

Conveyor Frame Assembly:

The all-metal frame is fabricated using the following materials:

A. Frame sides	3.42 mm (10 gauge steel)
B. Slider bed	3.42 mm (10 gauge steel)
C. Chain cover	Fabricated steel
D. Chain guide support	Upper guide is 3.42 mm (10 gauge steel) Lower guide is aluminum rolled extrusion

Welded 4.83 mm thick angle steel cross members provide a solid conveyor platform. The lower edge of the side frame has a 38 mm wide inward flange to attach floor supports. Bearing mounting holes are integral to the frame side, so no additional bearing plates are required.

Frame Height: Standard frame height is 216 mm. Sigma Belt Power Curves with a conveying width over 1000 mm will have a frame height of 305 mm. Sigma Belt Power Curves with an outside conveying radius over 2200 mm normally have a frame height of 305 mm (exceptions for narrow conveying widths).

Available Sizes: Sigma Belt Power Curves are available in standard model families with outside conveying radii of 1200 mm, 1500 mm and 2200 mm. Belt power curves with an outside conveying radius of less than 1200 mm are available in the Sigma-L series. Portec can build special radius sizes to match special applications. Portec can build units with arcs as large as 350 degrees. The minimum arcs are available as low as 11 degrees, but it is necessary to check the Portec Applications Manual for any unit under 40 degrees to determine minimum arc limit for that particular model size.

Special Frames: Sigma Belt Power Curves are available with stainless steel frames for special applications. Food-grade units will use optional chain guides to comply with sanitary requirements. When handling corrosive products, there are many options available to improve the operating life of the power curve. Sigma Belt Power Curves with endless belts will have a split inside radius frame for easy replacement of the belt assembly.

Standard Conveyor Belt: 2-Ply Black PVC-OP	
Belt material:	Ammeraal 2TO 472 A22 FRP
Conveying surface:	Black 2-ply PVC with A22 sandblast texture
Thickness:	3.1 mm
Allowable working tension:	21.4 Nm/m (1% elongation)
Underside:	Low friction polyester fabric
Belt fabric:	2-ply polyester
Fire rating:	ISO 340 fire resistant
Electrical conductivity:	Anti-static
Seams:	#1A Clipper lacing for quick belt replacement with nylon covered cable lacing pin
Chain attachment:	#4 brass grommet, 1040 steel rivet and washer, and nylon brushing
Options:	A wide range of belt materials for special applications <i>Endless belts (seamless)</i> <i>Belt cleats</i>

Belt Drive system: Unlike friction drive straight conveyors, the Sigma Belt Power Curve conveyor does not use the end roll to drive its conveyor belt. The belt is driven by its outside edge by the belt drive chain. Special attachment links connect the belt drive chain to a series of grommetted holes along the outside edge of the belt. The drive chain is positively driven by a shaft-mounted sprocket. This positive drive arrangement is unaffected by changes in loading, tension, temperature, humidity and foreign material getting between the bottom of the belt and the end rolls. When conditions change, there is no requirement for immediate attention to maintain the functional operation of the conveyor. Because the belt is merely a carrying surface and high tension is not required for operation of a chain driven conveyor, belt life, as well as integrity of belt joints, is greatly enhanced. The positive drive design is also very conducive to using mechanical lacing because concerns of damage to the end roll lagging (no lagging is required) are non-existent. Even in difficult access areas of a conveyor system, mechanical lacing allows for fast and efficient belt changes because, unlike conveyors with vulcanized endless splice belts, extensive disassembly of the conveyor is not required.

In contrast, friction driven belt conveyors require exact tension control and adjustment to continue operation, and small changes in conditions can immediately affect functionality. On friction drive units, high belt tension to maintain drivability transmits high stress levels to the belt joints; decreasing belt life and increasing maintenance demands. Also on friction driven units, end roll components (shafts, bearings, pulleys) are subjected to much higher stress levels due to the required belt tension. Life expectancy of these components is necessarily shorter.

Belt Drive Chain: #50 sidebow steel chain with belt attachment links	
Material:	heat-treated, carbon steel
Ultimate tensile strength:	2459 kg.
Maximum working load:	290 kg.
<i>Nickel-plated chain and attachment hardware is available as an option. The chain guide material can easily be replaced as slide-out/slide-in strips with a fastener on each end.</i>	

End Roll Bearings: All bearings are precision, sealed for life, and fitted in a cast iron housing. While additional lubrication is normally not required, a grease fitting can be installed for severe environments to lubricate the self-aligning feature of the bearing unit within the cast iron housing. Nickel-plated housings are available as an option.

End Roll Sprockets: Steel beveled tooth sprockets for #50 sidebow chain. Conveyors with conveying widths over 1000 mm or having an outside conveying radius over 2200 mm, will normally have 40 tooth sprockets. Stainless steel or hardened tooth sprockets are available as options for special applications.

End Rolls and Shafts: The all-steel end rolls are roll formed or swaged and funnel formed using 12 gauge or 14 gauge steel. The hubs are cast steel or manufactured cold rolled and hot rolled steel (depending on size of conveyor) and welded in each end. Stainless steel or solid plastic end rolls are available to meet sanitary requirements or for corrosive environments.

The end roll shaft is turned, ground and polished 1045 or 1144 stress-proof steel. Each shaft is keyed to fit the end roll. A drive shaft extension is provided on one corner as specified. Extra shaft extensions can be provided as required. Stainless steel or metric shafting is available as an option.

Positive Drive Belt System: The conveyor belt is positively driven by a shaft-mounted sprocket engaging a precision sidebow chain that is attached directly to the outside edge of the belt. This positive drive system is unaffected by changes in loading, tension, temperature, humidity, and foreign material on the belt. The Portec positive drive belt system ensures continuous, reliable operation even in harsh and difficult environments with minimal maintenance.

Standard shaft diameters are as follows:

Units	Outside Conveying Radius	Shaft Dia.
"A"	1200 mm	25 mm
"B"	1500 mm	30 mm
"C"	2200 mm	35 mm
Conveying width over 1270 mm		45 mm
<i>Note: Oversized shafts may be required on conveyors with slow belt speeds or high HP drive units.</i>		

The end roll assemblies are easily replaced as drop-in assemblies. This is especially convenient in confined spaces.

Return Rolls: The returning belt is supported by several rubber covered, precision ball bearing wheels spaced across a 5/8" diameter steel shaft or on hanger brackets. This system is considerably quieter than hollow cylindrical steel rollers, which are often used on belt conveyors. Stainless steel shafts are available as an option.

Side guards: Standard side guards are rolled using 1.89 mm (14 gauge) steel. Side guards over 150 mm high will have a 19 mm angled out top flange. If no side guards are specified, a 51 mm side guard will be provided on the outside radius.

Paint: Sigma Belt Power Curves are normally painted with a DTM (direct to metal) paint in one of 4 standard colors. Check the current Portec Paint Policy for a wide range of optional colors and paint types.