

POWERTRACK 500 CATERPILLAR DRIVE UNIT

The inline caterpillar drive unit allows positional flexibility throughout the system, as it can be incorporated into almost any straight section.

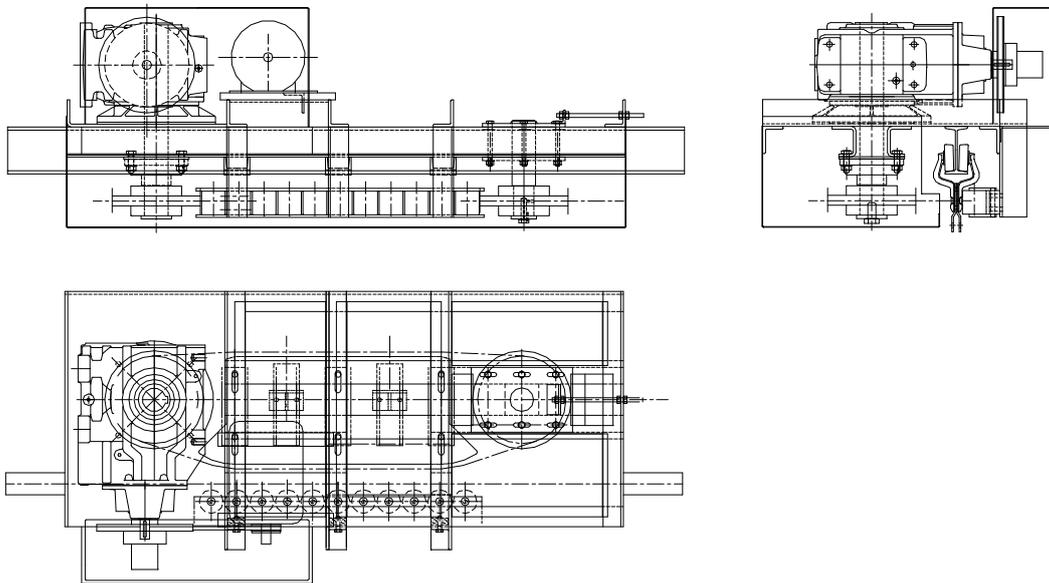
The main drive to the conveyor chain will be via cast drive dogs that are attached to a 2" pitch ASA roller chain. The cast drive dogs engage between the outer chain links.

The basic construction consists of a main drive unit framework onto which is bolted a motor and gearbox, which are connected via a vee belt arrangement with the input shaft of the gearbox having a torque limiter coupled to the main pulley.

Fixed directly to the gearbox output shaft is a sprocket that drives the 2" pitch ASA chain. A second sprocket acts as the tail/tensioning sprocket for the ASA roller chain onto which the cast drive dogs are fitted.

A heavy duty reaction bar and backing rail are incorporated into the drive unit design to compensate for the reactional forces encountered from the drive dogs meshing with the main conveyor chain.

The torque limiter, which acts as a sensitive mechanical/electrical overload protection device will be set by our installation engineer's during commissioning trials.



All sprockets and pulleys will be fully guarded to confirm with current H + S and CE mandatory requirements. Identification labels will be fitted to all drive units which will ensure easier information retrieval for future maintenance and inspection tasks etc.

All drive units are designed to operate at a standard fixed speed, however variable speed ranges maybe achieved by utilising an electrical speed controller.

POWERTRACK 500 CONVEYOR CHAIN

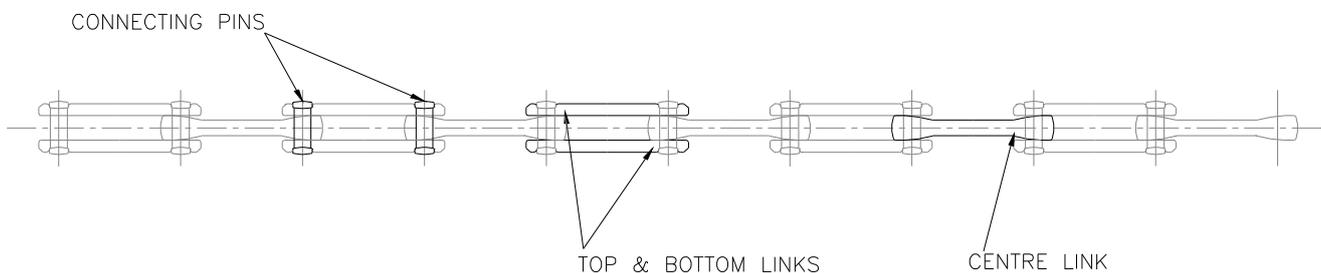
Our standard **Powertrack 00** (678) conveyor chain is a drop forged rivetless type 156mm (noml. 12") chain and is made up from link and pin components which are cast from high carbon steels, the three most popular being SAE 1045, SAE 1541 and SAE 1052.

The chain lends itself to overhead conveyor applications due to its ability to negotiate horizontal and vertical curves (bi-planar).

The chain assembly can be carried out manually by hand, without the use of any tools.

The basic components are a top and bottom link, into which the conveyor drive dogs engage, 1 off centre link into which the two and four wheel trolley attachments are fitted and a connecting pin.

To assemble the chain, the top and bottom links are moved to the middle of the centre link and rotated through 90°, which allows the connecting pin to be inserted through the top and bottom and centre links. The top and bottom links, together with the connecting pin must then be moved to the end of the centre link and rotated back 90°.



Once this assembly is tensioned the chain section is formed.

Upon assembly of the conveyor chain it is lightly oiled and packaged into manageable lengths for ease of handling on site, for installation.

POWERTRACK 500 TWO & FOUR WHEEL TROLLEY ATTACHMENTS

To support the conveyor chain from the RSJ track, trolley assemblies are utilised in addition to supporting the product loadings.

The trolley assemblies consist of two half cast roller arm brackets, which have a spacer bush bolted between them to create an assembly. Two heavy duty semi precision rollers are riveted to the tops of the roller arm brackets, which run on the RSJ track section.

The trolley rollers are case hardened and are supplied with an open steel cage and chrome balls.

Lubrication, via our shot lubricators can be easily achieved with the open cage type roller, however if grease is applied (upon request) sealed rollers are required.

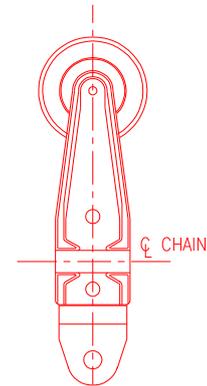
The outer profile of the roller is formed to provide a mating surface of the rolled steel joist track section.

Two Wheel Assembly

Two wheel trolley assemblies have a carrying capacity of 545 kg per assembly and consist of two half brackets bolted through the inner link of the conveyor chain.

Various standard carrying or jiggging attachments maybe bolted between the brackets to provide a carrying medium for the product.

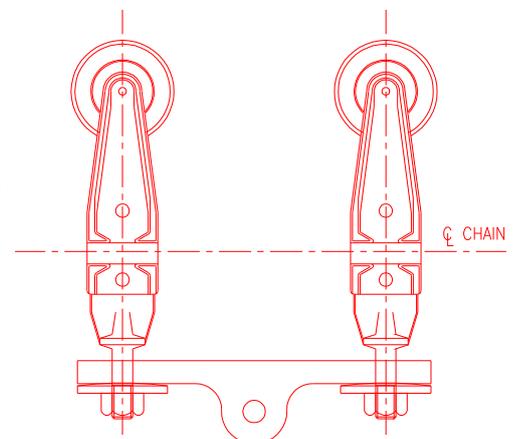
The maximum trolley spacing is 919mm. See table later in specification to determine trolley pitches and bend radii.



Four Wheel Assembly

Four wheel trolley assemblies are similar in construction to that of two wheel units, however utilise a loadbar, which connects 2 two wheel trolleys together, thus allowing upto 1090 kg to be carried.

The loadbar allows 2 two wheel trolleys to be bolted into the conveyor chain at 306mm centres.

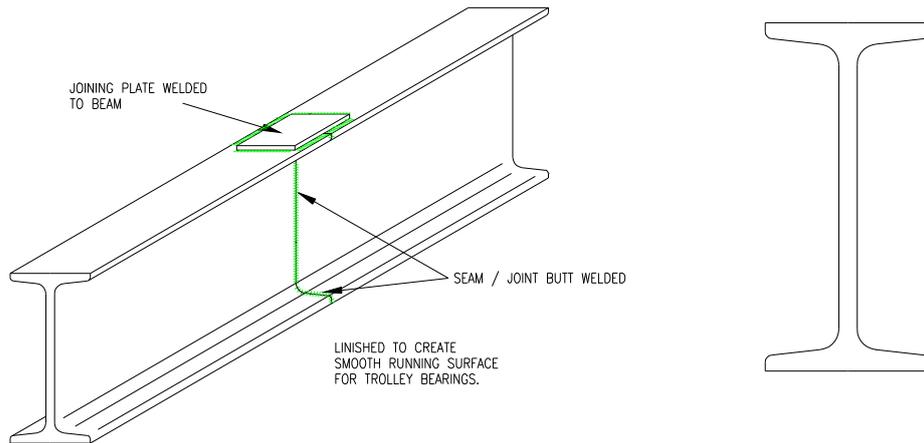


POWERTRACK 500 TRACK SECTION

The straight track section is rolled from a standard section rolled steel joist.

Standard straight sections can be joined by chamfering each end of the RSJ and butt welding together. For additional strength, a top and bottom plate can be welded onto the track section.

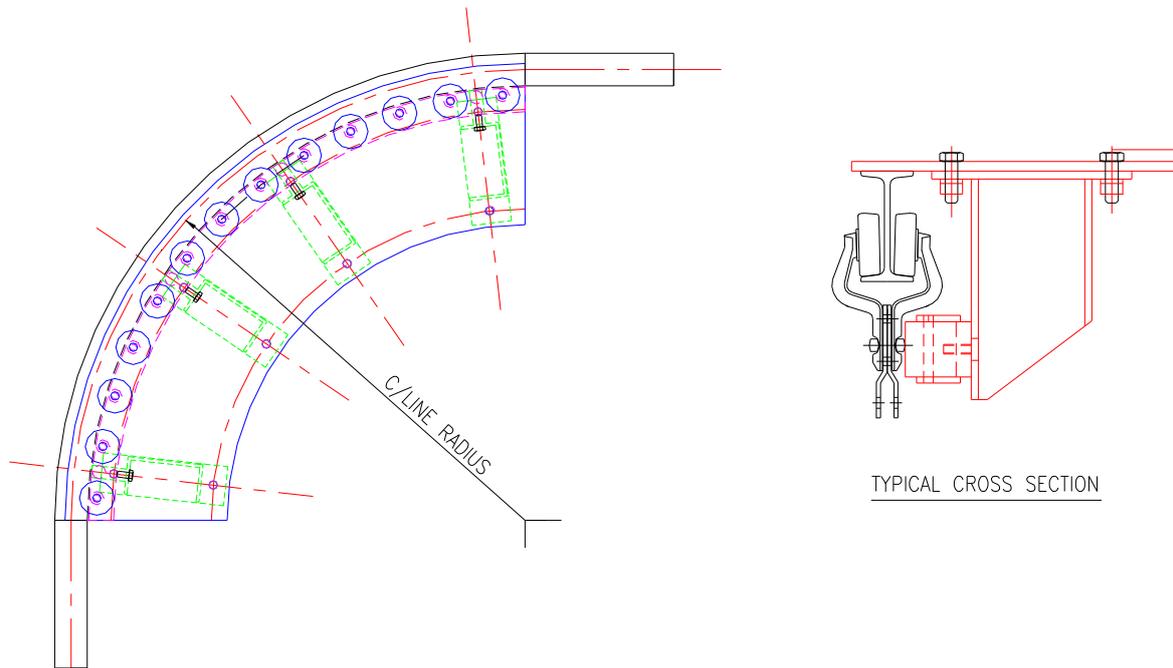
Upon completion of the welding, the trolley running surfaces are ground flush with a hand grinder to allow the free movement of the trolleys whilst in normal working conditions.



Horizontal Bends

The horizontal roller turn roller bend, as it is known, uses the same steel section as the straight track, however it is rolled to the required radii.

A 'battery' of heavy duty roller turns rollers are supported from substantial mounting brackets which are fitted to the inside edge of the bend beneath the track section.



The hardened roller turn rollers are used to resist the turning moment of the conveyor chain and retain it in the centre line, due to the working chainpull.

Standard bend radii and angles are available, however non standard units or composite type bends can be manufactured as required.

- Standard Radius - 610mm or 750mm
- Standard Angles - 15°, 30°, 45°, 60° + 90°

N.B. Care must be taken to ensure the correct trolley pitch is utilised with the required bend radii. Please consult the enclosed table or seek advice from ourselves prior to implementation.

Vertical Bends

Vertical bends are identical to that of the straight track section however, are rolled to the required radii.

As with any horizontal bend various standard angle and radii are available, however care should be taken with trolley pitches when determining the bend radii.

<i>TROLLEY PITCH</i>	<i>HORIZ. BEND RAD.</i>	<i>VERT. BEND RAD.</i>
306mm (12")	610mm	3658mm
612mm (24")	610mm	4572mm
918mm (36")	750mm	6096mm

POWERTRACK 500 TENSION UNIT – PNEUMATIC

The tension unit utilises a pneumatically operated cylinder for continual adjustment of the chain to allow the optimum tension within the conveyor system at all times.

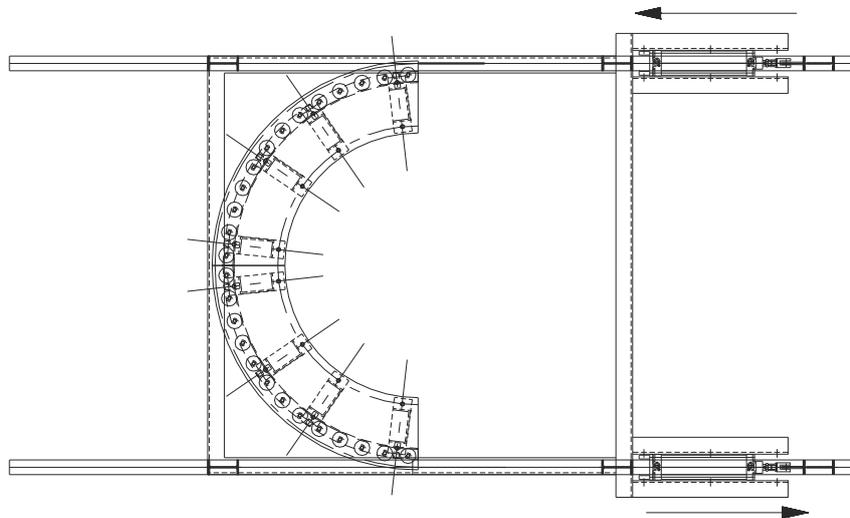
A low air pressure switch should be included within the conveyor controls (if controls are undertaken by customer), which in the event of an air failure would shut the conveyor system down and prevent a chain jam-up situation.

As with all conveyor systems the tension unit should be situated at the lowest point in the system, if practical, thus easily absorbing the variances in the chain and track lengths.

Ideally the conveyor drive unit should be prior to the tension unit, therefore allowing the lowest chainpull in the system to enter the unit.

If the correct chain tension is not achieved, chain surge maybe evident during the system's operation.

The basic construction consists of a fabricated framework onto which is mounted two 'sleeved' track sections. Attached to these two sections is a 180° horizontal bend which is supported by a carriage, and is allowed to float as the pneumatic cylinder extends and retracts.



This framework allows chain tensioning to be carried out without the necessity to adjust any conveyor supports.

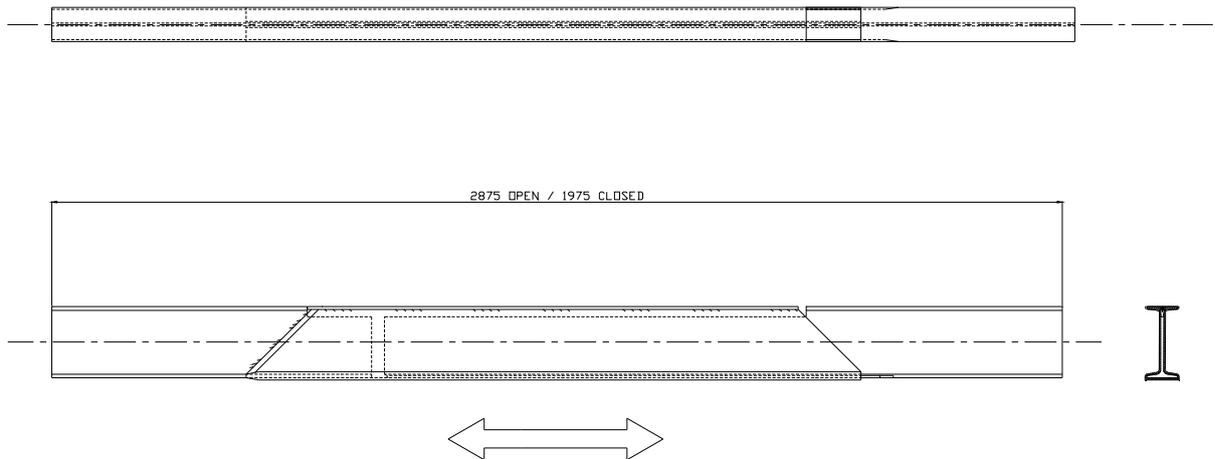
A screwed rod adjuster allows the tension unit to extend, to ensure the correct tension is present in the system, but will not allow it to collapse; thus ensuring undesirable slack chain is eliminated from the system.

The design of the tension unit allows a single pitch of chain to be removed from the system as required.

POWERTRACK 500 EXPANSION SECTION

These units are designed to compensate for the expansion of the conveyor track section when installed through high temperature applications, i.e. curing and drying ovens.

Dependant upon the oven size and length, at least one unit should be installed into each conveyor run passing through an oven.



The construction of the unit is similar to that of a linear tension unit, with the use of a track section sliding within a 'sleeved section'.

POWERTRACK 500 SHOT TYPE LUBRICATOR

The purpose of a lubricator is to allow the effective application of lubrication to the conveyor chain and rollers to enhance the life expectancy and reliability of the conveyor system.

The proposed lubrication system for the conveyor chain allows the precise application of the lubricant directly onto the critical components of the chain, i.e chain rollers and articulating joints.

An accurately measured quantity of lubricant is 'shot' onto the chain components via nozzles which are set up by our engineers during commissioning trials.

This method ensures very accurate application of lubricant to the conveyor chain, thus considerably reducing the possibility of product contamination and reject components.

The general operation of the unit allows air to enter the pneumatic pump via a solenoid valve. This solenoid valve is controlled by a proximity switch which is activated upon each pitch of chain passing the sensor.

Oil is forced, by the pneumatic pump, into the nozzles from the lubricator reservoir tank where precise volumes of oil at high velocity are very accurately discharged onto the chain components.

Each conveyor system requires its own lubrication frequency, which is dependant upon certain variable design parameters. i.e.

- Conveyor Speed
- Operating Period
- Working Environment (heat etc)
- Carrying Capacities

Due to the variation in the above working parameters to each conveyor system, it is difficult to determine a set lubrication frequency. Therefore we suggest that the chain is monitored during the initial running stages with the frequency being increased or decreased dependant upon the condition of the conveyor chain.

Chain Lubricant

We would proposed the use of 'TP1773', which in our opinion has a proven track record and would give the most effective protection to the chain components whilst working in environments upto 250°.

POWERTRACK 500 VERTICAL CURVE SAFETY DEVICES

In the event of the conveyor chain becoming parted and creating a runaway condition on a vertical rise or fall section, anti run forward and back units must be utilised when operating in personnel working areas.

These units would arrest the conveyor chain within these areas before entering a personnel working zone.

Anti Run Forward Unit

If the chain should become parted and begin to travel significantly faster than the normal operating speed, the anti run forward device will be activated and stop the conveyor. The drive motor will be stopped via a limit switch sensor fixed to unit.

Anti Run Back Device

To prevent the conveyor chain travelling in a reverse direction due to chain breakage or similar, this unit will stop the chain from further movement. The anti run back device works by use of a simple ratchet mechanism.