



POWERCON

EQUIPMENT GUIDE

Maintenance and adjustment of components used throughout the system on different types of equipment.

POWERCON HANDLING SYSTEMS (PTY) LTD.

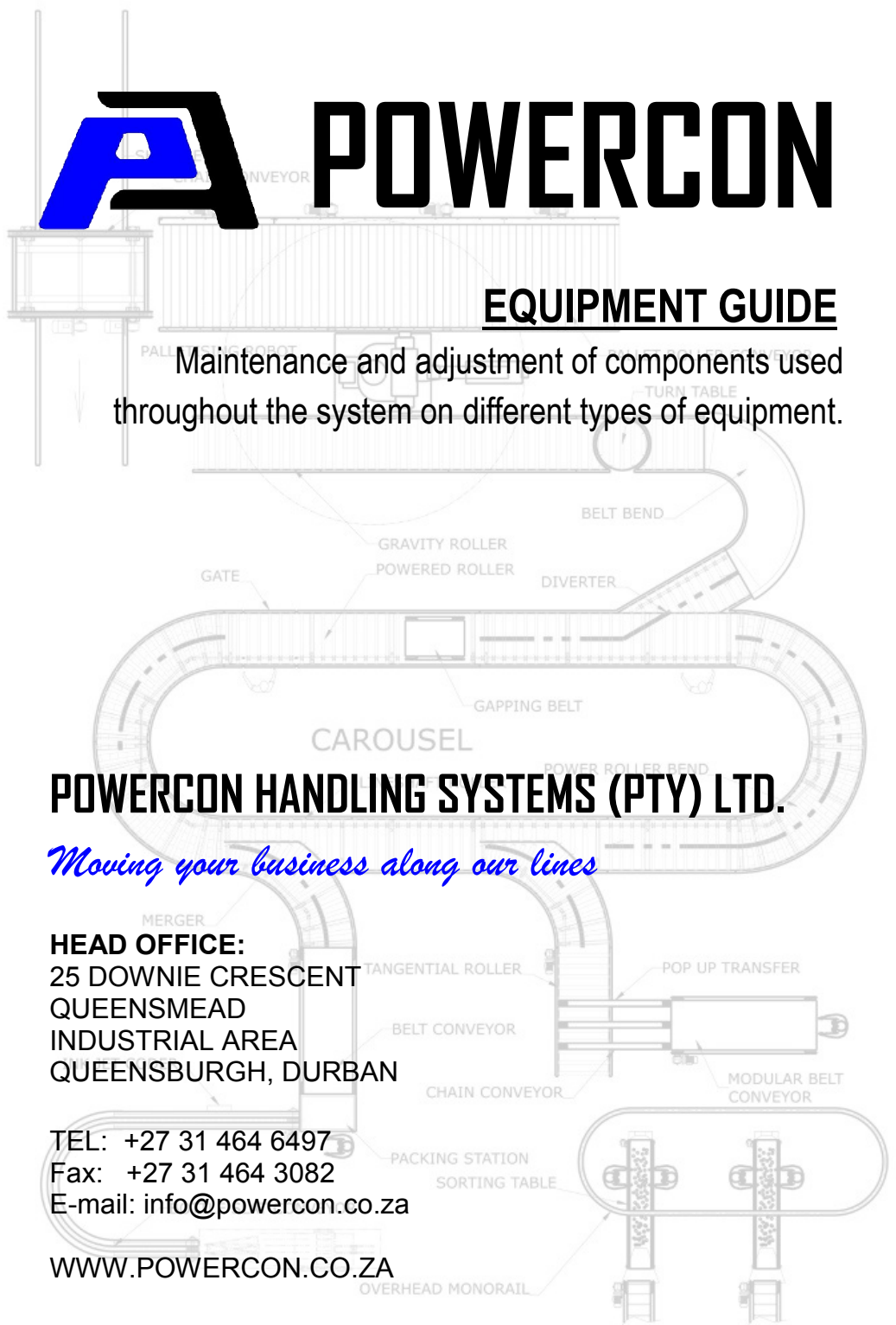
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CONTENTS:

EQUIPMENT MAINTENANCE:

1)	BELT TRACKING	-	PAGE 4, 5
2)	BED SQUARING	-	PAGE 6
3)	CHAINS	-	PAGE 6
4)	MOTORS & GEARBOXES (REDUCERS)	-	PAGE 7
5)	WEAR PATTERN	-	PAGE 7
6)	SPROCKETS	-	PAGE 8
7)	TAPER LOCKS HUBS/BUSHINGS	-	PAGE 8

SERVICING:

1)	SERVICE INTERVALS & GUARUNTEE	-	PAGE 9
2)	HOW TO BOOK YOUR SERVICE:	-	PAGE 10
3)	SERVICE / CALL OUT HISTORY	-	PAGE 11
4)	BREAKDOWN / SERVICE RATES	-	PAGE 12

GENERAL:

1)	STANDARD TERMS AND CONDITIONS	-	PAGE 13
2)	CONVEYOR SAFETY	-	PAGE 14,15

Belt Tracking:

Belt tracking need not be mysterious or difficult. The most important tool in belt tracking is patience. A slow speed conveyor takes much longer to track than a faster running conveyor. There are a few simple rules, however, which if followed makes the job much easier.

- Do not use major pulleys (tail, drive, take-up, etc.) to track the belt. These pulleys normally have belt wrap of 180° or more. For this reason, they are the system which holds the belt in proper Tension. Moving the pulley out of square (with respect to the bed section) only results in stretching one side of the belt with respect to the other. Today's belts have little or no tolerance for this. The result is a permanently stretched belt which will no longer track. Unusually one side of belt becomes longer than the other.
- Always track to a major pulley using snub or return rollers. For belt conveyors start at the tail end of the conveyor and work toward the head end of the unit. For belt driven live roller conveyor start at the head end of the conveyor and work toward the tail end of the unit.
- Conveyor belting will track in the direction which is perpendicular to the axle of the tracking roller. Snub rollers are installed for this purpose. Because the belt wrap on these is between 10 to 90 degrees they have considerable effect on tracking but do not cause stretch. Return rollers also provide a means of tracking but because the belt wrap on them is less than 10 degrees there effect is minimal.
- The squareness of a bed section having rollers as the belt carrying surface is also important. If the bed sections are racked, the belt will tend to track to one side of conveyor. Check for racking by removing some bed rollers and place a carpenter square against the inside of the bed frame and the face of a bed roller. If a section is not square, it can be squared using squaring rods and turn buckles.
- Before attempting to track a belt, check to see that all pulleys and rollers are square with respect to conveyor frame. The belt splice should be square with respect to the center line of the belt. The belt tension should be enough that the belt is driven by the drive pulley and bends slightly over the crowns of end and drive pulleys.

Belt Tracking (continued)

- Turn the conveyor on and move the end of the conveyor to which the return side of the belt is travelling. That is the tail end for belt conveyors and head end for belt driven live roller conveyor. Observe direction of belt as it leaves end pulley/roller.
- If the belt moves toward one side of conveyor, adjust the snub roller just prior to the end unit by moving the end of the snub roller, on the side to which the belt is moving, toward the end unit.
- Adjustments should be made in small increments. 1mm to 5mm at a time. Adjustments should be made until belt moves back to center of end unit and holds its place.
- If all adjustment in the snub roller is used and belt is still not tracked, move to the snub roller feeding the drive. Adjustment is made in similar fashion. Note: If all adjustment in the first snub roller is used and belt is only slightly off center, adjustment of return idlers could provide the fine tuning necessary. Move to the first return roller back from the snub roller and adjust it as you did the snub roller.
- It should be noted that it is acceptable for the belt to move from side to side, so long as it doesn't climb off the pulleys and always returns to its previous position.

Bed Squaring:

As noted above a square bed section is important for tracking of belts or roller type conveyors. This is especially true on conveyors 40 feet and longer. It is possible for a belt to be properly tracking over both end units, but tracking to one side of conveyor at intermediate points along its length. This condition usually indicates that a bed section or sections are racked, carrying rollers not square to bed side frames. To correct this condition the following steps should be taken:

- Identify which sections are racked by placing a square against the side frame and the face of a carrying roller. Note which way the rollers are skewed.
- Install squaring rods as necessary. Loosen the bolts securing the conveyor frames together. Loosen the bolts holding the frame to their supports.
- Place square against side frame and roller, then tighten nuts on end of threaded rod until frame is square.
- Tighten all coupling bolts and support belt.
- Retrack belt.

Chains:

Besides lubrication chain tension & alignment are important. The alignment of the chain also included the alignment of the sprockets it is wrapped around.

- For roller chain drives with chain spans sloping less than 45° from horizontal, the total possible mid-span movement of the slack span should be around 25mm.
- Chain wear takes place between hardened pin and bushing surfaces in load bearing area, resulting in elongation. This is sometimes referred to Incorrectly stretch.

*Note: worn and elongated chain should not be used with new sprockets. No roller chain should be used when the wear or elongation is more than 3%.
Some drives tolerate even less elongation.*

Motors and Gearboxes (Reducers):

Except for keeping the units clean and checking the level of oil in the gearboxes maintenance of these units is minimal.

- Oil levels in gearboxes should be checked when unit is warm, but not running.
- If either unit fails, replace it with the same unit.
- (Send the failed unit to the nearest service representative for repairs)
- Note that worm gearboxes common on smaller conveyors do generate significantly more heat than inline alternatives

Wear Pattern:

Wear grooves appear on the friction surfaces. This is a normal wear condition, and does not impair functioning of the unit. Never machine the friction surface to remove grooves or score marks resulting from normal wear.

- Heat: **Excessive heat and high operating temperatures are causes of rapid wear.** Units, therefore, should be ventilated as efficiently as possible, especially if the application requires fast, repetitive cycle operation.
- Foreign Materials: Oil and grease accidentally reaching the friction surfaces may be removed by wiping with a rag dampened with trichloroethylene. In performing this operation, do not drench the friction material.
- If the friction material has been saturated with oil or grease, no amount of cleaning will be completely effective. Once such a unit has been placed back in service, heat will cause the oil to boil to the surface, resulting in further torque loss.

Sprockets:

Sprockets should be checked for proper alignment, that they are securely fastened to shafts and that they are wearing in a normal fashion.

- If sprockets show signs of wearing on the sides of their teeth this is an indication of miss-alignment.
- If the tips of their teeth are wearing off this is a sign of an elongated chain or a loose chain.

Note: When replacing sprocket, or chain it is advisable that they both be changed.

Taper Lock Hubs/Bushings:

The proper installation of taper lock bushing is critical. If not installed properly the bushings can break loose, with the potential of damage to equipment and a safety hazard for personnel. Please follow the following instructions for installation of taper lock bushings:

- Clean all oil, dirt and paint from shafts, bushing bore, outside of bushing and component bore (sprocket, sheave or pulley).
- Insert bushing into component. Match the hole pattern, not the threaded holes (each hole will be threaded on one side only).
- Oil set screws and thread into those holes which have threads in hub. For sprockets and sheaves do this prior to mounting on shafts.
- Alternately torque set screws to recommended torque setting in chart below. If two bushings are used on same component and shaft, i.e. Pulleys, fully tighten one bushing before working on the other.
- Use a block, sleeve or drift, and hammer to tap in bushing after each time set screws are torqued down.

Service Intervals & Guarantee:

Although general maintenance and basic services and checks need to be performed by the client on a daily basis, Conveyors need to be inspected and serviced by [POWERCON HANDLING SYSTEMS™](#) to ensure your equipment's reliability and **retain the guarantee**. We recommend the follow service intervals:

- **1 week after installation (usually a free service)**
- **Monthly inspections**
- **Full service every 3 months**

Note: Service plans are not included in your equipment purchase, however can be provided at an extra cost.

Contact us to arrange a booking and find out what our current service rates are.

Failure to service at regular intervals could cause damages to your equipment which will not be covered under the guarantee.

Daily check to be carried out by client:

Check alignment of belts / chains
Visual inspection of all components
Listen for and report any abnormal noises
Look for signs of excessive wear
Inspect belts for damage
Ensure guards are intact

Please see our standard terms and conditions on page 13.

HOW TO BOOK YOUR SERVICE:

POWERCON HANDLING SYSTEMS (PTY) LTD

TEL - + 27 31 464 6497 (Head office)

CELL - + 27 78 918 4313 (JHB Only)

EMAIL - info@powercon.co.za

Sales:

Bennie - bennie@powercon.co.za

Anya - anya@powercon.co.za

Physical Address: (Workshop)

25 Downie Crescent

Queensmead Industrial Area

Queensburgh, Dbn 4070

** When booking, please use the equipment serial number (or invoice number) as a reference.*

SERVICE / CALL OUT HISTORY

Please keep this card on hand whenever Powercon Handling Systems is contacted to perform repairs or maintenance to your equipment.

<u>COMPANY NAME:</u>	<u>TEL NUMBER:</u>	<u>PHYSICAL ADDRESS:</u>
<u>ORIGINAL SUPPLY DATE:</u>	<u>EQUIPMENT SUPPLIED:</u>	<u>SERIAL NUMBERS</u>

CALL OUT DATE	WORK PERFORMED	REFERANCE NUMBER	SIGNED BY POWERCON (FULL NAME)

Call out / break down / Service rates

Under warranty:

Should your conveyor be found to be **defective** due to poor workmanship or failure while within the warranty period, we will repair your conveyor at no charge to you. This will include travelling costs incurred up to 25km from our work in Queensburgh, Durban otherwise travelling will be charged for. Please note, that buy out items will carry the relevant suppliers guarantee.

Out of the warranty period:

Should the conveyor be out of warranty or found to be defective due to negligence, we will either assess and quote or carry out the repair of the conveyor at your request. This needs to be confirmed prior to any repairs being carried out. Should you want the conveyor repaired, we will only cost the job once complete or quote for work at a minimum charge of 3 hours.

Time charged for:

We do not charge on site labour and travelling separately. We charge from when our technician leaves our premises.

Our call out rates are as follows:

Technician + 1 assistant (generally for call outs/break down / Servicing)

- R _____ per hour (normal work hours, Mon-Fri)
- R _____ per hour (after hours)

Technician + 3 assistants (generally for installation work)

- R _____ per hour (normal work hours, Mon-Fri)
- R _____ per hour (after hours)

RATES EXCLUDE VAT.

POWERCON HANDLING SYSTEMS STANDARD TERMS AND CONDITIONS

GUARANTEE:

Our equipment is guaranteed against defective materials and workmanship for period of 12 months (2000 hrs) based on single shift operation, provided equipment has been properly maintained, serviced by us and operated as it was intended. Any part found to be defective within guarantee period, due to faulty materials and/or workmanship shall be replaced or repaired at our discretion, free of cost. Any modifications or abuse of the equipment will render the guarantee null and void.

DOCUMENTS AND DRAWINGS:

All drawings, documents and design briefs are the property of Powercon Handling Systems and such information may only be made available to outside parties once written consent has been obtained from ourselves in writing. Under no circumstances will drawings be made available unless an order has been confirmed or and intent to purchase has been issued.

VALIDITY:

All our quotations are generally valid for 30 days from date of quotation. Since many of our prices are linked to Rand / Dollar exchange rates, prices may be subject to change without prior notice. Please ensure pricing is valid prior to placing orders. We reserve the right to accept or reject any order.

TERMS OF PAYMENT:

Unless otherwise stated, we require a 50% deposit before work commences and the balance payment is to be made in full before delivery or collection. Payments are to cleared in our account before goods will be released.

VARIATIONS / MODIFICATIONS:

Should design changes be required which involves modifications to the equipment during or prior to manufacture or installation, a variation order may be required

CANCELLATIONS:

Should the purchaser cancel the order, Powercon Handling Systems reserves the right to withhold deposits and / or submit a final invoice to recover costs.

INDEMNITY:

The buyer shall require its employees to use reasonable care and all safety devices in the operation and maintenance of said equipment. The buyer agrees to indemnify Powercon Handling Systems, their employees and its suppliers from any and all claims, demands, liabilities, causes of action, suits, costs and expenses of any kind and nature (including attorney's fees) for personal injury and property damage arising from or in any way connected with the operations activities or use of the equipment.

CONVEYOR SAFETY

Like other things we work with, conveyors are safe when used correctly. They're not a means of human transportation or a plaything. They come in many shapes and sizes, and each is designed to do a specific job, so it's not easy to sum up conveyor safety in a few sentences. But needless to say, you have to use the right conveyor for the job.

Certain safety precautions must be taken even though you don't work directly with conveyors. For example, don't crawl over or under them, Never ride a conveyor.

Don't attempt to operate a conveyor unless you've been checked out on the procedures and are authorized to run it. Persons working on or about a conveyor should know the location and operation of stopping devices. If they don't, they should consult their supervisor. Anyone operating a conveyor must receive proper training.

Don't attempt to clean any belts or parts while the conveyor is running. If it's necessary to clean belts or drums while the equipment is in motion, proper barrier guards should be provided at pinch points.

Most companies that manufacture conveyors try to make them safe. If the equipment isn't safe, modifications have to be made. Pinch points and moving parts must be guarded.

If a conveyor runs overhead, precautions must be taken to prevent injuries from materials which might fall from above. If a conveyor runs at head height or is the type that carries material hung from hooks, measures should be taken to prevent persons from being struck, and employees in the area should remain alert to possible danger.

Conveyors should be stopped and controls locked out when repairs are being made, and the equipment shouldn't be started again until it is certain that all is clear.

CONVEYOR

DOS AND DON'TS TO KEEP YOURSELF SAFE

Safety Practices

 <p>Do Not Climb, Sit, Stand, Walk, Ride, or Touch the Conveyor at Any Time</p>	 <p>Do Not Perform Maintenance on Conveyor Until Electrical, Air, Hydraulic and Gravity Energy Sources Have Been Locked Out and Blocked</p>	 <p>Operate Equipment Only With All Approved Covers and Guards in Place</p>
 <p>Do Not Load a Stopped Conveyor or Overload a Running Conveyor</p>	 <p>Ensure That All Personnel Are Clear of Equipment Before Starting</p>	 <p>Allow Only Authorized Personnel To Operate or Maintain Material Handling Equipment</p>
 <p>Do Not Modify or Misuse Conveyor Controls</p>	 <p>Keep Clothing, Body Parts and Hair Away from Conveyors</p>	 <p>Remove Trash, Paperwork and Other Debris Only When Power is Locked Out</p>
 <p>Ensure That ALL Controls and Pull Cords are Visible and Accessible</p>	 <p>Know the Location and Function of All Stop and Start Controls</p>	 <p>Report All Unsafe Conditions</p>