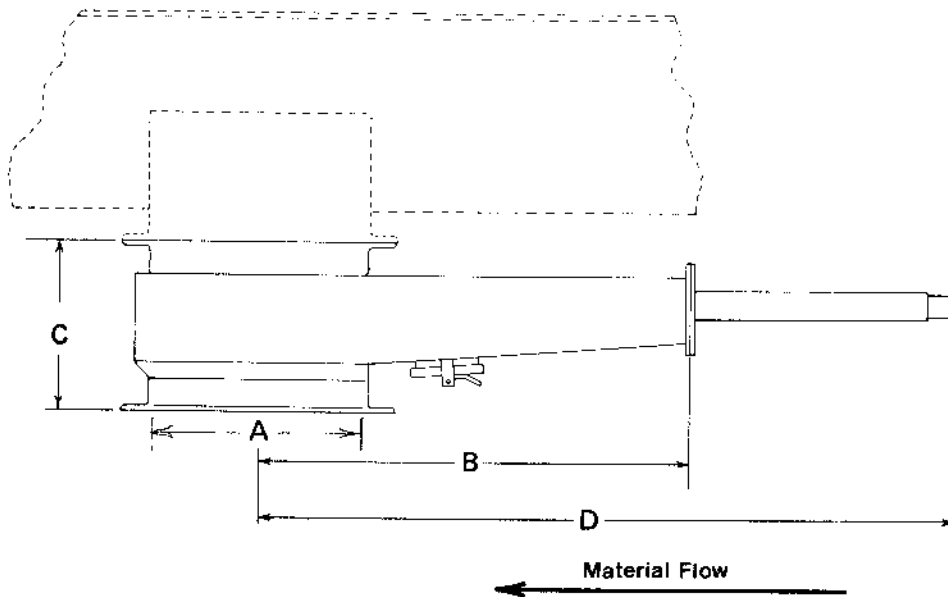
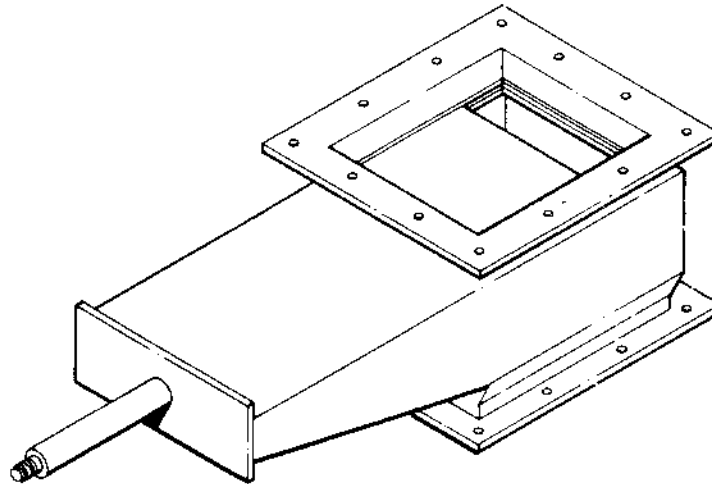
FLAT PNEUMATIC SLIDE GATE



Conv. Dia.	Part Number	A	B	C
4	PG4*F	5	21-7/8	16-3/8
6	PG6*F	7	27-5/8	21-3/8
9	PG9*F	10	38	28-3/8
10	PG10*F	11	39-3/8	30-3/8
12	PG12*F	13	45	35-1/2
14	PG14*F	15	50	39-3/8
16	PG16*F	17	55	43-3/8
18	PG18*F	19	60-1/2	48-3/8
20	PG20*F	21	65-1/2	52-3/8
24	PG24*F	25	75-1/2	60-3/8

\* Specify metal thickness: 16 = 16 Ga. 14 = 14 Ga.  
12 = 12 Ga. 10 = 10 Ga. 316 = 3/16 Plt. 250 = 1/4" Plt.

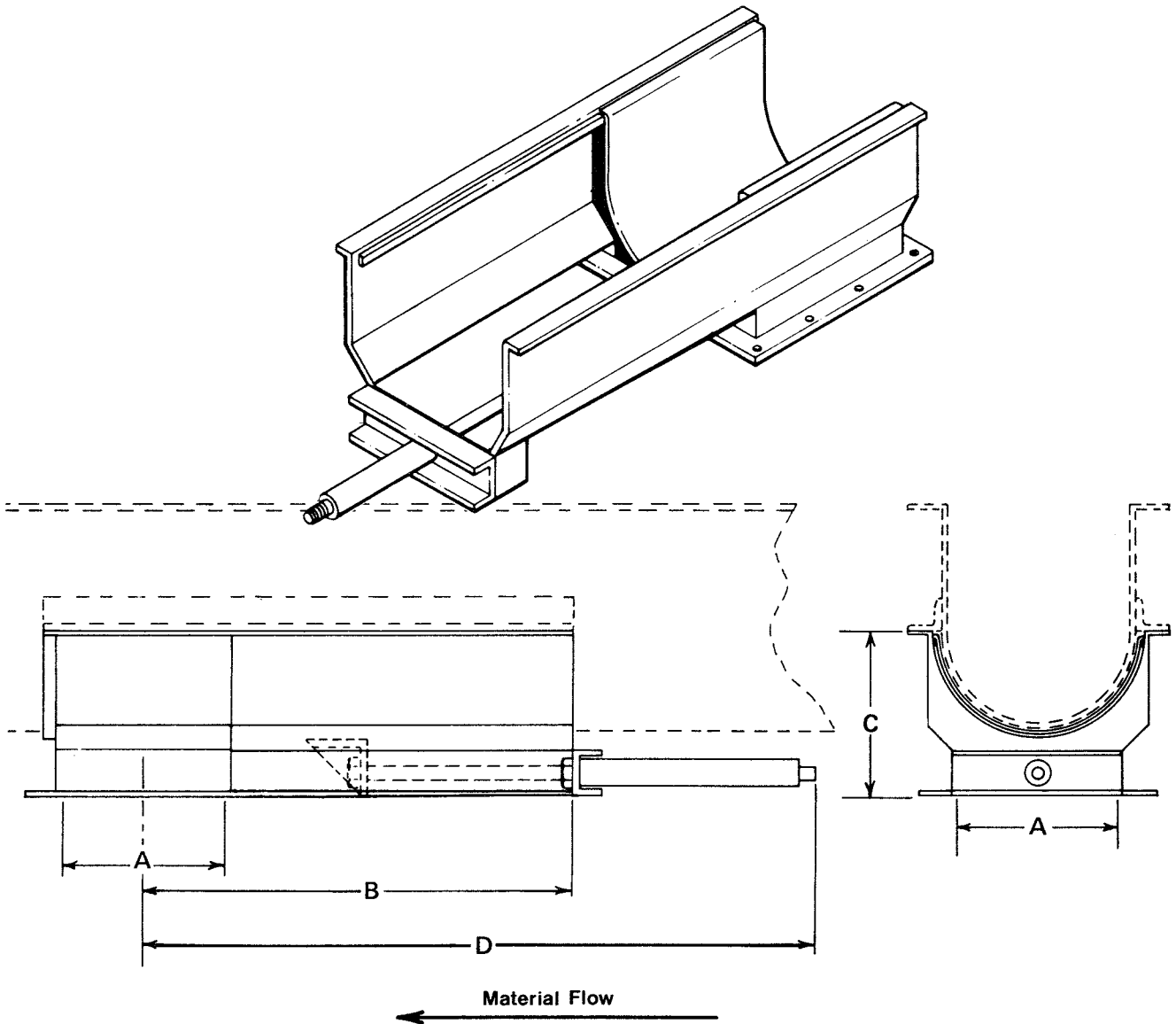
# FLAT DUST-TIGHT PNEUMATIC SLIDE GATE



Conv. Size	Part Number	A	B	C	D
4	PG4*FD	5	12	7-1/2	20-7/16
6	PG6*FD	7	16-1/8	9	26-9/16
9	PG9*FD	10	22-3/4	10	37-3/4
10	PG10*FD	11	23-1/2	10-1/2	38-1/2
12	PG12*FD	13	27	10-1/2	44
14	PG14*FD	15	30	10-1/2	49
16	PG16*FD	17	33	10-1/2	54
18	PG18*FD	19	36-1/2	11-1/2	59-1/2
20	PG20*FD	21	39-1/2	12	64-1/2
24	PG24*FD	25	45-1/2	13	74-1/2

\* Specify metal thickness: 16 = 16 Ga. 14 = 14 Ga. 12 = 12 Ga. 10 = 10 Ga. 316 = 3/16" 250 = 1/4"

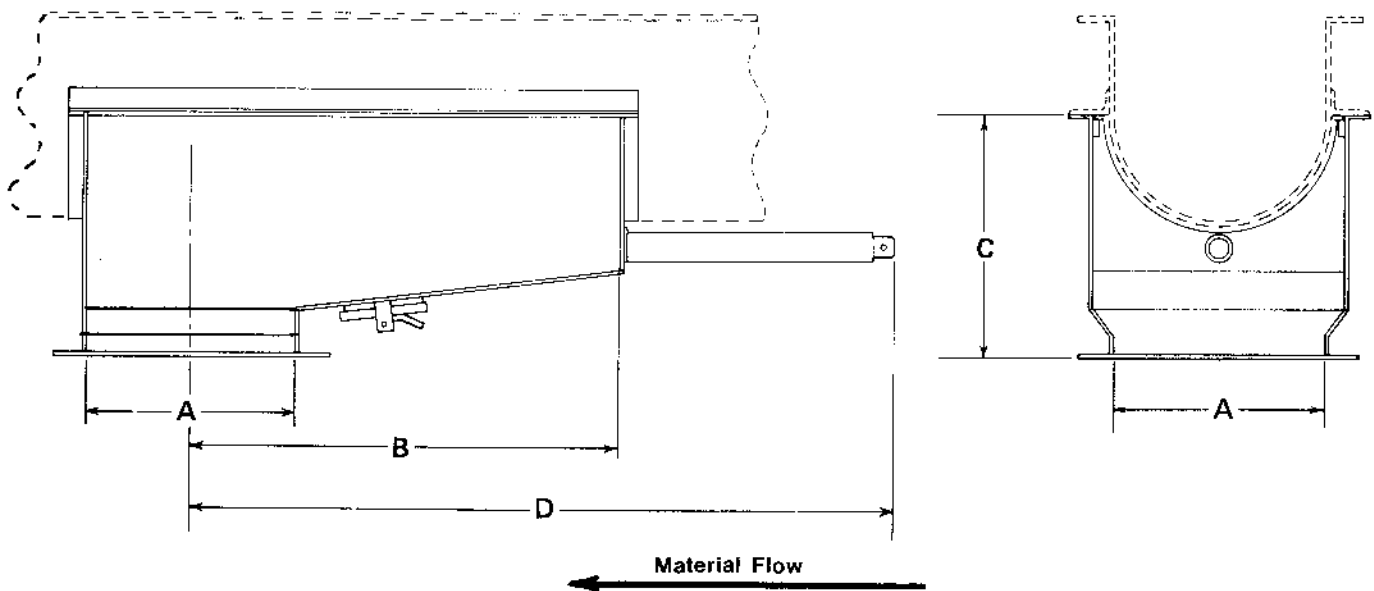
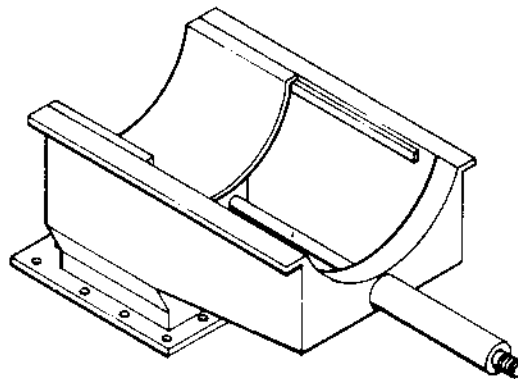
CURVED GATE FURNISHED ONLY WHEN MOUNTED ON TROUGH BY KWS  
CURVED PNEUMATIC SLIDE GATE



Conv. Size	Part Number	A	B	C	D
4	PG4*C	5	12-5/8	3-3/4	21-7/8
6	PG6*C	7	16-3/8	5	27-5/8
9	PG9*C	10	21-7/8	7-1/8	38
10	PG10*C	11	23-1/4	7-7/8	39-3/8
12	PG12*C	13	26-7/8	8-7/8	45
14	PG14*C	15	29-3/4	10-1/8	50
16	PG16*C	17	32-3/4	11-1/8	55
18	PG18*C	19	36-1/4	12-3/8	60-1/2
20	PG20*C	21	39-1/4	13-3/8	65-1/2
24	PG24*C	25	45-1/4	15-3/8	75-1/2

\* Specify metal thickness: 16 = 16 Ga. 14 = 14 Ga. 12 = 12 Ga.  
10 = 10 Ga. 316 = 3/16 Plt. 250 = 1/4" Plt.

**CURVED GATE FURNISHED ONLY WHEN MOUNTED ON TROUGH BY KWS  
CURVED DUST-TIGHT PNEUMATIC SLIDE GATE**

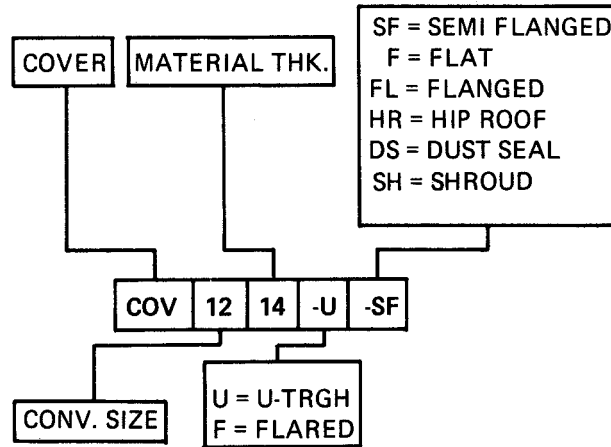


Conv Size	Part Number	A	B	C	D
4	PG4*CD	5	12-5/8	7-1/2	22-1/8
6	PG6*CD	7	16-3/8	10	27-7/8
9	PG9*CD	10	21-7/8	12-1/2	38-1/4
10	PG10*CD	11	23-1/4	13	39-5/8
12	PG12*CD	13	26-7/8	15	45-1/4
14	PG14*CD	15	29-3/4	15-1/2	50-1/4
16	PG16*CD	17	32-3/4	16-1/2	55-1/4
18	PG18*CD	19	36-1/4	18-1/2	60-3/4
20	PG20*CD	21	39-1/4	20	65-3/4
24	PG24*CD	25	45-1/4	23	75-3/4

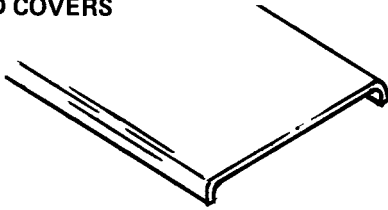
\* Specify metal thickness: 16 = 16 Ga. 14 = 14 Ga. 12 = 12 Ga.  
10 = 10 Ga. 316 = 3/16 Plt. 250 = 1/4" Plt.



# COVERS

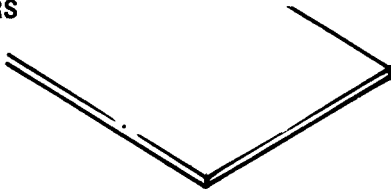


## FLANGED COVERS



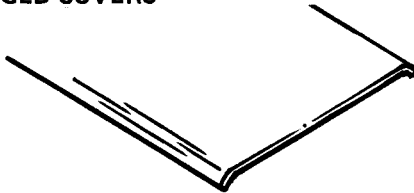
Flanged covers are turned down approximately 3/4" on each side. Flanges provide a limited degree of weather and dust proofing and also may be gasketed for more complete dust or non-critical weather-proof operation. They are secured by means of bolts or screw or toggle clamps.

## FLAT COVERS



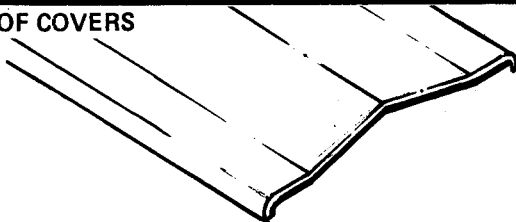
Flat covers fit flush with housing top flanges. They may be bolted, spring clamped or attached with screw or toggle clamps. Although flat covers are intended primarily for interior applications, they also may be gasketed for moderate dust-proof operation.

## SEMI FLANGED COVERS



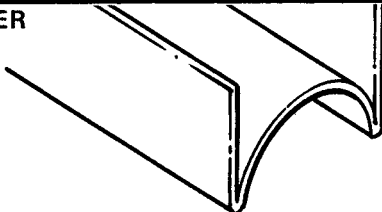
Semiflanged covers are intended for indoor or general use. Cover edges are slightly flanged to make it more rigid. A butt-strap is provided at one end which overlaps the succeeding cover section to cover the joint between sections. Covers may be fastened to the trough flange with spring, clamps, screw clamps or toggle clamps.

## HIP ROOF COVERS



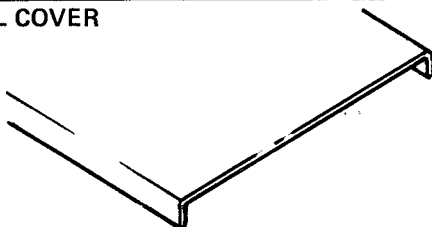
Ridged or hip roof covers are designed for outside applications. The center peak of the cover sheds rain or snow. Both sides of the cover are flanged to provide additional weather-proofing. These covers also may be gasketed for more severe weatherproof operation. Covers may be bolted or attached by means of screw or toggle clamps.

## SHROUD COVER



The shroud cover is designed for use with standard U-trough when a tubular cross-section is required. Standard covers frequently are used with the shroud cover to prevent accumulation of foreign matter or moisture in the pockets formed by the contour of the shroud and the sides of the housing.

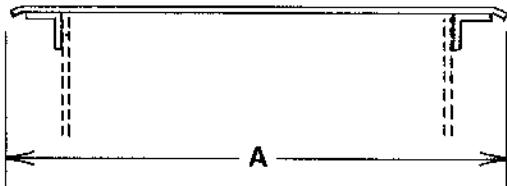
## DUST SEAL COVER



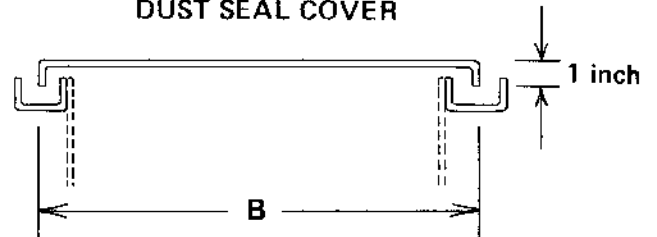
Dust seal covers are flanged down on all four sides to match channel sections fabricated in the special dust seal troughs.

Channels may be filled with sand or other materials to provide the desired seal effect.

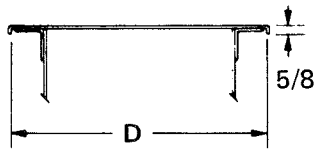
SEMI FLANGED COVER



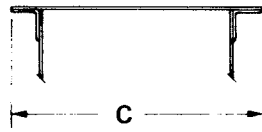
DUST SEAL COVER



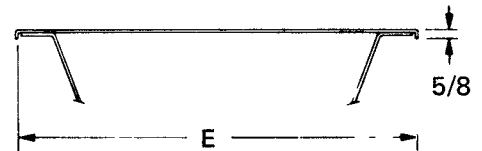
Screw Dia.	Part Number Semi-Flanged Cover	Wt. Per Ft.	Part Number Dust Seal Covers	Wt. Per Ft.	(Approx.) A	B
4	COV 416 U-SF COV 414 U-SF	1.9 2.4	COV 416 U DS COV 414 U DS	2.4 3.0	8-3/8	6
6	COV 616 U-SF COV 614 U-SF	2.4 3.0	COV 616 U DS COV 614 U DS	3.0 3.8	10-7/8	8-1/4
9	COV 914 U-SF COV 912 U-SF	3.8 5.3	COV 916 U DS COV 914 U DS	3.6 4.5	14-3/8	11-1/2
10	COV 1014 U-SF COV 1012 U-SF	4.1 5.7	COV 1016 U DS COV 1014 U DS	4.0 5.0	15-3/8	12-1/2
12	COV 1214 U-SF COV 1212 U-SF	5.3 7.4	COV 1214 U DS COV 1212 U DS	4.4 6.2	18-1/4	15
14	COV 1414 U-SF COV 1412 U-SF	5.6 7.8	COV 1414 U DS COV 1412 U DS	5.0 7.0	20-1/4	17
16	COV 1614 U-SF COV 1612 U-SF	6.3 8.8	COV 1614 U DS COV 1612 U DS	5.6 7.8	22-1/4	19
18	COV 1812 U-SF COV 1810 U-SF	9.8 13.7	COV 1814 U DS COV 1812 U DS	6.2 8.7	25-1/4	21-1/2
20	COV 2012 U-SF COV 2010 U-SF	10.5 14.7	COV 2014 U DS COV 2012 U DS	6.6 9.2	27-1/4	23-1/2
24	COV 2412 U-SF COV 2410 U-SF	12.1 16.9	COV 2414 U DS COV 2412 U DS	7.2 10.1	31-1/4	27-1/2



FLANGED

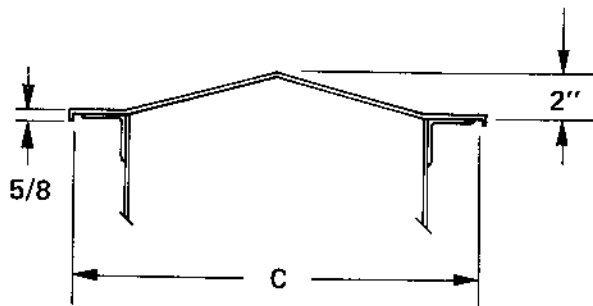


FLAT

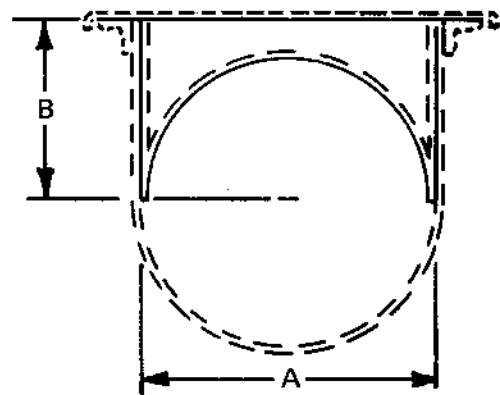


FOR FLARED TROUGHS

Screw Dia.	Cover Thickness	Flanged		Flat		Flanged For Flared Trough		C	D	E
		Part Number	Wt. Per Ft.	Part Number	Wt. Per Ft.	Part Number	Wt. Per Ft.			
4	16 Ga.	COV416UFL	2.0	COV416UF	1.6	X	X	7-3/4	8	X
6	16	COV616UFL	2.4	COV616UF	2.0	COV616FFL	3.9	9-3/4	10-1/2	17-3/8
9	16	COV916UFL	3.2	COV916UF	3.0	COV916FFL	5.0	13-1/4	14	22
	10	COV910UFL	7.2	COV910UF	6.2	COV910FFL	9.6			
10	16	COV1016UFL	3.4	COV1016UF	3.2	X	X	14-1/4	15	X
	10	COV1010UFL	7.7	COV1010UF	6.6					
12	14	COV1214UFL	5.0	COV1214UF	4.5	COV1214FFL	7.4	17-1/4	18	27
	10	COV1210UFL	9.1	COV1210UF	8.0	COV1210FFL	13.3			
14	14	COV1414UFL	5.6	COV1414UF	5.0	COV1414FFL	7.9	19-1/4	20	29
	10	COV1410UFL	10.0	COV1410UF	9.0	COV1410FFL	14.3			
16	14	COV1614UFL	6.1	COV1614UF	5.5	COV1614FFL	9.0	21-1/4	22	33
	10	COV1610UFL	11.0	COV1610UF	9.9	COV1610FFL	16.1			
18	14	COV1814UFL	7.1	COV1814UF	6.3	COV1814FFL	10.4	24-1/4	25	37
	10	COV1810UFL	12.4	COV1810UF	11.3	COV1810FFL	18.0			
20	14	COV2014UFL	7.5	COV2014UF	7.0	COV2014FFL	11.3	26-1/4	27	40
	10	COV2010UFL	13.4	COV2010UF	12.3	COV2010FFL	19.5			
24	12	COV2412UFL	11.8	COV2412UF	11.0	COV2412FFL	17.0	30-1/4	31	46
	10	COV2410UFL	15.2	COV2410UF	14.2	COV2410FFL	21.8			



HIP ROOF



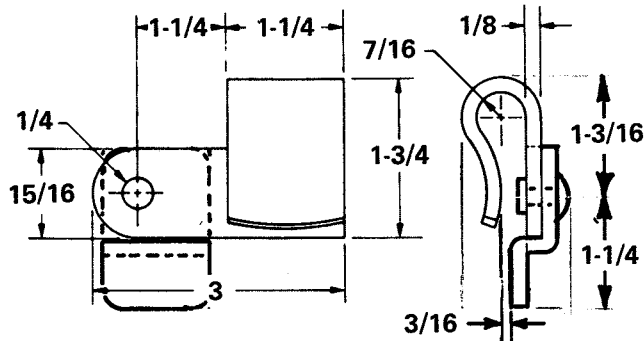
SHROUD

Screw Dia.	Cover Thickness	Hip Roof		Shroud		A	B	C
		Part Number	Wt. Per Ft.	Part Number	Wt. Per Ft.*			
4	14 Ga.	COV414UHR	2.0	COV614USH	3.5	5	3-5/8	8
6	14	COV614UHR	3.5	COV614USH	4.2	7	4-1/2	10-1/2
9	14	COV914UHR	4.4	COV914USH	5.9	10	6-1/8	14
	12	COV912UHR	5.8	COV912USH	8.3			
10	14	COV1014UHR	4.6	COV1014USH	6.6	11	6-3/8	15
	12	COV1012UHR	6.2	COV1012USH	9.2			
12	14	COV1214UHR	5.4	COV1214USH	7.6	13	7-3/4	18
	10	COV1210UHR	9.7	COV1210USH	13.6			
14	14	COV1414UHR	6.0	COV1414USH	8.9	15	9-1/4	20
	10	COV1410UHR	10.8	COV1410USH	16.1			
16	14	COV1614UHR	6.5	COV1614USH	10.0	17	10-5/8	22
	10	COV1610UHR	11.8	COV1610USH	18.0			
18	12	COV1812UHR	9.7	COV1812USH	16.6	19	12-1/8	25
	10	COV1810UHR	12.4	COV1810USH	21.3			
20	12	COV2012UHR	10.6	COV2012USH	18.5	21	13-1/2	27
	10	COV2010UHR	13.4	COV2010USH	23.8			
24	12	COV2412UHR	11.8	COV2412USH	21.1	25	16-1/2	31
	10	COV2410UHR	15.2	COV2410USH	27.1			

\*Weight does not include end plates.

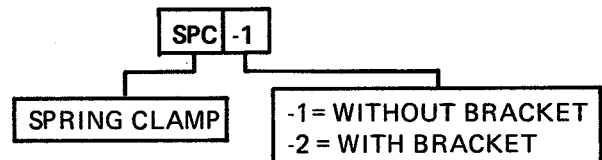
# Clamps

## SPRING CLAMP

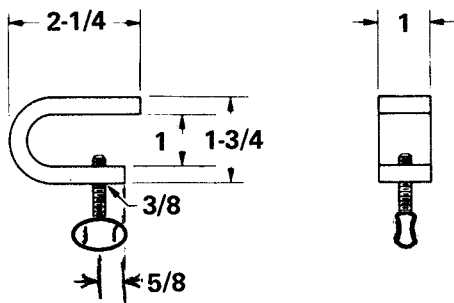


KWS steel spring clamps are manufactured from heavy-gauge steel with precision dies. Clamps are of the pivot type and are attached to the conveyor housing top flange by means of rivets. Designed for attaching flat covers, the spring clamps are adjustable and may be used with covers having rubber or other types of gaskets.

## SPRING CLAMP

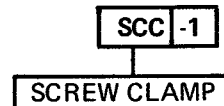


## SCREW CLAMP

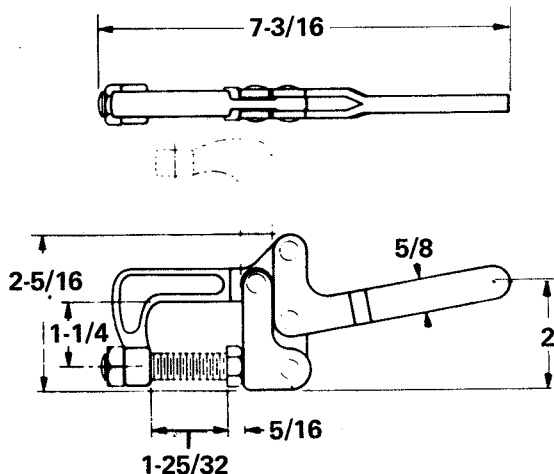


Steel screw clamps may be used with flanged or flat covers for all conveyor sizes through 24". Screw clamps provide a simple, yet completely secure, means of attaching covers.

## SCREW CLAMPS

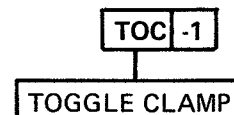


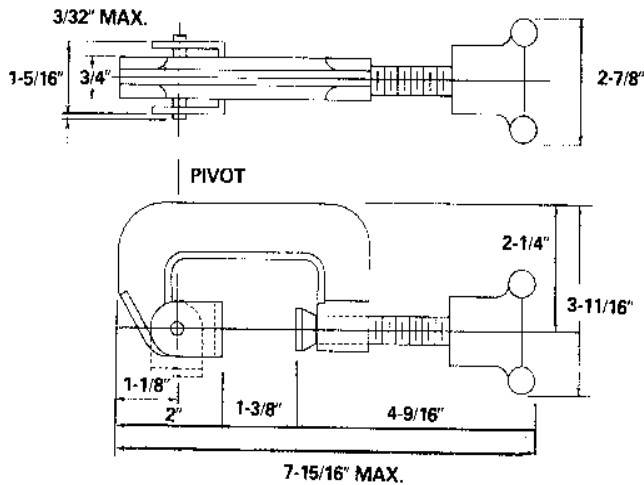
## TOGGLE CLAMP



Toggle clamps are designed for attaching covers to conveyors where quick accessibility is required. The toggle clamp is attached by welding the front or top of the base to the conveyor. The hold-down bar moves a full 90° to clear the working area. Adjustable spindle allows adjustment for all conveyor sizes. Plastic handle moves 50°. The clamp provides a holding pressure of 800 lbs., yet weighs less than a pound.

## TOGGLE CLAMPS





Under laboratory test conditions 17.5 lbs. ft. torque applied results in a compressive load of 1,560 lbs. without failure.

## HEAVY-DUTY SWIVEL SCREW CLAMP

**DEPENDABLE AND DURABLE.** Our KWS-SP-SC swivel screw clamps are ideal for a multitude of applications. These heavy-duty clamps are constructed from stainless steel and aluminum for durability and years of corrosion-resistant service.

**VERSATILE.** Our heavy-duty swivel screw clamps are perfect for many material handling applications. On drop bottom troughs they provide dependable holding power with a minimum number of clamps. Of course, they are ideal for securing trough covers too.

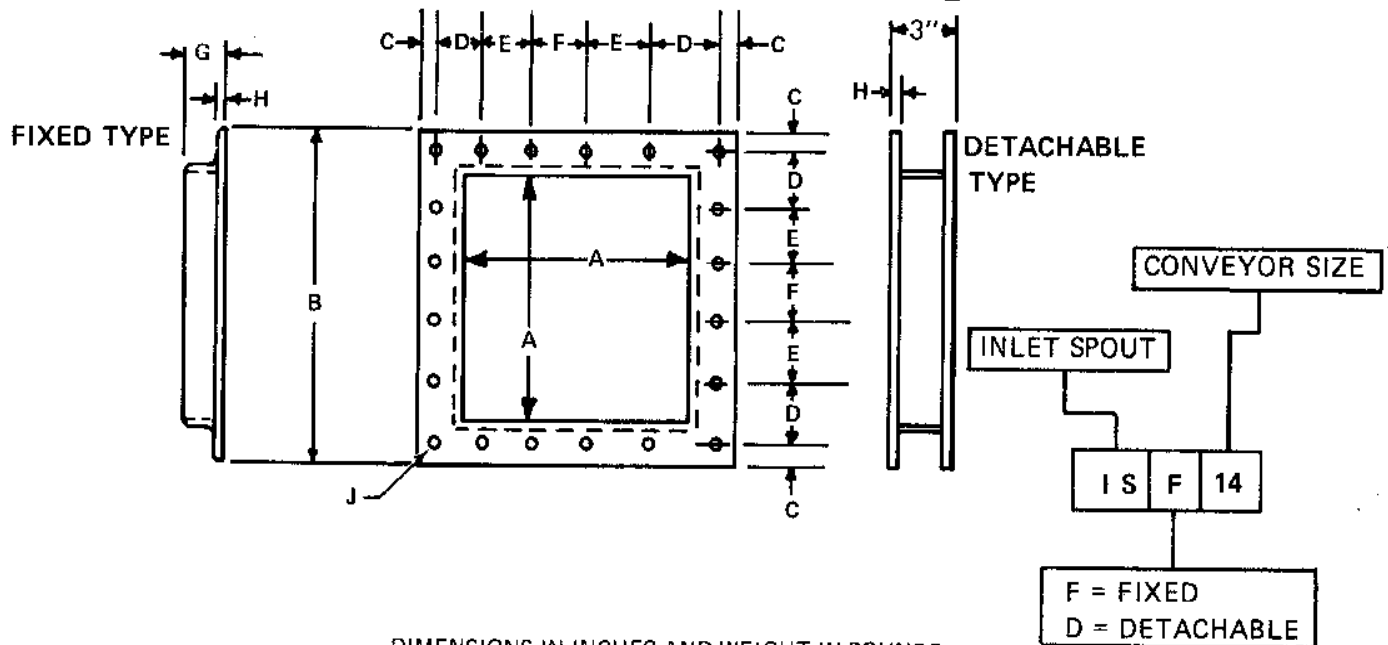
**CONVENIENT.** Quick and easy access is provided by our swivel screw clamps.

### SWIVEL SCREW CLAMP

KWS-SP-SC

WEIGHT 1 LB.

## CONVEYOR INLETS



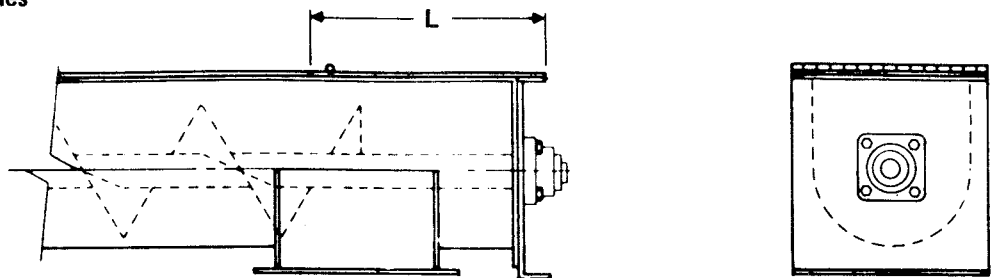
DIMENSIONS IN INCHES AND WEIGHT IN POUNDS.

Conveyor Diameter	Part Number	Weight	A	B		C		D	E	F	G	H	J
				Fixed Inlet	Detachable Inlet	Fixed Inlet	Detachable Inlet						
4	IS*4	1.8	5	7-1/2	7-1/2	3/8	3/8	2-1/4	-	2-1/4	1-1/4	1/8	1/4
6	IS*6	5.0	7	10	10	11/16	11/16	2-13/16	-	3	1-1/2	3/16	3/8
9	IS*9	6.8	10	13	13-1/4	1/2	5/8	4	-	4	1-1/2	3/16	3/8
10	IS*10	7.4	11	14	14-1/4	1/2	5/8	4-5/16	-	4-3/8	1-1/2	3/16	3/8
12	IS*12	12.1	13	17	17-1/4	3/4	7/8	5-1/8	-	5-1/4	2	3/16	3/8
14	IS*14	13.7	15	19	19-1/4	3/4	7/8	3-1/2	3-1/2	3-1/2	2	3/16	3/8
16	IS*16	15.3	17	21	21-1/4	3/4	7/8	3-3/4	4	4	2	1/4	3/8
18	IS*18	29.0	19	24	24-1/4	1	1-1/8	4-7/16	4-3/8	4-3/8	2-1/2	1/4	1/2
20	IS*20	31.8	21	26	26-1/4	1	1-1/8	4-7/8	4-3/4	4-3/4	2-1/2	1/4	1/2
24	IS*24	37.2	25	30	30-1/4	1	1-1/8	5-5/8	5-5/8	5-1/2	2-1/2	1/4	1/2

\* F - FIXED, D - DETACHABLE

## TROUGH COVER - Accessories

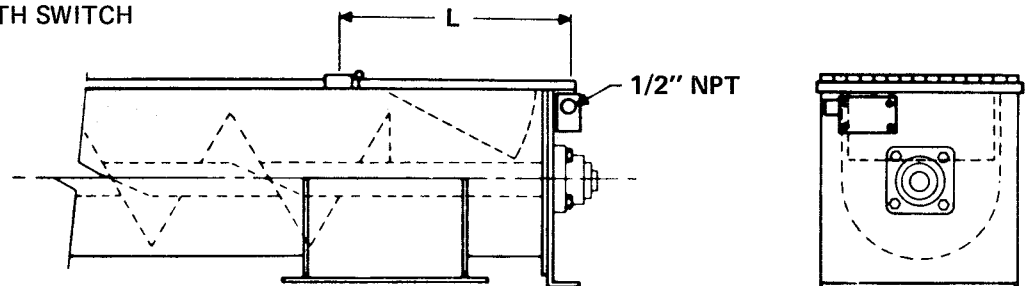
### OVERLOAD RELIEF



In the event that storage facility, processing equipment or subsequent conveyors become full, the material is forced upward against the hinged relief and discharged, thus preventing overload damage to the conveyor and accessories.

Relief doors are available for bolting to existing conveyor covers or may be shop assembled to any type of standard or special conveyor cover. Length "L" is equal to 1-1/2 times the conveyor diameter.

### OVERLOAD RELIEF WITH SWITCH

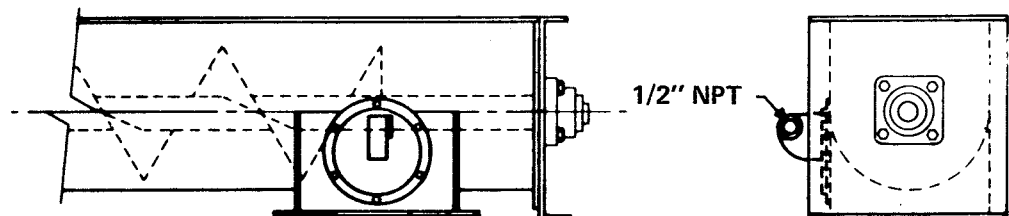


This protective device provides immediate relief upon overload and closes or opens an electrical circuit which may stop the conveyor, sound an alarm, or both.

When the surplus of material flows from the conveyor the overload relief closes and returns the switch to safe position, thus restarting the conveyor.

The electrical switch is available in standard, weather tight or explosion proof construction. This assembly is available for installation on existing conveyors, or may be shop assembled during fabrication of new conveyors. Length "L" is equal to 1-1/2 times the conveyor diameter.

### OVERLOAD PRESSURE SWITCH



When it is undesirable to allow material to spill from the above relief devices during overload, this pressure type switch may be installed on the discharge spout to open or close an electrical circuit which may stop the conveyor, sound an alarm, or both.

This device may also be used to advantage in any intermediate discharge spouts to indicate a full condition or to open another pneumatically operated discharge gate. Switches are available for field installation on existing conveyors, or may be shop assembled during fabrication of new equipment.

# **Design and Installation Supplement**

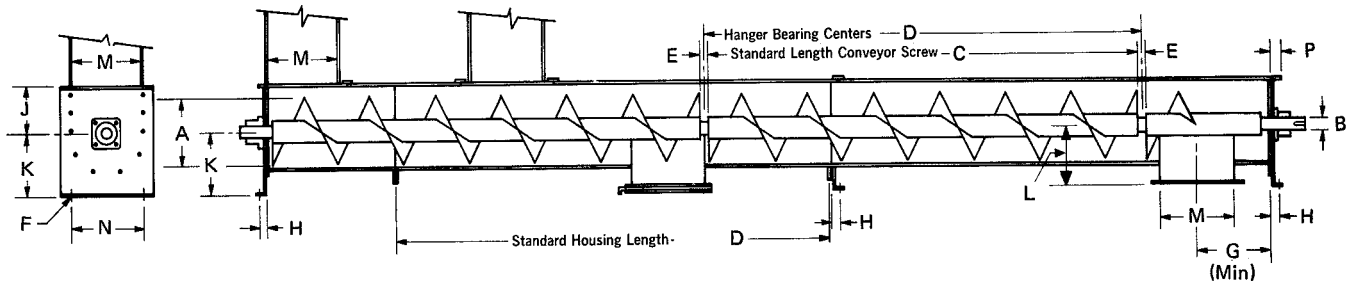
**LAYOUTS**

**INSTALLATION AND MAINTENANCE**

**END FLANGE BOLT PATTERNS**

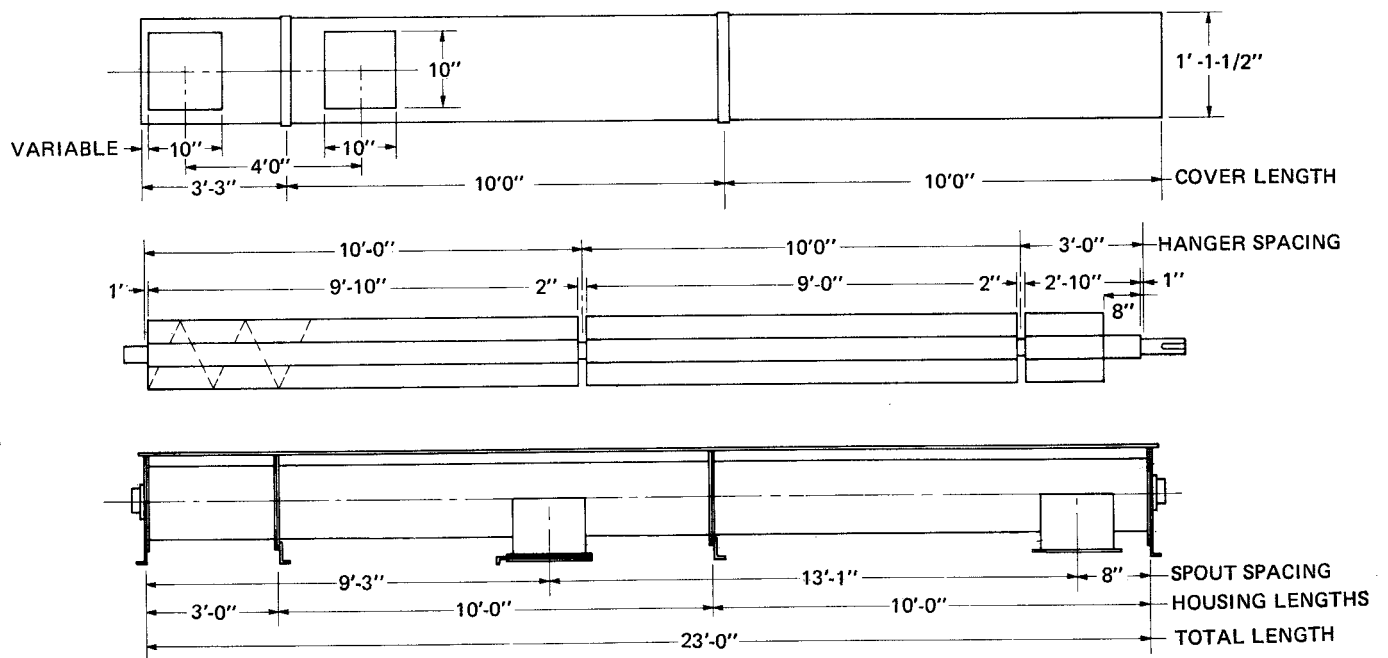


## TROUGH

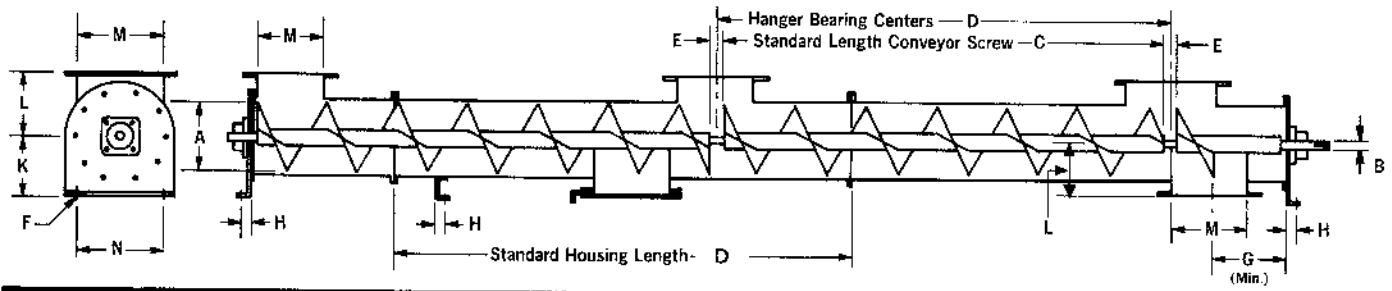


A Screw Dia.	B Coupling Dia.	C Length	D Length	E	F	G (Min)	H	J	K	L	M	N	P
4	1	9-10-1/2	10	1-1/2	3/8	4-1/2	1	3-5/8	4-5/8	3-3/4	5	5-3/4	1-7/16
6	1-1/2	9-10	10	2	3/8	6	1	4-1/2	5-5/8	5	7	8-1/8	1-1/2
9	1-1/2 2	9-10	10	2	1/2	8	1-1/2	6-1/8	7-7/8	7-1/8	10	9-3/8	1-5/8
10	1-1/2 2	9-10	10	2	1/2	9	1-9/16	6-3/8	8-7/8	7-7/8	11	9-1/2	1-3/4
12	2 2-7/16 3	11-10 11-9 11-9	12	2 3 3	5/8	10-1/2	1-5/8	7-3/4	9-5/8	8-7/8	13	12-1/4	2
14	2-7/16 3	11-9	12	3	5/8	11-1/2	1-5/8	9-1/4	10-7/8	10-1/8	15	13-1/2	2
16	3	11-9	12	3	5/8	13-1/2	2	10-5/8	12	11-1/8	17	14-7/8	2-1/2
18	3 3-7/16	11-9 11-8	12	3 4	5/8	14-1/2	2	12-1/8	13-3/8	12-3/8	19	16	2-1/2
20	3 3-7/16	11-9 11-8	12	3 4	3/4	15-1/2	2-1/4	13-1/2	15	13-3/8	21	19-1/4	2-1/2
24	3-7/16	11-8	12	4	3/4	17-1/2	2-1/2	16-1/2	18-1/8	15-3/8	25	20	2-1/2

## TYPICAL METHOD OF DETAILING

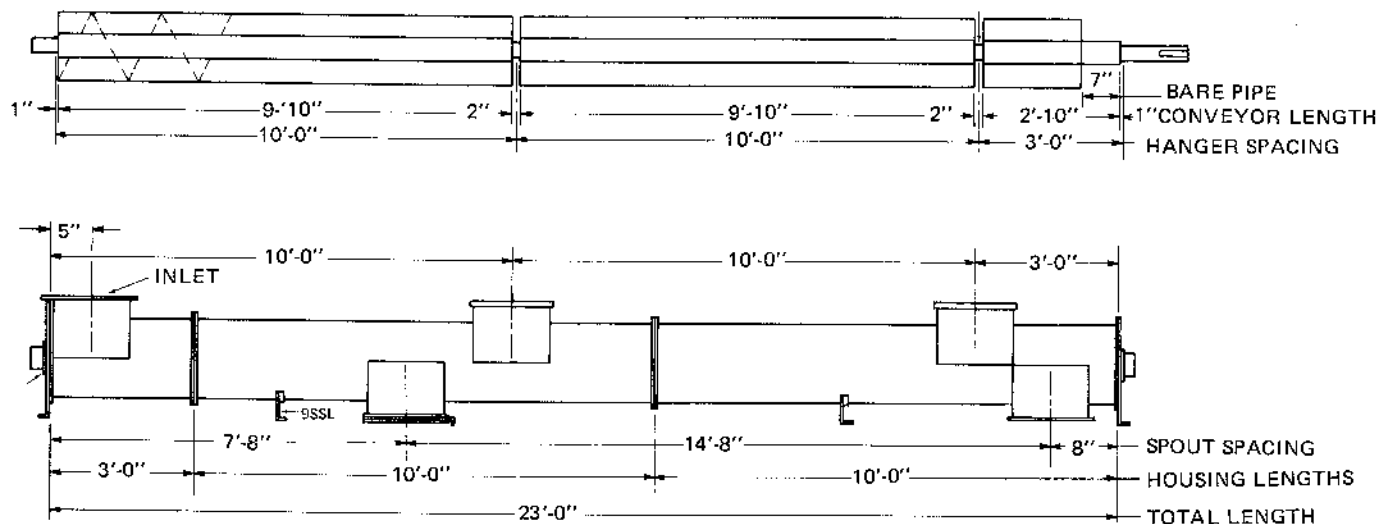


## TUBULAR HOUSING



A Screw Dia.	B Coupling Dia.	C Length	D Length	E	F	G (Min.)	H	J	K	L	M	N	P
4	1	9-10-1/2	10	1-1/2	3/8	4-1/2	1	3-5/8	4-5/8	3-3/4	5	5-3/4	1-7/16
6	1-1/2	9-10	10	2	3/8	6	1	4-1/2	5-5/8	5	7	8-1/8	1-1/2
9	1-1/2 2	9-10	10	2	1/2	8	1-1/2	6-1/8	7-7/8	7-1/8	10	9-3/8	1-5/8
10	1-1/2 2	9-10	10	2	1/2	9	1-3/4	6-3/8	8-7/8	7-7/8	11	9-1/2	1-3/4
12	2 2-7/16 3	11-10 11-9 11-9	12	2 3 3	5/8	10-1/2	1-5/8	7-3/4	9-5/8	8-7/8	13	12-1/4	2
14	2-7/16 3	11-9	12	3	5/8	11-1/2	1-5/8	9-1/4	10-7/8	10-1/8	15	13-1/2	2
16	3	11-9	12	3	5/8	13-1/2	2	10-5/8	12	11-1/8	17	14-7/8	2-1/2
18	3 3-7/16	11-9 11-8	12	3 4	5/8	14-1/2	2	12-1/8	13-3/8	12-3/8	19	16	2-1/2
20	3 3-7/16	11-9 11-8	12	3 4	3/4	15-1/2	2-1/4	13-1/2	15	13-3/8	21	19-1/4	2-1/2
24	3-7/16	11-8	12	4	3/4	17-1/2	2-1/2	16-1/2	18-1/8	15-3/8	25	20	2-1/2

## TYPICAL METHOD OF DETAILING



# BOLT REQUIREMENTS

## BOLTS RELATED TO CONVEYOR DIAMETER

COMPONENTS ASSEMBLED		CONVEYOR DIAMETER																24	
		4		6		9		10		12		14		16		18		20	
		No.	Size	No.	Size	No.	Size	No.	Size	No.	Size	No.	Size	No.	Size	No.	Size	No.	Size
Covers to Housings * (Per 10' Section)		10	1/4 X 1	10	1/4 X 1	10	1/4 X 1	10	1/4 X 1	12	3/8 X 1	12	3/8 X 1	12	3/8 X 1	12	3/8 X 1	12	3/8 X 1
Ends to Housing Flanges Discharge Ends (U-Trough/Rectangular)		4	3/8 X 1-1/4	4	3/8 X 1-1/4	4	3/8 X 1-1/4	4	3/8 X 1-1/4	4	1/2 X 1-1/4	4	1/2 X 1-1/4	4	5/8 X 1-1/2	4	5/8 X 1-1/2	6	5/8 X 1-1/2
Flush Discharge Ends																			
U-Trough		8	3/8 X 1-1/4	8	3/8 X 1-1/4	8	3/8 X 1-1/4	8	3/8 X 1-1/4	8	1/2 X 1-1/4	8	1/2 X 1-1/4	10	5/8 X 1-1/2	10	5/8 X 1-1/2	12	5/8 X 1-1/2
Tubular		6	3/8 X 1-1/4	6	3/8 X 1-1/4	8	3/8 X 1-1/4	8	3/8 X 1-1/4	8	1/2 X 1-1/4	8	1/2 X 1-1/4	8	5/8 X 1-1/2	10	5/8 X 1-1/2	12	5/8 X 1-1/2
Inside Pattern (U-Trough)		6	3/8 X 1-1/4	6	3/8 X 1-1/4	8	3/8 X 1-1/4	8	3/8 X 1-1/4	8	3/8 X 1	8	1/2 X 1-1/4	8	1/2 X 1-1/2	10	1/2 X 1	12	1/2 X 1
Std. Outside Pattern																			
U-Trough		6	3/8 X 1-1/4	6	3/8 X 1-1/4	8	3/8 X 1-1/4	8	3/8 X 1-1/4	8	1/2 X 1-1/4	8	1/2 X 1-1/4	8	5/8 X 1-1/2	10	5/8 X 1-1/2	12	5/8 X 1-1/2
Flared		X	X	8	3/8 X 1-1/4	8	3/8 X 1-1/4	X	X	8	1/2 X 1-1/4	10	1/2 X 1-1/4	10	5/8 X 1-1/2	10	5/8 X 1-1/2	12	5/8 X 1-1/2
Tubular		6	3/8 X 1-1/4	6	3/8 X 1-1/4	8	3/8 X 1-1/4	8	3/8 X 1-1/4	8	1/2 X 1-1/4	8	1/2 X 1-1/4	8	5/8 X 1-1/2	10	5/8 X 1-1/2	12	5/8 X 1-1/2
Rectangular		7	3/8 X 1-1/4	7	3/8 X 1-1/4	9	3/8 X 1-1/4	9	3/8 X 1-1/4	9	1/2 X 1-1/4	9	1/2 X 1-1/4	11	5/8 X 1-1/2	11	5/8 X 1-1/2	13	5/8 X 1-1/2
Flanges																			
U-Trough		6	3/8 X 1-1/4	6	3/8 X 1-1/4	8	3/8 X 1-1/4	8	3/8 X 1-1/4	8	1/2 X 1-1/4	8	1/2 X 1-1/4	8	5/8 X 1-1/2	10	5/8 X 1-1/2	12	5/8 X 1-1/2
Flared		X	X	8	3/8 X 1-1/4	8	3/8 X 1-1/4	X	X	10	1/2 X 1-1/4	10	1/2 X 1-1/4	10	5/8 X 1-1/2	10	5/8 X 1-1/2	12	5/8 X 1-1/2
Tubular		6	3/8 X 1-1/4	6	3/8 X 1-1/4	8	3/8 X 1-1/4	8	3/8 X 1-1/4	8	1/2 X 1-1/4	8	1/2 X 1-1/4	8	5/8 X 1-1/2	10	5/8 X 1-1/2	12	5/8 X 1-1/2
Rectangular		7	3/8 X 1-1/4	7	3/8 X 1-1/4	9	3/8 X 1-1/4	9	3/8 X 1-1/4	9	1/2 X 1-1/4	9	1/2 X 1-1/4	11	5/8 X 1-1/2	11	5/8 X 1-1/2	13	5/8 X 1-1/2
Flange Foot to Housing		2	3/8 X 1-1/4	2	3/8 X 1-1/4	2	3/8 X 1-1/2	2	3/8 X 1-1/2	2	1/2 X 1-1/2	2	1/2 X 1-1/2	2	5/8 X 1-1/2	2	5/8 X 1-1/2	2	5/8 X 1-1/2

\* FOR DUST TIGHT DOUBLE THE QUANTITY.

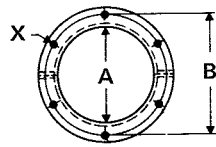
# BOLTS RELATED TO SHAFT SIZES

COMPONENTS ASSEMBLED		SHAFT DIAMETER											
		1"		1-1/2"		2"		2-7/16"		3"		3-7/16"	
		Qty.	Size	Qty.	Size	Qty.	Size	Qty.	Size	Qty.	Size	Qty.	Size
Bearings (End) to Housing End, Babbitt, Discharge Babbitt, Flanged Ball, Discharge Ball, Flanged	3	3/8X1-1/2	3	1/2X2	3	5/8X2	3	5/8X2-1/4	3	3/4X2-1/2	3	3/4X2-3/4	3
	4	3/8X1-1/2	4	1/2X2	4	5/8X2	4	5/8X2-1/4	4	3/4X2-1/2	4	3/4X2-3/4	4
	3	3/8X1-1/2	3	1/2X2	3	5/8X2	3	5/8X2-1/4	3	3/4X2-1/2	3	3/4X2-3/4	3
	4	3/8X1-1/2	4	1/2X2	4	5/8X2	4	5/8X2-1/4	4	3/4X2-1/2	4	3/4X2-3/4	4
Bearings (Thrust) to Ends Type RTB	X	X	4	1/2X2-1/2	4	1/2X2-1/2	4	5/8X3	4	3/4X3-1/2	4	3/4X3-3/4	4
Seals, Shafts Flanged Gland Plate w/Ball or Babbitt Plate w/Roller Split Gland Waste Pack, w/Ball or Babbitt Waste Pack, w/Roller	4	1/2x1-1/2	4	1/2x1-1/2	4	1/2x1-1/2	4	1/2x1-1/2	4	1/2x1-1/2	4	5/8x1-1/2	4
	4	1/2x2	4	1/2x2	4	5/8x2-1/4	4	5/8x2-1/4	4	3/4x3	4	3/4x3	4
	4	1/2x2-1/2	4	1/2x2-1/2	4	1/2x3	4	5/8x3	4	3/4x3-1/2	4	3/4x3-1/2	4
	2	1/2x1-1/2	2	1/2x1-1/2	2	1/2x1-1/2	2	5/8x1-3/4	2	5/8x1-3/4	2	3/4x2-1/4	2
	4	1/2x3-1/2	4	1/2x3-1/2	4	5/8x3-5/8	4	5/8x3-5/8	4	3/4x4-1/2	4	3/4x4-1/2	4
	4	1/2x4	4	1/2x4	4	1/2x4	4	5/8x4-3/8	4	3/4x4-1/2	4	3/4x4-1/2	4
Pillow Block Ball	2	3/8x1-3/4	2	1/2x2-1/2	2	5/8x3	2	5/8x3	2	7/8x3-1/2	2	7/8x4	2
Pillow Block Roller	X	X	2	1/2x2-1/2	2	5/8x3	2	5/8x3	2	3/4x3	2	7/8x3-1/2	2

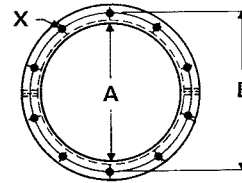
## HANGER BOLTS

Hanger Size		Hanger Number											
		650		670		216		220		225		230	
Screw Dia.	Shaft Dia.	No.	Size	No.	Size	No.	Size	No.	Size	No.	Size	No.	Size
4	1	X	X	X	X	X	X	4	3/8X1	4	3/8X1	X	X
6	1-1/2	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1
9	1-1/2	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1
9	2	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1
10	1-1/2	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1
10	2	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1	4	3/8X1
12	2	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4
12	2-7/16	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4
12	3	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4
14	2-7/16	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4
14	3	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4	4	1/2X1-1/4
16	3	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2
18	3	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2
20	3	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2
20	3-7/16	X	X	X	X	X	X	4	5/8X1-1/2	4	5/8X1-1/2	4	5/8X1-1/2
24	3-7/16	X	X	X	X	X	X	4	5/8X2-1/4	4	5/8X2-1/4	4	5/8X2-1/4

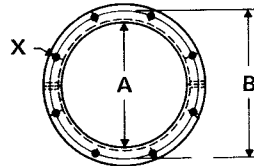
## TUBULAR HOUSING FLANGES



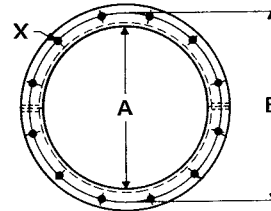
6 bolts



10 bolts

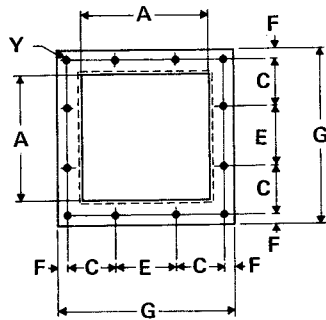


8 bolts

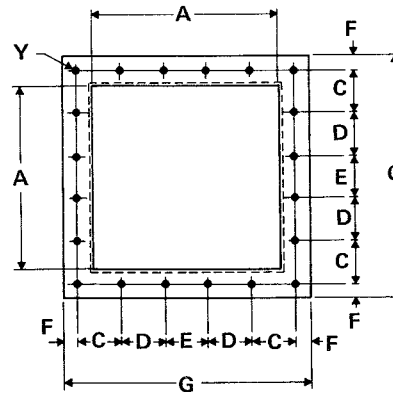


12 bolts

## INTAKE & DISCHARGE FLANGES



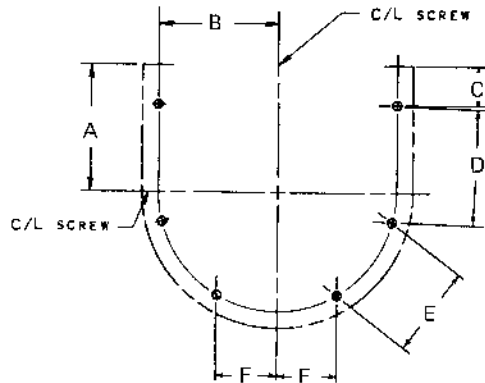
12 bolts



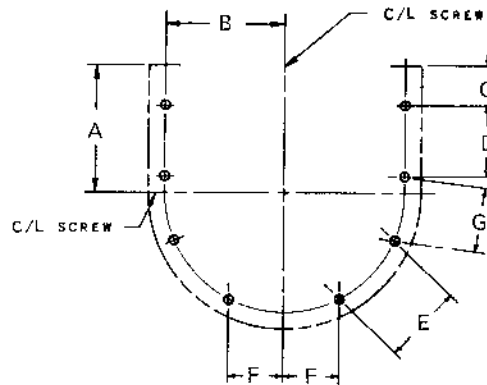
20 bolts

Screw Size	Flange Bolts		A	B	C	D	E	F	G
	Tubular X	Discharge Y							
4	6-3/8	12-1/4	5	7	2-1/4	—	2-1/4	3/8	7-1/2
6	6-3/8	12-3/8	7	8-7/8	2-13/16	—	3	11/16	10
9	8-3/8	12-3/8	10	12-1/2	4	—	4	5/8	13-1/4
10	8-3/8	12-3/8	11	13-1/4	4-5/16	—	4-3/8	5/8	14-1/4
12	8-1/2	12-3/8	13	15-7/8	5-1/8	—	5-1/4	7/8	17-1/4
14	8-1/2	20-3/8	15	17-7/8	3-1/2	3-1/2	3-1/2	7/8	19-1/4
16	8-5/8	20-3/8	17	20	3-3/4	4	4	7/8	21-1/4
18	10-5/8	20-1/2	19	22	4-7/16	4-3/8	4-3/8	1-1/8	24-1/4
20	10-5/8	20-1/2	21	24-3/8	4-7/8	4-3/4	4-3/4	1-1/8	26-1/4
24	12-5/8	20-1/2	25	28-1/2	5-5/8	5-5/8	5-1/2	1-1/8	30-1/4

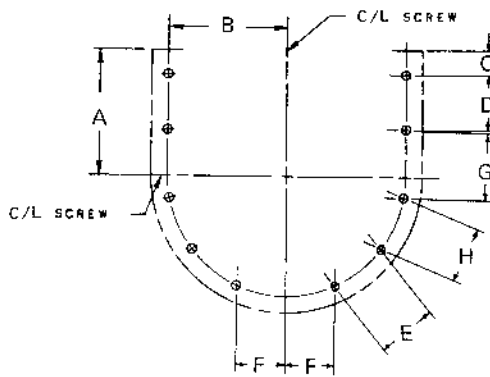
# **BOLT PATTERNS U-TROUGH END FLANGES**



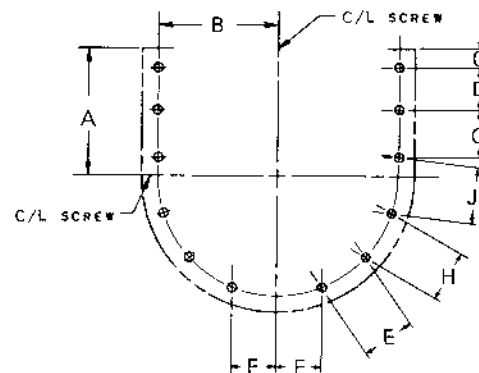
6 Hole Flange Connection



8 Hole Flange Connection



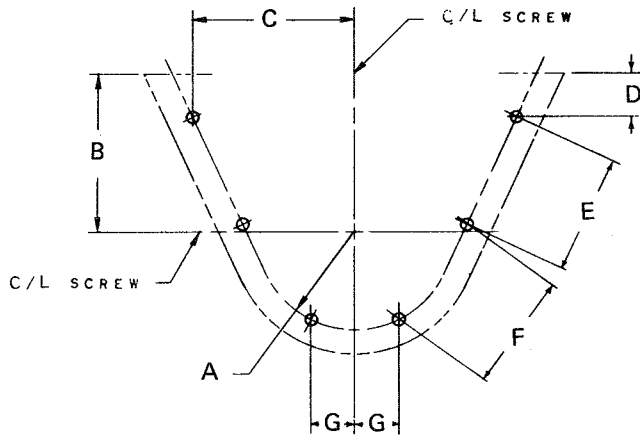
10 Hole Flange Connection



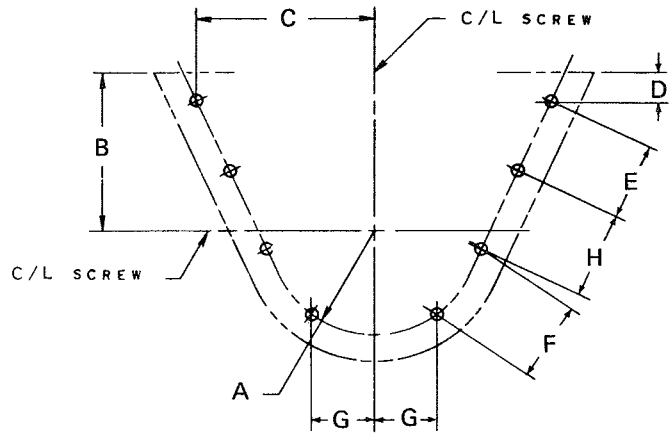
12 Hole Flange Connection

Screw Dia. Inches	Bolts		A	B	C	D	E	F	G	H	J
	Dia. Inches	Holes									
	Inches										
6	3/8	6	4-1/2	4-7/16	1-1/32	4-1/8	4-1/16	2-1/32	-----	-----	-----
9	3/8	8	6-1/8	6-1/4	1-3/16	4-1/8	3-3/4	2-9/16	4-1/8	-----	-----
12	1/2	8	7-3/4	7-15/16	1-1/2	5-5/16	4-1/16	3-7/8	5-3/16	-----	-----
14	1/2	8	9-1/4	8-15/16	2-17/32	5-5/8	5-15/16	3	5-15/16	-----	-----
16	5/8	8	10-5/8	10	2-5/8	6-3/8	6-5/8	3-3/4	6-5/8	-----	-----
18	5/8	10	12-1/8	11	2-23/32	5-15/16	5-7/8	2-15/16	5-7/8	5-7/8	-----
20	5/8	10	13-1/2	12-3/16	2-25/32	6-1/4	6-11/16	3-11/32	6-11/16	6-11/16	-----
24	5/8	12	16-1/2	14-1/4	2-25/32	6-1/8	6-5/8	3-5/16	6-5/8	6-5/8	6-5/8

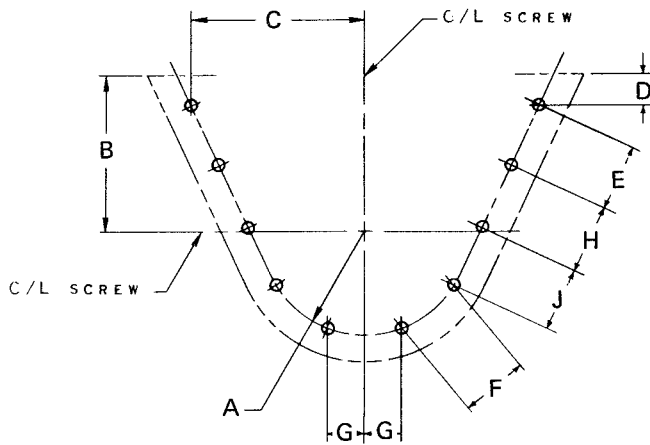
# **BOLT PATTERNS** **FLARED TROUGH END FLANGES**



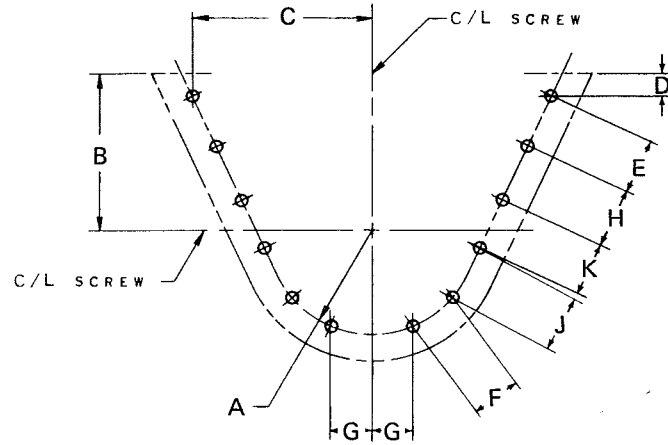
**6 HOLE FLANGE CONNECTION**



**8 HOLE FLANGE CONNECTION**



**10 HOLE FLANGE CONNECTION**



**12 HOLE FLANGE CONNECTION**

Screw Dia. Inches	Bolts		A	B	C	D	E	F	G	H	J	K
	Dia. Inches	Holes										
6	3/8	6	4-7/16	7	7-3/16	1-27/32	5-1/4	5-1/4	2-1/32	-----	-----	-----
9	3/8	8	6-1/4	9	9-21/32	1-43/64	5	5	2-9/16	5	-----	-----
12	1/2	8	7-15/16	10	11-13/16	1-13/16	5-3/4	5-3/4	3-7/8	5-3/4	-----	-----
14	1/2	10	8-15/16	11	12-49/64	2-1/16	5-1/8	5-1/8	3	5-1/8	5-1/8	-----
16	5/8	10	10	11-1/2	14-11/16	2-15/64	5-1/2	5-1/2	3-3/4	5-1/2	5-1/2	-----
18	5/8	10	11	12-1/8	16	2-5/8	6-3/16	6-3/16	2-15/16	6-3/16	6-3/16	-----
20	5/8	10	12-3/16	13-1/2	17-7/8	2-9/32	7	7	3-11/32	7	7	-----
24	5/8	12	14-1/4	16-1/2	20-61/64	2-5/16	6-7/8	6-7/8	3-5/16	6-7/8	6-7/8	6-7/8



## INSTALLATION AND MAINTENANCE

KWS'S SCREW CONVEYOR SYSTEMS MAY BE FURNISHED AS COMPLETE ASSEMBLIES OR IN INDIVIDUAL COMPONENTS. SHOP ASSEMBLED SYSTEMS ARE ALIGNED AND MATCH MARKED FOR EASE OF ASSEMBLY IN THE FIELD. THESE UNITS ALSO INCLUDE ALL NECESSARY HARDWARE INCLUDING BOLTS. INDIVIDUAL COMPONENTS SHOULD BE MORE CAREFULLY ASSEMBLED TO INSURE PROPER ALIGNMENTS FOR THE MOST EFFICIENT OPERATION.

**NOTE:** UPON DELIVERY OF CONVEYORS, CHECK SHIPMENT WITH PACKING LIST TO BE SURE ALL COMPONENTS ARE PRESENT AND NOT DAMAGED. IF DAMAGE HAS OCCURRED IN TRANSIT, A CLAIM SHOULD BE FILED WITH THE CARRIER IMMEDIATELY.

### **ASSEMBLY**

- PLACE THE CONVEYOR HOUSING SECTIONS IN THEIR PROPER SEQUENCE, USING MATCH MARKS OR DRAWING. CONNECT THE END FLANGES LOOSELY. DO NOT TIGHTEN BOLTS. ALIGN AND LEVEL THE HOUSING BOTTOM CENTERLINES PERFECTLY, THEN TIGHTEN FLANGE BOLTS. **NOTE:** A CONVEYOR ASSEMBLY SHOULD ALWAYS BEGIN AT THE THRUST END. IF THE SYSTEM DOES NOT REQUIRE A THRUST BEARING UNIT, ASSEMBLY SHOULD BEGIN AT THE DISCHARGE END.
- IF THRUST END IS DESIGNATED, ASSEMBLE THE HOUSING END PLATE AND THRUST BEARING.
- INSERT THE END OR DRIVE SHAFT IN THE BEARING. DO NOT TIGHTEN SET SCREWS.
- PLACE THE FIRST CONVEYOR SCREW SECTION IN THE HOUSING, SLIPPING THE END OR DRIVE SHAFT INTO THE CONVEYOR PIPE END. SECURE WITH COUPLING BOLTS.

**IMPORTANT** - THE SUPPORTING LUGS ON THE FLIGHTING SHOULD BE OPPOSITE THE MATERIAL CARRYING SIDE OF THE FLIGHTS. CLEARANCE IS REQUIRED BETWEEN THE HOUSING ENDS AND THE CONVEYOR PIPE ENDS. ALSO, BE SURE THE CONVEYOR SCREW CLEARS THE BOTTOM OF THE HOUSING BY 1/2".

- INSERT COUPLING SHAFT INTO THE OPPOSITE END OF THE FIRST SCREW SECTION. TIGHTEN COUPLING BOLTS.
- INSERT COUPLING SHAFT THROUGH HANGER BEARING AND BOLT HANGER TEMPORARILY TO THE HOUSING.

**CAUTION** - BEFORE BOLTING EACH HANGER BEARING IN PLACE, FORCE ALL ASSEMBLED SCREWS AWAY FROM THE DISCHARGE END. THIS REMOVES ALL "SLACK" DUE TO COUPLING BOLT HOLE CLEARANCE AND PLACES THE CONVEYOR SCREW SECTIONS LONGITUDINALLY IN THE POSITION THEY WOULD ASSUME UNDER FULL THRUST LOAD DURING OPERATION. THIS IS PARTICULARLY IMPORTANT IN LONG CONVEYORS TO PREVENT THE SCREW PIPE FROM CONTACTING HANGER BEARINGS AND TRANSFERRING THRUST LOADS THAT WOULD RESULT IN EARLY FAILURE. A MINIMUM CLEARANCE OF 1/3" MUST BE ALLOWED BETWEEN THE CONVEYOR PIPE END AND THE HANGER BEARING ON THE SIDE NEAREST THE CONVEYOR DISCHARGE. SOME USERS PREFER TO ALLOW CLEARANCE ON THE INLET SIDE BY MOVING THE HANGER TOWARD THE INLET END WITH ONLY FREE RUNNING CLEARANCE BETWEEN THE HANGER BEARING AND PIPE END. REVERSIBLE CONVEYORS SHOULD HAVE CLEARANCE BETWEEN THE HANGER BEARING AND PIPE ENDS DIVIDED EQUALLY ON EACH SIDE. FOR CONVEYORS SUBJECT TO HIGH TEMPERATURE MATERIALS, EXPANSION TYPE HANGERS SUCH AS No. 326 SHOULD BE USED.

- TIGHTEN END BEARING SET SCREWS FIRMLY AGAINST THE FIRST END OR DRIVE SHAFT.
- TIGHTEN THE FIRST HANGER BOLTS. BE SURE THAT THE HANGER IS AT RIGHT ANGLES TO THE HOUSING.
- INSERT A COUPLING SHAFT IN THE SECOND CONVEYOR SECTION AND SECURE WITH COUPLING BOLTS. ATTACH THE OPPOSITE END TO THE COUPLING SHAFT IN THE FIRST SCREW SECTION. SECURE WITH COUPLING BOLTS. BE SURE TO ALLOW THE 1/32" CLEARANCE BETWEEN THE HANGER BEARING AND THE PIPE END OF THE SECOND SECTION AFTER FORCING THE SCREW SECTIONS TOWARD THE INLET END.
- REPEAT THE PRECEDING STEPS FOR EACH CONVEYOR SCREW SECTION.
- INSERT THE FINAL END OR DRIVE SHAFT INTO THE LAST SCREW SECTION AND ATTACH COUPLING BOLTS.
- ATTACH THE HOUSING END AND END BEARING TO THE SHAFT AND BOLT THE END TO THE HOUSING.
- LUBRICATE BEARINGS IF REQUIRED.

**CAUTION** - TO INSURE THERE IS NO BINDING OR MISALIGNMENT IN THE SYSTEMS, ROTATE THE CONVEYOR SLOWLY BY HAND. IF THE SYSTEM IS TOO LARGE TO TURN BY HAND, APPLY POWER ONLY MOMENTARILY AND CHECK CONVEYOR THOROUGHLY.

**MAINTENANCE - LUBRICATION** - SCREW CONVEYOR SYSTEMS UTILIZE MANY DIFFERENT DESIGNS OF BEARINGS; THEREFORE, LUBRICATION REQUIREMENTS MAY VARY FOR DIFFERENT SYSTEMS. BALL AND ROLLER BEARINGS SHOULD BE LUBRICATED TO MANUFACTURER'S LUBRICATION STANDARDS. BABBITT OR OTHER TYPE FRICTION BEARINGS SHOULD BE LUBRICATED PERIODICALLY. THE FREQUENCY OF LUBRICATION SHOULD BE BASED ON CHARACTERISTICS OF MATERIAL BEING HANDLED, AS WELL AS THE OPERATING CONDITIONS. OIL IMPREGNATED BRONZE, GRAPHITE-IMPREGNATED BRONZE, OIL IMPREGNATED WOOD, HARD IRON, HARD SURFACED AND MANY TYPES OF PLASTIC BEARINGS REQUIRE NO PERIODIC LUBRICATION.

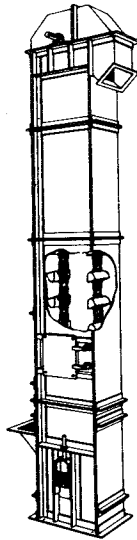
**INSPECTION** - A PERIODIC INSPECTION OF THE CONVEYOR SYSTEM IS RECOMMENDED TO INSURE PROPER OPERATION. CHECK FOR EXCESSIVE WEAR, DAMAGED OR MISALIGNED COMPONENTS. THE CHECK SHOULD INCLUDE INTAKE AND DISCHARGE POINTS FLIGHTING THICKNESS AT THE OUTER EDGE, BEARING CONDITION AND ALIGNMENT OF SHAFTS. DRIVE SHAFTS ARE SUBJECT TO THE INITIAL LOADS OF THE CONVEYOR; THEREFORE, IT IS RECOMMENDED THAT COUPLING BOLTS BE REMOVED PERIODICALLY TO INSPECT FOR ELONGATION OF BOLT HOLES AND BENT OR WORN BOLTS.



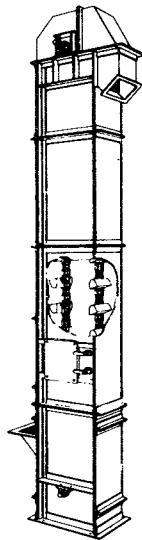
IM061003



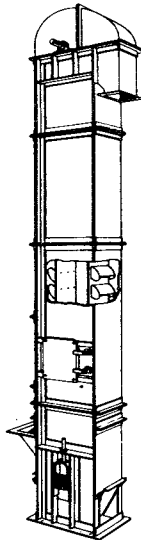
# BUCKET ELEVATORS



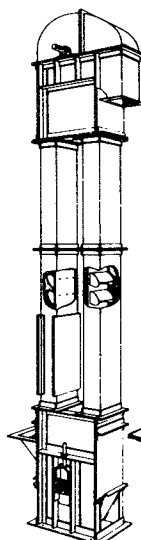
**KWS 100**  
bucket elevator



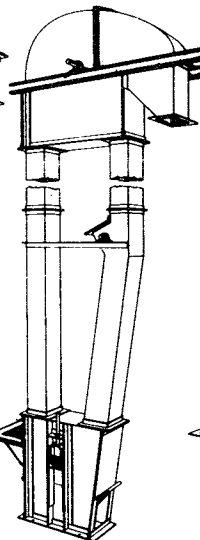
**KWS 200**  
bucket elevator



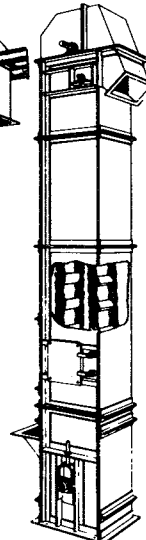
**KWS 500 S**  
bucket elevator



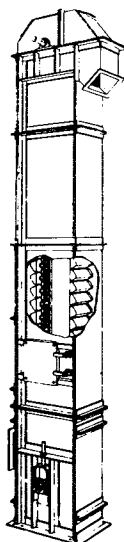
**KWS 500 D**  
bucket elevator



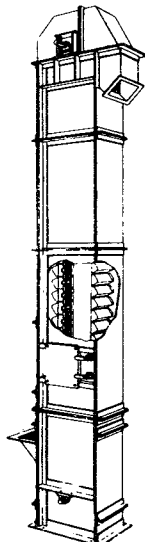
**KWS 500 B**  
bucket elevator



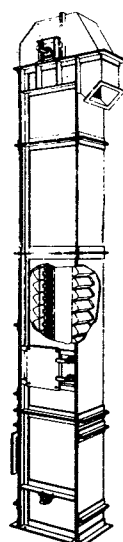
**KWS 600**  
bucket elevator



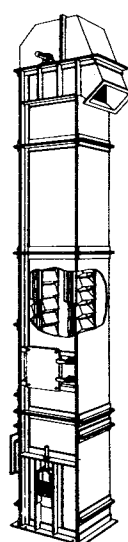
**KWS 700**  
bucket elevator



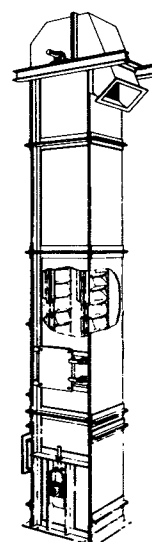
**KWS 800**  
bucket elevator



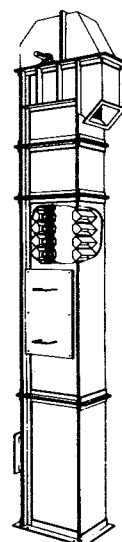
**KWS 800 L**  
bucket elevator



**KWS 1000**  
bucket elevator



**KWS 1100**  
bucket elevator



**KWS 1400**  
bucket elevator



**KWS MANUFACTURING CO., LTD.**

# KWS BUCKET ELEVATORS

## Centrifugal discharge bucket elevators . . . . . PRICED UPON REQUEST

Elevators of this design predominate in the bulk handling of free-flowing, fine and loose materials with small to medium size lumps. Buckets, mounted at spaced intervals, are loaded by scooping up material from the boot or by feeding the material into them. Material is discharged by centrifugal action as the buckets pass over the head wheel. These elevators are made in several types and are suitable for many requirements.

**KWS 100** • Elevators of this type meet the service requirements of the majority of installations using centrifugal discharge elevators. The head shafts are fixed. The foot shaft takeups are of the screw type. Gravity takeups are available. Buckets are of malleable iron for use on chain or belt. Casings are of steel plate and angle construction. (Fabricated Steel Buckets are also available)

**KWS 200** • These elevators are similar to KWS 100 except that the head shafts are adjustable and the foot shafts are fixed to maintain the relation of buckets to the loading chute and curved bottom plate. They are preferred for handling food products, materials which tend to pack or build up in the bottom of the boot, and for materials having a considerable percentage of lumps.

**KWS 500** • These elevators are designed and engineered to conform with general practice in the handling of grain. Head and foot shafts are provided with anti-friction bearings. Takeups are of the screw type unless otherwise specified. Buckets are of steel and are mounted on a belt. Casings of steel are welded and dust tight. The curved hood is designed for proper discharge of the grain. The boot can be loaded from the front or back side or both. Venting of the head and boot sections is desirable to improve the pickup and discharge of materials. (Heavy Duty Polyethylene buckets or Fabricated Steel Buckets are also available)

## Positive discharge bucket elevators . . . . . PRICED UPON REQUEST

Elevators of this design operate successfully at low bucket speeds and are suitable for handling light, fluffy and fragile materials and those having a tendency to stick in the buckets. Buckets, mounted at spaced intervals, are loaded by scooping up material from the boot or by feeding the material into them. After passing over head wheels, the buckets are inverted over the discharge spout, thus providing a positive discharge of material.

**KWS 600** • This design conforms with the best practice for handling and discharging materials which are light, friable or sluggish. The head shafts are fixed. The foot shaft takeups are of the screw type. Gravity takeups are available. Buckets are of malleable iron mounted at intervals on double strands of chain. Casings are of steel plate and angle construction.

## Continuous bucket elevators . . . . . PRICED UPON REQUEST

Elevators of this design are made in a number of types for handling many bulk materials ranging from light to heavy and from fines to large lumps. Buckets are spaced continuously and loaded by direct feeding, except for KWS 800 elevator where material is scooped from the boot. Spillage between buckets is prevented by their close spacing. As buckets discharge, the material flows over the preceding bucket, whose front and projecting sides form a chute, to the discharge spout.

**KWS 700** • This elevator is the most frequently used of the continuous bucket design. The head shafts are fixed. The foot shaft takeups are of the screw type. Gravity takeups are available. Buckets are of steel and spaced continuously on a single strand of chain. Casings are of steel plate and angle construction. Material is fed to the buckets through a loading leg.

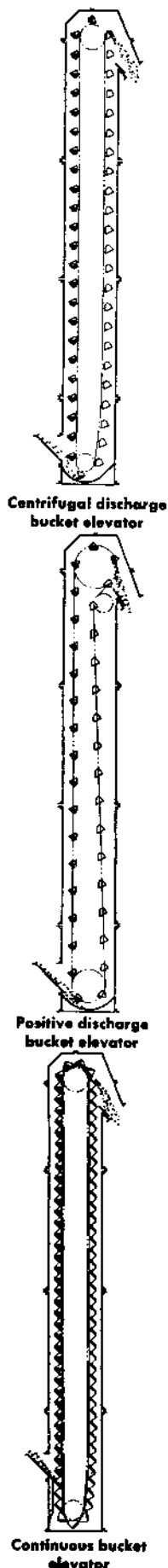
**KWS 800** • Elevators of this type are used for the handling of fine or crushed materials with lumps not exceeding ½ inch. These elevators are similar to KWS 700, except that head shafts are adjustable and foot shafts are fixed, to maintain the relation of buckets to the loading chute and curved bottom plate. Buckets are loaded by scooping up material from the boot. When modified by the addition of a loading leg and a correspondingly higher inlet spout, this type elevator can be used for handling lumpy materials.

**KWS 800L** • Identical to KWS 800, except with loading leg and stub inlet chute.

**KWS 1000** • This elevator is of the super-capacity type and used for handling friable, heavy or abrasive material ranging from fines to large lumps. The head shafts are fixed and the foot takeups are of the screw type. Gravity takeups are available. Continuous buckets are end-mounted between two strands of Class SS bushed roller chain. Material is fed to the buckets through a loading leg. Casings are of steel plate and angle construction. Inclined boots are recommended when handling sharp, wedge-shaped and shale-like materials.

**KWS 1100** • These elevators are similar in design to KWS 1000, except for greater capacities and centers. Head terminal machinery and driving equipment are carried on independent supports. The foot takeups are of the screw type. Gravity takeups are available.

**KWS 1400** • This elevator is designed primarily for cement mill service, but is suited for many other similar abrasive service applications. Their design and rugged construction makes them ideally suited for handling cement, clinker, crushed stone, bauxite, feldspar, gravel, gypsum, roofing granules, sand, shale, etc. They are available in a full range of sizes extending to the very high capacities and lifts.



## K.W.S. HI-CAPACITY CENTRIFUGAL DISCHARGE BUCKET ELEVATOR

Designed with quality components to meet industry's need for maximum efficiency and dependable service. Designed for various operations . . . from grain elevators to manufacturing . . . to processing plants. A leader in the handling of free flowing, fine and loose material with some small to medium size lumps.

Standard components consisting of:

12 gauge head section with 14 gauge split removable hood, ¼" thick discharge spout with adjustable throat and inspection port, head shaft C-1045 steel, pillow Block roller bearings with split housing, split gland seals with graphite packing K.W.S. heavy duty drum pulley.

10 gauge boot section with curved bottom plate and two removable panels and two clean out doors, ¼" thick inlet hopper with flange, boot shaft C-1045 steel, K.W.S. heavy duty ball bearing take-up, split gland seals with graphite packing, K.W.S. heavy duty wing pulley.

12 gauge intermediate sections with ¾" thick flange angles and vertical angles (outside at each corner), first intermediate section to have one access door and one removable panel, gasket to be ½" thick closed cell black neoprene sponge, all assembly bolts to be zinc plated.

Head section and boot section will be shop assembled, (complete elevator not assembled).

Belting—PVC—polyester polyvinyl chloride.

Buckets—"Heavy Duty" Polyethylene style CC-HD. (-60 degrees F to +225 degrees F)

### Elevator specifications

KWS HI-CAPACITY CENTRIFUGAL DISCHARGE BUCKET ELEVATOR			CAPACITY CUBIC FEET PER HOUR		BELTING POLYESTER POLYVINYL CHLORIDE -PVC-	BELT SPEED FEET PER MINUTE		PULLEY DIA.		CASING SIZE INSIDE IN INCHES (NOMINAL)
MODEL	BUCKET	CTRS.	HIGH SPEED MAX. 60 PCF	LOW SPEED MAX. 100 PCF		HIGH SPEED	LOW SPEED	HEAD DRUM	BOOT WING	
141HC	6x4 @	6"	1080	607	PV-225	400	225	20	14	11¾x35
142HC	8x5 @	7"	2216	1246	PV-225	400	225	20	14	13¾x39
143HC	9x6 @	8"	3445	2020	PV-225	440	258	22	16	15¾x42
144HC	10x6 @	8"	3831	2246	PV-350	440	258	22	16	15¾x42
145HC	11x7 @	9"	5082	2980	PV-350	440	258	24	18	17¾x48
146HC	12x7 @	9"	5582	3273	PV-350	440	258	24	18	17¾x48
147HC	12x8 @	10"	8702	5085	PV-470	510	298	30	24	17¾x54
148HC	14x7 @	9"	6504	3810	PV-470	440	258	24	18	19¾x48
149HC	14x8 @	10"	9941	5809	PV-470	510	298	30	24	19¾x54
150HC	16x8 @	10"	13528	8293	PV-470	584	358	36	24	22¾x60
151HC	18x8 @	10"	14979	9182	PV-470	584	358	36	24	24¾x60

**KWS MANUFACTURING COMPANY, LTD.**  
**GENERAL TERMS AND CONDITIONS**  
**Form #TC0603-9**

**TERMS OF PAYMENT:** All invoices are due and payable in Johnson County, TX. To customers having established credit with KWS, terms are 1/2% discount if paid in full within ten (10) days of the date of invoice and otherwise all credit sales are due in full within thirty (30) days from the date of invoice, unless otherwise agreed in writing. No discount is allowed for earlier payment unless authorized by KWS in writing. Purchasers without a credit rating will avoid delay by furnishing satisfactory references or by instructing KWS to bill in advance or to ship with sight draft attached to bill of lading. Accounts past due shall accrue interest at the highest lawful rate allowed by applicable law.

**LIMITED WARRANTY:** KWS warrants all equipment manufactured by KWS to be free from defects in material and manufacture at the time of shipment for a period of one (1) year from the date of shipment. KWS will furnish without charge, but will not install, replacements for such parts as we find to have been defective. Unless otherwise stated in quotation, this limited warranty is based on operation of the equipment for a period not exceeding eight hours per day. KWS MAKES NO OTHER WARRANTY OF ANY KIND AND HEREBY DISCLAIMS ALL WARRANTIES EXCEPT THE LIMITED WARRANTY HEREBY STATED, BOTH EXPRESS AND IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All warranty claims must be submitted within ten (10) days of discovery of defects or shall be deemed waived. No representative of our company has any authority waive, alter, vary or add to the terms hereof without prior approval in writing. This limited warranty applies only to equipment which is subjected to normal use and service. This limited warranty shall not apply to any equipment which as been subjected to misuse, neglect or accident, or has been altered or tampered with, or if corrective work has been done thereon without our specific written consent, no allowances will be made for such corrective work done without such consent. Improper lubrication, deterioration by chemical action, and wear caused by the presence of abrasive materials, do not constitute defects. KWS shall not be responsible for work done, apparatus furnished, or repairs made by others. Equipment manufactured by others, and included in our proposal is not warranted in any way by KWS but carries only the manufacturer's warranty, if any.

**LIMITATIONS OF LIABILITY:** It is expressly understood that KWS's liability is limited to the furnishing of replacement parts. KWS SHALL NOT BE LIABLE, UPON WARRANTIES OR OTHERWISE, FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES FOR ANY DAMAGES ARISING FROM THE USE OF EQUIPMENT. Thus, KWS is not liable for any other expense, loss or damage including, but not limited to, loss of profits, production, increased cost of operation of spoilage arising in connection with the sale or use of, or inability to use our equipment or products for any reason, except as herein provided.

**TEXAS LAW TO APPLY, JURISDICTION AND VENUE:** It is expressly understood that this sale of products or equipment was negotiated, executed, consummated and is otherwise performable in Johnson county, Texas, and shall be governed, construed and interpreted as to validity, enforcement and in all other respects in accordance with the laws of the State of Texas, and the laws of the United States of America, as applicable. KWS has its principal place of business in Johnson County, Texas, which county shall be the proper place of venue to enforce payment or performance. Purchasers irrevocably agree that any legal proceeding arising out of or in connection with this sale shall be brought in the state courts of Johnson County, Texas, or the United States District Court for the judicial district in which Johnson County is located.

**PROMISE OF DELIVERY:** Promise of delivery represents only our best estimate of the time required to complete the work and ship the material from our plant. All orders are accepted with the understanding that shipping dates are approximate and subject to change because of factory conditions, fires, strikes, material shortages, civil or military authority, mandatory priority and/or other causes beyond our knowledge or control.

**CANCELLATION:** Orders entered on our books are not subject to cancellation and no cancellations will be accepted except upon terms that will INDEMNIFY us against loss. Cancellation charges as published will be invoiced.

**RETURNED GOODS:** No material will be accepted for credit unless such return is first authorized in writing by us. All prices are predicated on sale of material as merchandise only. Additional charges may be assessed for any special services or markings, special boxing, cartage, transfer, overtime (when authorized by purchaser), financing, or other abnormal requirements.

**MINIMUM CHARGE:** Minimum charge on any invoice will be \$35.00 net plus applicable parcel post, express or freight charges.

**CONTRACTS:** All prices are made F.O.B. Burleson, Texas, unless otherwise indicated. Our responsibility ceases when delivery has been made to the transportation company. If there are shortages or evidence of damage, insist on the transportation agent making notations on the shipping documents before signing receipt. Claims should be made immediately and we will cooperate with customers when desired in obtaining adjustments from the transportation company. All contracts are made and accepted at Burleson, Texas, and are not valid until acknowledged from the company's main office. It is the company's intent and purpose to surrender title to this material when final payment is made. Possession may be given before final payment is due, and to protect us against default in payment or in the event of an execution or attachment is levied on your property, it is hereby expressly agreed:

A-The title and right of possession to this material shall remain with us until full and final payment is made; B-No part of this material shall be considered a fixture or incorporated into the realty by virtue of its attachment to real estate and any part may be separated from such real estate for the purpose of re-possession by us or by our agents in the event of a default by purchaser; C-We shall have the right to elect a claim of mechanic's lien against the property upon which this material is situated and waive our rights to re-possess under Paragraphs A and B above any time before expiration of the time fixed by law for filing a mechanic's lien; D-Acceptance or acknowledgement of any order, quotation or contract is with the express understanding that a "no lien agreement" has not been filed.

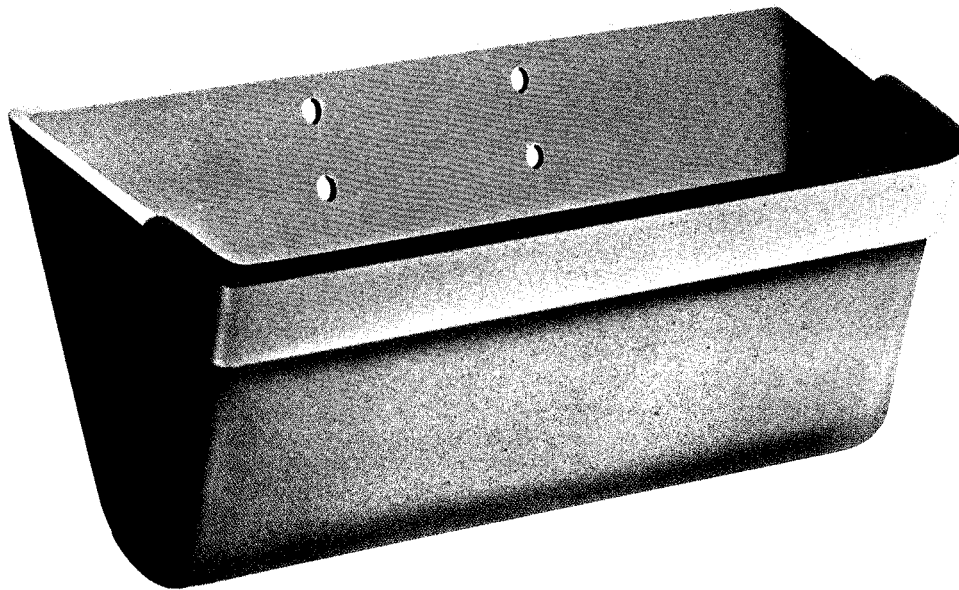
**SPECIAL TAXES:** Any federal, state or city sales tax or other manufacturers' or processors' tax, if any when assessed, will be added to our invoice.

**CLAIMS:** Claims for errors or shortages existing prior to our delivery of the equipment to the carrier will be considered only when made to use immediately after receipt of shipment.

**SAFETY DEVICES:** We will supply only such safety devices as are specified in this order. Any additional safety measures or devices which may be required by law, or which you wish to add, are to be furnished by you or, at your written request, they will be furnished by us as additional cost to you.

**PAINTING:** As a protective measure, we will apply before shipment one coat of our standard shop paint to all outside accessible unfinished surfaces, and a protective coat to all machine-finished surfaces, or equal.

# ELEVATOR BUCKETS



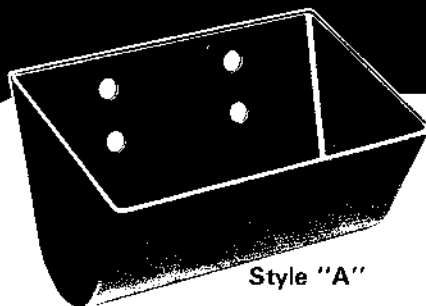
## **Welded Steel Construction** *For Chains or Belts*

What's so special about KWS MANUFACTURING ?

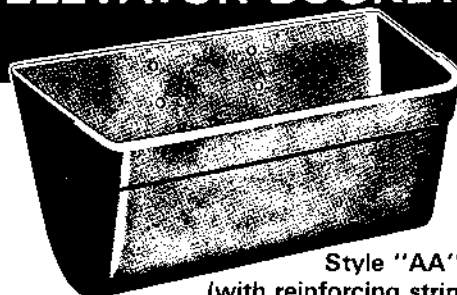
Take a look. KWS is setting the standard of excellence for the material handling industry. From a complete system to a replacement part - KWS delivers. You expect that standard of excellence from KWS MANUFACTURING. We demand it.

## **KWS MANUFACTURING CO., LTD**

## ELEVATOR BUCKETS



Style "A"



Style "AA"  
(with reinforcing strip)

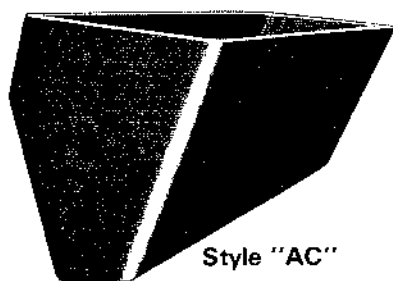


SALEM

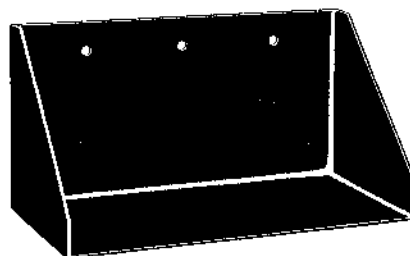
**STYLE A FABRICATED STEEL ELEVATOR BUCKETS**, are commonly used for elevators handling cement, chemicals, coal, sand, gravel, stone, pulp, phosphate and similar materials. Ends are parallel and perpendicular to back of bucket.

**STYLE AA FABRICATED STEEL ELEVATOR BUCKETS**, are similar to the Style A, with reinforcing lip along the front edge and around the front corners, giving the buckets greater resistance to distortion when scooping up heavy or gritty materials. Ends are parallel and perpendicular to back of bucket.

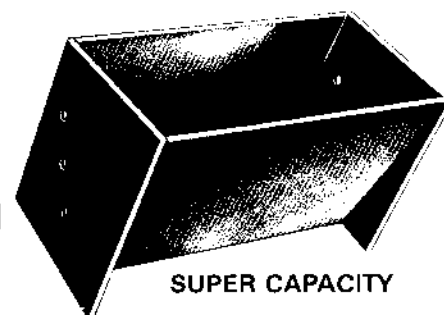
**SALEM FABRICATED STEEL ELEVATOR BUCKETS**, are used for handling granular or powdered, free-flowing materials. They are formed to a shape which insures proper filling and free and clean discharge. Ends are parallel and perpendicular to back of bucket.



Style "AC"



Style "C" (square heel)



SUPER CAPACITY

**STYLE AC FABRICATED STEEL ELEVATOR BUCKETS**, are designed to provide fast thorough discharge of cement, lime and other dry, fluffy materials. Vent holes in the bottom of each bucket release trapped air in filling and allow material to empty from bucket quickly and completely on discharge.

**STYLE C FABRICATED STEEL ELEVATOR BUCKETS**, are designed for handling clay, sugar, salt, finely pulverized ores, wet grain, and such other materials as would stick or pack in other styles of buckets. Ends are parallel and perpendicular to back of bucket.

**SUPER CAPACITY BUCKETS**, are of the continuous type, extend back of the pitch line of the chain and result in a much greater carrying capacity for each bucket than can be obtained with the regular continuous buckets. These buckets are mounted between two strands of chain. They are three piece construction, securely welded both inside and outside to assure long life and dependability.

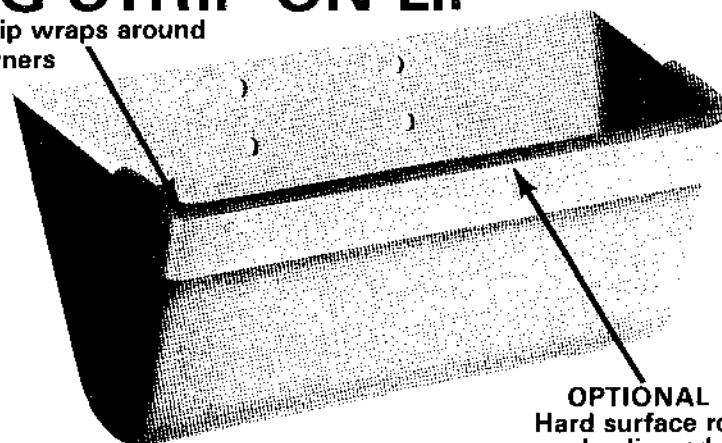
**PRICED UPON REQUEST**

## REINFORCING STRIP ON LIP

- Reinforcing strips securely welded to front lip of buckets.
- Furnished with or without hard surfacing rod on leading edge. (OPTIONAL)
- Reinforcing strips on Salem & Style "A" type buckets will be approximately six (6) inches longer than buckets to wrap around & protect front corners.
- Reinforcing strips on continuous type buckets will be furnished on inside or outside of lip to customers specs.
- Reinforcing strips of abrasive resistant steel or other alloys will be quoted promptly on request.

**PRICED UPON REQUEST**

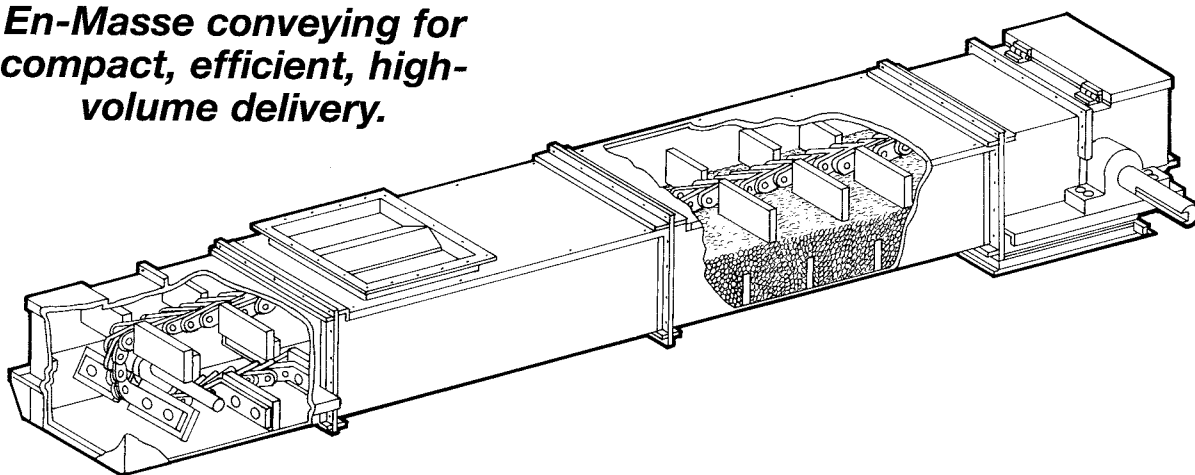
Strip wraps around corners



OPTIONAL  
Hard surface rod  
on leading edge

# DRAG- MASTER CONVEYORS

*En-Masse conveying for  
compact, efficient, high-  
volume delivery.*



The compact En-Masse is an efficient, high-performance alternative to conventional means of material handling.

Because it conveys a high volume of material, yet requires much smaller amounts of space, the En-Masse is an ideal solution for congested areas where several units are discharging in the same location.

Material is moved as a large "solid" mass with no internal turbulence, at low speeds, using 85% of the trough for material. The resulting high capacity and lack of turbu-

lence allows the En-Masse to handle almost all types of bulk materials, including fragile types many other conveyors cannot handle well.

This high-performer uses  $\frac{2}{3}$  the horsepower of an equivalent, conventional unit. It is weather- and dust-free, and can be self-cleaning, depending on materials.

*Talk to our sales engineers about ways the En-Masse can be the compact solution to your materials delivery problems.*

What's so special about KWS MANUFACTURING COMPANY, LTD.

Take a look. KWS is setting the standard of excellence for the material handling industry. From a complete system to a replacement part - KWS delivers. You expect that standard of excellence from KWS MANUFACTURING COMPANY, LTD. We demand it.

## KWS MANUFACTURING COMPANY, LTD.



# KWS MANUFACTURING COMPANY, LTD.

## SAFETY INSTRUCTIONS

### MINIMUM GENERAL PROVISIONS

It is the responsibility of the contractor, installer, owner and user to install, maintain and operate the conveyor and/or elevator components and conveyor assemblies manufactured and supplied by KWS Manufacturing Company, Ltd. 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 Safety Codes as currently in effect.

In order to avoid an unsafe or hazardous condition, the assemblies or parts must be installed with the following **MINIMUM** provisions:

1. Conveyors and/or elevators shall not be operated unless the conveyor and/or elevator housing completely encloses the conveyor's and/or elevator's moving elements; and power transmission guards are in place. Conveyor and/or elevator inlets and discharge openings are designed to connect to other equipment or machinery so that the flow of material into and out of the conveyor and/or elevator is completely enclosed. If the conveyor and/or elevator is to be opened for inspection, cleaning or observation, the motor driving the conveyor and/or elevator is to be locked out electrically in such a manner that it cannot be restarted by anyone, however remote from the area, unless the conveyor and/or elevator housing has been closed and all other guards are in place. A formalized Lockout/Tagout procedure must be followed when a conveyor and/or elevator are stopped for maintenance or repairs and before conveyor and/or elevator guards are removed. All safety devices, covers, and guards should be replaced before restarting equipment for operation and eliminating the Lockout/Tagout.
2. If the conveyor and/or elevator must have an open housing as a condition of its use and application, the entire conveyor and/or elevator is then to be guarded by a railing or fence.
3. Feed openings for shovels, front-end loaders, or other manual or mechanical equipment shall be constructed in such a way that the conveyor and/or elevator opening are covered by grating. If the nature of the product is such that grating cannot be used, then the exposed section of the conveyor and/or elevator is to be guarded by a railing, or fence, and there shall be warning signs posted.
4. DO NOT walk on conveyor and/or elevator covers, grating, or power transmission guards.
5. DO NOT poke or prod material in the conveyor and/or elevator with a bar or stick.
6. DO NOT place hands or feet in any conveyor and/or elevator openings.
7. DO NOT overload conveyor and/or elevator or use it for anything but its intended use.
8. Practice good housekeeping.

### HAZARDOUS OPERATION

Standard conveyors and/or elevators are not equipped to operate under conditions, which may be hazardous, nor with hazardous materials. The manufacturer should be consulted if there is an indication that a hazardous condition or material is involved. Several situations may create these conditions. A few of the more common follow:

1. Hazardous Condition - Where product is under pressure or vacuum, or the trough is provided with jackets for heating or cooling; special precautions are required. Standard components are not designed for this service.
2. Hazardous Materials - they may be explosive, flammable, toxic, noxious, etc. Special provisions for safety are required. DO NOT use standard components.
3. Handling Food Stuffs - Conveyors and/or elevators to handle foodstuffs are subject to special codes for materials, construction, location and accessibility. Investigation before ordering conveyors and/or elevators is required. KWS Manufacturing Company, Ltd. is capable of providing you with help in this area. Special precautions should be taken for protection of personnel against contact with moving parts when utilizing quick clean out features in sanitary conveyors and/or elevators.

### ELECTRICAL

Conveyor and/or elevator manufacturers generally do not provide electrical equipment to control the conveyors or elevators. Many kinds of electrical interlocking of conveyors and/or elevators and conveyor and/or elevator systems are available; such that if one conveyor and/or elevator in the system or process is stopped, other equipment feeding it or following it can be automatically stopped. The purchaser must use electrical equipment conforming to the National Electric Code, the National Electric Safety Code and other local or national codes.

Electrical controls, machinery guards, railings, walkways, arrangement of installation, training of personnel, etc., are necessary and mandatory ingredients for a safe working place. It is the responsibility of the contractor, installer, and owner/user to supplement the materials and services furnished by KWS Manufacturing Company, Ltd. with necessary items to make the conveyor and/or elevator installation comply with all laws and codes.

Consideration should be given to some or all of the following electrical devices, and to any others that may be appropriate. All devices, such as those listed below, may enhance the safety and/or overall performance of the equipment in certain situations. Consideration must be given to their use as a secondary safety device as they may present a false sense of security to the operator and/or personnel around the equipment. In no case are they intended to replace or reduce the importance of the Lockout/Tagout procedures required by law as the primary safety precautions. In addition, consideration must be given to the feasibility and usefulness of secondary safety devices in each specific working environment.

1. Overload protection devices such as shear pins, torque limiters, etc. to shut off power whenever operation of conveyor and/or elevator is stopped as a result of excessive material, foreign objects, excessively large lumps, etc.
2. No speed protection devices such as zero speed switches to shut off power in the event of any incident that may cause conveyor and/or elevator to cease operating.
3. Safety shut out switch with power lockout provisions at the conveyor drive.
4. Emergency stop switches readily accessible wherever required.
5. Electrical interlocking power lockout provisions to shut down feeding conveyor and/or elevator whenever receiving conveyor and/or elevator stops.
6. Electrical devices to warn personnel of startup of conveyor and/or elevator, especially if started from remote location.
7. Special enclosures for motors and controls for hazardous atmospheric conditions.
8. Electrical interlocking switches to shut down conveyor and/or elevator are NOT recommended for covers, inspection doors, personnel repair opening with covers, etc. due to the false sense of security these devices give operators and maintenance personnel.

### SAFETY LABELS

One or more safety decals (several samples illustrated on the following page) are attached to all conveyor and/or elevator housings, gates, guards, etc. For complete details of decal to use and its location on the equipment, refer to Conveyor Equipment Manufacturers Association (C.E.M.A.) at [www.cemanet.org](http://www.cemanet.org).



**! WARNING**




CVS930011

Exposed screw and moving parts can cause severe injury

**LOCK OUT POWER** before removing cover or servicing

**! WARNING**



CHS93001

Exposed moving parts can cause severe injury

**LOCK OUT POWER** before removing guard

**! WARNING**




CVS930012

Exposed buckets and moving parts can cause severe injury

**LOCK OUT POWER** before removing cover or servicing

**! DANGER**




CHS950017

Moving parts will cause severe injury

**KEEP AWAY**

**! WARNING**



CHR000025

Guard Removed

Risk of severe injury

**DO NOT OPERATE** Without guard

**! WARNING**



CHR930002

Equipment starts automatically - can cause severe injury

**KEEP AWAY**

**! WARNING**



CHS930011

Exposed screw and moving parts can cause severe injury

**LOCK OUT POWER** before removing cover or servicing

**! WARNING**

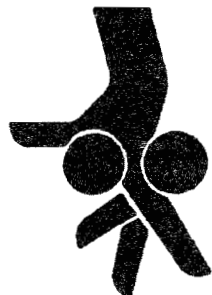


CHS990026

Walking or Standing on Conveyor Covers or Gratings can cause Serious Injury or Death

**STAY OFF**

**! WARNING**

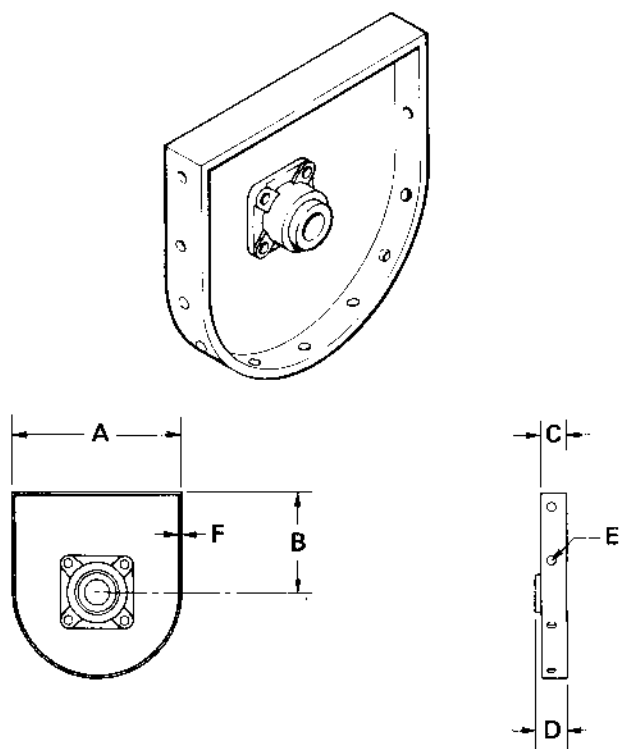


CHR931005

Moving equipment can cause severe injury

**KEEP AWAY**

# INSIDE TROUGH ENDS



FOR U-TROUGH ONLY

Screw	Shaft	PART NUMBERS * U-Trough	WEIGHTS U-Trough
6	1-1/2	TEWI6112U	11
9	1-1/2 2	TEWI9112U TEWI92U	14 18
10	1-1/2 2	TEWI10112U TEWI102U	15 19
12	2 2-7/16 3	TEWI122U TEWI122716U TEWI123U	27 29 41
14	2-7/16 3	TEWI142716U TEWI143U	35 47
16	3	TEWI163U	59
18	3 3-7/16	TEWI183U TEWI183716U	68 80
20	3 3-7/16	TEWI203U TEWI203716U	103 115
24	3-7/16	TEWI243716U	145

\* Suffix for bearing material

Screw Dia.	Shaft Dia.	A	B	C	D †			E Bolts	F
					Ball	Roller	Friction *		
6	1-1/2	7	4-1/2	1-1/2	2-1/4	3-3/4	3-3/16	3/8	3/16
9	1-1/2 2	10	6-1/8	1-5/8	2-1/4 2-1/2	3-3/4 3-7/8	3-1/4 4-1/4	3/8	1/4
10	1-1/2 2	11	6-3/8	1-3/4	2-1/4 2-1/2	3-3/4 3-7/8	3-1/4 4-1/4	3/8	1/4
12	2 2-7/16 3	13	7-3/4	2	2-5/8 3 3-3/4	3-7/8 4-1/2 5	4-1/4 5-1/4 6-1/4	1/2	1/4
14	2-7/16 3	15	9-1/4	2	3 3-3/4	4-1/2 5	5-5/16 6-5/16	1/2	5/16
16	3	17	10-5/8	2-1/2	3-7/8	5	6-5/16	5/8	5/16
18	3 3-7/16	19	12-1/8	2-1/2	3-7/8 4-3/8	5 5-5/8	6-3/8 7-3/8	5/8	3/8
20	3 3-7/16	21	13-1/2	2-1/2	3-7/8 4-3/8	5-1/8 5-5/8	6-3/8 7-3/8	5/8	3/8
24	3-7/16	25	16-1/2	2-1/2	4-3/8	5-5/8	7-3/8	5/8	3/8

NOTE: † Add seal thickness if PS or WPS seal is used.

\* Specify babbitt or bronze.