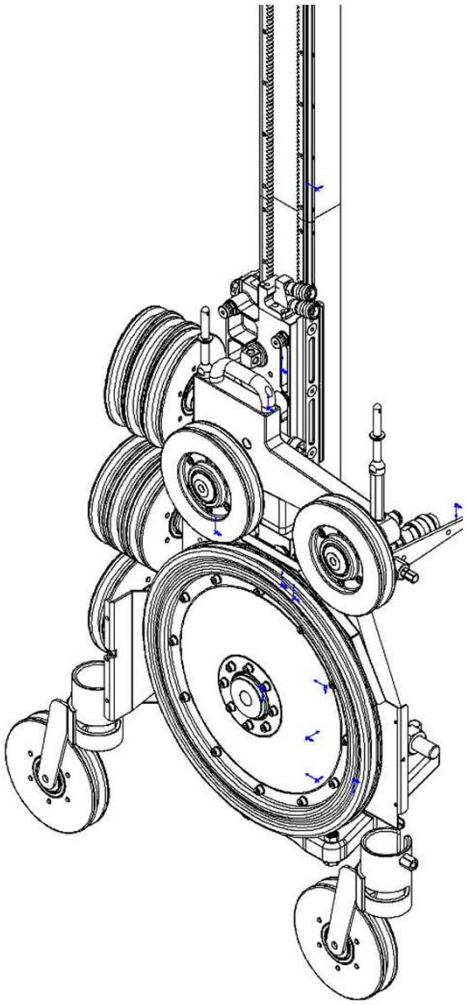
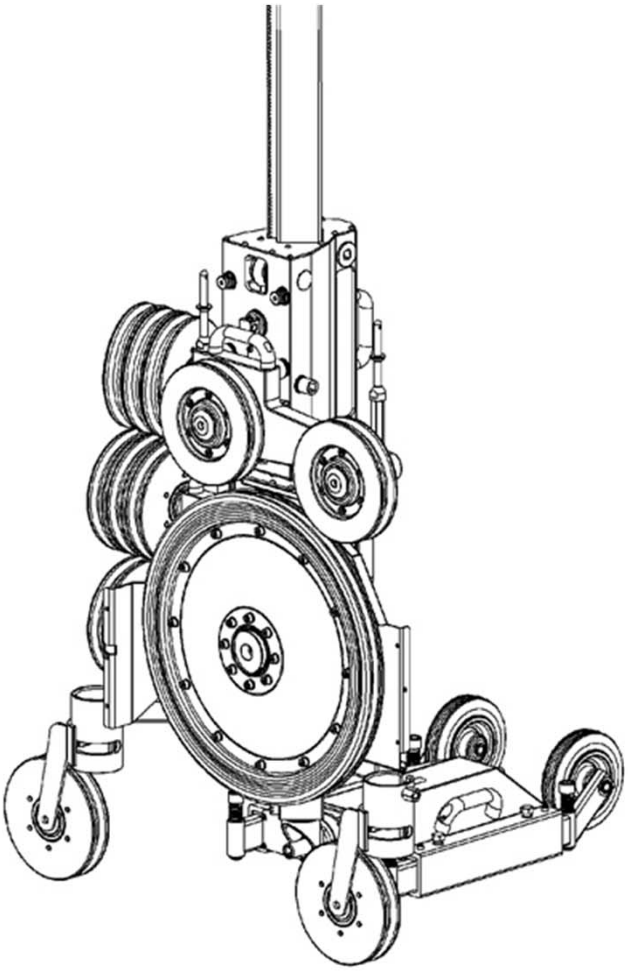
Operator’s manual

Pentruder® 3P8 Hydraulic wire saw
Pentpak® Hydraulic power pack





Pentruder®

by TRACTIVE

Operator's manual for Pentruder® 3P8 hydraulic wire saw and Pentpak® hydraulic power pack

Version: 1.0 Date: 2012-04-04
Support & Servicedokument
Original instructions

Contents

1 Introduction

Thank you very much for your confidence in our product! You have chosen to invest in a product which will give you many years of efficient and profitable production. The Pentruder 3P8 Wire Saw System has been developed based on over 30 years of experience in this specialized field. With correct handling it offers outstanding performance, safety and reliability.

The diamond wire cutting technique has been employed advantageously since many years especially for jobs where the objects have been difficult to reach to, or too big to be cut with circular saws, or other methods. Stitch drilling has been popular for many years, but due to its low overall efficiency, wire cutting has more or less taken over from stitch drilling. With wire cutting, one is not limited by depth of cut. The technique can be used to make cuts through huge objects without damaging the adjacent concrete structures. Big sections can be removed reducing cost for splitting block in several pieces. Wire cutting is a relatively quiet method, and very little vibration is produced.

It is essential that all personnel working with or in close proximity to the wire saw have read and understood the contents of this manual before commencing operations. By reading and understanding the manual the operator will be able to take advantage of the many features and benefits of the Pentruder 3P8 Wire Saw System. Should questions arise, please contact our sales agent.

We are confident that your investment in this equipment and its many design features will enhance your business competitive edge and profitability!

Product:

3P8 Wire Saw System - Hydraulic drive
Power source: Pentpak 15, 20 or 25.

Manufacturer:

Tractive AB
Gjutargatan 54
S-781 70 Borlänge
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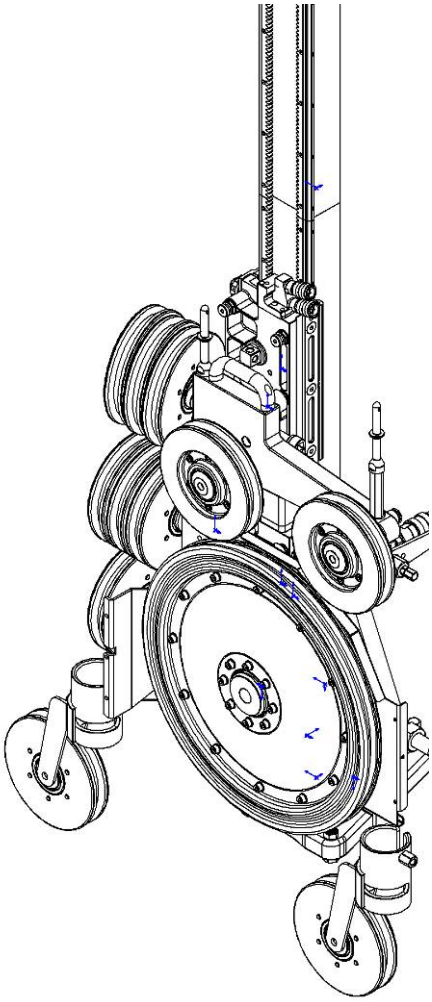
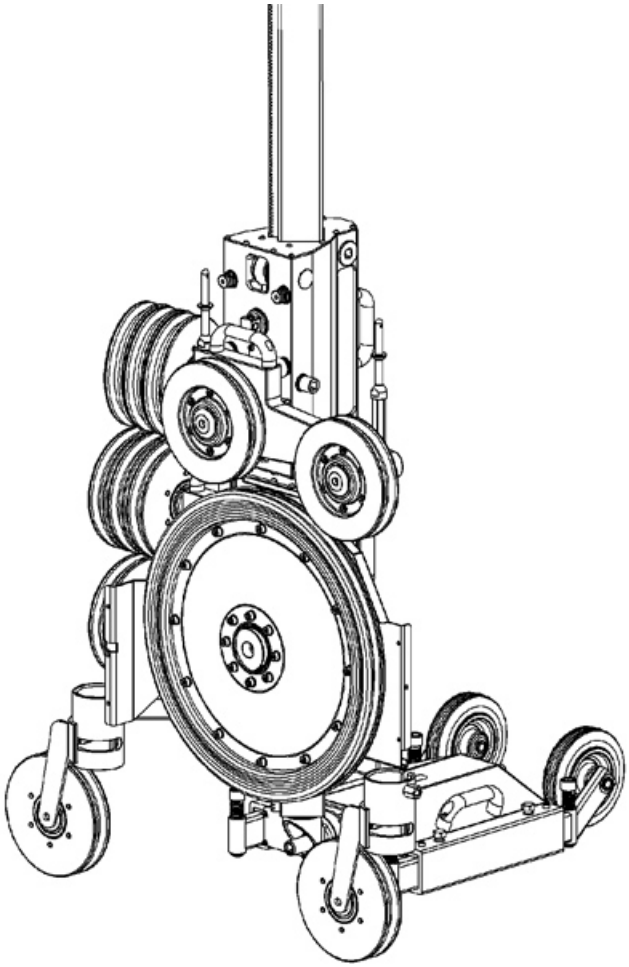
www.tractive.se

2 Description

2.1 Features

- The 3P8 wire saw can be driven by either one of the 16, 25 or 34 cc hydraulic motors and Pentpak 15, 20 or 25.
- Pentruder 3P8 wire saw can either be built on the wall saw track (MCCS) or on the 70 mm column system.





- The cutting speed 22 m/s when driven by the 16 cc hydraulic motor and Pentpak 15 or 20, 15 m/s when driven by the 25 cc hydraulic motor and Pentpak 15 or 20 and 21 m/s when driven by the 34 cc hydraulic motor and Pentpak 25.

- The wire storage stores 8 m of wire per 1 m of stroke of the tensioning carriage (the upper carriage). The storage can store (pull in) over 20 m of wire if the total column length is 3.0 m or more. Any combination of 0.5, 1.2, 1.5 and 2.0 m columns can be used.

- The wire can be run over all pulleys on the machine without opening the wire.

- A patent pending system allows the wire to be run also over the adjustable swivelling pulleys, without having to cut the wire.

- Fully enclosing guards protects the operator(s) and keeps all expensive parts (reasonably) clean, like the carriages, main pulley drive system, column, etc.

- The 3P8's design allows for direct cuts to be made, and satellite pulleys can often be omitted. A direct cut means that the machine is fitted directly on the object to be cut, or very close to it, eliminating the need for extra satellite pulleys.

2.2 Modules 3P8

- 3P8-DP-HY, 3P8 Drive pulley hydraulic
- 3P8-UA, 3P8 Upper assembly
- 3P8-LA, 3P8 Lower assembly
- HSE-PP15-20 / HSE-PP25 Soft start valve with pressure gauge

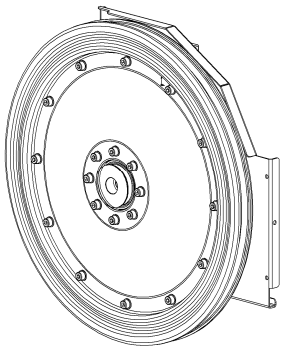
Guards

- 3P8-LMG, 3P8 Telescoping storage guard
- 3P8-TG, 3P8 Top guard
- 3P8-DPG, 3P8 Drive pulley guard
- 3P8-SSG, 3P8 Slack side telescoping guard

2.2.1 3P8-DP-HY, 3P8 Drive pulley hydralic

The main drive pulley has a diameter of Ø 500 mm, 20". It has a rubber drive ring with a specially designed type of rubber compound giving very good traction wire to rubber, even when wet. The wire wraps around the main drive pulley over 270°, which gives superb traction.

The main drive pulley is driven by a Gates toothed high torque Carbon cog belt. The belt transmission is hidden behind guards and protected from concrete slurry. The belt can be replaced using only a set of standard 6, 8 and 14 mm Allen keys.



3P8-DP-HY

2.2.2 3P8-UA, 3P8 Upper assembly and 3P8-LA, 3P8 Lower assembly

All swivelling pulleys can easily be removed from their holders for easy cleaning and maintenance, by just removing one screw.

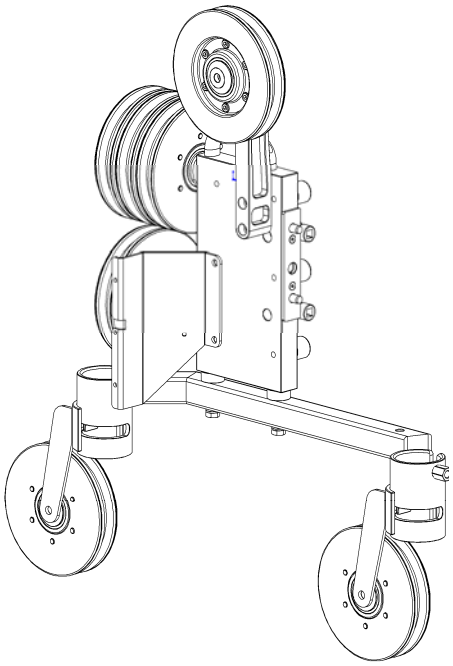
All pulleys can easily be removed from their mountings. All bearings are sealed with external seals.

The storage and idler pulleys are Ø 198 mm O.D., 7,8" and the wire is running on "pitch" Ø 180, 7.1".

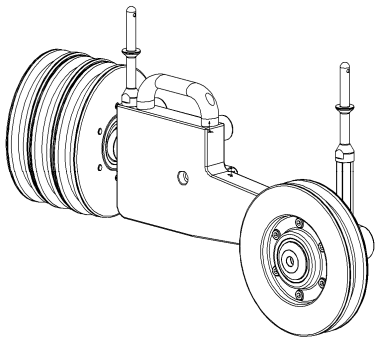
The storage and idler pulleys have a rubber rings with a specially designed type of rubber compund giving very good wear resistance. There are totally eleven such pulleys on the 3P8, including six pulleys in the storage.

All pulleys are a two piece design, and are bolted together. All rubber liners (rings) can easily be replaced using standard tools.

When the rubber liners / rings are new, the groove width for the wire, in all pulleys, is 10 mm, 0,3930", meaning that it's suitable for a Ø 11 mm, 7/16" wire. Ø 8 mm, 5/16" wire also works well



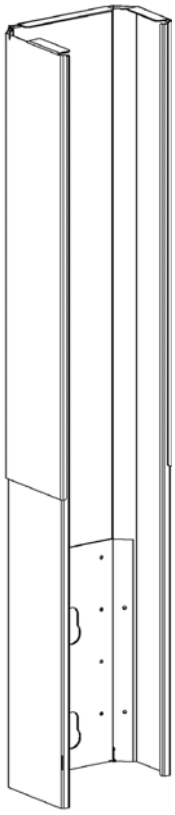
3P8-UA



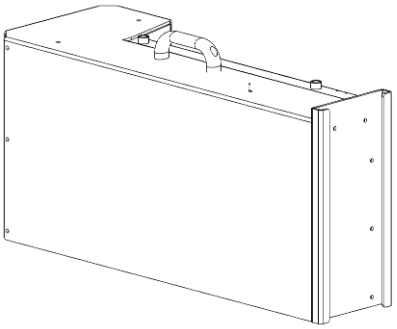
3P8-LA

2.2.3 Guards

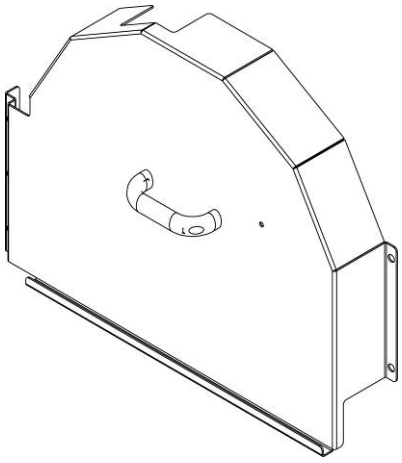
Fully enclosing and easy to fit guards protects the operator(s) and keeps all expensive parts (reasonably) clean, like the carriages, main pulley drive system, column, etc.



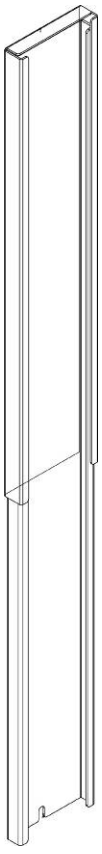
3P8-LMG



3P8-TG



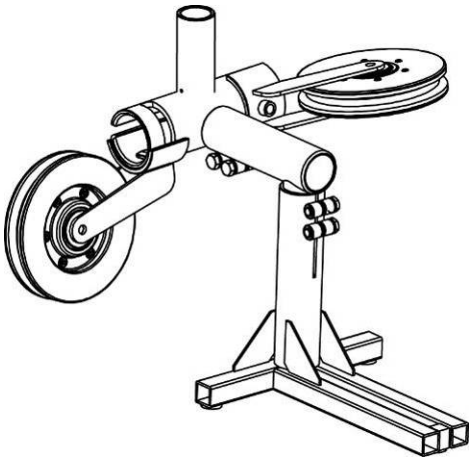
3P8-DPG



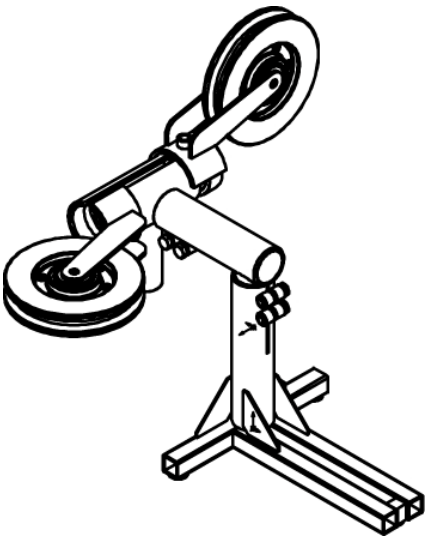
3P8-SSG

2.2.3 Accessories, wire sawing

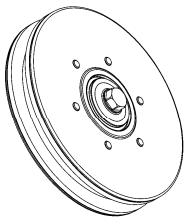
In some setups it can be useful to use satellite pulleys. We offer three versions. WSP2-90, a 2-link satellite pulley with 90°, WSP2-180, a 2-link satellite pulley with 180° and WSP1, a single satellite pulley.



WSP2-90



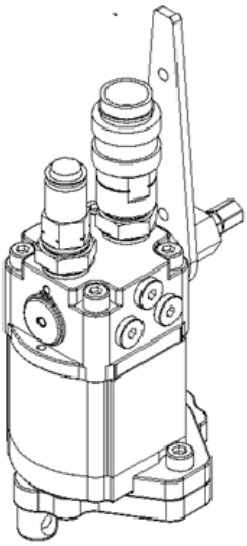
WSP2-180



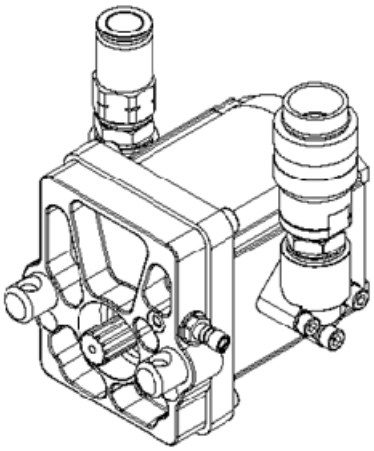
WSP1

2.3 Drive motor

- HR16R, Hydraulic motor, reversible, 16 cc
- HR25R, Hydraulic motor, reversible, 25 cc
- HR34-CW, Hydraulic motor, NOT reversible, 34 cc



HR16R, HR25R



HR34-CW

2.4 Rig for 3P8 wire saw with 70 mm column system

- CE1-70-3P8 x 2, Carriage CE1 for 3P8
- FE1, Friction brake for carriage
- PT-HY32, Hydraulic feed unit

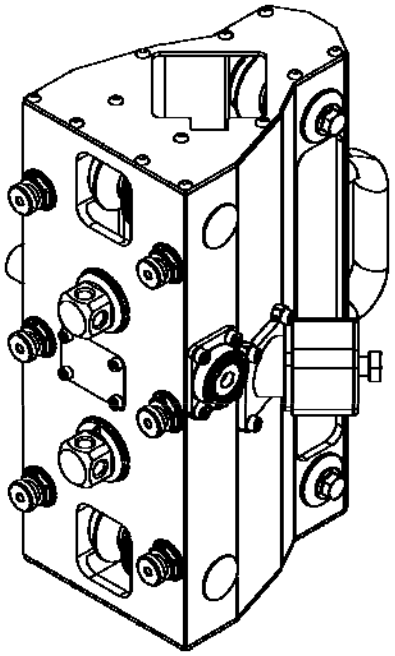
- CN 2.0-3P8, Column Female / plastic cap, 2 m (only extendable at the bottom)
- CN F/M, Columns F/M-70 Female / Male coupling, extendable, 0.5 / 1.2 / 1.5 m
- CN F/J, Columns F/J-70 Female / Jack screw, 0.5 / 1.2 / 1.5 m
- ET70, Eccentric bolt for TTFF and JTFF/JTFM tracks

- BE1, Base plate fixed quick disconnect coupling
- BETC, Base plate w top mount fixed quick disconnect coupling

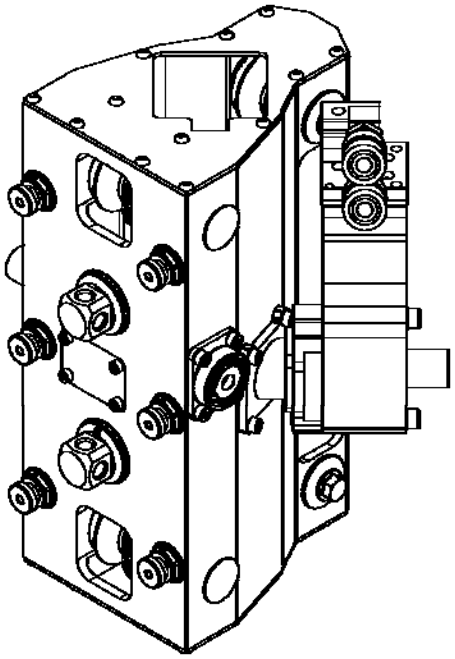
2.4.1 CE1-70-3P8 Carriages with FE1 Friction brake / PT-HY32 Hydraulic feed unit

The lower carriage, CE1-70-3P8, doesn't move during operation of the wire saw. The friction brake prevents it from moving on the column.

The hydraulic feed unit, PT-HY32, is fitted on the upper carriage, CE1-70-3P8. The hydraulic feed unit moves the upper carriage upwards as the cutting advances. The feed rate is controlled by the potentiometer on the remote control together with the regulator valve on the Pentpak 15/20/25 hydraulic power pack. See page 35 Automatic feed control.



CE1-70 with FE1 Friction brake



CE1-70 with PT-HY32 hydraulic feed unit

2.4.2 CN Columns and ET70 eccentric bolt

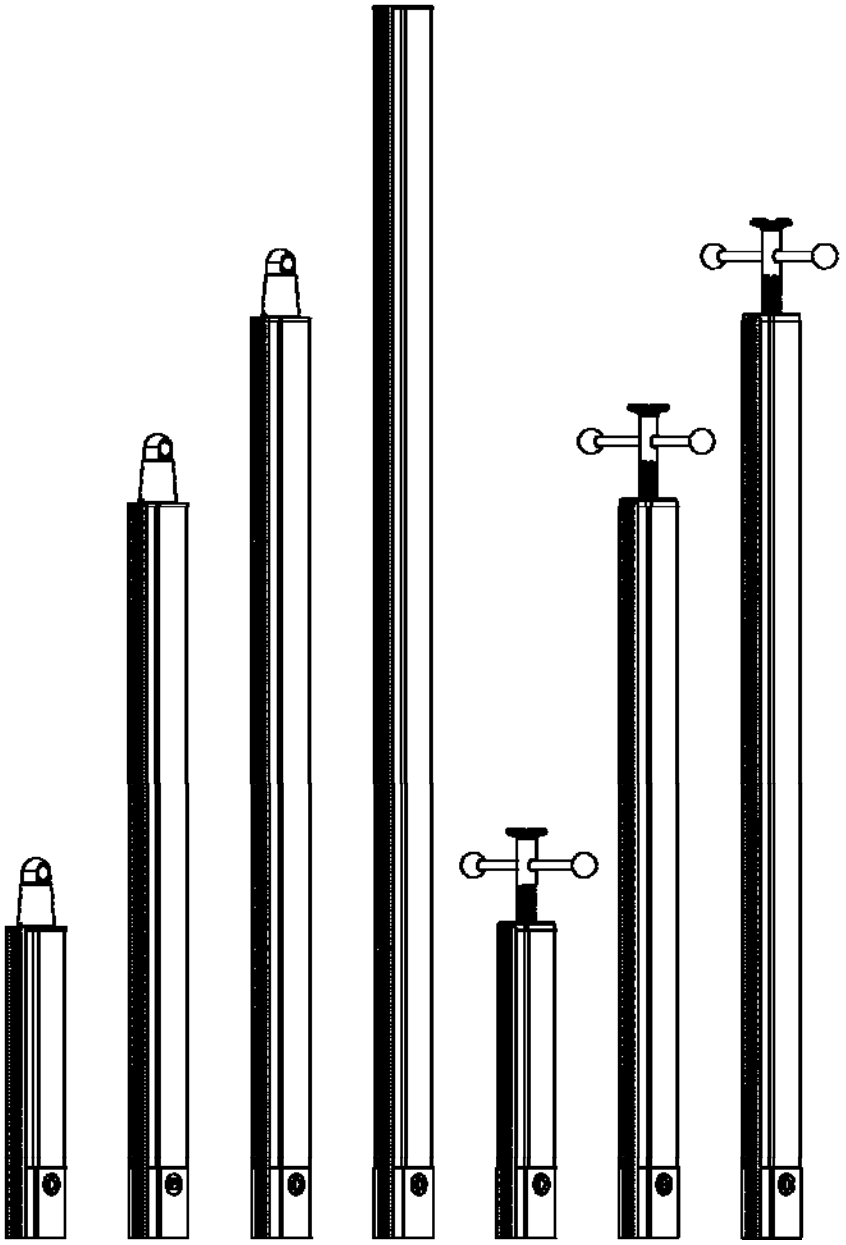
There are three types of 70 mm columns. Extendable columns CN F/M-70 with a female / male configuration, meaning that each column is fitted with a female conical quick release coupling at one end, and a male coupling at the other end.

Columns CN F/J-70 with a Jack Screw in one end, where the male coupling sits on an extendable column, are used to jack the machine against ceiling or wall.

There is also a column CN-3P8 with a female coupling in one end and a blanking plug in the other end. This column is 2.0 meters and mostly used for the Pentruder 3P8 wire saw.

The CN F/M and CN F/J columns are available in three lengths, 0.5 m, 1.2 m and 1.5 m.

The ET70 eccentric bolt is used to fasten the track to the base plate or to fit two columns to each other.



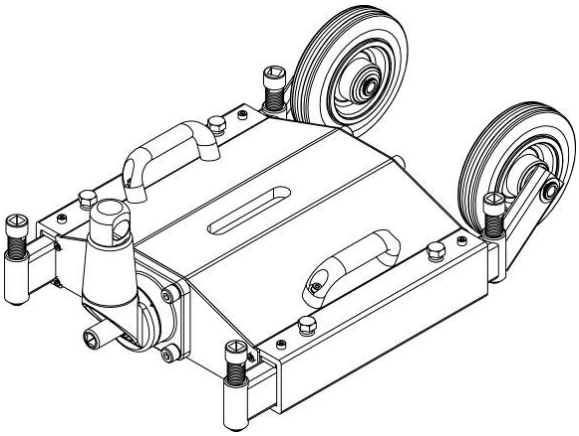
CN 0.5 F/M, CN1.2 F/M, CN1.5 F/M, CN 2.0-3P8, CN 0.5 F/J, CN 1.2 F/J, CN 1.5 F/J

2.4.3 BE1 and BETC base plates

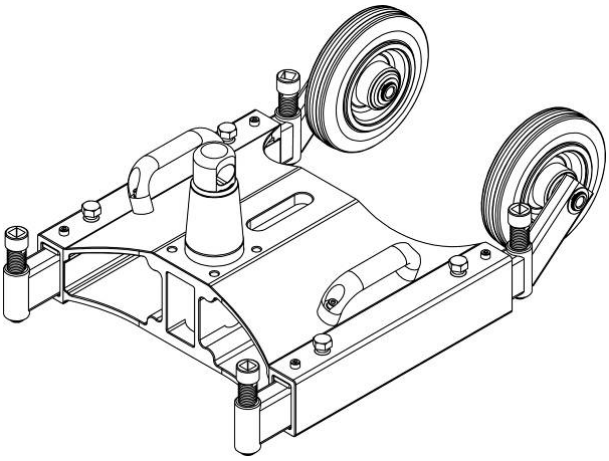
The BE1, BE2 and BETC base plates are used with CN columns, TTFF or JTFF tracks (see MCCS-rig).
The conical quick coupling on BE1 is fixed. There is also a BE2 base plate where the conical quick coupling can be swiveled sideways in increments of 5°, but we don't recommend this base plate for wire sawing.

The base plate BETC has a top mount fixed conical quick coupling.

The columns fitted on the conical quick release coupling can be swiveled around its own axis, and great flexibility is offered to simplify set-up.



BE1



BETC

2.5 Rig for 3P8 wire saw with saw track (MCCS)

- CEG-M25 Carriage, gliding, 3P8, drilling, chain sawing, manual, gear ratio 25:1
- CEG-HY32 Carriage, gliding, 3P8, hydraulic. Max feed speed 1.0 m/min.

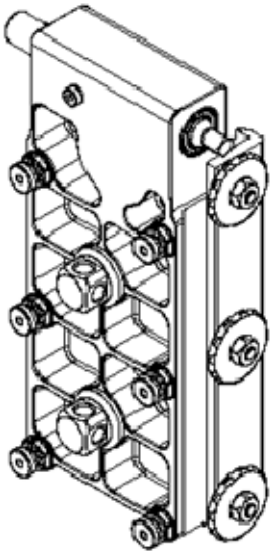
- TS, T-slot type track, 0.85 / 1.15 / 1.7 / 2.0 / 2.3 / 3.45 m

- BTS4, Base plate for TS type tracks, rectangular, 220 x 320 mm

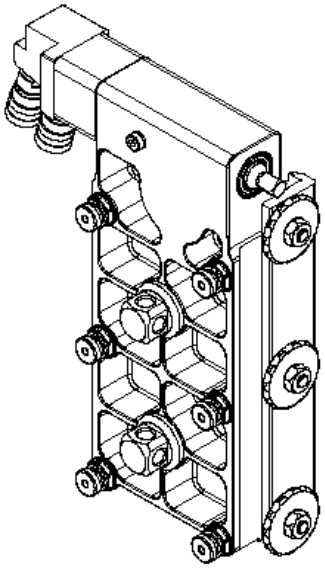
2.5.1 CEG Carriages - MCCS

The lower carriage, CEG-M25 doesn't move during operation. It can be replaced by any other CEG-carriage.

The upper carriage, CEG-HY32 has a built in hydraulic feed motor. The hydraulic feed motor moves the upper carriage upwards as the cutting advances. The feed rate is controlled by the potentiometer on the remote control together with the regulator valve on the Pentpak 15/20/25 hydraulic power pack. See page 35, automatic feed control.



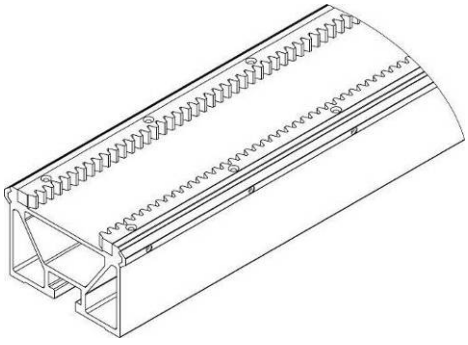
CEG-M25



CEG-HY32

2.5.3 TS T-slot type track - MCCS

The Modular Concrete Cutting System (MCCS) builds on the t-slot type track which has been used for the Pentruder wall saw since 1997. The TS track is very light weight, yet offers great stiffness and stability to the system.
The TS tracks are available in the lengths 0.85, 1.15, 2, 2.3 and 3.45 m and the weight is 6.95 kg per meter.



TS0.85 / TS1.15 / TS1.7 / TS2.0 / TS2.3 / TS3.45

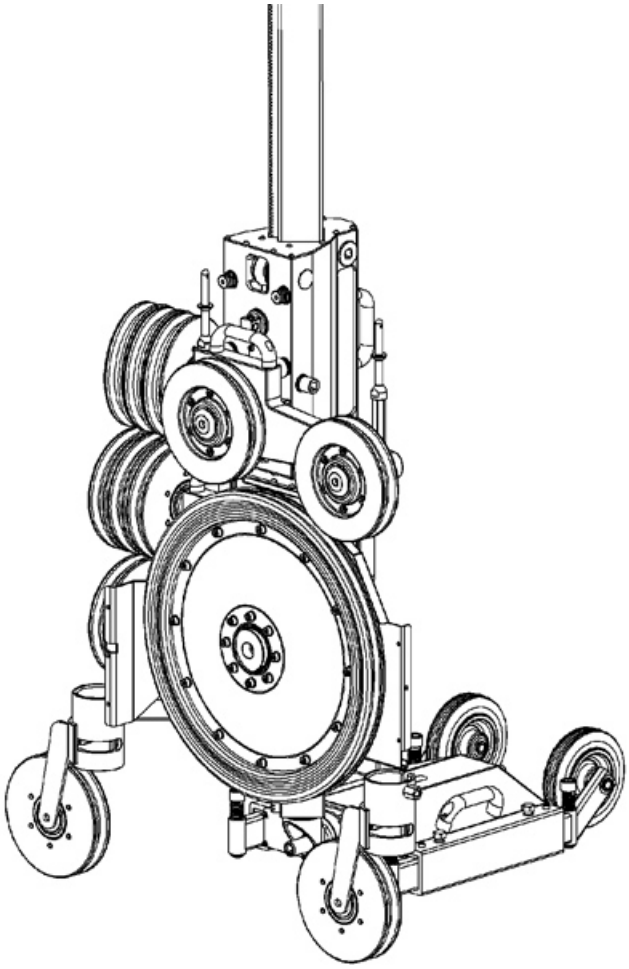
2.5.2 Base plate BTS4 - MCCS

BTS4 Base plate

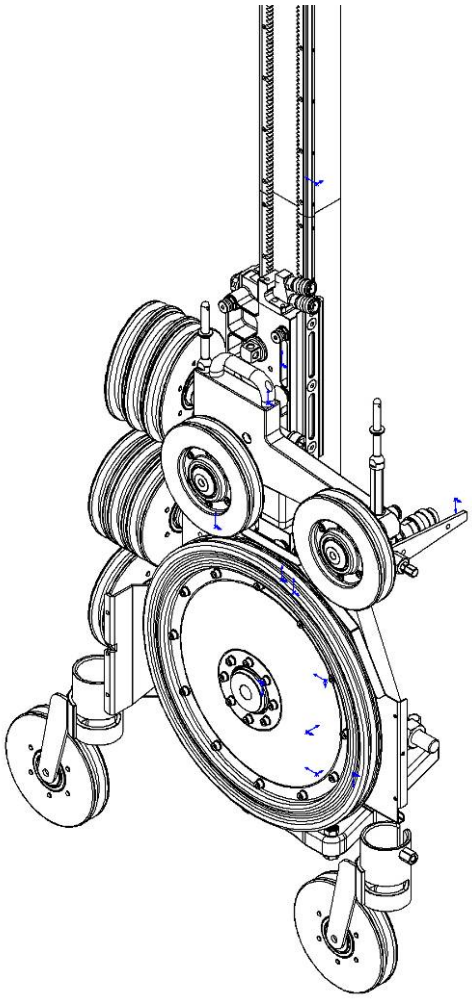
2.7 Why does the 3P8 use so many pulleys in the wire storage?

There are four loops of wire being tensioned, three in the storage, and one on the return or slack side, this means that if the upper carriage moves 1.0 m, 3.3 feet, you have stored eight meters in the storage. Objects 2.2 x 10 m, 7.2 x 33 ft., has been cut without shortening the wire, and then the carriage was moved over 2.5 meters, 8.2 feet up, taking in over 20 meters, 65 feet of wire!

All 3 + 3 pulleys in the storage are used, always. The feed regulation parameters are based on the resistance and force needed to tension the wire when it runs over all pulleys.



Pentruder 3P8 (HF-)wire saw on rig with 70 mm column system



Pentruder 3P8 (HF-)wire saw on rig with saw track (MCCS)

3 Safety instructions

3.1 Safety instructions which are used in this operator's manual

⇨	**Note!**	This sign indicates technical specifics and methods which will facilitate the job.

!	**Important!**	Here we inform about risks connected with use of the machine, and, if the safety precautions are not respected, can result in damage to property and persons in close proximity to the machine.

⚠	**WARNING!**	In these we inform about risks connected with use of the machine, and, if the safety precautions are not respected, can result in serious injury and even to fatal injuries to persons in close proximity to the machine.

3.2 Intended use of the 3P8 wire saw

⚠	**WARNING!**	The wire saw may only be used for wire sawing in concrete, masonry or similar materials. Other use is non-intended and therefore to refrain from.

⚠	**WARNING!**	Before cutting is commenced, make sure that; • there are no power lines, gas or oil pipes in the way. • the statics of the building are not imperiled because of cut.

Tractive AB is not responsible for damage on property or persons whether they originate from incorrect handling or deficient maintenance or as a consequence from not checking the machine for damage and/or defects before taking it into use.

The following safety instructions are important to know and follow.

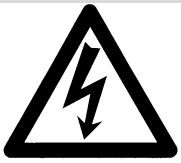
3.3 Area of application

The wire saw may only be used for wire sawing in concrete, masonry or similar materials. Other use is non-intended and therefore to refrain from.

⚠	**WARNING!**	The wire saw may not be used on loose masonry as the anchors may come loose.

3.4 General safety instructions

WARNING - DANGER OF LIFE!



It is potentially fatal to wire saw a power line which is energized. The wire saw can get energized.

A residual-current device doesn't protect against this danger.

WARNING!

- The wire saw is state of the art and follows the present regulations. However, incorrect handling of the machine can lead to serious or even fatal injury to the operator and persons in proximity to the machine.
- To maintain the level of safety inherent in the design of this machine, only Tractive original spare parts may be fitted. Tractive AB disclaims all responsibility for damages occurring as a result of use of non-original parts. All warranty claims are void if non original spare parts are used.
- All persons which are operating or in any way working on the wire saw has to read and understand the whole operator's manual and especially the safety instructions, before any work is commenced. It is the obligation of the buyer to make sure that the operator really has received the information necessary to operate and take care of the machine in a correct and safe way.
- Before sawing is commenced all persons involved must know how the emergency stop buttons are working.
- The wire saw may only be operated and serviced by authorized and trained personnel. This personnel should be trained by personnel which is authorized by the manufacturer.
- No work should be commenced which cannot be judged to be safe.
- The operator is obligated to immediately inform about changes on the wire saw which can impair the safety of the machine.
- The user is liable that the wire saw is in faultless condition and that all functions are in order before work is commenced.
- Modifications or changes on the wire saw which might impair the safety of the machine are not allowed.
- Tractive AB is not responsible for damage on property or persons whether they originate from incorrect handling or deficient maintenance or as a consequence from not checking the machine for damage and/or defects before taking it into use.
- The wire saw may not be used in an environment where explosion protected equipment is demanded.

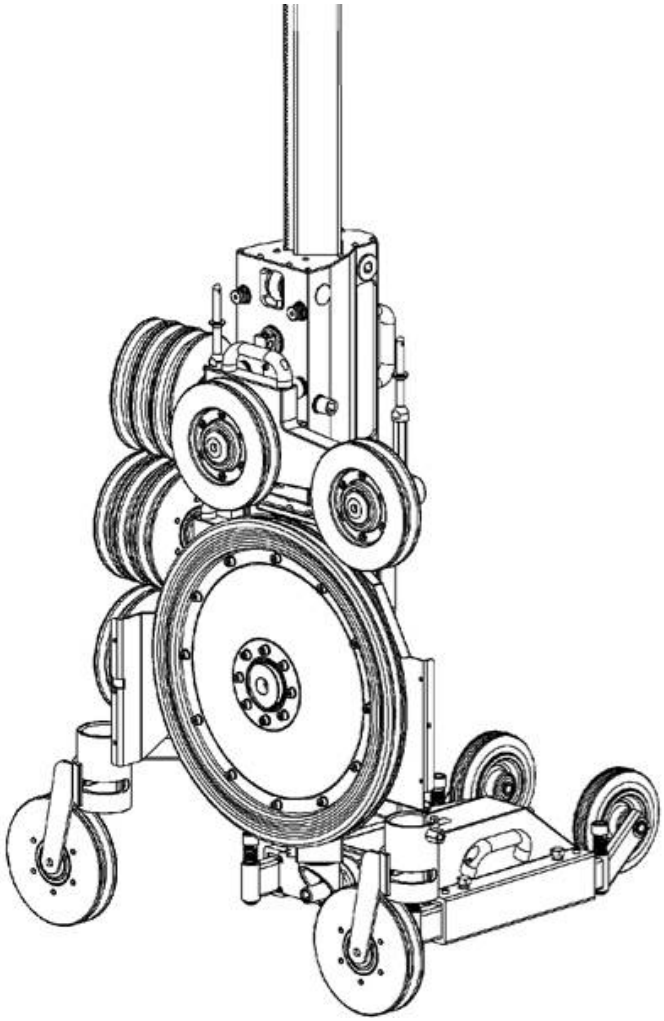
3.5 Safety precautions at site

WARNING!

- Always check that the equipment is in faultless condition and that all functions are in order before work is commenced.
- No mounting, for instance change of wire, may be performed on the wire saw unless it is disconnected electrically from the mains.
- Safety regulations at the work place must be followed as well as the safety regulations of the operator's manual for the drill motor used.
- All persons working with, or in the proximity to the drilling rig should wear safety equipment, i.e. protection helmet, protection shoes, gloves, eye and ear protectors. Other safety regulations at the work place must be followed. The noise level at drilling might lead to permanent hearing disorders if not ear protection is worn.
- The operator should have good supervision over the wire saw and inform passing persons about possible risks.
- Unauthorized persons shall not be within the risk area (the area around the drill unit).
- The power pack must always be switched off and the 32 (red) or 63 (blue) Amp plug and cable disconnected from the power pack before any kind of service is commenced.
- The power pack must be disconnected from the power supply by removing the 32/63 Amp plug and cable from the power pack before any kind of service is commenced.
- Mounting and dismounting of the wire saw may only take place when the power to the main pulley drive motor is disconnected from the power pack by disconnecting the two big hydraulic hoses.
- The power pack must only be operated when it is standing on its rubber feet.
- The power pack is water cooled and must be drained from water when the ambient temperature is in the proximity of or below 0 degrees Celsius.
- The electric motor of the power pack is water cooled and the water pressure must therefore be limited to max 5 bar or 70 PSI. The incoming water supply may only be connected to the lower connection on the power pack. The quick disconnect couplings may not be replaced with couplings that are not fully open when disconnected.
- Always lift the drill unit ergonomically correct. The Pentpak is not provided with hooks for lifting. Should this unit need to be lifted with a crane, this should only be done after permission and instructions have been given by a person responsible for safety on the site. Contact your sales agent for instructions on how the lifting can be done in the best way.
- The base plate must always be securely anchored to perform safe drilling.
- Never run the wire saw without water cooling to the power pack and HF-motor. Should the cooling water seize to function, stop the machine immediately.
- Only connect the Pentpak power pack to the Pentruder wire saw and Pentruder hydraulic motor or such equipment which has been manufactured or approved by Tractive AB.

4 Mounting the Pentruder 3P8 wire saw

4.1 Overview Pentruder 3P8 with 70 mm column system

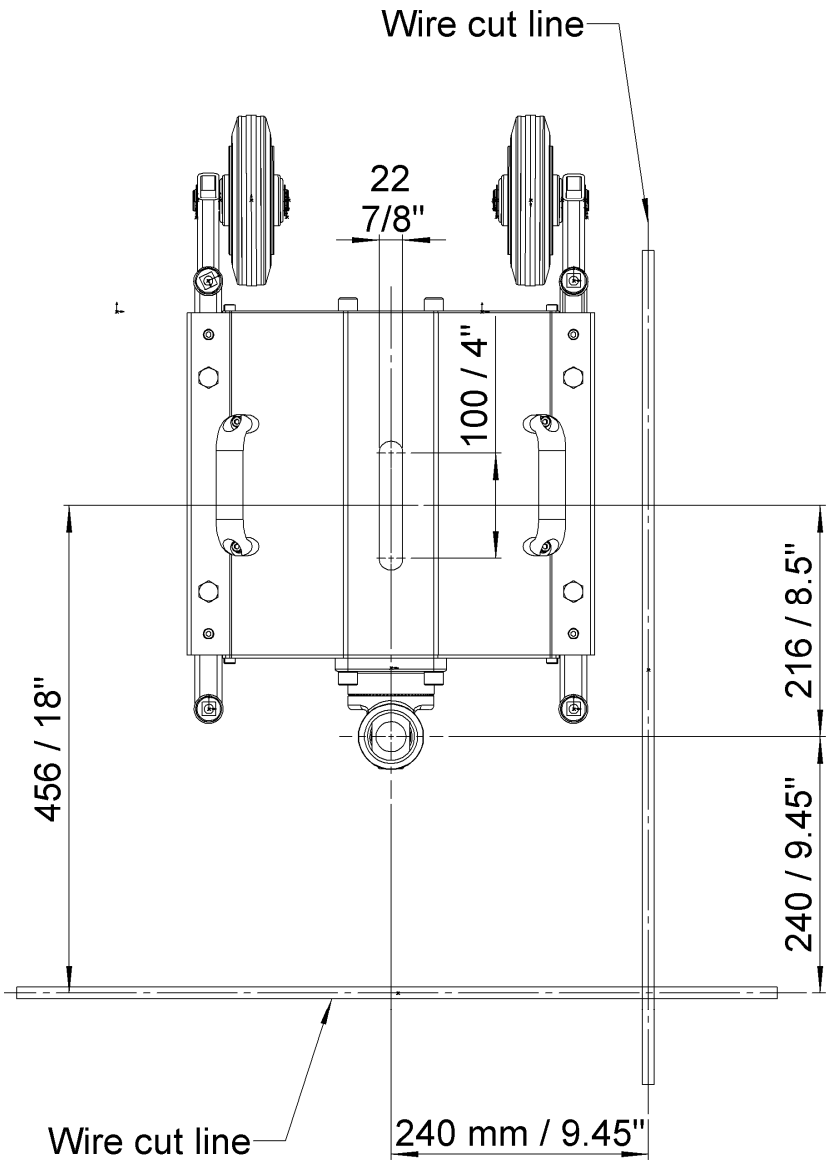


4.2 How to position the wire saw – 70 mm column system

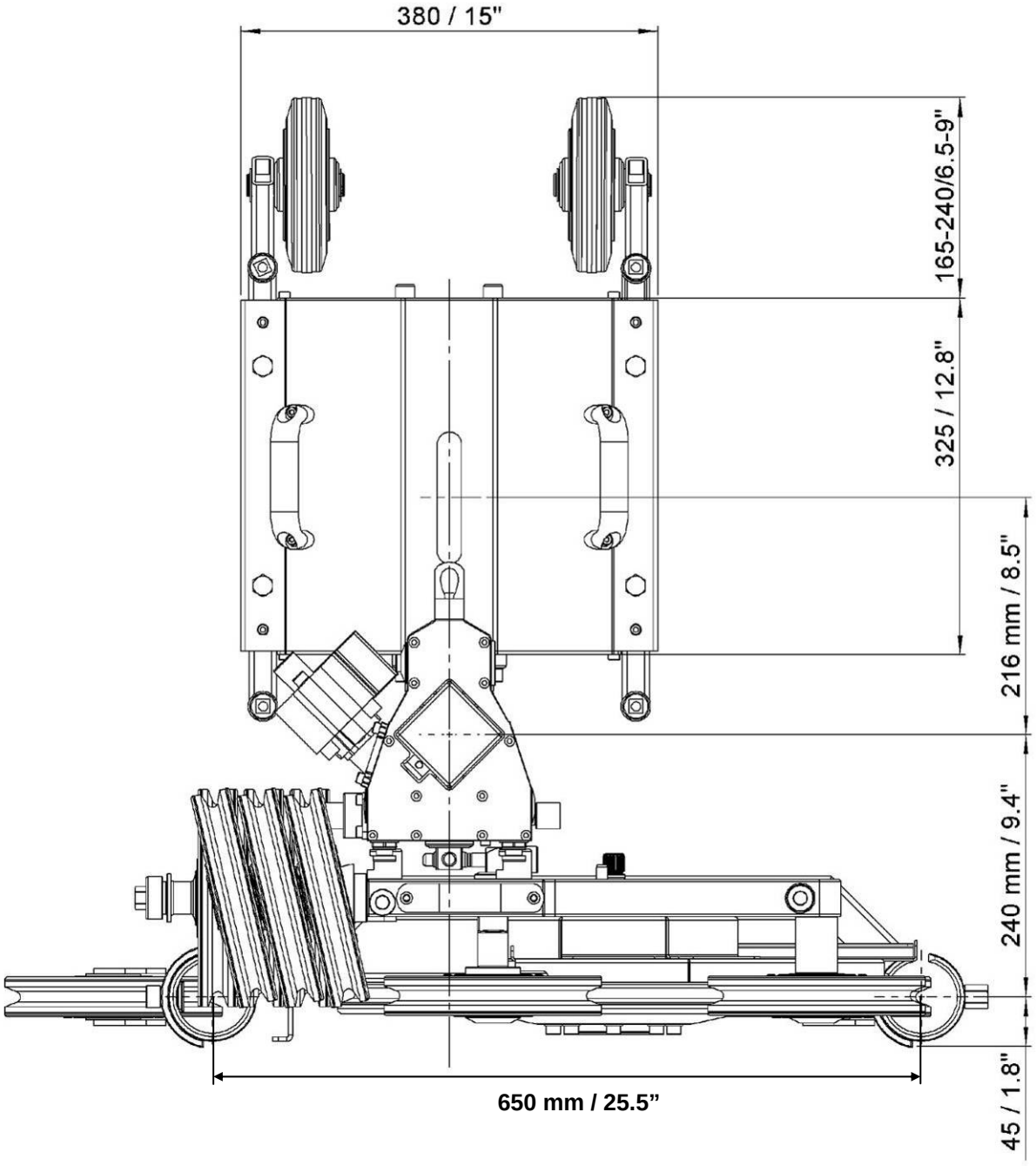
1. Be observant on what material the base plate will be mounted on. For safety reasons it is very important that the base plate is properly fastened. If mounted on brick or porous concrete we recommend to fasten the base plate with M16 / 5/8" through bolts.

2. The wire cut line will be as shown in the drawing below.
   Note: The column can rotate around its own axis, and be locked in any position. Therefore you may prefer to measure your anchor position from the center of the column.

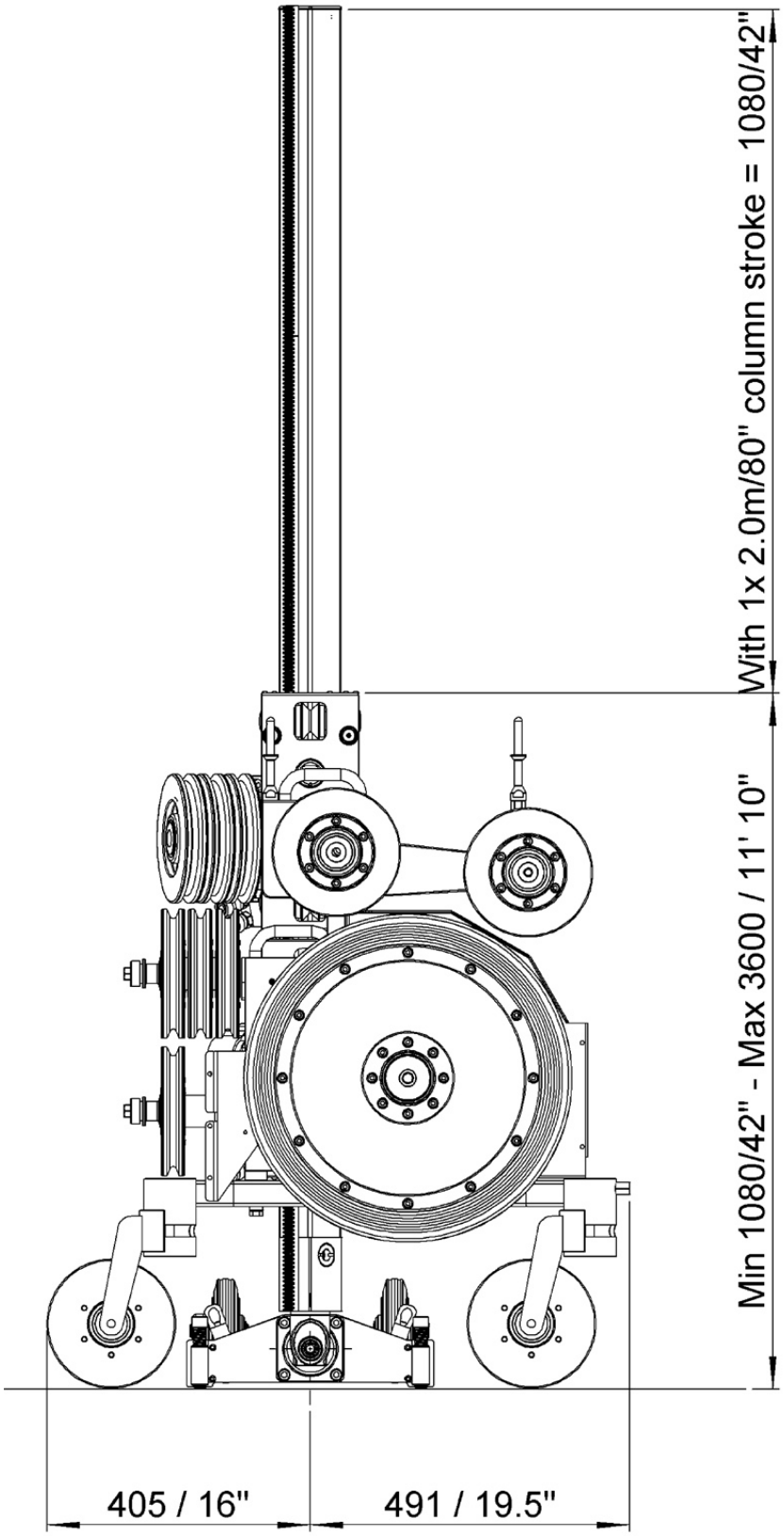
4.2.1 Measurements for positioning of wire saw – 70 mm column system



Measurements for positioning of wire saw – 70 mm column system



Overview cut lines – view from top



Stroke of carriage - Measurements

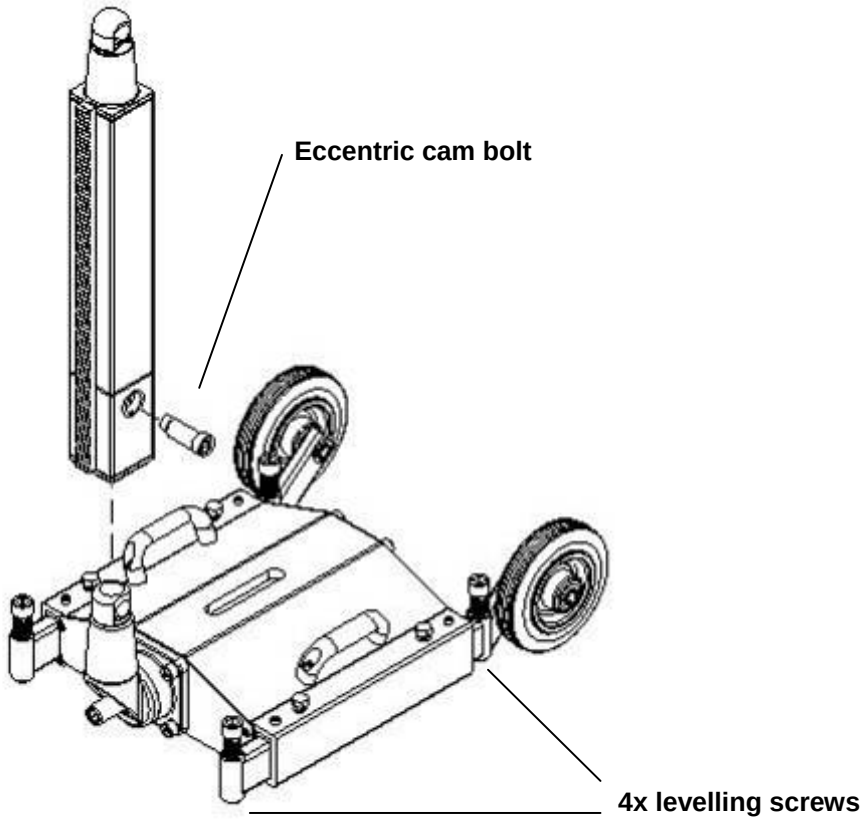
4.3. Standard mounting sequence with 70 mm column system

1. Base plate
2. Column or columns
3. Lower carriage
4. Upper carriage

4.3.1 Mounting the base plate and column

1. Mount the base plate

Bolt the base plate to a solid object using an M16 / 5/8" anchor bolt. Use only high quality anchors and bolts. Adjust the support legs. Level the base plate using the four leveling screws.



BE2 and column-CN 0.5 F/M-70.

2. Mount the columns or columns

The column is locked by turning the eccentric bolt Clockwise.

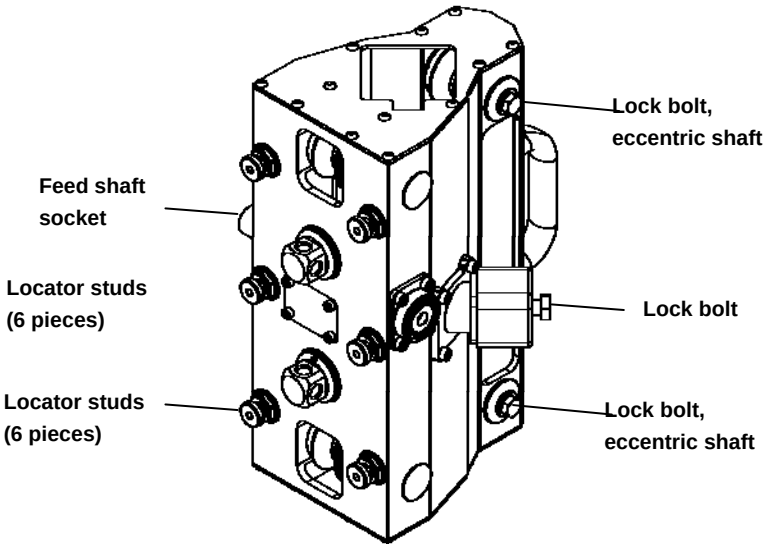
To release the column, the eccentric is turned Counter Clockwise until it lifts from the cone. To remove the eccentric bolt, turn it slightly Clockwise again until the load on the bolt is gone, and then pull out the bolt, and then the column can be removed.

! Important! Do not insert your fingers in the bolt hole.

4.3.2 Fit the lower carriage on the column

1. Loosen the lock bolt on the friction clutch one turn. (19 mm / 3/4" spanner)
2. Slide the carriage over the column
3. Adjust the height of the carriage by turning the feed shaft socket with a ratchet or knuckle bar.
4. Tighten the lock bolt on the friction clutch.
5. For optimum preload of the rollers on the column, the rear rollers should be adjusted using a ½" ratchet or knuckle bar and a 15 mm wrench. Adjusted correctly, this eliminates all play between the carriage and the column. Do not set the rollers too hard. The result will be premature wear of the column.
6. Lock the eccentric shafts for correct pre load of the rollers, by tightening the screw with a 15 mm wrench.

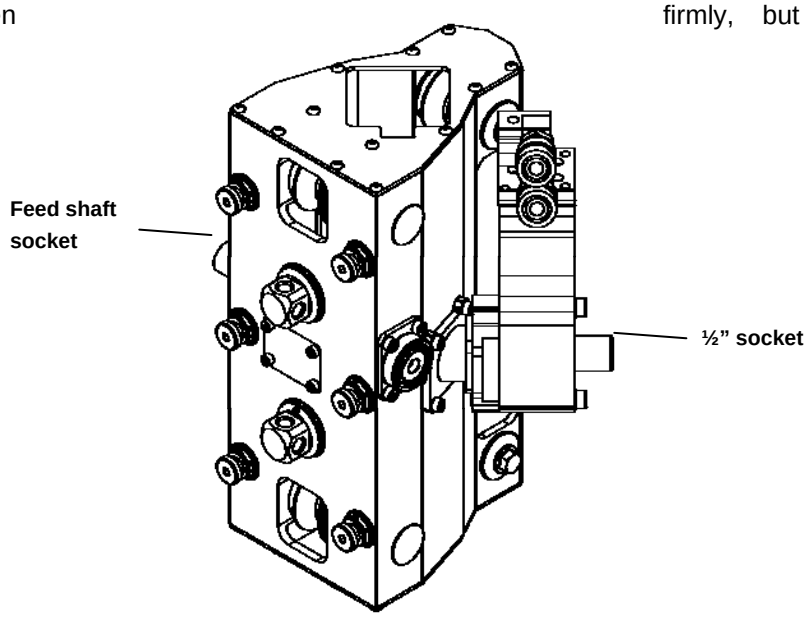
Note! Tighten firmly, but do not over tighten!



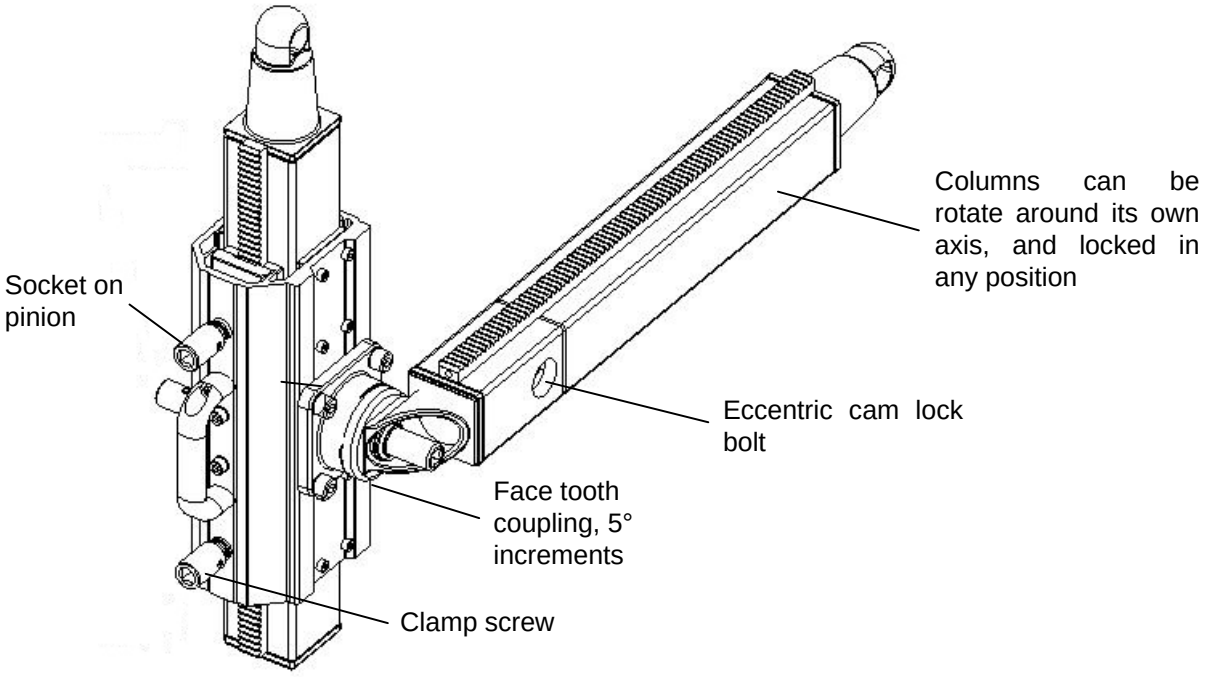
4.3.3 Fit the upper carriage on the column

1. Loosen the ½" socket on the feed unit one turn.
2. Slide the carriage over the column.
   Adjust the height of the carriage by turning the feed shaft socket with a ratchet or knuckle bar.
3. Tighten the ½" socket on the feed unit.
4. Adjust the preload of the roller on the column. See 5 and 6 above.

NOTE! Tighten firmly, but do not over tighten!



4.3.2 Mount a Pivoting head - PD1 if applicable



Pivoting head-PD1 with column

In many cases an universal pivoting head can be used to simplify set-up and to add versatility to the system. The Pivoting Head can for example be fitted on a vertical column and a horizontal column fitted to the Pivoting Head conical quick coupling.

To use the pivoting head

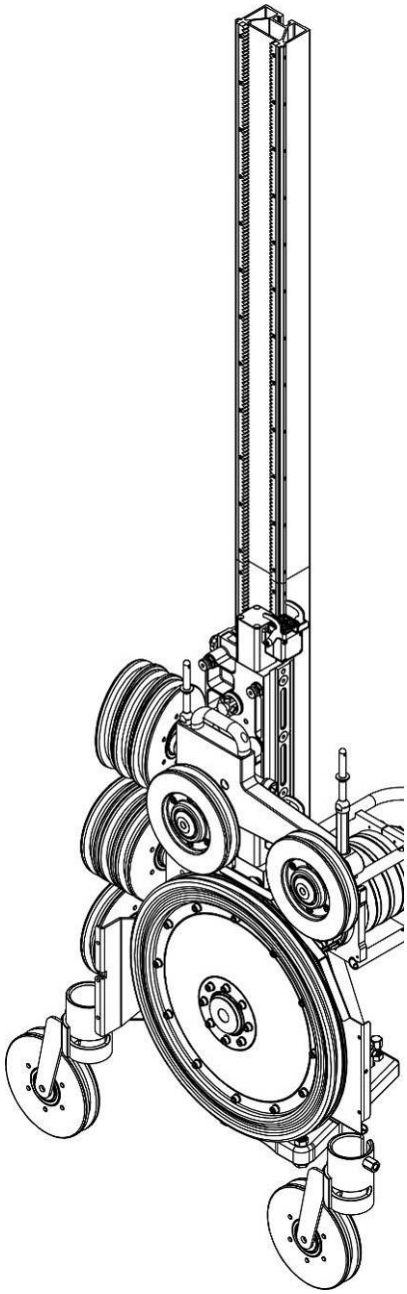
1. Mount the pivoting head on the column.
2. Adjust height and tighten the clamp screws slightly.
3. Use a ratchet or knuckle bar to move the pivoting head to the desired position on the column.
4. Lock the pivoting head with the clamp screws.
5. To mount the second column on the pivoting head, align bolt hole with pull stud hole in the male conical coupling, insert an eccentric bolt and tighten hard, clockwise, with a ½" knuckle bar or ratchet.
6. Now you can mount the carriages on the horizontal column, see mounting of carriage.

The column quick coupling is of the same type as on Base Plate BE2, with a swiveling face tooth coupling allowing for adjustment of drill angle in 5° increments.

! Important!

- Be observant so that the eccentric bolt doesn't slip out of the column when the column is mounted on the conical coupling on the pivoting head. It MUST be completely flush with the column side face.
- Before tightening the adjustable male-coupling please make sure the face teeth are correctly in mesh.
- When the eccentric bolt is removed, do NOT put your fingers in the bolt hole to push the bolt out.
- When the pivoting head is mounted, be sure that the locking screws are tightened to give enough friction between column and pivoting head, to keep the pivoting head from sliding down the column in an uncontrolled way.

4.4 Overview Pentruder 3P8 with TS track (MCCS)



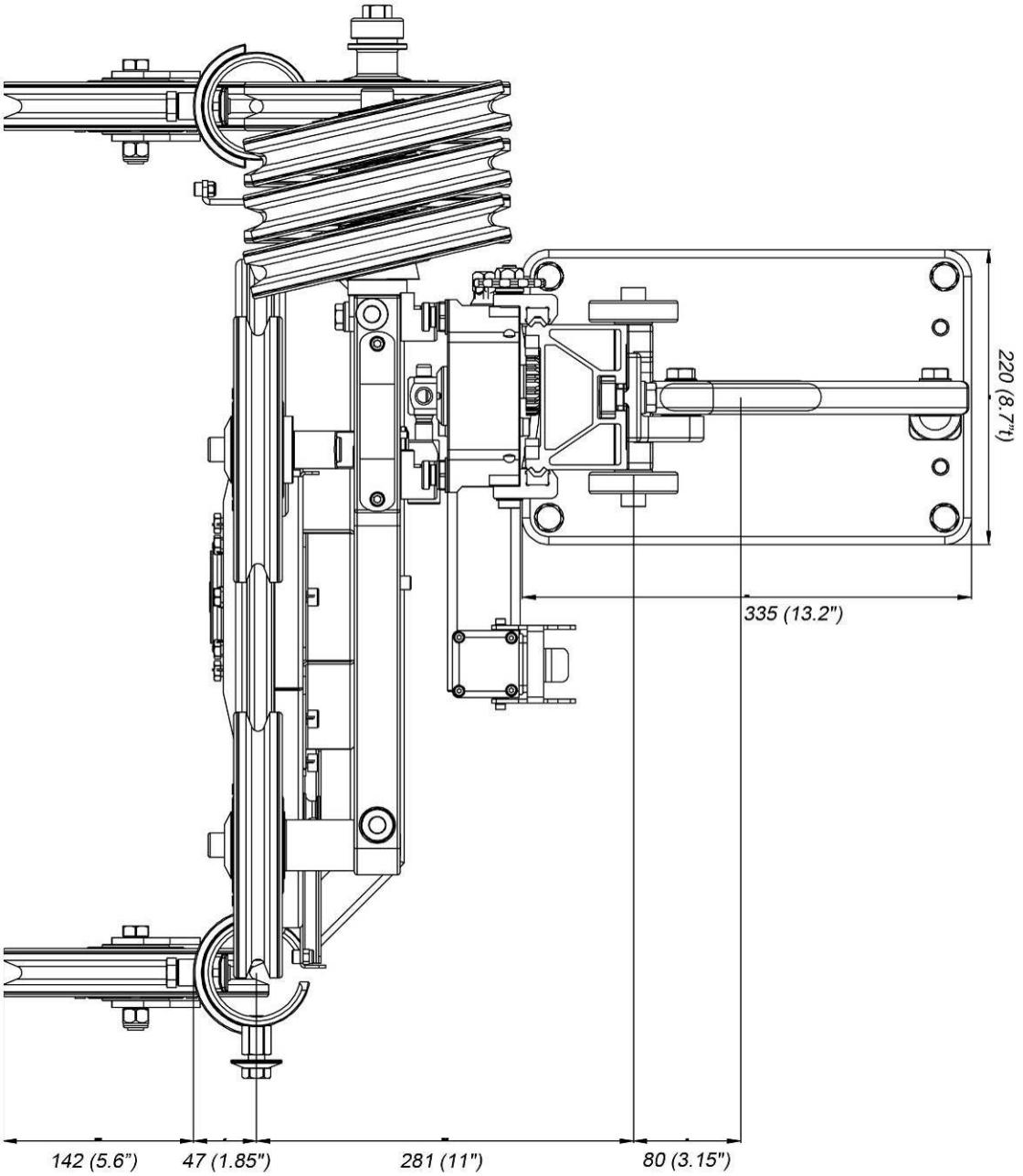
4.5 How to position the wire saw with TS track (MCCS)

1. Be observant on what material the base plate will be mounted on. For safety reasons it is very important that the base plate is properly fastened. If mounted on brick or porous concrete we recommend to fasten the base plate with M16 / 5/8" through bolts.

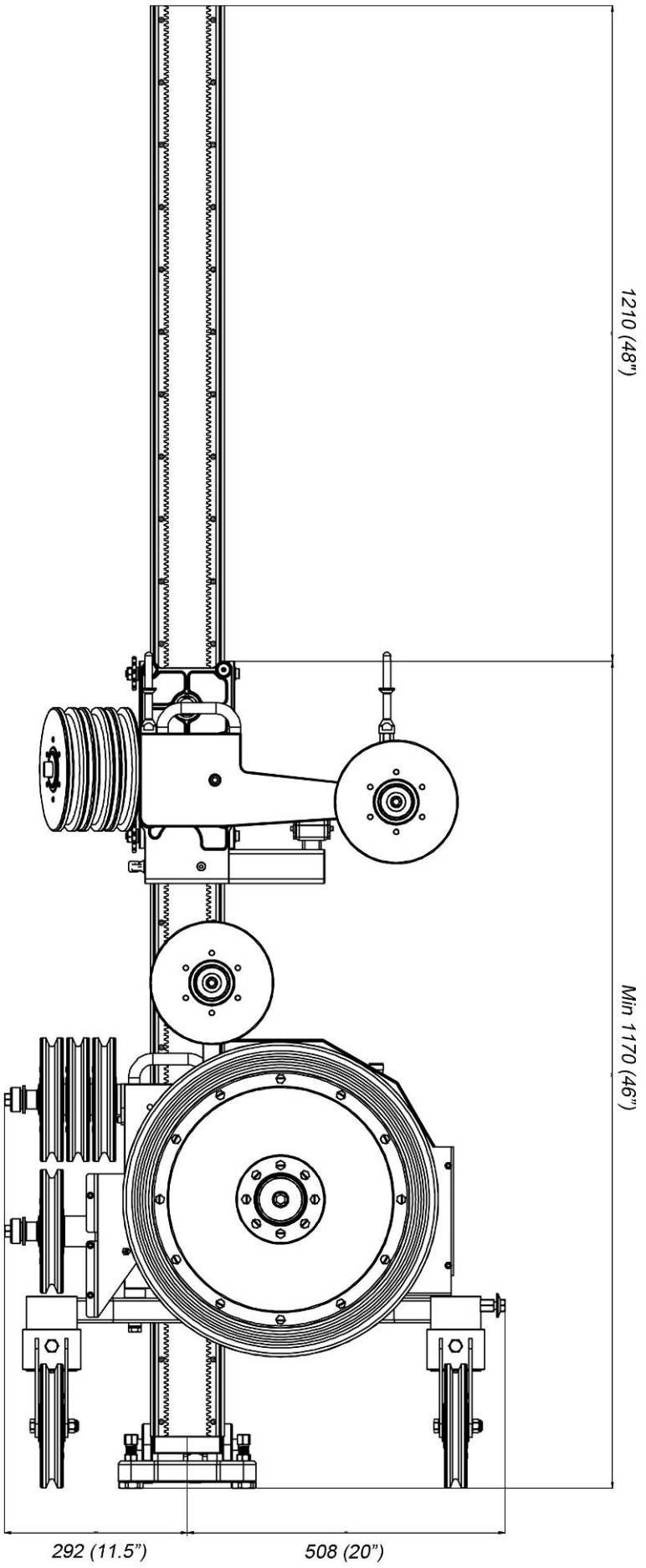
WARNING! If the base plate is not securely fastened to a solid foundation, the very high forces applied on the wire by the tractive power will cause instability and will lead to unforeseen events that can lead to serious or fatal injury.

2. The wire cut line will be as shown in the drawing below.

4.5.1 Measurements for positioning of wire saw – TS Track (MCCS)



Measurements for positioning of wire saw – TS Track (MCCS)



Stroke of carriage – Measurements – TS Track (MCCS)

4.6. Standard mounting sequence with TS track (MCCS)

1. Base plate
2. Track or tracks
3. Lower carriage
4. Upper carriage

4.6.1 Mounting the track on the base plate

We recommend to assemble the base plate on the track first, and then fastening the assembled rig on the concrete.

a. Slide the upper clamp in to the track. Older tracks with only one rack can be used. In this case make sure the rack is on the left side seen from the rack side of the track.

b. Slide the lower clamp in to the track.

c. Tighten the two bolts on the lower clamp.

d. Tighten the upper bolt loosely.

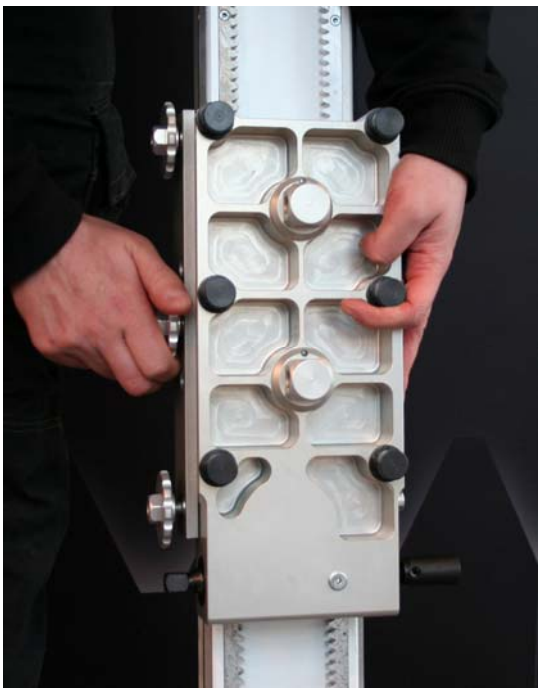
e. When the track is in the right position, tighten the bolt properly.

f. Next tighten the upper bolt on the back brace.

g. Tighten the lower bolt on the back brace.

4.6.2. Mount the lower carriage CEG-M25 on the track

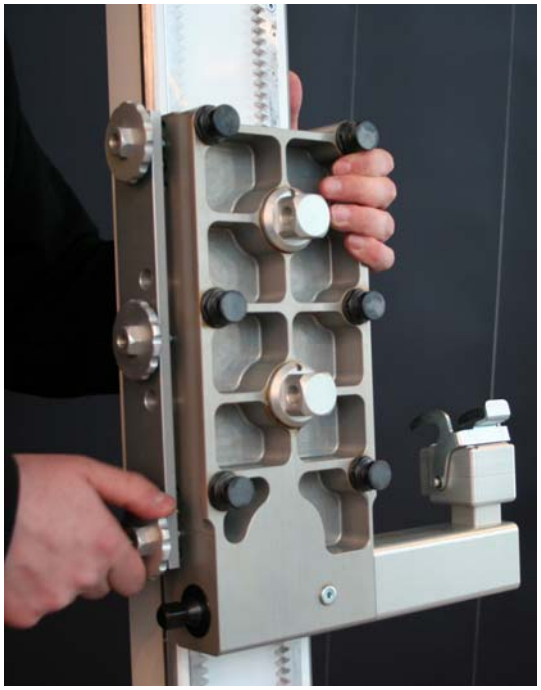
1. Open the three clamp nuts.
2. Put the carriage on the track as shown in the picture and align the feed gear with the rack on the track.
3. Tighten all three clamp nuts firmly first by hand and then with a 19 mm spanner to be firmly tightened, but not solid.



Note! Tighten firmly, but do not over tighten!

4.6.3 Mount the upper carriage CEG-E-3P8 on the track

1. Open the three clamp nuts.
2. Put the carriage on the track as shown in the picture and align the feed gear with the rack on the track.
3. Tighten all three clamp nuts firmly first by hand and then with a 19 mm spanner to be firmly tightened, but not solid.



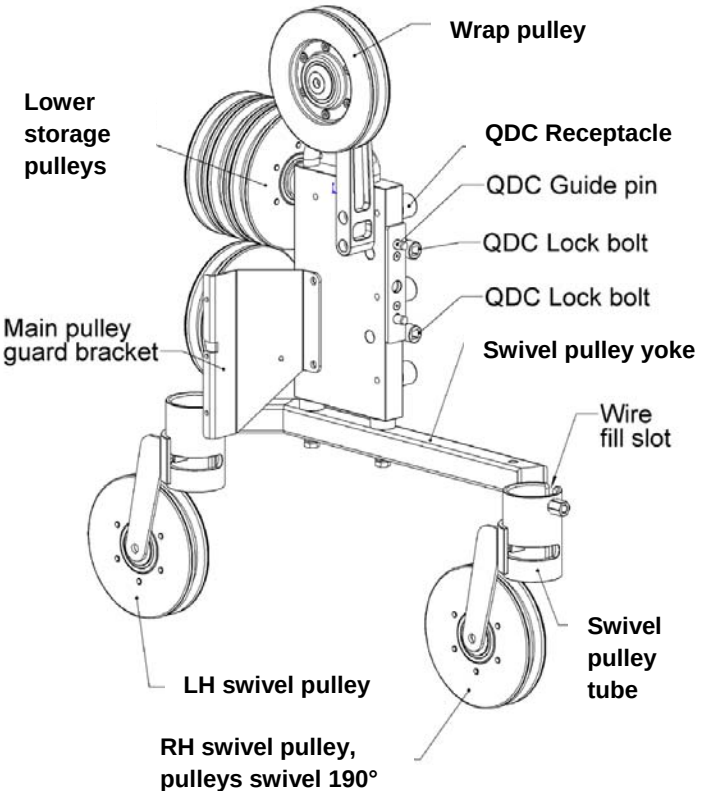
Note! Tighten firmly, but do not over tighten! It must be possible for the upper carriage to glide upwards during cutting.

Note! The liners on the track and the green plastic liners in the upper carriage must be clean before starting to cut. Please also smear the green liners in the upper carriage lightly with some grease or oil.

4.7 Mounting the 3P8 wire saw modules

4.7.1 Attach the lower storage and swivel pulley assembly

1. Normally the lower assembly unit is mounted on the carriage with the swiveling pulleys pointing towards the surface the base plate is mounted on.



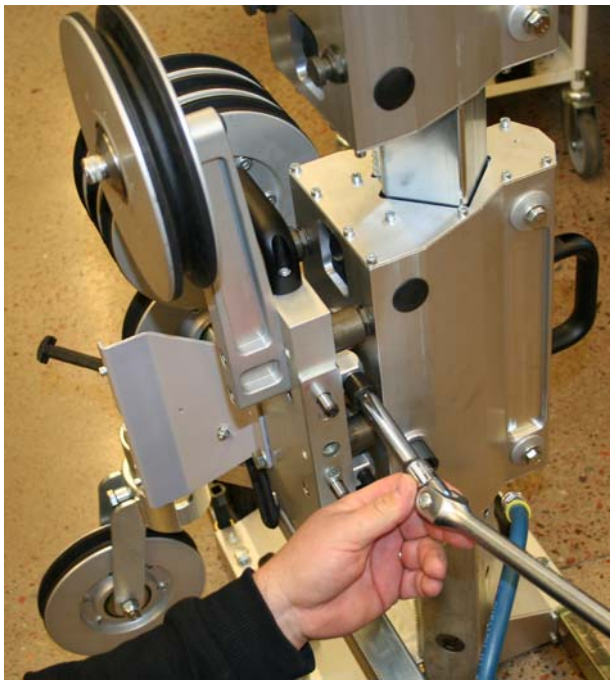
WARNING!

Be careful after having mounted the carriages on the column.

2. Make sure the friction couplings / clamp nuts are tightened to avoid injuries, this applies to both carriages.
3. Do not over tighten the clamp socket!
4. Slide the complete lower assembly sideways with the Quick Disconnect Coupling (QDC) receptacles engaging with the locator studs on the carriage. See picture below, *"Fitting the lower assembly".*

Note! Tighten the QDC lock bolts firmly, but do NOT over tighten! See picture below,

Fitting the lower assembly

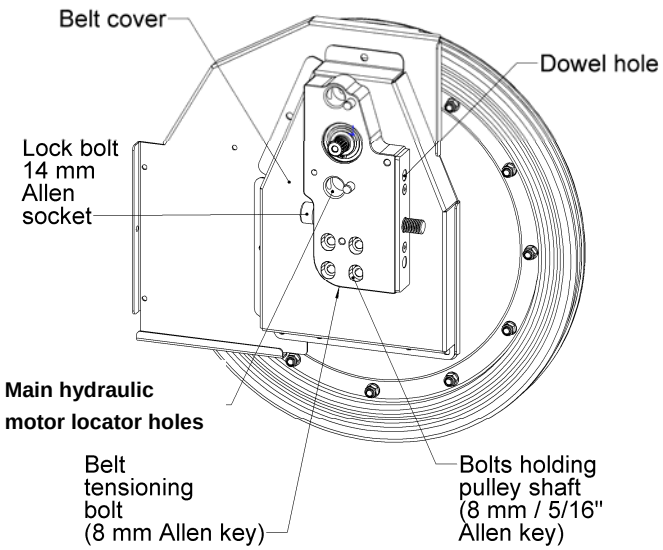


Fastening the lower assembly

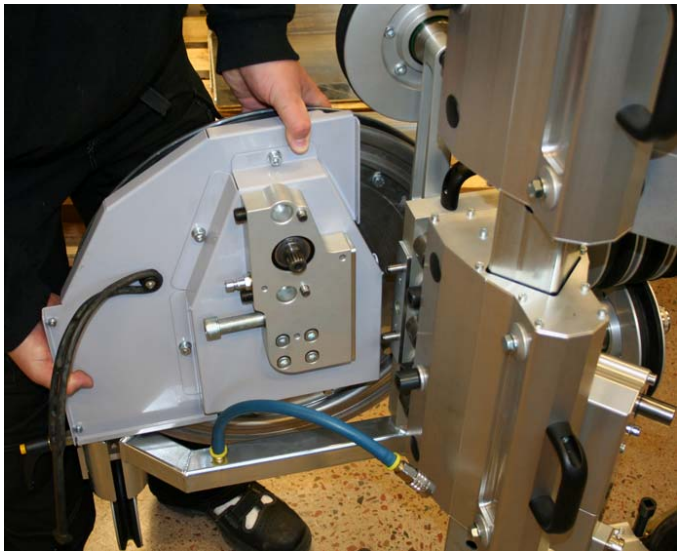
4.7.2 Attach the main drive pulley assembly

1 Attach the main drive pulley assembly on the lower storage assembly by mating the two dowel pins to the dowel holes in the storage plate.

2 Tighten the lock bolt with a 14 mm Allen key socket and a long ½" extension.



Main drive pulley assembly



Fitting of main drive pulley assembly

4.7.3. Attach the main drive hydraulic motor to the pulley assembly

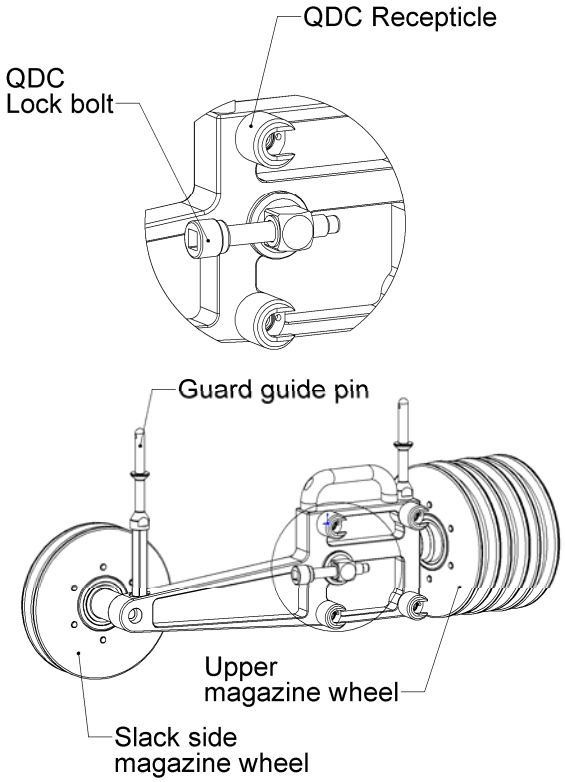
Attach the hydraulic motor to the pulley assembly by entering the locator dowels in to the holes in the pulley assembly plate. Tighten the lock screws with an 8 mm allen key / 5/16". Rock the main drive pulley slightly back and forth to make the spline shaft mesh with the main hydraulic motor.

4.7.4. Attach the upper storage assembly

Attach the upper storage assembly by sliding the assembly sideways onto the locator studs on the upper carriage. Use the lower four studs.

Note! Tighten the QDC lock bolts firmly, but do NOT over tighten!

Assembly of upper storage assembly



Quick disconnect coupling and upper storage assembly

4.8. Connecting hydraulic and water hoses

4.8.1 Connect hydraulic hoses

Attach the hydraulic hose to the main drive hydraulic motor and the feed line to the upper carriage feed unit/motor.

4.8.2 Connect water hoses

Connect incoming water supply to the lower connection on the Pentpak. On the upper connection (output of cooling water) of the Pentpak, connect a water hose that supplies water to the 3P8 main drive motor.

4.9. Attach guards

After the wire has been started, very slowly, and has cut a shallow groove, stop the machine and fit the guards.
The start-up procedure is described in paragraph 5.6 Guidelines to follow when commencing a cut.

Fitting of guard on Pentruder 3P8 wire saw.

5 Guidelines on how to operate the Pentruder 3P8 wire saw.

First of all you have to accept you may need some time to get used to the machine. It is a little like driving a car for the first time. The systems controlling the 3P8 wire saw are semi-automatic but will need adjusting from the operator to reach optimum performance. In some circumstances you have to trust your ears and eyes, and help the control a little, to get the best result.

Once the safety issues have been dealt with, and the operator has understood that these requirements must be respected and the instructions followed, he can start enjoying the extraordinary qualities of the Pentruder 3P8 wire saw. He will notice that the bigger the object is, the better the 3P8 will perform. Not even heavily reinforced objects represent a problem.

5.1 Safety when wire sawing

WARNING!

- Wire sawing can be a very dangerous exercise! All possible safety precautions must be taken to avoid accidents from happening.
- All guards must be fitted on the machine while it is running, and the wire must be protected over its whole free length, as well as from and to the cut object.
- The wire can break at any time, and it is rather impossible to predict when it will break.
- When it breaks, it will most likely be in the worst possible way, and a bead may be torn off the core wire and thrown off the wire trajectory at enormous speed.
- When the wire breaks, the wire speed will most likely be much higher than the wire speed used when cutting, as it is compounded by the whip lash effect and can reach speeds over 100 m/second. Such a "bead bullet" can kill anyone that is hit by this bullet, so all possible safety precautions must be taken to prevent a bead from flying freely around in the air.
- Be sure to lock all guards, cover the wire where it is free, and cover the cut left after the wire.
- Never stand in line with the cut line.
- Wear all safety equipment as stipulated by the authorities.
- The power or force applied on the wire in the 3P8 is higher than on any other commercially available electrically driven compact (non quarry type) wire saw. Therefore it is important to splice the wire carefully.

5.2 Positioning the Pentruder 3P8 Guide pulleys

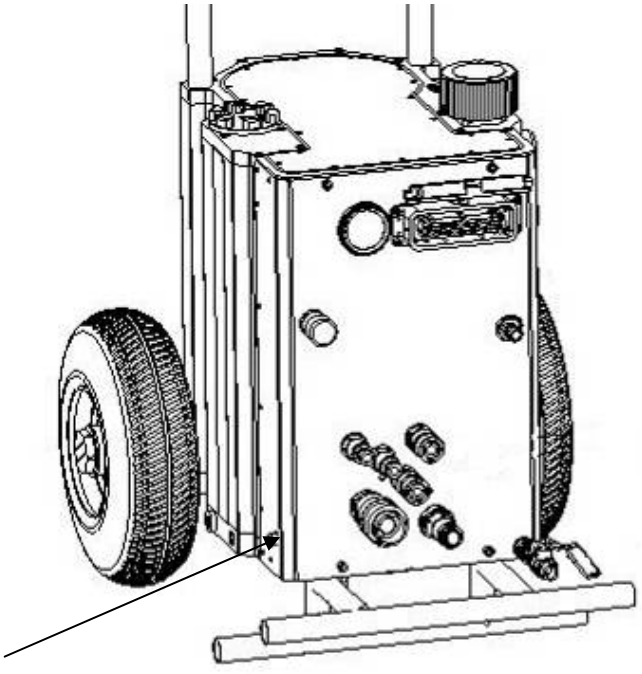
- When setting up the base plate, pay attention to the positioning of the wire going out from and back to the machine. Try to plan the set-up so that satellite pulleys are not needed.
- The 3P8 can most often be mounted directly on the cut object. If this is possible, it is called a direct cut. A direct cut is preferable as extra satellite pulleys steal power. The high start up torque, and the high traction between wire and main drive pulley rubber drive ring allow start up over several corners, without use of extra satellite pulleys to lift the wire off the cut object.
- Naturally, in some instances satellite pulleys must be used. If this is the case, try to avoid using satellite on the slack side. This is where the wire goes out from the machine and where the RH swivel pulley is. The RH side if you stand in front of the main drive pulley.
- Try to position the base plate so that the wire goes back in to the concrete or the cut object with the wire running over the RH swivel pulley when cutting starts.
- What we are after with these recommendations is to create as little friction as possible on the slack side. Then the cutting will go faster and the feed regulation will work best.

5.3 Automatic feed control – power / tension system

The Pentruder 3P8 wire saw and Pentpak 15/20/25 are equipped with a semi-automatic control which senses differences in type of concrete, contact surface area, the ability of the wire to cut the concrete and re-bars. A fairly constant power application is ensured by a special valve, which senses the working pressure to the main drive motor and regulates the tensioning of the wire until the system is in balance and an even power application is achieved.

The maximum level of power application can be set to suit a certain condition or wire, power supply etc., by adjusting the screw at the bottom right corner of the Pentpak 15/20/25. See figure below. Insert a 6 mm Allen key into the hole in the front panel to do this adjustment and unscrew to decrease maximum working pressure and tighten to increase. For wall sawing, the screw is normally set at ¾ turn out from bottom at the factory. This setting represents the correct setting for achieving maximum performance with max output from the electric motor.

For wire sawing, turn the screw 4 - 5 turns out to start with, set the desired maximum penetration speed with the potentiometer, and then adjust the allen screw on the power pack until the desired working pressure is achieved.



Adjustment of automatic feed on Pentpak 15, 20 and 25.

- **Note!** If it is a small object, with a short contact length for the wire, the power per diamond bead will be much higher compared with cutting a bigger object using the same pressure settings. High power per diamond bead means high wire wear and risk for premature wire joint failure. This is why the power setting should be lower when cutting smaller objects.
- If the cut object is bigger the wire is working over many meters contact length and many beads are in contact with the cut object at the same time. The wire tension will be less to create the friction needed to make use of the maximum available power from the Pentpak.

- **Note!** This means the smaller the cut object is, the harder it is to use all the power, and to achieve high cutting rates (square meters per hour).
- It also means the bigger the object is, (up to a certain size, of course) the easier it is to use all the power, and to achieve high cutting rates (square meters per hour).

5.3.1 Speed on track/column

With the Pentpak 15/20 the upper carriage with feed unit can be fed along the track/column with a speed of about 1 m/minute. With the Pentpak 25 the upper carriage with feed unit can be fed along the track/column with a speed of about 2 m/minute. When the potentiometer (Remote control -"Potentiometer for feeding speed") is turned clockwise to the max, the feeding speed is at its highest. If the knob is turned anti-clockwise the feeding movements is at its lowest (stops).

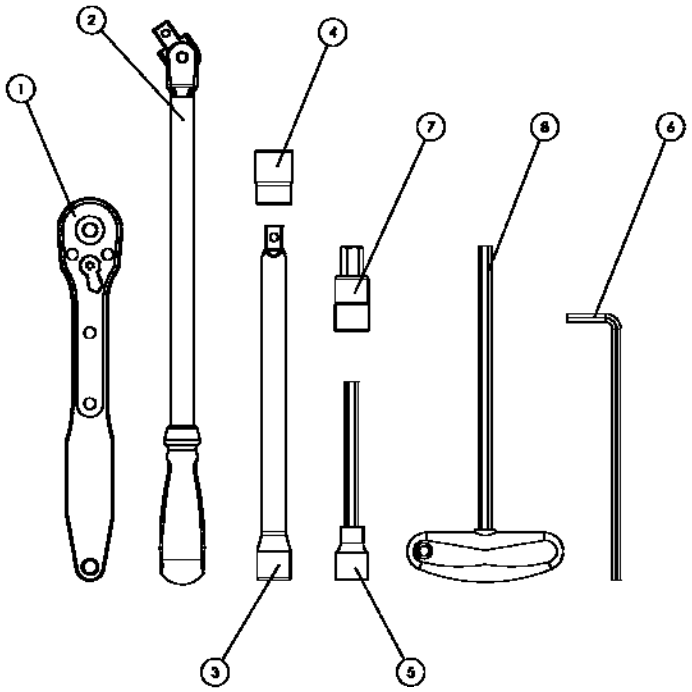
5.4 To prepare before cutting commences

5.4.1 Apart from the 3P8 machine itself, the operator should have the following material at hand:

- Safety equipment as helmet, eye- and ear protection, dust extraction equipment sensitive environments, protective clothes, shoes and gloves.
- A hydraulic motor.
- A suitable power pack, Pentpak 15, 20 or 25 with hoses and Remote Control Unit.
- Electrical plugs, 32 or 63 Amp, when needed, extension cables for the power pack
- Hammer drill to drill holes to secure the base plate.
- M16 HKD type or other anchors and anchor bolts to fasten the base plate.
- Hammer and mandrel for setting HKD type anchors.
- Measuring tape for positioning of base plate in relation to wire cut line.
- 7 meters, 23ft, of wire, plus what is needed to reach around the object to cut.
- Several high quality steel crimp sleeves, for the wire. Universal joints don't work well with this machine.
- Hydraulic crimp tool for steel crimp sleeves.
- Water hoses and extensions for power pack and soft thin hose for supplying water to one or several positions along the wire trajectory. Soft, flexible garden hose, 1/2" inside works well.
- T-manifolds to split water flow to several hoses.
  Industrial vacuum cleaner for collection of concrete slurry and water retention.
- Some thin 'spray on' oil or WD40 to spray on the machine before cutting starts.

5.4.2 Tools normally used to set up and operate the 3P8:

- 1/2" ratchet (1) or 1/2" knuckle bar (2)
- 1/2" - 250 mm extension (3) (or two short ones)
- 1/2" x 19 mm socket (4)
- 1/2" – 8 mm allen socket (5)
- 6 mm allen key (for belt change) (6)
- 1/2" – 14 mm allen socket (7)
- 8 mm allen key, T-handle (8)



5.4.3 Jobsite spare parts

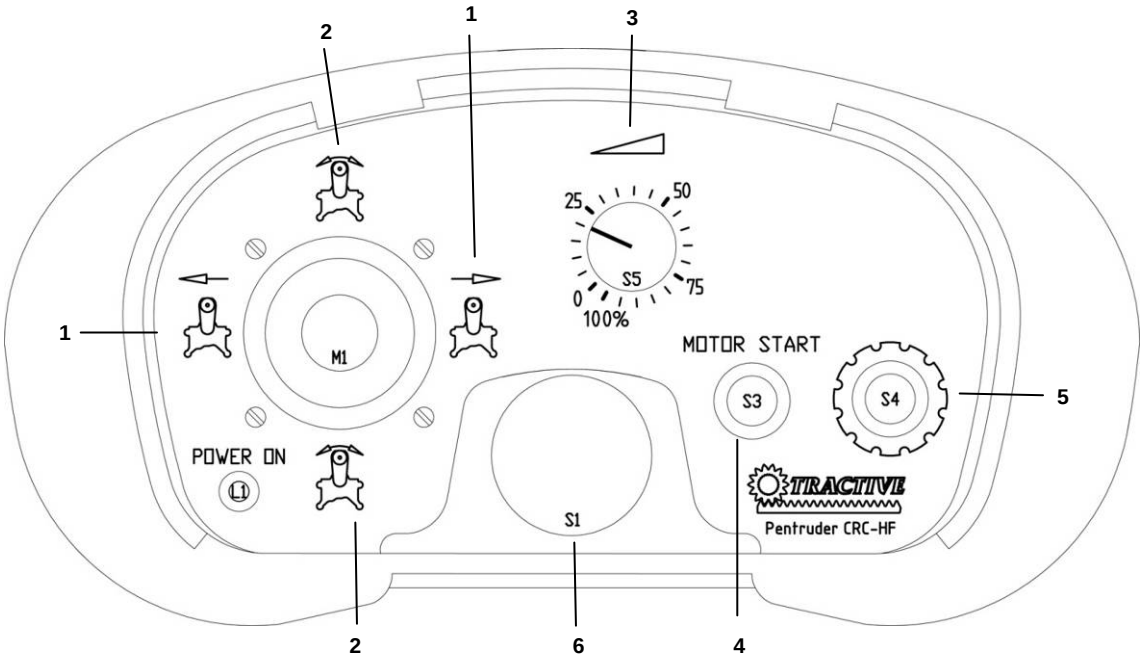
- 2 x Spare cog belts. Use only a Gates Polychain GT Carbon belt 720-8M GT2.
  Tractive Part No 378107202108.
- 2 x 15090100 Lock nut, guard, 3P8
- 70 mm column system: Eccentric bolt, Tractive Part No 34080500

5.5 Pentpak 15 / 20 / 25 hydraulic power pack

5.5.1 Remote control

The Pentpak power pack is conveniently controlled by means of a hand held remote control unit where all functions are gathered. When using the hydraulic feed unit the feeding movement is also controlled with the help of the remote control.
This solution enhances safety as the operator can have a full and unrestricted overview and control of the machine.

The remote control unit is connected to the Pentpak 15, 20 or 25 power pack with a multi-pin connector. All functions are reset as soon as at least one of the phases of the power supply is disconnected, or as soon as at least one of the emergency stop buttons are depressed. No functions remain and the power pack must be restarted after a stop is caused by any of the above mentioned reasons.



Remote control

1. Feed movement on the column
2. No function for the wire saw
3. Potentiometer for feeding speed
4. Start/Stop Electric motor in Pentpak
5. Start/Stop main hydraulic output on
6. Emergency STOP button

5.5.2 Remote control - Extension of cable

The cable for the remote control unit can be extended by using 10 m extension cables. A maximum of 2 extension cables may be used.

5.5.3 Starting the wire saw

1. To start the wire, flick the Start/Stop Electric motor switch, to start the electric motor.
2. Let the power pack run minimum 10 seconds.
3. Press and hold the Start/Stop hydraulic circuit switch, and Start/Stop Electric motor switch once to start the wire.

5.5.4 Positioning the power pack

! **Important!** The power pack should be positioned away from where the sawing takes place and should be kept dry at all times. It should preferably be placed on a flat surface.

! **Important!** Do NOT leave the power pack outside in the rain. The unit is ventilated but to prevent possible damage to electronic components we recommend that it is kept dry to prevent excessive condensation forming

5.5.6 Power connections

The power pack should be connected to a 230 or 400 V 50 Hz power supply (depending on version) with at least 16 (25) Amp fuses. For the US market version the voltage is 480V 60Hz. The power pack is equipped with a 63 Amp socket. An adapter must be fitted when other cables or supplies are to be used.

WARNING! The power pack may not be electrically connected before the hydraulic hoses are connected.

WARNING! Never connect the hydraulic hoses to either power pack or hydraulic motor when the power pack is running. The power pack must be switched off and disconnected from the mains by removing the 63 Amp plug before any of the hydraulic hoses are connected.

WARNING! Be sure to lock the ¾" hydraulic couplings by turning the sleeves on the female couplings after they are connected.

5.5.7 Y/D-start (Pentpak 15 or Pentpak 20

To be able to use the power pack where the power supply is limited, an Y/D-start is used to protect the fuses in the start-up moment. Despite the powerful electric motor the Pentpak 15 can be started when connected to 20 automatic fuses or at the least 16 Amp resistance fuses. For the highest performance the power pack should be connected to 25 - 32 Amp fuses.

5.5.8 Soft start on Pentpak 25 (or Pentpak 20)

The Pentpak 25 has an electronic soft start to facilitate start of the powerful 25 kW motor even on 25 Amp fuses.

5.5.9 Shutting off the electrical motor of the power pack

The electrical motor is started and stopped electrically via the remote control unit. It is important to stop the wire completely before turning off the electric motor in the power pack.

5.5.10 Emergency stop button

The Pentpak 15/20/25 is equipped with 2 emergency stop buttons, one on the remote control unit, and one on the power pack front panel. By depressing at least one of the emergency stop buttons, all functions will be reset. No functions will remain and the power pack must be restarted after the emergency stop button is released.

5.5.10 Transportation of the power pack

Whenever the power pack is transported in a vehicle, it is important that it is securely strapped down and well protected. The power pack should preferably be transported standing on its wheel and foot, but can be laid down resting on its handles. We cannot guarantee that no oil leaks out but generally there is no problem.

5.5.11 Transport, wheels

The Pentpak 15/25 is equipped with two wheels for transportation. The tyre pressure should be 2 bar / cm2.

5.5.12 Thermal protection relay

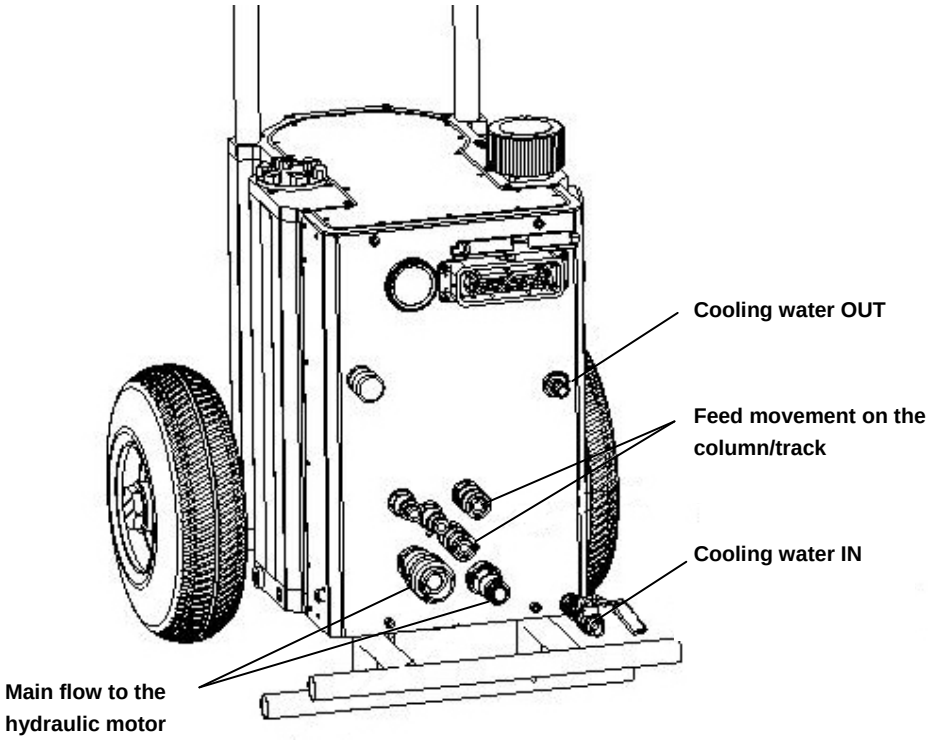
The Pentpak 15/20/25 is equipped with a thermal switch to protect the electric motor from overheating and damage to the electric motor. The temperature of the electric motor can rise to a dangerous level if too little cooling water is run through the system. It can also happen that too warm or dirty water is run through the system, which will reduce the cooling capacity. A special thermal switch therefore monitors the temperature of the electric motor windings and shuts down all functions when the temperature has risen over the allowed value. The thermal temperature relay function can only be reset by removing the 63 Amp plug from the power pack. If the relay has shut down the power pack, do not shut off the cooling water, but let it continue to flow to cool the motor down to a healthy temperature again.

! **Important!:** Repeated starting attempts of an overheated power pack, running with too little or to warm cooling water will damage the electric motor beyond repair. If the power pack shuts down because of overheating, i.e. it cannot be started using the normal starting procedure, the cooling water must be left flowing to the power pack to cool down the motor.

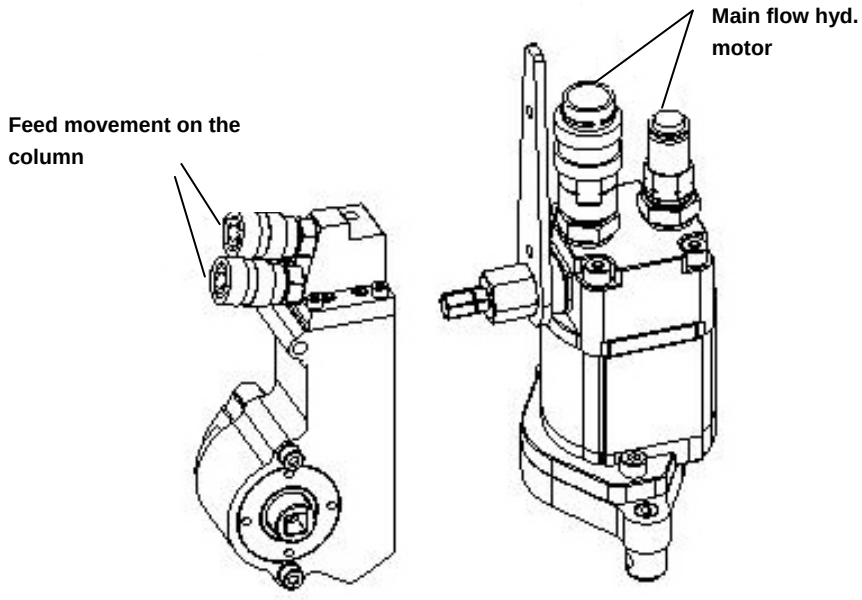
The Pentpak 15/20/25 is equipped with a special high efficiency electric motor for highest output at lowest possible power consumption. In spite of its diminutive dimensions, the electric motor maintains a very high efficiency even under maximum output. This is possible only because of adoption of a specially designed cooling system the motor.

5.5.13 Couplings/hoses

Check the hoses for before connecting them to the drill unit and power pack. All hydraulic couplings are arranged in such a way that they can only be connected in the correct way. Should a hose break and leak during operation, immediately turn off the power pack and replace the hoses.



Connections on the power pack Pentpak 15/20/25.



Connections on hydraulic feed unit PT-HY32 (70 mm column system) and hydraulic motor HR16/25/34.

Hydraulic power to the main drive motor is supplied from the Pentpak 15/20 by two identical 5/8", 6 m long hoses, the Pentpak 25 uses 3/4", 8 m.
Hydraulic feed is supplied from the Pentpak 15/20 by two 1/4", 6 m long hoses, Pentpak 25 uses 3/8", 8 m long hoses strapped together with a 3/8" water hose.

Mounting the hydraulic hoses

1. Connect the two big hydraulic hoses to the male and female couplings (1/2" or 3/4") on the hydraulic motor and to the Pentpak.
2. Connect the two small hydraulic hoses with water hose to the couplings ¼" on the hydraulic feed unit and the power pack.

As far as is possible the hoses should not be extended to avoid pressure drop and power losses. If the hoses must be extended we recommend a maximum total length of 30 m from power pack to drill motor. After the extension hoses have been connected the power pack should be left running for a minute operating the movements and starting the blade motor. Then check the oil level and top up if necessary.

Note: If the extension hoses are not pre-filled with oil, the oil will foam and the power pack will not operate correctly. The power pack must be bled and oil level re-established. Contact your sales agent for advice before using extension hoses.

5.5.13 Oil vent, oil level and pressure drop

To reduce the weight and dimensions of the power pack, the Pentpak 15/20/25 uses a very small amount of oil. Consequently, there is no big oil tank to take care of air bubbles and let them slowly rise to the surface and disappear. In the Pentpak 12/20/25 the problem with air bubbles is instead eliminated by use of a special "turbo charger" which feeds the main pump with pressurized oil. The result is that much less air bubbles are produced and there is no need for a big oil tank.

On the 76 mm level indicator the oil should be up to 1/3 of the glass when the power pack is switched off, with the 127 mm level indicator the oil should be up to 2/3 of the glass when the power pack is switched off. See also "Pressure drop" and "Shutting off the electrical motor of the power pack".

To avoid unnecessary power losses the system should be run with as short hoses as possible. The standard equipment contains 6 or 8 m long hoses and provide low pressure drop and excellent efficiency.

5.5.14 Water cooling

The 3/8" cooling water hose must be connected between the power pack and the wire saw.

Note! The power pack is water cooled and needs a minimum of 8 liters of cool water per minute at full power output.
The water pressure should be at least 1 bar. The water supply may only be connected to the lower connection on the power pack, never to the upper one. The upper connection is connected to the water hose running up to the wire saw.

Important! The water couplings may never be substituted for couplings with a closing valve when disconnected as water then will remain in the oil cooler and in the electric motor cooling jacket. Leaving water in the power pack will destroy these components in sub-zero temperatures.

Mounting the cooling water hoses

1. Connect the water hose between the power pack and wire saw.
2. Connect the water hose between the power pack and water post (not delivered by Tractive).

5.6 Guidelines to follow when commencing a cut

1. Check that both swivelling guide pulleys are tight (19 mm socket). Check their alignment with the desired cut line.
2. With the wire on the machine, all guards fitted, and water nozzles or hoses adjusted, please pay attention to the wire tension. On the slack side there should be some slack before attempting to start the wire. Check that the wire is run over all pulleys correct and has not jumped off during the set-up procedure.

   Test the tension by hand by moving the wire on the slack side, which is the RH side when standing in front of the main drive pulley, hydraulic motor pointing away from you. You should be able to move the wire sideways 10 cm or so.
3. Turn the potentiometer for feeding speed on the RCU back to the Zero position.
4. Start the electric motor in the Pentpak by flicking the Start/Stop Electric motor switch.
5. Let the power pack run minimum 10 seconds.
6. Press and hold the Start/Stop hydraulic circuit switch and Start/Stop Electric motor switch once to start the wire.
7. Move the joystick to the left or right (depending on how the hoses are connected) and turn up the potentiometer for feeding speed to tension the wire.
8. The working pressure can be balanced by adjusting the allen screw on the power pack (see page 35, 5.3 Automatic feed control) and the potentiometer on the remote control.
   For example; set the potentiometer at 50% and adjust the allen screw on the power pack until desired working pressure is achieved. If you cannot reach desired pressure, increase the setting of the potentiometer and adjust the allen screw again.
9. Experience from running different types of wires, in different types of aggregate, steel, rock, or whatever you are cutting, will be very helpful to achieve good results. If you knew everything from the start it would be easy but less fun!

10. **Note!** Pay attention to water flowing to the wire. If dry smoke appears the wire can overheat and may be damaged after a short while. Readjust the hoses and / or increase water flow. Use soft garden hose and press the free end into the cut grove. Use as many hoses as possible to cool and clean the wire. A good flow of water to the wire is needed for most plastic or rubber injected wires to make them last and perform well.
11. When a deep section is to be cut, often pilot holes must be drilled. The pilot holes must then be aligned so that the cutting planes will be tapered, or the block will bind and cannot be removed.

    Removal of concrete containing contaminated or hazardous materials may require containment of the cooling water.

6 MAINTENANCE

The Pentruder 3P8 wire sawing system must remain in a condition which is safe for operation at all times, and therefore certain maintenance is needed. Please read the instructions below carefully before any service work is commenced.

For safe and uninterrupted operation of the machine, we strongly recommend that the complete machine is brought back to your dealer for service at least once a year. At this service the machine is checked for proper function and all components critical for safe and reliable operation are checked and replaced if necessary.

Please respect the following maintenance instructions:

WARNING!

- No service or maintenance may be performed on the power pack unless it is disconnected electrically from the mains.
- No service or maintenance may be performed on the HF-motor unless it is disconnected from the power pack.

- Wire sawing can be a dirty job! To keep the equipment clean will take a lot of effort, certainly if the machine is running for prolonged periods and cleaning is not possible or allowed due to time pressure.
- Try to clean the machine as well as possibly, especially directing your attention to the carriages, their internal taper rollers, and the columns. The machine will not work well if the upper tensioning carriage does not run smoothly on the column/track.
- **Note!** If a high pressure cleaner is used, you must NOT point the nozzle at the seals over the bearings on any of the pulleys or the main drive pulley. Water will be injected and the bearings will fail prematurely.
- The cog belt that drives the main drive pulley is a Gates Polychain GT Carbon belt. Its length is 720 mm, width 21 mm, Gates denomination 720-8M GT2.
- The cog belt will last for at least 100 hours, in most cases well over 150 hours. The lifetime will depend greatly on how many times the wire gets jammed.
- Try to avoid using wires with different sizes of beads. Differently sized beads and sections of wire will cause jamming and will shorten the life of the cog belt.
- The cog belt can be replaced in about 10 minutes, after some practice. See page 35 for instructions on how to replace the belt.
- Preload on rollers (70 mm column system): The roller carriage has four conical rollers to guide the carriage on the column without any play at all. Check the preload now and then. The conical rollers do not need a high preload on the column. The rear rollers can be adjusted using a ½" spanner and a 15 mm wrench.
- Do not set the rollers too hard. If set to hard, the result will be premature wear of the column. Hold the eccentric shafts with a 1/2" tool and tighten lock bolts with a 15 mm wrench. With correct preload on the rollers the carriage will run smoothly and give a very rigid support for the wire saw modules.

6.1 How to replace the cog belt

Disassembly

1 Remove the center bolt holding the pulley. 14 mm allen key.

2 Remove bearing cap and seal.

3 Remove all M6 bolts holding belt cover to back cover. 5 mm allen key.

4 Remove the belt tensioning bolt. 6 mm allen key.

5 Loosen the bolts holding pulley shaft. 8 mm or 5/16" allen key

6 Lift main drive pulley and slide it off the pulley shaft while holding back the cog belt

Assembly

1 Put a new belt on the small cog wheel.

2 Slide the main drive pulley on to the pulley shaft while at the same lifting the pulley and putting the belt over the big cog wheel pulley.

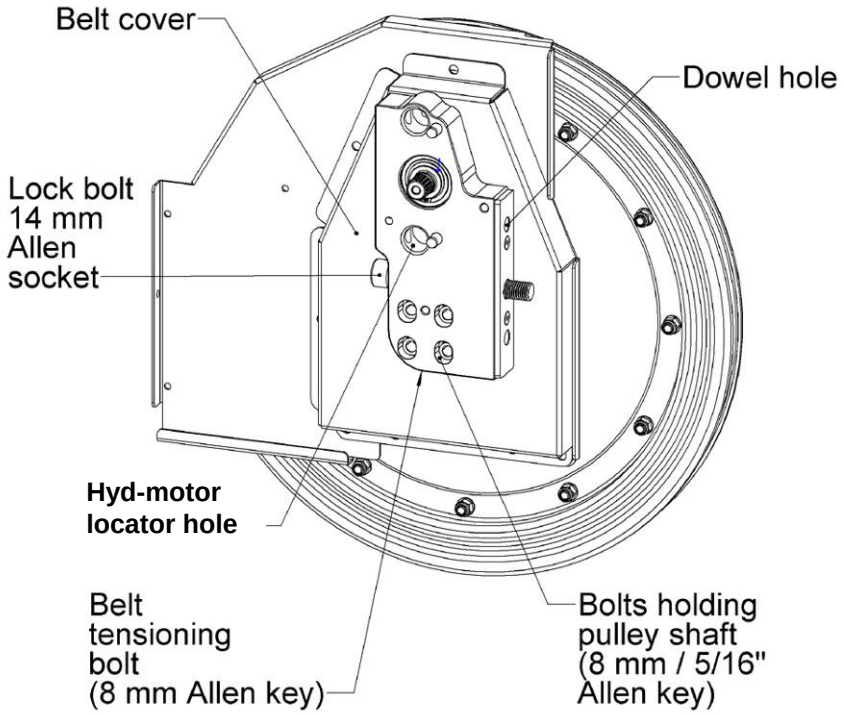
3 Push the pulley inwards while at the same time turning it to make the belt line up.

4 Tighten the pulley shaft bolts slightly.

5 Tighten the belt tensioning bolt firmly.

6 Tighten the pulley shaft bolts firmly. (60 Nm)

7 Fit and tighten bolts holding rear cover to belt cover.



Main drive pulley

7 Technical Data Pentruder Modular Rig System

Wire saw modules, 3P8:

Technical data for Pentruder 3P8 wire saw modules

	3P8-DP-HY Drive pulley hydraulic	3P8-UA Upper assembly	3P8-LA Lower assembly
Weight kg / lbs:	14.5 / 32	15 / 33	20 / 44
Pulleys O.D. Ø mm/":	500 / 20	198 / 7.8	198 / 7.8
"Pitch Ø mm/":		180, 7.1	180, 7.1
Groove width for wire:	10 mm / 0.3930	10 mm / 0.3930	10 mm / 0.3930
Suits wire Ø mm/":	8-10 / 5/16 – 1/2	8-10 / 5/16 – 1/2	8-10 / 5/16 – 1/2
Number of pulleys:	1	4	7
Minimum Storage	6.5 m / 21 ft		
Maximum Storage	Approximately 20 m / 65 ft		

Softstart valve with pressure gauge:

Technical data for Pentruder 3P8 softstart valve with pressure gauge

	HSE-PP15-20	HSE-PP25
Used with:	Pentpak 15 and 20	Pentpak 25

Guards, 3P8:

Technical data for Pentruder 3P8 Guards

	3P8-LMG	3P8-TG	3P8-DPG	3P8-SSG
Weight kg / lbs:	10 / 22	10 / 22	5 / 11	7 / 15.4

Hydraulic motors – HR:

Technical data for Hydraulic motors - HR

	HR16	HR25R	HR34CW
Weight kg / lbs:			
Wire speed	22 m/s @ 42 Liter / min (with Pentpak 15 and 20)	15 m/s @ 42 Liter / min (with Pentpak 15 and 20)	21 m/s @ 80 Liter / min (with Pentpak 25)

Carriage – CE – 70 mm column system:

Technical data for Carriage CE1-70-3P8 and CE1-70

	CE1-70-3P8 Upper carriage (+ PT-3P8 hydraulic feed unit)	**CE1-70 Lower carriage (+ FE1 Friction brake)**
Width incl ½" socket mm/inch	219 / 8.6	219 / 8.6
Width housing mm / inch:	150 / 5.9	150 / 5.9
Length mm / inch:	376 / 14.8	376 / 14.8
Depth mm / inch	228 / 9	228 / 9
Weight l kg / lbs:	9.3 / 20.5	9.3 / 20.5
Feed:	Hydraulic	Manual, Fixed with friction brake

Columns – CN – 70 mm:

Technical data for column CN.

	CN 0.5 F/M-70	**CN 1.2 F/M-70**	**CN 1.5 F/M-70**	**CN 0.5 F/J-70**	**CN 1.2 F/J-70**	**CN 1.5 F/J-70**	**CN 2.0-3P8**
Length mm / inch:	508 / 20	1200 / 47.2	1500 / 59	508 / 20	1200 / 47.2	1500 / 59	2000 / 79
Weight kg / lbs:	6.4 / 14.1	11.9 / 26.2	14.3 / 31.5	6.6 / 14.5	12.1 / 26.6	14.5 / 32	14.5 / 32
Coupling:	Female/Male	Female/Male	Female/Male	Female / Jack screw	Female / Jack screw	Female / Jack screw	Female/ Plastic plug
Extendable:	Yes	Yes	Yes	No	No	No	No
Fits base plates:	BE1, BE2, BETC	BE1, BE2, BETC	BE1, BE2, BETC	BE1, BE2, BETC	BE1, BE2, BETC	BE1, BE2, BETC	BE1, BE2, BETC

Base plates – 70 mm column system:

Technical data for Base plates BE1 and BETC.

	BE1	**BETC**
Width including pulleys mm / inch:	492 / 19.4	492 / 19.4
Width less pulleys mm / inch:	380 / 15	380 / 15
Length including support legs and pulleys mm / inch:	610 / 24 with support legs in	610 / 24 with support legs in
Length less pulleys, front and rear legs mm / inch:	426 / 16.7	426 / 16.7
Height not including coupling cone mm / inch:	111 / 4.4	111 / 4.4
Length / width of slot for anchoring mm / inch:	100 x 22 / 4 x 0.9	100 x 22 / 4 x 0.9
Size of pulleys mm / inch:	Ø 160 / 6.3	Ø 160 / 6.3
Weight including pulleys and support legs kg / lbs:	18.5 / 40.7	14.8 / 32.6
Weight less pulleys and support legs kg / lbs:	12.8 / 28.2	9.1 / 20
Coupling	Fixed, front mounted	Fixed, top mounted

Pivoting head - PD1 – 70 mm column system:

Technical data for pivoting head PD1.

	PD1
Width including coupling and ½" drive socket mm / inch:	236 / 9.3
Width housing mm / inch:	106 / 4.2
Length mm / inch:	320 / 12.6
Depth incl. clamp screws mm / inch:	170 / 6.7
Weight kg / lbs:	7.7 / 17

Carriage – CEG – for TS track (MCCS):

Technical data for Carriage CE1-HY32 and CEG-M25

	CEG-HY32 Upper carriage	CEG-M25 Lower carriage
Weight kg / lbs:	8 / 17.6	6.3 / 13.9
Feed:	Hydraulic feed, Max speed 1.0 m/min	Manual, gear ratio 25:1

Tracks TS:

Technical data for track TS

	TS0.85	TS1.15	TS2.0	TS2.3	TS3.45
Length mm / inch	850 / 33.5	1150 / 45	2000 / 79	2300 / 90	3450 / 136
Weight kg / lbs	5.9 / 13	8.0 / 17.6	13.9 / 30,6	16.0 / 35.3	24.0 / 52.9
Fits base plates	BTS3, BTS4	BTS3, BTS4	BTS3, BTS4	BTS3, BTS4	BTS3, BTS4

Base plate – BTS4 – for TS track (MCCS):

Technical data for base plate BTS4

	BTS4
Widht mm / inch:	492 / 19.4
Length mm / inch:	610 / 24
Weight kg / lbs:	19.5 / 43

Declaration of conformity – Pentruder 3P8 Hydraulic Wire Saw

We, Tractive AB declare that the machine

Manufacturer: Tractive AB
Gjutargatan 54
78170 Borlänge
Sweden

Category: Hydraulic wire saw

Type: Pentruder 3P8 Hydraulic Wire Saw

- Is in conformity with the provisions of the Machinery Directive 2006/42/EC.
- Is in conformity with the provisions of the following other EC-directives:
  - Low Voltage Directive 2006/95/EC
  - EMC-Directive 2004/108/EC

In accordance with the EC-declaration of conformity, the product must not be modified without the manufacturer's permission. If this occurs, this documented EC-declaration ceases to apply and the modifier is considered to be the manufacturer and must verify and draw up an addendum to the EC-declaration and file technical data for the inspection authority.

Borlänge 21st of February, 2011

A. Johnsen

Anders Johnsen

Technical Director

Declaration of conformity – Pentpak hydraulic power packs

We, **Tractive AB** declare that the machine

Manufacturer: Tractive AB
Gjutargatan 54
78170 Borlänge
Sweden

Category: Hydraulic power pack
Make and type: Pentpak 15 / 20 / 25

Is in conformity with the provisions of the Machinery Directive 2006/42/EC.
Is in conformity with the provisions of the following other EC-directives:

- Low Voltage Directive 2006/95/EC
- EMC-Directive 2004/108/EC

We also declare that it is in conformity with directive 2000/14/EC on the noise emission in the environment by equipment for use outdoors (amended by Directive 2005/88/EC and the Regulation EC 219/2009), measured in accordance to the Conformity Evaluation Method set out in Annex VI para.5 and evaluated during production as in Annex VI para.6, 2nd procedure.

Notified Body: 0404 SMP Svensk Maskinprovning AB
Fyrisborgsgatan 3
75450 Uppsala
Sweden

Noise related value: 15 / 20 / 25 kW

Measured sound power level: Lwa: 97 dB(A) for Pentpak 15 and 20, 101 dB(A) for Pentpak 25

Guaranteed sound power level: Lwa: 104 dB(A)

Borlänge 21st of February, 2011

Anders Johnsen
Technical Director