OD Mount Pipe Cutting & Beveling Machine

PCB1420ii

Set Up & Operation Manual

pssss
Your "Go To" Supplier for all things Piping!

Contents

Read Manual Carefully - If in doubt Ask

Health & Safety

The following points should be taken into consideration with regard safety and handling precautions when assembling, installing, operating, maintaining, and servicing our equipment.

1. The manual should be read in full and understood before proceeding. If unsure ask the Axis representative to clarify.
2. Any work that is to be carried out with Axis machines should be undertaken by suitably qualified, trained, and competent personnel
3. Standard safety procedures with regard utilizing mechanical equipment must be adhered and locations where work is conducted should be considered. Be fully aware of rotating equipment and potential pinch points in restricted workspace. Always keep yourself from harm's way and operate from safe distance to avoid possibility of accident.
4. Safety equipment is specific to the job, that which is deemed necessary is the responsibility of the customer. Recommended Mandatory requirement – Eyes, Ears, Hands and Feet
5. Always isolate the power source on the equipment before adjusting, handling, or setting the machine

Axis Machines accepts no responsibility for any problems or accidents that occur from malpractice in using the equipment, when operating, installing or from badly maintained parts

Hand Protection

Ear Protection

Eye Protection

Machinery Pinch Point

Strong Magnet

General Alert

The motor may vibrate. Frequent and long exposure to the vibrations may cause HAVS and afflictions affecting hands and arms. The effects are not well known because they depend on several reasons such as: the type of work, the condition of the operator, the duration and the conditions of the exposure.

As the motors are noisy, it is recommended to use appropriate ear protections.

Personal protections such as: protection glasses, helmets, ear protections, safety shoes and gloves must be at the disposal of the operator and used by him or any other person when operating conditions and norms require their use.

Health & Safety

Make sure the control system of the motor is switched off before using the power source. The on/off devices must always be in perfect good working condition. Do not block the safety device and the on/off devices. In case the air feed stops, you must immediately activate the “stop” position of the on/off devices.

Avoid any physical contact with the moving parts when the power source is not completely isolated from the motor except if it is necessary for the operational conditions.

The following points should be taken into consideration with regard safety and handling precautions when assembling, installing, operating, maintaining, and servicing our equipment.

Any mechanical drive must be used in good working conditions and meet safety requirements.

Be careful with long hair and/or loose-fitting clothes.

Make sure the exhaust system does not endanger the operator when the output is closed up (on account of ice or protection caps for instance…)

Switch off the motor totally before changing workplace.

ADDITIONAL SAFETY INFORMATION

Use of this tool may produce hazardous fumes, particles, and/or dust. Ensure adequate ventilation in the workspace and/or use of a respirator.

Read material safety data sheets when using any cutting fluids or materials involved in the drilling / cutting process

Contact Us

For support or any other queries, please email / scan qr code with Machine, Model Number and serial number to:

Email: sales@axismachines.org

MODEL : _____

_____

SERIAL NO : _____

_____

PURCHASE DATE : _____

_____

Machine Features

- Cold Cutting and Beveling
- Split Ring
- Tool bits feed automatically
- Minimal axial and radial clearance
- Lightweight and compact design
- Easy set-up
- Pneumatic, electric or hydraulic drive

Packing List

PACKING LIST				
QTY.	**PACKED**	**PART NUMBER**	**DESCRIPTION**	**BOX**
PCB : to PIPE CUTTING & BEVELING MACHINE				
			comprising of :-	
2		PCB-SR	SPLIT RING ASSEMBLY	
1		PCB-DM-3	DRIVE MOTOR ASSEMBLY	
2		PCB-TS-3	TOOL SLIDE ASSEMBLY	
1		PCB-TA	TRIP ASSEMBLY	
4		PCB-BA-A	BASE ASSEMBLY	
4		PCB-FE-1	FOOT EXTENSION 1 INCH	
4		PCB-FE-2	FOOT EXTENSION 2 INCH	
1		PCB-AM	AIR MOTOR	
1		AFL-L	AIR FILTER LUBRICATOR	
1		WLH-L-5M	1/2 " HOSE / 3/8" HOSE	
TOOLBAG containing :-				
4		PCB-BA-1307	FOOT EXTENSION 1 INCH	
4		PCB-BA-1308	FOOT EXTENSION 2 INCH	
2		PCB-TS-717	PARTING BLADE SPACER PLATE	
2		PCB-TS-718	PARTING BLADE SPACER BLOCK	
2		PCB-TS-719	BEVEL TOOL SPACER BLOCK	
2		PCB-TS-715	PARTING BLADE LOCK PIECE	
TOOLKIT comprising of:-				
1		TOOL BAG	Containing	
1		90SQ	90 deg SQUARE	
1		RM	RUBBER MALLET	
1		1.5-10MMHKS	BALL HEAD HEX KEY SET (1.5MM~10MM, 9 PCS)	
1		17MMCW	17MM COMBINATION WRENCH	
1		22MMCW	22MM COMBINATION WRENCH	
1		½"RH	RATCHET HANDLE	
1		3/8"RH	RATCHET HANDLE	
1		75MM SEB	75MM SOCKET EXTENSION BAR	
1		½"HBS-15MM	½" DR HEXAGON BIT SOCKET – 15MM	
1		3/8"HBS-8MM	3/8" DR HEXAGON BIT SOCKET – 8MM	
1		3.6MMT	3.6M MEASURING TAPE	

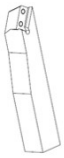
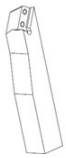
Packing Details

Shipping Box: Mild Steel Case

Box 1

Shipping Weight	Length (cm)	Width (cm)	Height (cm)
161 Kg	95	60	50

Tool Bits & Tooling

BEVEL TOOL BITS			
10°	**15°**	**30°**	**37°**
			
BT10-3.5-R	**BT15-3.5-R**	**BT30-3.5-R**	**BT37-3.5-R**
BT10-3.5-L	**BT-15-3.5-L**	**BT30-3.5-L**	**BT37-3.5-L**
BT10-7-R	**BT15-7-R**	**BT30-7-R**	**BT37-7-R**
BT10-7-L	**BT15-7-L**	**BT30-7-L**	**BT37-7-L**
IBINSERTS	**J-PREP BEVEL TOOL**	**IBJINSERTS**	
Box of 10 Inserts for Insert Bevel Tools	**BTJ1-7-25R**	Box of 10 Inserts for J-Prep Insert Bevel Tool	
	BTJ1-7-25L		
PARTING BLADE TOOL BITS			
PB27	**IP2**	**PB37**	**IP3**
6mm	Box of 10 Inserts for PB27	8mm	Box of 10 Inserts for PB37

Machine Configuration

General Operation Guidelines

The following procedures are provided to enable your Axis machine to be installed and function correctly and safely.

1. All safety procedures must be observed prior to operating the equipment.

2. Do not operate the equipment if equipment maybe compromised or serviceability of the equipment is suspect.

3. The operators must wear the correct safety equipment whilst operating this equipment.

4. Do not attempt to machine above the specification of the machine or below the specified sizes. This will invalidate the guarantee.

5. Do not attempt to machine if the setting of the machine is suspect or below that recommended

6. Never allow another person to turn the power supply on or off whilst working with the machine, only the designated machinist must utilize & control the operation whilst on the job

7. Never leave the machine working unattended. If you need to leave the machine unattended at any time, make sure that it is isolated, any power supply is turned off and disconnected.

8. Make sure that all personnel are fully skilled and trained in both the operation of the machine and understand all the relevant safety aspects.

9. Do not use the machine with blunt tooling or overload machine with too deep a cut. Use coolant or cutting oil where possible.

10. The machine is automatic feed, keep hands safe & away from the machine when it is rotating. If unsure and need to explore inside or remove swarf, stop the machine to do so,

11. Beware of hot chips and flying debris. The machine can run at high RPM if mechanically driven, try and use a magnetic screen to stop and control the cuttings. Barrier off the machine to safeguard any other person around. 3M restriction zone if possible.

Setting Up

PRE-INSTALLATION PROCEDURE

NOTE: MOTOR SHOULD BE REMOVED FROM THE SPLIT RING!

SEPARATING SPLIT RING HALVES

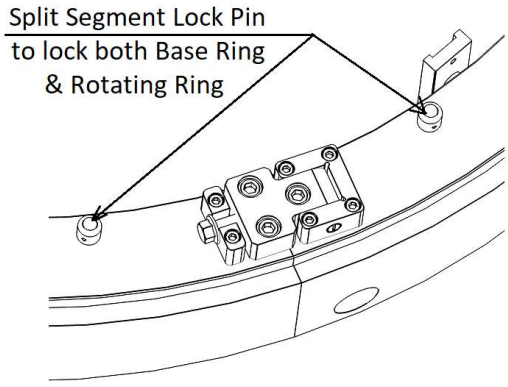
1. Align gear and housing split lines – rotate gear by hand. If lock pin holes in gear will not line-up with holes in housing, rotate gear 180° for proper alignment

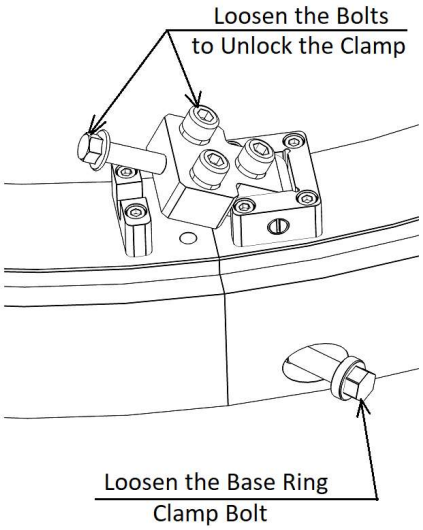
2. Place locking pins into holes through the gear and housing to prevent gear rotation when the ring is split. Press the top button to allow pin to slip into the hole

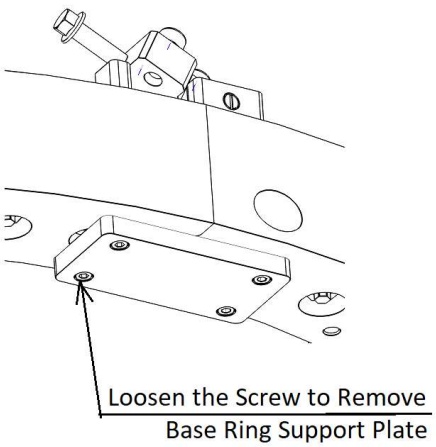
3. Loosen the 2 swing bolt flange nuts in the housing and swing the bolts out of the pockets. Unscrew the 2 clamp bolts on the gear halves and separate the frame halves by pulling them apart.

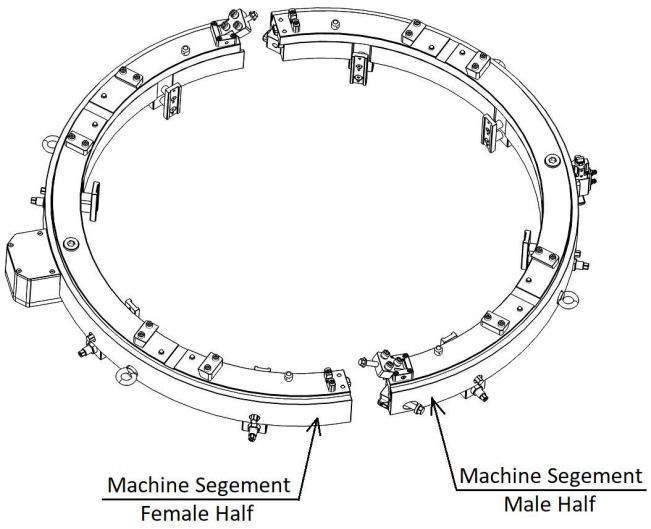
4. Measure pipe OD to be cut and preset the extension legs to diameter determined.

5. Ensure the slide assemblies are positioned to clear the work piece but are as close to the OD as possible. The slides can be moved by removing the feed screw bracket, tool block and 12 socket head cap screws.









Setting Up

PRE-INSTALLATION PROCEDURE

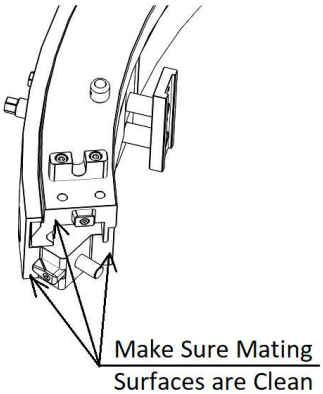
SEPARATING SPLIT RING HALVES

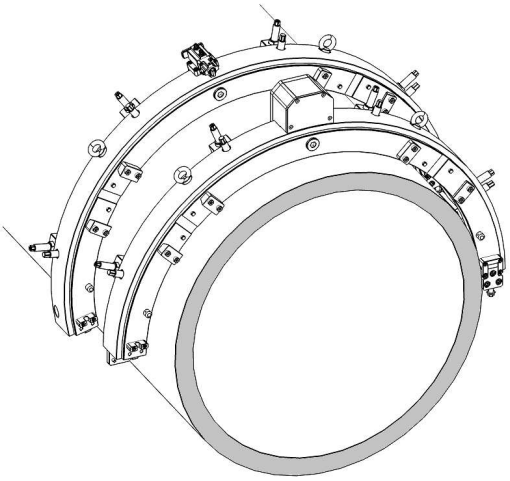
6. Remove the lock pin. Push the handle of the tripper pin assembly in so the tripper pin is in the ***"engaged"*** *position*. If the tripper pin does not line up with the star wheel, reposition the handle. When the tripper pin height is set, check the tripper pin length. The end of the tripper pin should be spaced 1mm away from the cavity between 2 of the points of the star wheel. Lift the handle to disengage the tripper pin and reinsert the lock pin.

7. Machines that are fitted with the Heavy Duty setting leg locators which utilize locking brackets to restrain the bearing when splitting the machine into two halves. The locking brackets are right angled with a small hole through the short end and have a square and round hole cut through the longer length. They are profiled to hook over the square support bar and locking adjustment screw of the adjustable setting legs that protrude through the outside of the machine, they are then secured in place by fastening to the drive plate on the front of the machines with M8 screw.

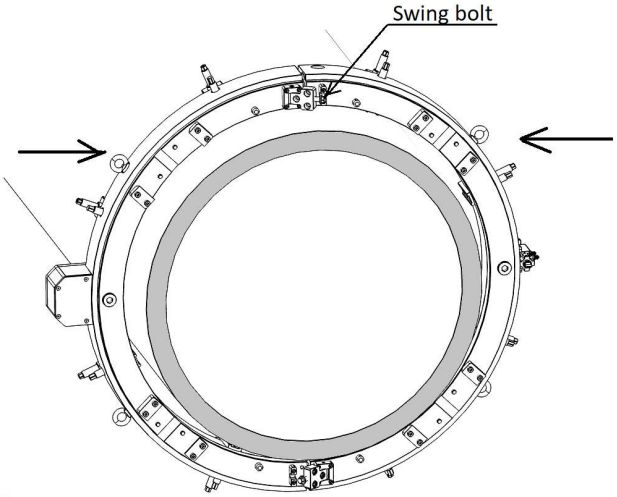
8. The locking bracket as illustrated in pictures below have the appearance of the one on the right when installed properly. Once this is in place, the machine on either side of the machine it ca be split into two halves.. To fit the locking bracket on the machine – Rotate the machine so that the split line of the face plate and body are aligned. The cap head screw on the faceplate should be in line with the jacking leg screw and square support bar. Slide the bracket into place over the jacking screw and square support bar. Fasten to face plate

9. Locking Bracket

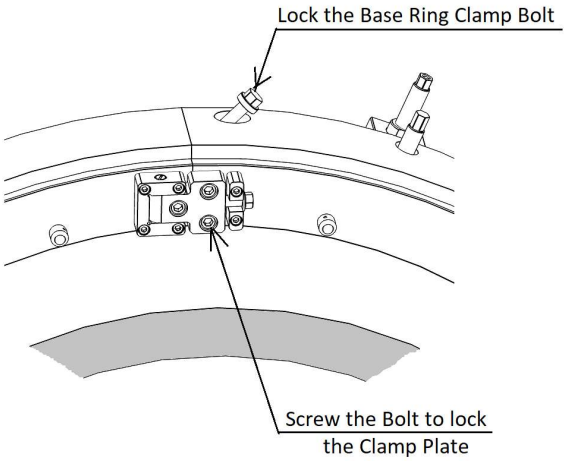




Set the Male & Female Split Ring halves
on top of the work piece

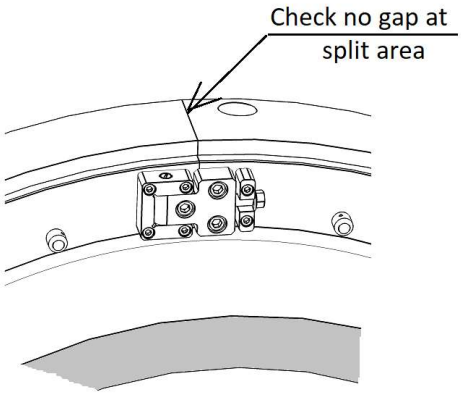


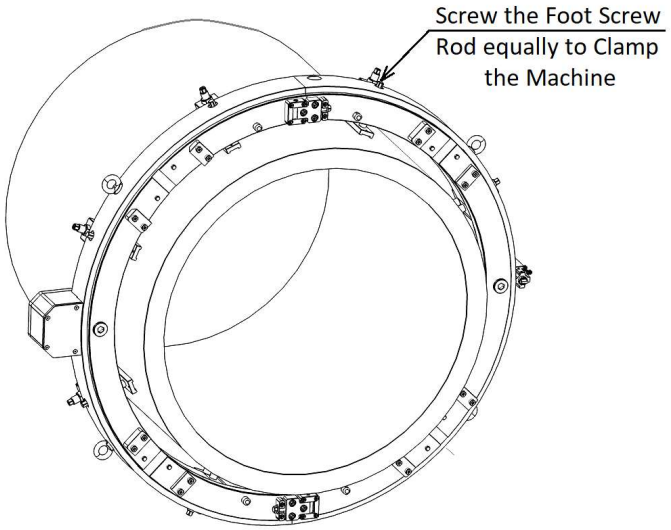
Press both Split Ring to Join together &
Lock the Swing Bolt to hold the machine together



Setting Up

INSTALLATION ON PIPE-LINE





JOINING SPLIT RING HALVES

1. Install the 2 halves of the Split Ring around the pipe and tighten the housing bolts and the clamp bolts on the gear.

2. Lightly tighten two locator feet directly across form each other (locators 1 & 3), just enough to secure the split frame while trying to keep it centered on the work piece. Lightly tighten two more locator pads that are directly across from each other and 90 degrees away from the first set of locators (locator 2 & 4) DO NOT TIGHTEN down completely until the Split Frame has been both squared and centered to the pipe.

Setting Up

INSTALLATION ON PIPE-LINE
SQUARING & CENTERING

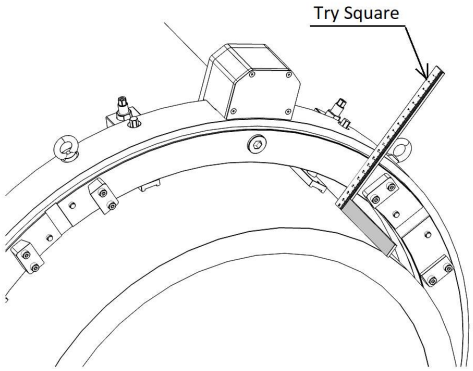
1. Squaring : Place a square on the back of the Split Frame, directly adjacent with a locator foot, hold the square against the housing and the work piece and square the machine to the pipe at the four locations around the pipe.

2. Centering : Using a 150mm scale, measure the distance from the work piece to the fitted Ring ID at the four lightly tightened locator positions. Tighten the four locators so the 6 inch scale reads the same at all four positions. Pull out the locking pins so the split frame gear can rotate.

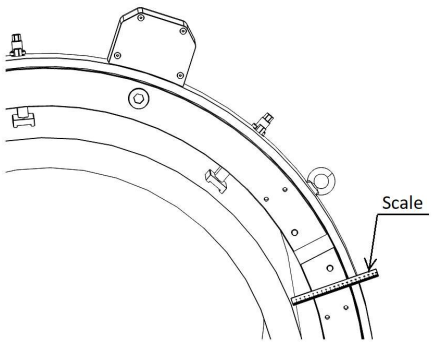
3. To be more precise, mount a dial indicator on the gear face with the tip resting on the work piece OD. Turn the gear so the indicator is positioned over one of the tighten locators (locator 1) and set the dial to zero. Slowly rotate the gear 180 degrees to another locator (locator 3) and take an indicator reading. If the reading is not zero, adjust the locators until the indicator reads one half of the original reading. Reset the indicator dial to zero and repeat. If the Split Frame cannot be centered, the pipe maybe out of round and tracking slides are required.

4. Rotate the gear so the indicator is positioned over another locator foot (locator 2) and set the dial to zero. Slowly rotate the gear 180 degrees to another locator (locator 4) and take an indicator reading. If the reading is not zero, adjust the locators until the indicator reads one-half of the original reading. Reset the indicator dial to zero and repeat. The first two locators may need to be slightly loosened in order to zero the Split Frame work piece.

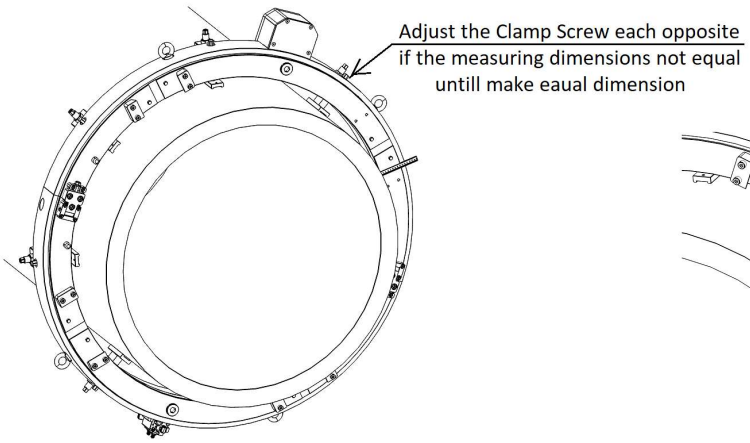
5. Repeats steps 3 & 4 until locators are centralized. Most thin wall pipes are out of round, therefore a zero reading all the way around may not be possible.

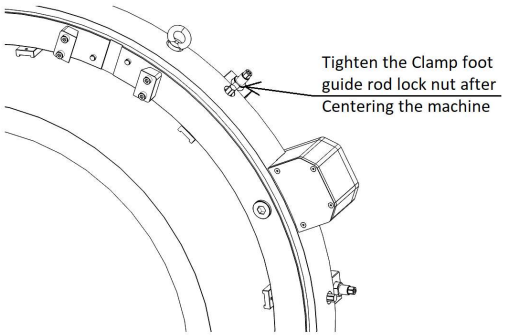


Squaring of Machine at each oppositte leg position



Center the Machine by measuring gap
between the ID of Machine & Pipe Surface





Setting Up

Setting Tooling

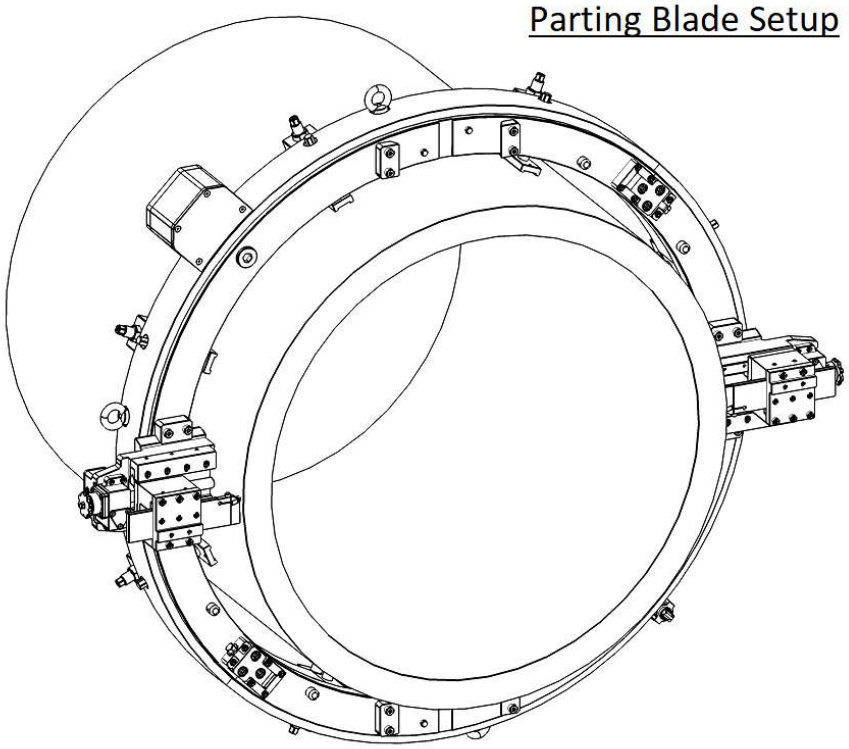
1. Prior to installation of tool bits, determine which tool bits must be used for your specific machining operation. NOTE: The Split Ring cuts in a clockwise direction, when viewed at its face. There are right-hand and left-hand bevel and Parting Tool bits, right hand bits bevel on the side which the Split Frame is mounted, left hand bits bevel on the opposite side of the cut line.

2. Using the star wheel wrench, back the tool slide away from the pipe to allow enough room for the tool bits to pass completely through the pipe without running the tool bits into the work piece. Disengage the feed pin on the tripper bracket.

3. Insert proper Beveling and Parting Tool bits so that the tip touches the pipe OD and stems from the center of the tool block. Hold the Tool Bit with one cap screw, snug but not tight. Manually rotate the cutting head counter-clockwise 1 revolution. This reverse action will put the Tool Bits away from any high spots in the pipe that could cause tool damage. After 1 complete revolution has been made tighten the cap screws on both tool blocks. Back the Bevel Tool Bit 1mm away from the work piece with the star wheel wrench.

NOTE: Always cut with the No. 1 Parting Tool Bit leading No.2 Bit cutting on its own in front by 1mm in depth

Parting Blade Setup



OPERATING INSTRUCTIONS

MACHINE OPERATION

CAUTION : To prevent damage to the tool bit, the pipe to be cut must be rigged properly to keep the tool bits from binding when the pipe is severed. Improperly rigged piping may result in personal injury.

Parting In-Line Pipe

1. Follow set-up procedures, replacing the Bevel Tool Bit with another Parting Tool Bit. Back up both bits (out approx. 1mm). Attach drive motor to the Split Ring, disengage tripper pin, and open the control valve slowly to check function and speed.

   NOTE : If the tool blocks do not move smoothly in the slides during the test rotation the adjustable gibs may need adjustment.

2. Engage the feed pin by pushing down on the tripper handle, after machine has been started. Each rotation will advance the tool bits approx. 1mm with the tripper pin engaged. Use the tripper pin to advance the feed of the Tool Bits until both of the tool bits are cutting. If chatter or vibration occur, reduce cutting RPM. If the tool bits chip or become dull, replace them immediately with sharp bits. Use coolant during the cutting operation to reduce friction on the cutting edge.

3. Stop the machine when the parting is complete. Back out the tool blocks with the star wheel wrench to the full position.

CAUTION : The cutting operation is continuous until terminated by the operator. To stop the cutting feed during rotation, PULL OUT THE TRIPPER HANDLE and let the machine rotate a few times to clear the tool bit. Turn off the power to stop Split Frame rotation. Letting the tool bit clear will prevent tool damage and gouging

Severing and Beveling In-Line Pipe

1. Follow tool bit set-up procedures replacing both sever bits with either left hand or right hand SEVER BEVEL combinations. Back the BEVEL bit up 1mm above the sever bit and follow the procedures above, until the pipe is severed and beveled.

OPERATING INSTRUCTIONS

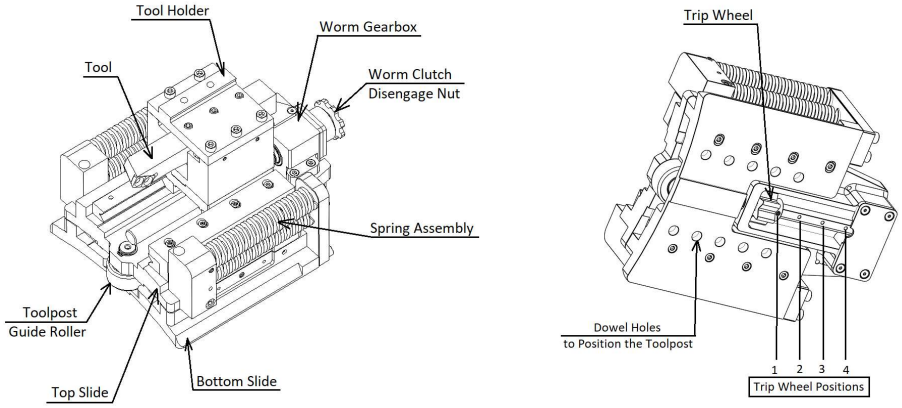
OUT OF ROUND TOOL SLIDES

Out of Round Tracking Slides – Part Number. PCB-OTS-3

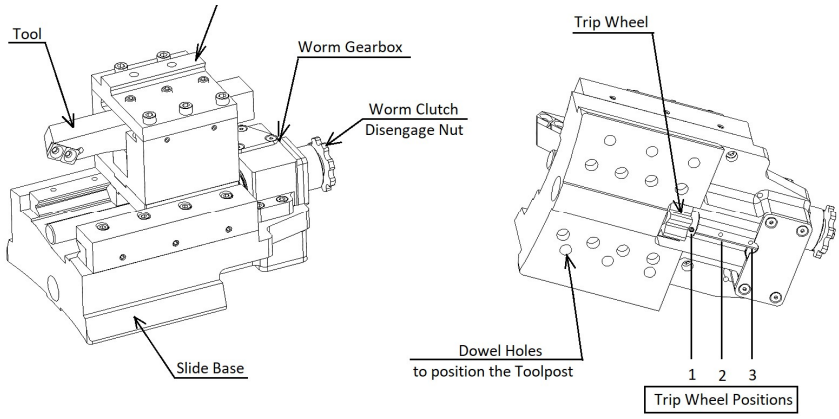
The PCTS cutting assembly are compact tool slides which are utilized when pipes are found to be out of round.
Often thin wall pipes have quite a bit of ovality.
Seam welded pipes also have deformity that can be complied with using the PCB-TS
They are spring loaded tool post that follow the contour of the pipe allowing the cut and bevel to be uniform all the way round the circumference.

The tool slides are mounted on adaptor plates that are fastened on the front face plate of the machine. The adaptor plates have full length finger clamps down each sides that allow the slides to be inserted and pushed down through to required position.

PCB-OTS-3
PCB-OTS-7



PCB-TS-3
PCB-TS-7



Setting the slides

Measure the dimension across the springs to begin with the restraining nuts completely wound Off.

To preload the slides, tighten the restraining nuts at the top of the slide.
Tighten the nuts to compress the springs and make the dimension across the spring @ 4mm shorter than before or if the machine has been set using DTI and the ovality is known set accordingly

With the springs compressed push forward down onto the pipe wall to be cut

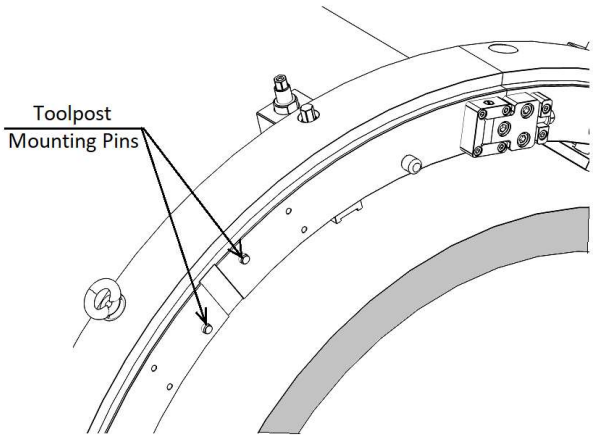
Once in the right position the tool sides are clamped onto the adaptor plate with the three set screws using Allen key.

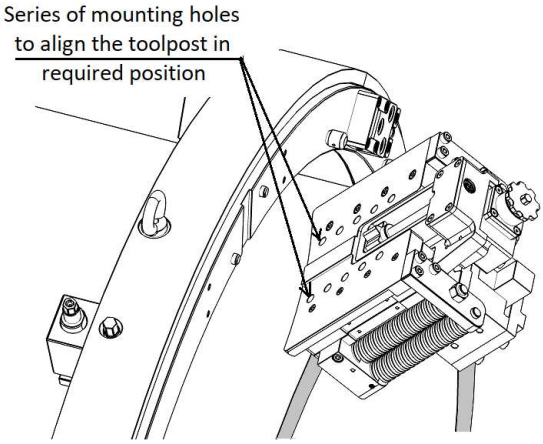
The restraining nuts are then undone to allow the springs to move the tool post in and out when in operation to allow the tool to follow the ovality

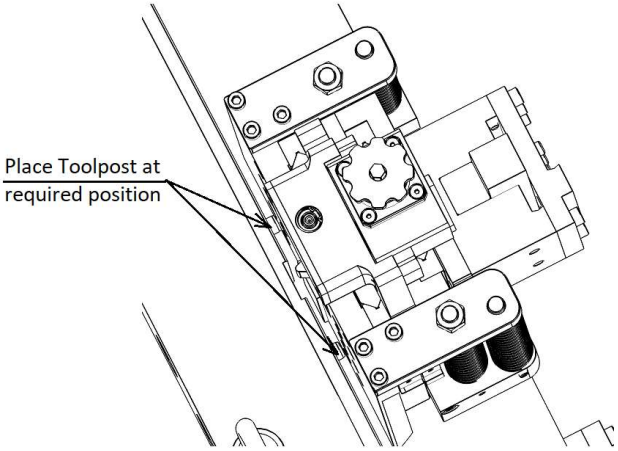
OPERATING INSTRUCTIONS

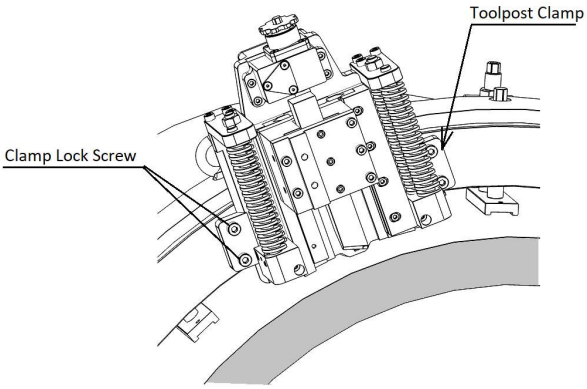
TOOL SLIDES

Setting the Tool Slides

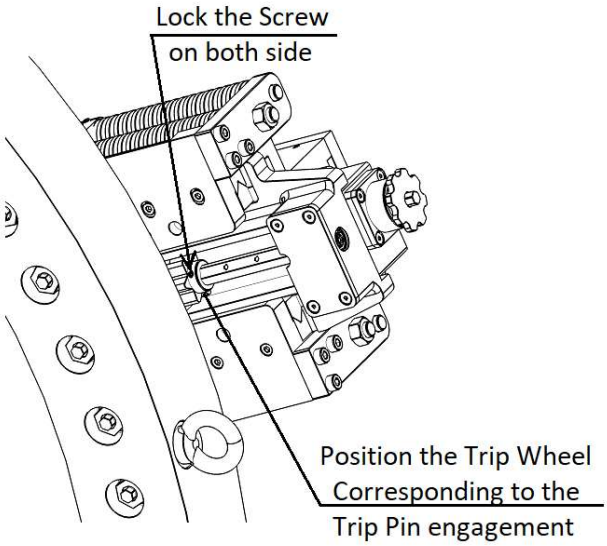








Place the Clamp & Tight the Screw
to Lock the Toolpost



OPERATING INSTRUCTIONS

INDEXABLE TOOLING

30 Degree Bevel Tool Holder Set – Insert Part Number. IB3

Bevel Tools – Indexable Inserts
The Tool holders have a series of inserts that are set at relevant bevel angles, 30 and 37.5 degrees. As standard any wall thickness over ¾" will require a compound angle ie. 30 x 10 degree.
The Angle is normally stipulated by Welding engineer.

The lead tool No. 1 is fitted with 3 off x inserts the following tool No. 2 is fitted with 2 off x inserts that align and follows wiping the joins

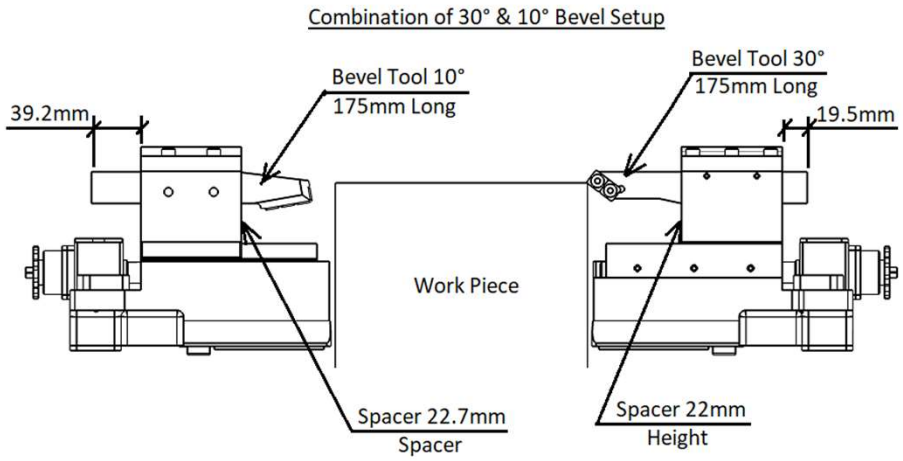
The tool length need to be unified to provide overlap. The tools should be aligned in the tool post to match and be at the same height measured from the back of the tool post. Generally it is normal to align both tools with back of tool post

Both the Bevel Tool ends match position in tool post

Packing

The Bevel Tool needs to be secured in the tool post and set on the machine center line, to correctly fit in the tool post, place a 4mm packer in the topside of the toolholder to set back on center.

The tool is fastened with set screws on the top of the tool post and also the bolts on side



OPERATING INSTRUCTIONS

INDEXABLE TOOLING

Insert Parting Blade Holder – Insert Part Number. IP2

The Inserts are very efficient when it comes to production and quantity to be cut.

There are different grades and sizes to cope with the rigors of materials hardness.

The general cutting blade that the PCB machine utilizes is IP2 with 6mm insert

Setting – Staggered Height

Packing the Parting Blades to Corresponding Height

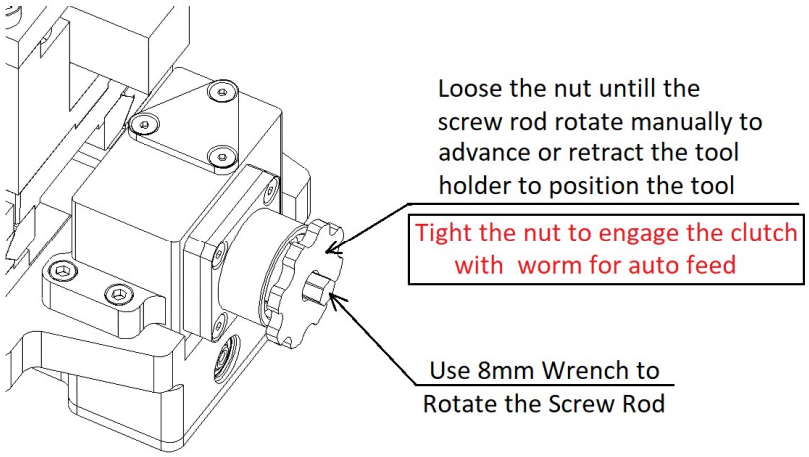
Using Packing the Lead parting blade No.1 height in the tool post is set 5mm higher than the second parting blade No. 2 to give clearance, stop tool snagging and help the cuttings escape the cut line.

The packing for the tool holders are different thickness to allow the height to be set

N.B. When to change the Inserts

Inserts should be changed when they become blunt or damaged to be proficient, protect the equipment and maintain optimum operation times.
An operator can spot differences in the machine's performance, the machine may slow down, struggle to rotate and cut material. The cuttings may change shape and colour, more heat will be generated through the tool rubbing

Manual & Auto Feed engagement



OPERATING INSTRUCTIONS

TRIP ASSEMBLY

Trip Assembly – Part Number. PCB-TA-24

The Trip assembly is fastened on the outside diameter of the machine, there is a specific location with corresponding tapped holes to fasten the trip assembly to the machine.

The Trip needs to be set to the height of the tool side to be able to engage with the star wheel so every time the tool slide rotates past the trip it strikes the trip that rotates the star wheel to feed the tool inwards

To set the trip rotate the tool slide around to the trip. The trip can then be pushed into place and fastened at corresponding height with allen key.

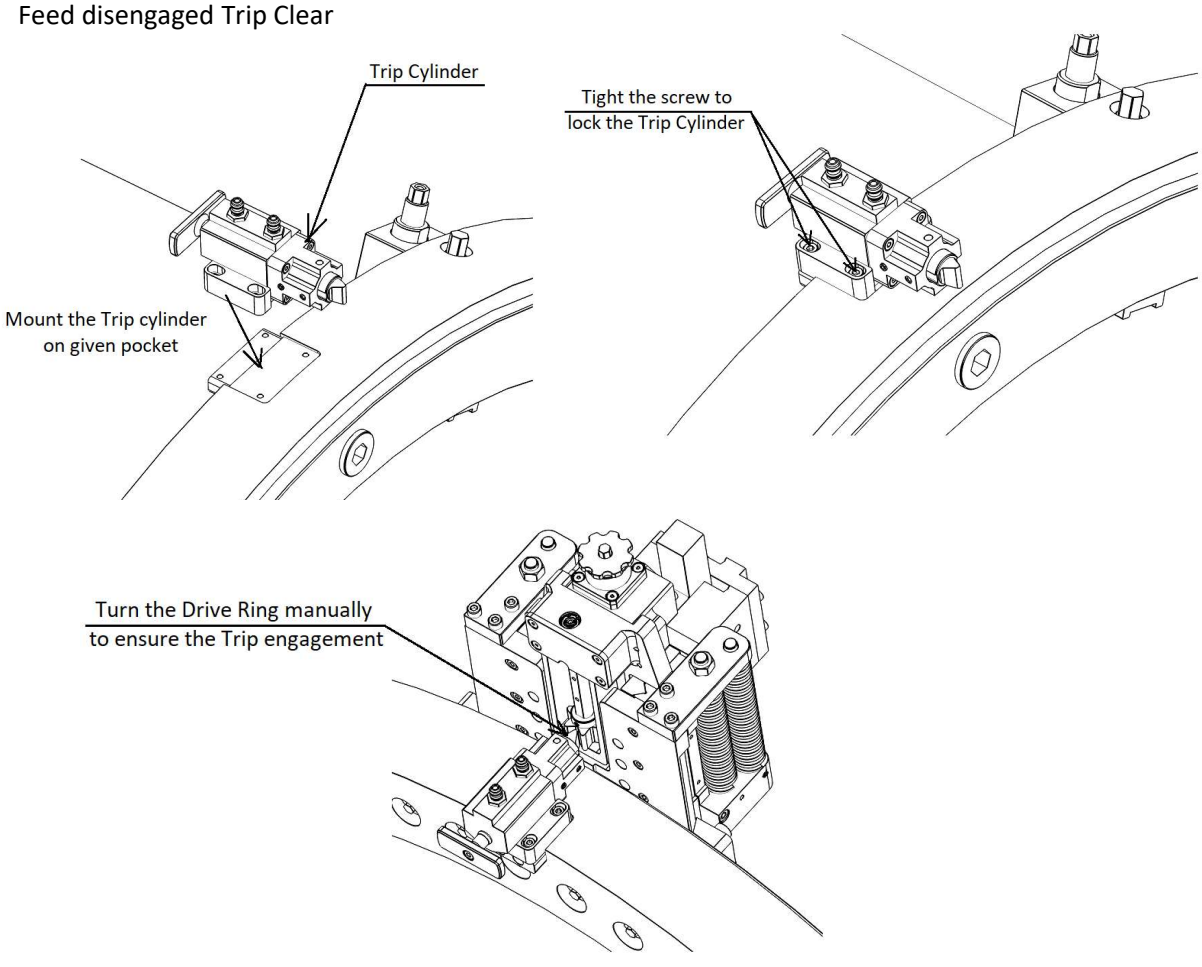
Push the trip forward, inwards to position in line with PCD of the star wheel on the tool slide to engage the feed

Pull the trip back and out to disengage the feed.

If you hear or see the machine struggling pull the trip out of feed and allow the machine to rotate a couple of times to rotate a couple of times to relieve itself before introducing the feed again.

Feed engaged every time the Tool Slide rotates it strikes the trip

Feed disengaged Trip Clear



OPERATING INSTRUCTIONS

MOTOR INSTALLATION

Motor Installation

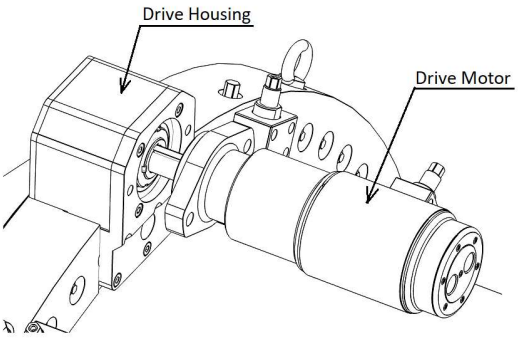
Loosen the four motor mount clamp screws. Position the motor mount toward the rear of the Split Frame

Slide the motor mount under the motor mount clamps and slide the motor forward until the back of the motor mount is flush with the back of the Split Frame housing. If the motor mount does not slide in all the way, rotate the cutter head to align the gear teeth. Tighten the motor mount cap screws.

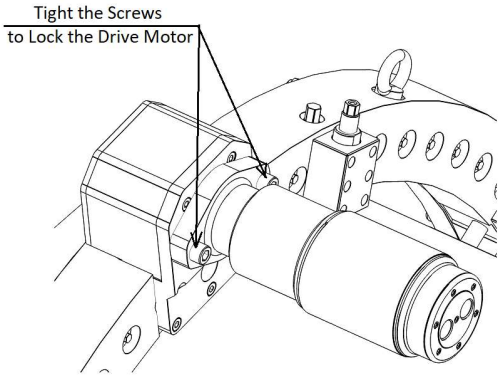
CAUTION : Both locking pins must be removed from the gear face before installing the motor, and all power must be turned off.

NOTE : If the motor does not engage, check to make sure the two gears are properly aligned. Rotate the cutting head by hand if necessary to align gear teeth

Mounting the Drive Motor



Insert the shft of the drive motor
inot the Drive pinion



OPERATING INSTRUCTIONS

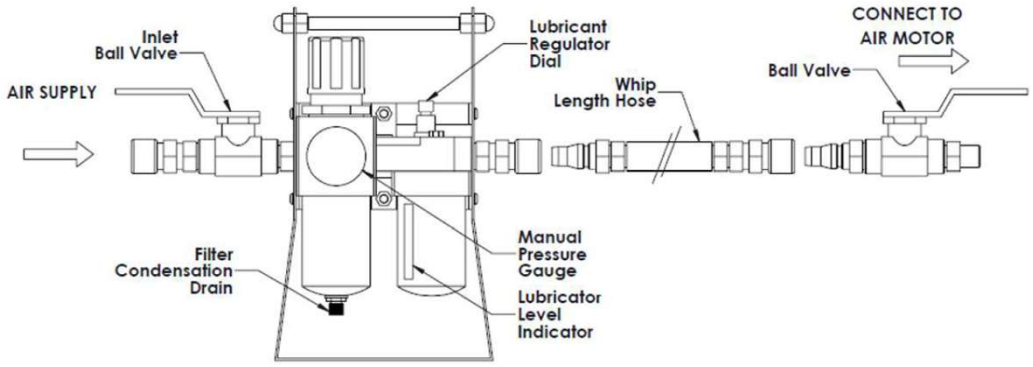
Pneumatic Filter Lubricator

1. Check Oil Level on sight glass on lubricator reservoir.

2. Check the filter has no water has been captured and stored in the well by releasing the filter cap at the bottom. If water present drain before use

3. Ensure all hose connections are secure and tight between the supply and machine to prevent leaks and utilize wired safety connections over joints in case of failure.

4. When line is energized open air valve fully to set oil drop in lubricator to 1 drop every 5 seconds by adjusting the regulator dial. Utilize SAE 10 grade oil for the application in the unit



Before running the machine, make sure that the hoses are connected securely with safety line attached

Make sure all hands are clear from the machine before starting the machine.

When you have opened the air supply, adjust the valve a little bit at a time to regulate the flow to give the required rotation, provide the appropriate speed for the size of flange or material being cut

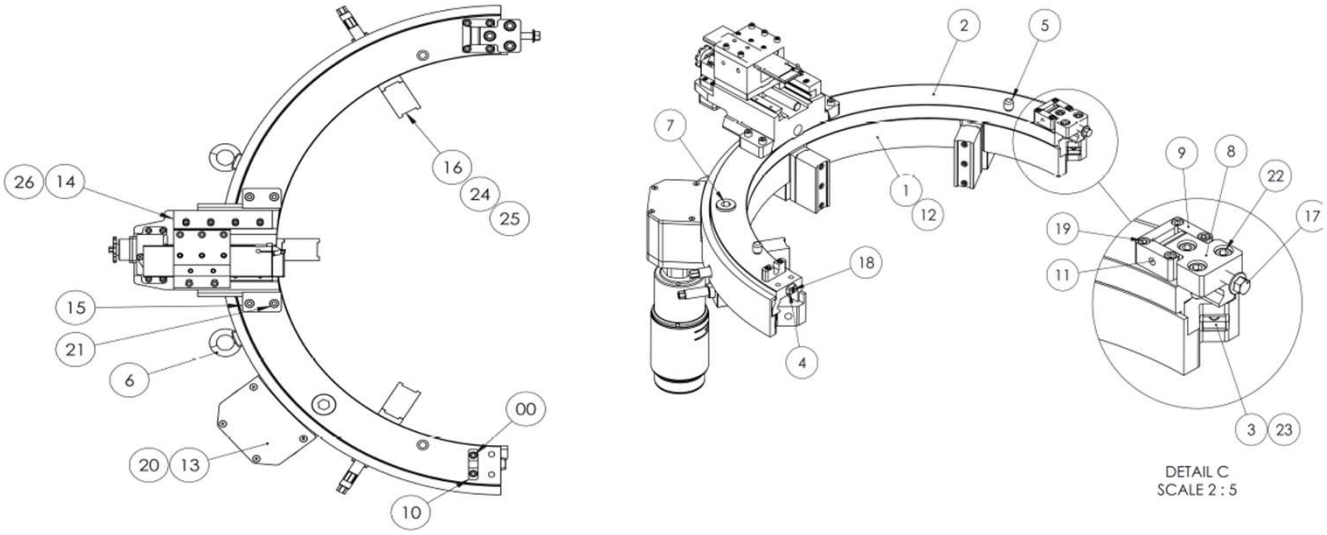
It is highly recommended that the air supply is fitted with two shut off valves, one on the filter lubricator and another at end of whip length hose to operate at the inlet of the air motor as a failsafe, make everyone aware when the machine is going to be started, hands clear and two valves closed will help to protect operators if somebody accidently knocks or opens a valve by mistake.

Turn off and stop the machine to change feed rates, engage boring feed or make any adjustment

Turn both valves off and fully isolate the air supply when an operation has been completed and machine is stopped. If you need to put your hands into the machine to inspect the surface finish, change tooling, clean debris or when leaving the machine unattended at any length of time, toilet or lunch breaks fully isolate the equipment.

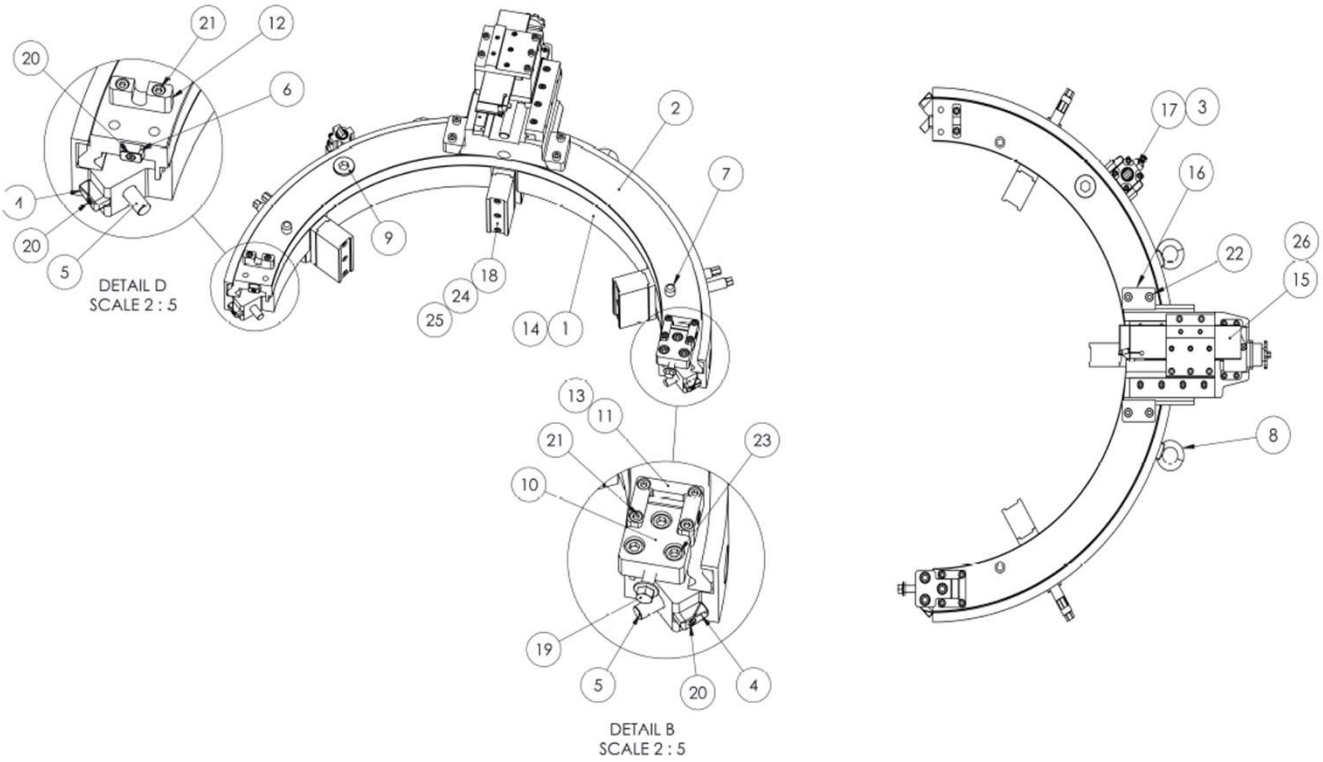
Air Motor – MT20 with ball valve to control speed.

PCB1420ii-SR. SPLIT RING ASSEMBLY



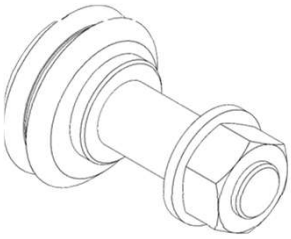
No	PART NUMBER	REV	DESCRIPTION	QTY
01	PCB1420-SR-M		SPLIT RING (MALE HALF)	1
02	PCB-1420-1-102		DRIVE GEAR	1
03	PCB-TA-24-206		TA MOUNTING BLOCK	1
	PCB1420-1-110		SUPPORT PLATE	1
04	LTW-003		LOCK TAPER WEDGE	2
05	CB-003		CLAMP BOLT - M12	2
06	KY-131318-TF		DRIVE GEAR TAPER KEY	1
07	SLP-002		SPLIT SEGMENT LOCK PIN	2
08	LE-P-M10		LIFTING EYE BOLT	2
09	1/2" SOCPL		SOCKET HEAD PLUG	1
	M6x16SHCS		SOCKET HEAD CAP SCREW	4
	PCB-CA-2		**TOP CLAMP ASSEMBLY**	**1**
14	TR2-2		TRACK ROLLER ASSEMBLY	18
17	PCB-TA-24		TRIP ASSEMBLY	1
No	**PART NUMBER**	**REV**	**DESCRIPTION**	**QTY**
10	PCB-CA-201		TOP CLAMP	1
11	PCB-CA-202		CLAMP LOCATING BLOCK	1
12	PCB-CA-203		CLAMP LOCKING BLOCK	1
13	PCB-CA-204		CLAMP PIN	1
21	M6x25SHCS		SOCKET HEAD CAP SCREW	6
23	M10x20SHCS		SOCKET HEAD CAP SCREW	3
19	M10x35HFB		HEX. FLANGE BOLT	1

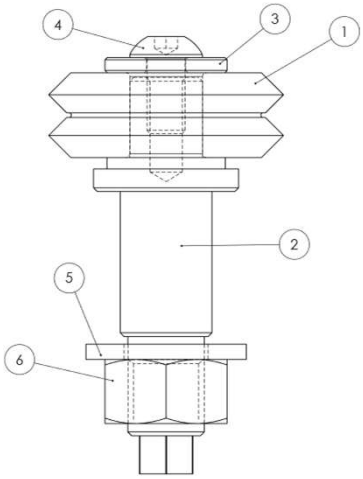
PCB1420ii-SR. SPLIT RING ASSEMBLY



No	PART NUMBER	REV	DESCRIPTION	QTY
01	PCB1420-SR-F		SPLIT RING (FEMALE HALF)	1
02	PCB-1420-1-102		DRIVE GEAR	1
	PCB1420-1-110		SUPPORT PLATE	2
03	PCB1420-1-113		LTW INSERT	2
04	KY-131318-TF		DRIVE GEAR TAPER KEY	1
05	SLP-002		SPLIT SEGMENT LOCK PIN	2
06	LE-P-M10		LIFTING EYE BOLT	2
07	1/2" SOCPL		SOCKET HEAD PLUG	1
	M6x16SHCS		SOCKET HEAD CAP SCREW	8
	PCB-CA-2		TOP CLAMP ASSEMBLY	1
12	TR2-2		TRACK ROLLER ASSEMBLY	18
13	PCB-DR-3		DRIVE MOTOR	1
14	PCB-TS-B		TOOL SLIDE ASSEMBLY	1
No	**PART NUMBER**	**REV**	**DESCRIPTION**	**QTY**
08	PCB-CA-201		TOP CLAMP	1
09	PCB-CA-202		CLAMP LOCATING BLOCK	1
10	PCB-CA-203		CLAMP LOCKING BLOCK	1
11	PCB-CA-204		CLAMP PIN	1
19	M6x25SHCS		SOCKET HEAD CAP SCREW	6
20	M10x20SHCS		SOCKET HEAD CAP SCREW	3
17	M10x35HFB		HEX. FLANGE BOLT	1

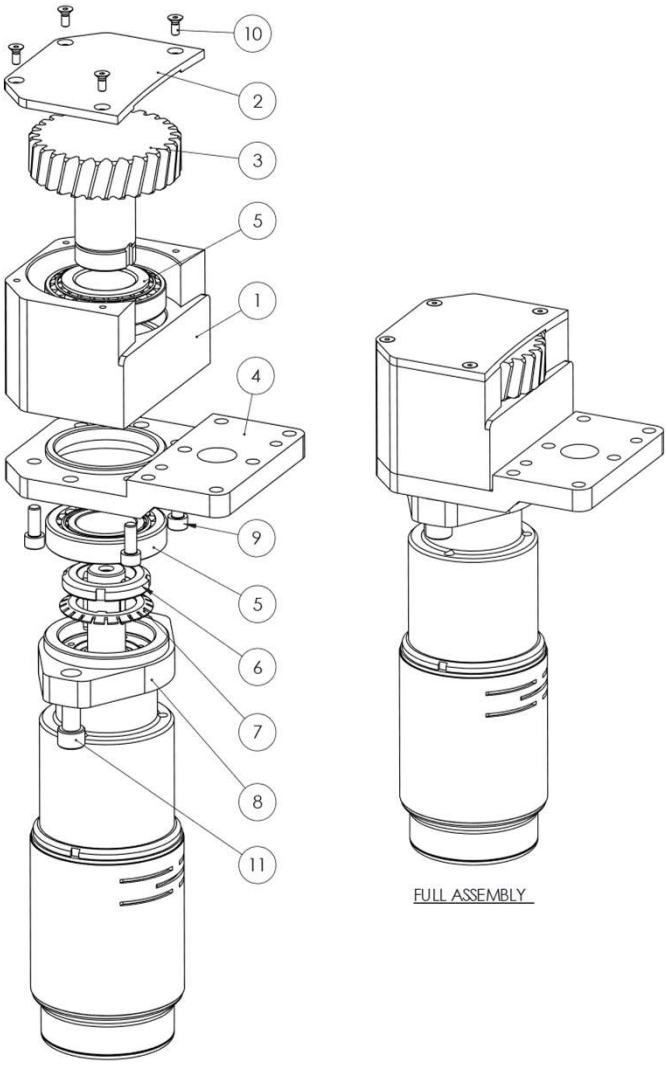
TR2 – TRACK ROLLER ASSEMBLY





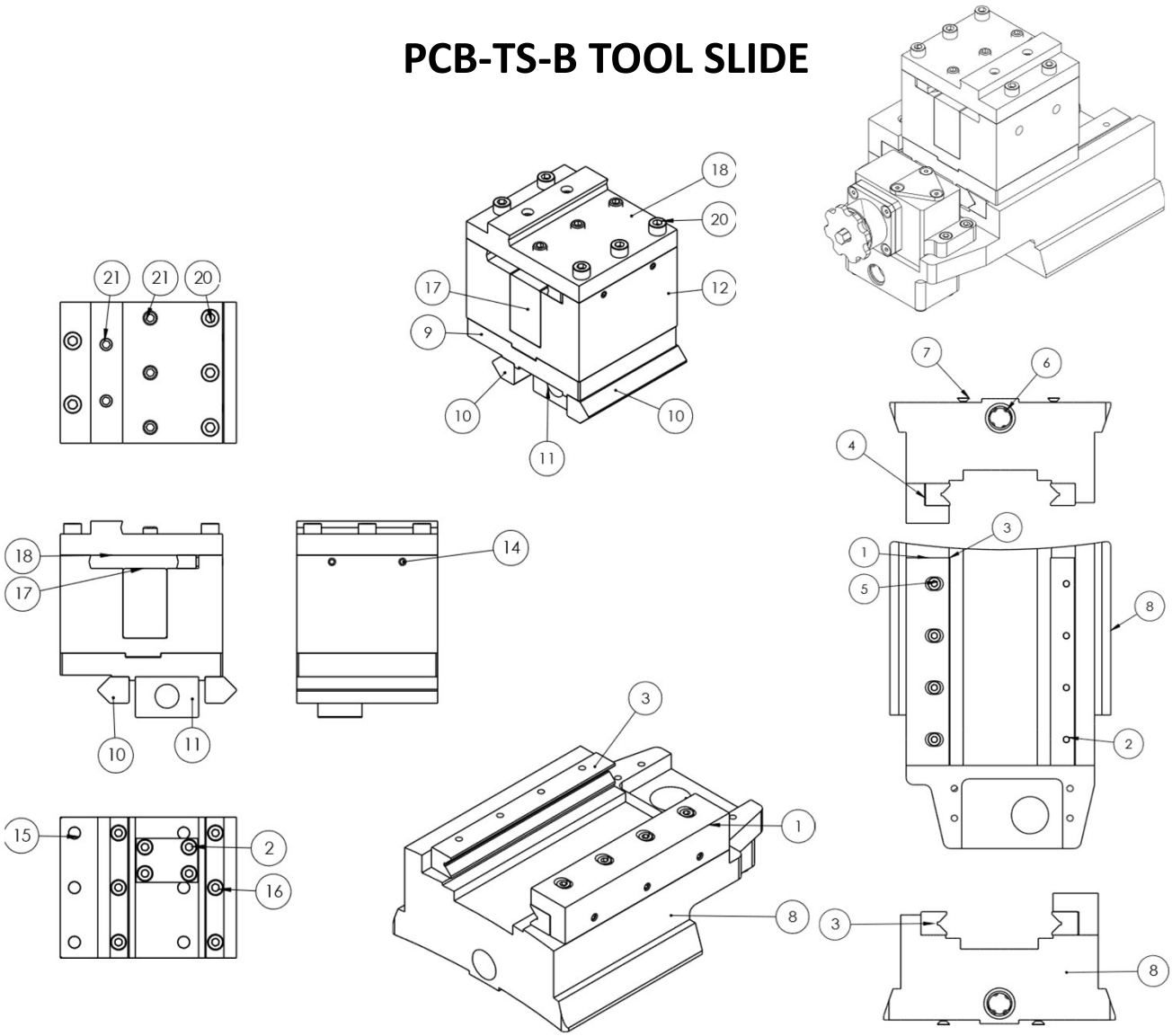
No	PART NUMBER	REV	DESCRIPTION	QTY
01	BG-GW2X		TRACK ROLLER	42
02	TR-2-202		ROLLER SHAFT	42
03	TR-2-207		TR LOCK WASHER	42
04	TR-1-004		WASHER	42
05	TR-1-005		M12 SELF-LOCKING NUT	42
06	M6x12BHS		BUTTON HEAD SCREW	42

PCB-DR-3 DRIVE MOTOR



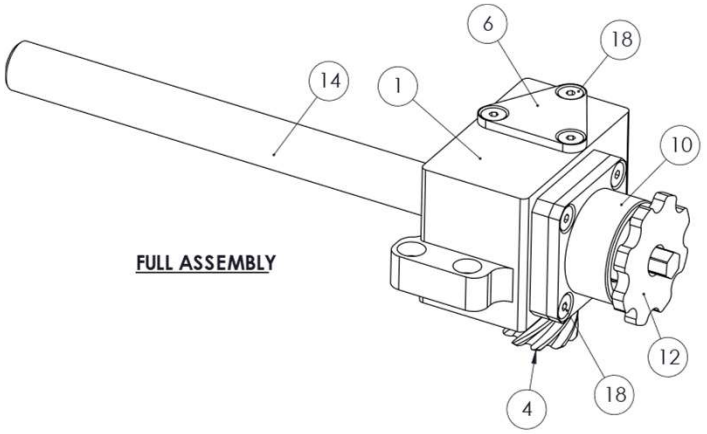
No	PART NUMBER	REV	DESCRIPTION	QTY
01	PCB-DR-301		DRIVE HOUSING	1
02	PCB-DR-302		DRIVE COVER HOUSING	1
03	PCB-DR-304		DRIVE PINION	1
04	PCB-DR-307		MOTOR MOUNTING FLANGE	1
05	BG-30208		TAPER RB	2
06	LN-KM8		KM8 LOCK NUT	1
07	LW-MB8		MB8 LOCK WASHER	1
08	PCB-MT30LT		AIR MOTOR	1
09	M5x16SCHS		SOCKET HEAD CAP SCREW	4
10	M12x25SHCS		SOCKET HEAD CAP SCREW	2
11	M5x12CSK		COUNTERSUNK SCREW	4

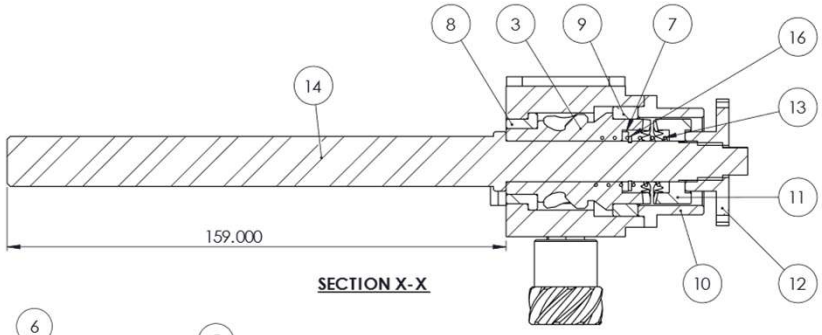
PCB-TS-B TOOL SLIDE

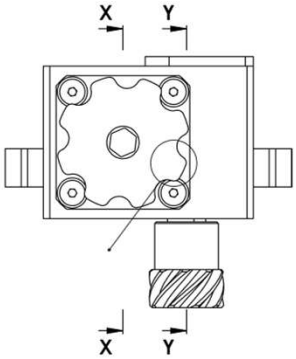


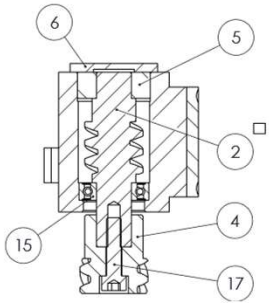
No	PART NUMBER	REV	DESCRIPTION	QTY	No	PART NUMBER	REV	DESCRIPTION	QTY
01	PCB-TS-702B		TOOL POST BASE PLATE 2	2	20	RL-M-15140		RAIL (FEMALE) 15X140LG	4
02	PCB-TS-703		CROSS HELICAL CLOSING COVER	2	21	BG-61903		RADIAL BALL BEARING	1
03	PCB-TS-704A		TRIP WHEEL SHAFT	2	22	BG-63882Z		DEEP GROOVE BALL BEARING	1
04	PCB-TS-705	REV 1	TRIP WHEEL	2	23	CR-A10		EXTERNAL CIRCLIP	1
05	PCB-TS-706		CROSS HELICAL PINION	4	24	CR-B16		INTERNAL CIRCLIP	1
06	PCB-TS-708A		V-RAIL LOCKING L-CLAMP	2	25	M5x16SHCS		SOCKET HEAD CAP SCREW	1
07	PCB-TS-709		TOOL POST LEAD NUT	2	26	M5x20SHCS		SOCKET HEAD CAP SCREW	1
08	PCB-TS-710		TOOL POST SADDLE PLATE	2	27	M5x25SHCS		SOCKET HEAD CAP SCREW	1
09	PCB-TS-711		TOOL HOLDER 1	2	28	M6x25SHCS		SOCKET HEAD CAP SCREW	1
10	PCB-TS-712	REV 1	TOOL HOLDER 2	1	29	M6x40SHCS		SOCKET HEAD CAP SCREW	1
11	PCB-TS-713		TOOL HOLDER COVER 1	2	30	M8x45SHCS		SOCKET HEAD CAP SCREW	1
12	PCB-TS-714		TOOL HOLDER COVER 2	1	31	M4x10CSK		COUNTERSUNK SCREW	1
13	*PCB-TS-715*		*PARTING TOOL LOCK PIECE*		32	M4x16SS		SET SCREW	1
14	*PCB-TS-716*		*PARTING BLADE SPACER PLATE 1*		33	M5x16SS		SET SCREW	1
15	*PCB-TS-717*		*PARTING BLADE SPACER PLATE 2*		34	M6x12SS		SET SCREW	1
16	*PCB-TS-718*		*PARTING TOOL POST SPACER BLOCK*		35	M8x16SS		SET SCREW	1
17	*PCB-TS-719*		*BEVELING TOOL POST SPACER BLOCK*	*2*	36	DIA.5.0x12DP		DOWEL PIN	1
18	PCB-TS-730		TOP CLAMP	4	37	PCB-TSW-2B		WORM GEARBOX ASSEMBLY	1
19	RL-V-1580		RAIL (MALE) 15X80LG	4					
20	RL-M-15140		RAIL (FEMALE) 15X140LG	4					

PCB-TSW-2B WORM GEARBOX



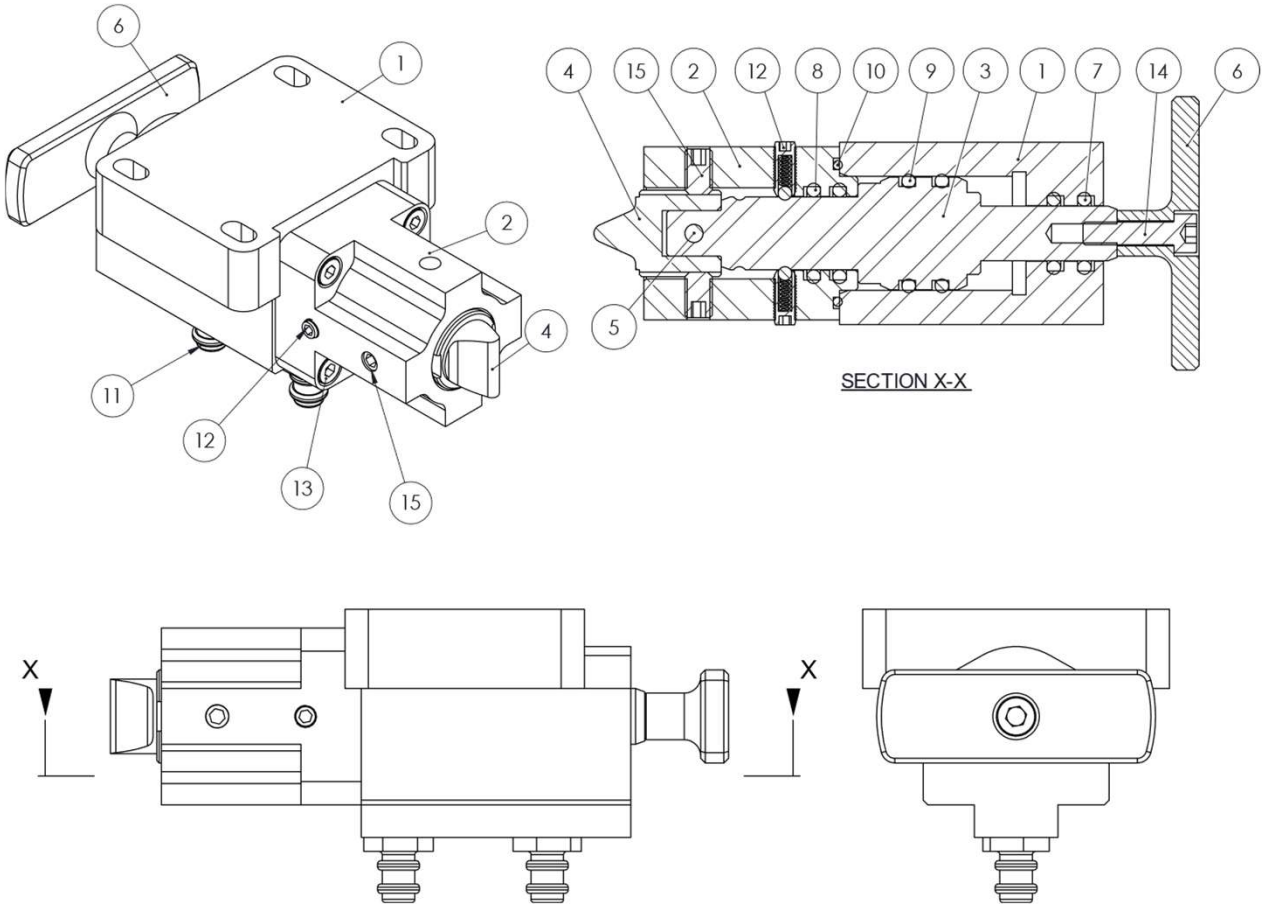






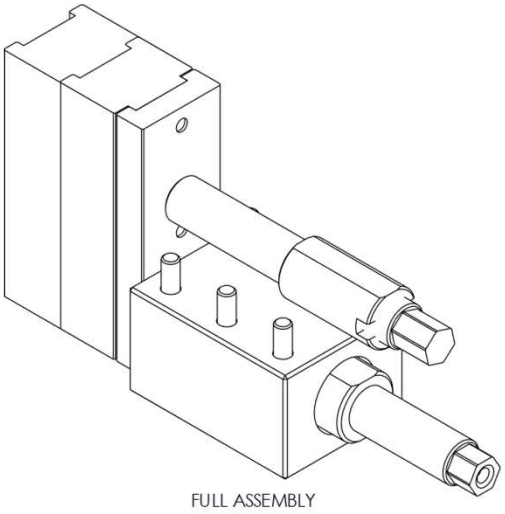
No	PART NUMBER	REV	DESCRIPTION	QTY
01	PCB-TSW-201		WORM GEARBOX HOUSING	2
02	PCB-TSW-202		3ST WORM SHAFT	2
03	PCB-TSW-203		3ST WORM WHEEL	2
04	PCB-TSW-204		CROSS HELICAL GEAR	2
05	PCB-TSW-205		WORM OILITE BUSH	2
06	PCB-TSW-206		WORM OILITE BUSH LOCK COVER	2
07	PCB-TSW-207		WORM WHEEL SPACER	2
08	PCB-TSW-208		WHEEL OILITE BUSH FREE END	2
09	PCB-TSW-209		WHEEL OILITE BUSH CLUTCH END	2
10	PCB-TSW-210		CLUTCH END COVER	2
11	PCB-TSW-211		CLUTCH	2
12	PCB-TSW-212		CLUTCH END NUT	2
13	PCB-TSW-213		CLUTCH SPRING	2
14	PCB-TSW-214B		LEAD SCREW ROD	2
15	BG-619012Z		DEEP GROOVE BALL BEARING	2
16	CR-A13		EXTERNAL CIRCLIP	2
17	M5x20SHCS		SOCKET HEAD CAP SCREW	2
18	M4x10CSK		COUNTERSUNK SCREW	14

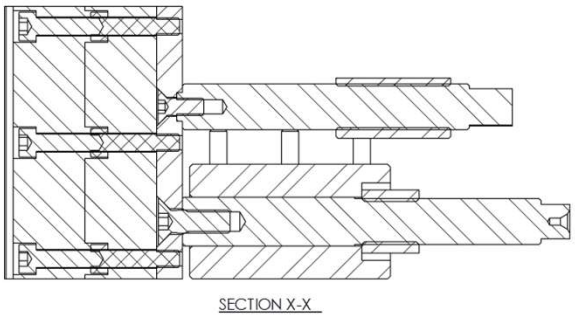
PCB-TA-24 TRIP ASSEMBLY

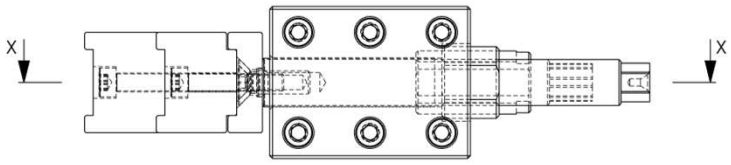


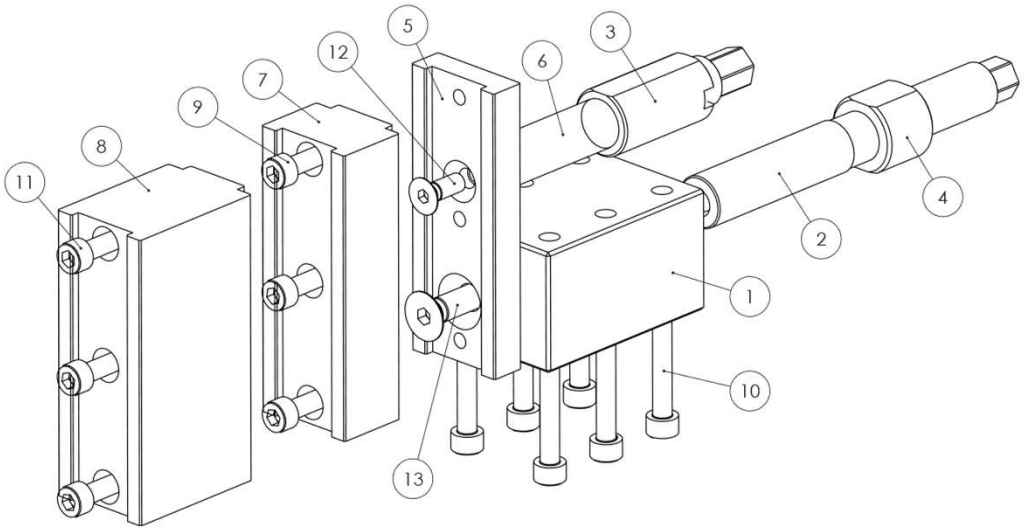
No	PART NUMBER	REV	DESCRIPTION	QTY
01	PCB-TA-201		CYLINDER BLOCK	1
02	PCB-TA-202		ENDCOVER	1
03	PCB-TA-203		PISTON ROD	1
04	PCB-TA-204		TRIP PIN	1
05	PCB-TA-205		TRIP PIN LOCK SCREW	1
06	GSK-12-321		GEAR SELECTOR KNOB	1
07	OS-12x18x3		O-RING SEAL	2
08	OS-16x22x3		O-RING SEAL	2
09	OS-20x26x3		O-RING SEAL	2
10	OS-28x32x2		O-RING SEAL	1
11	1/8"GN		GREASE NIPPLE	2
12	BP-M5		BSJ5 BALL PLUNGER M5	2
13	M4x12SHCS		SOCKET HEAD CAP SCREW	4
14	M5x20SHCS		SOCKET HEAD CAP SCREW	1
15	M6x10SS		SET SCREW	1

PCB-BA BASE ASSEMBLY









No	PART NUMBER	REV	DESCRIPTION	QTY
01	PCB-BA-1301A		FOOT GUIDE BLOCK	4
02	PCB-BA-1302A		FOOT GUIDE ROD	4
03	PCB-BA-1303		THREAD INSERT	4
04	PCB-BA-1304		FOOT GUIDE ROD LOCK NUT	4
05	PCB-BA-1305A		FOOT PLATE	4
06	PCB-BA-1306A		FOOT SCREW ROD	4
07	PCB-BA-1307		FOOT EXTENSION-1 INCH	4
08	PCB-BA-1308		FOOT EXTENSION-2 INCH	4
09	M6x25SHCS		SOCKET HEAD CAP SCREW	12
10	M6x40SHCS		SOCKET HEAD CAP SCREW	24
11	M6x505SHCS		SOCKET HEAD CAP SCREW	12
12	M6x16CSK		COUNTERSUNK SCREW	4
13	M8x25CSK		COUNTERSUNK SCREW	4

General Maintenance

Period	Task	Lubricant
After Each Use	1. Clean all component and lightly oil 2. Check all components are present and stored with machine 3. Check all components are present and stored with machine 4. Check Cutters – regrind or re-order inserts 5. Check for any play or wear and tear	SAE10 or WD40
Every two weeks when using	1. Check the machine general conditions 2. Always use the Air Filter Lubricator when using pneumatic Machines 3. Check the Air Filter Lubricator 1. are assembled as close as possible to the machine 2. Contain lubricant oil for pneumatic tools 4. Periodically clean the expansion group threading with compressed air. 5. Always make sure that the seats of the tools in the spindle are clean 6. Every 20-30 working hours, make sure that the safety valve is still working and there is not air leakage 7. Check that there is no air leakage in the air system at the final connection between the machine and the hose. 8. Pour some drops of naptha into the pneumatic motor (in the air inlet nipple) and make the machine idle 9. To make the machine work properly, always use sharpened tools and assemble as many tools as the spindle will permit	

***Recommend 00 EP Lithium Semi fluid Grease or similar.**

	Brand	Name
The moving parts of the machine should be always maintained greased. **The thrust bearings should be lubricated in relation to the working hour sustained by the machine**	ESSO	BEACON EP2
	MOBIL	MOBILUX EP2
	AGIP	GRMU EP2
	SHELL	CALITHIA EP2

Fault Diagnosis

The following table is to help the operator try to locate a possible fault that may arise when operating the machine. If fault persists or not able to find diagnosis. Please report to your Axis Machines contact for technical assistance.

Performance	Possibile fault	Rectify
Machine doesn't work	Locking Pin not removed Power Supply not on	Remove Pins Check Power Supply
Machine wave when working	The structure is not fastened correctly or machine not secure	Check the Jacking Locator & Half joint fastening screws
Working Surface Finish not good	The bevel tool bit is blunt or damaged	Edge the tool bit or replace with new tool bits
Machine chatters during working	Cutting Speed too fast	Slow down cutting speed
Tool bit broken	Machine not perpendicular to pipe	Edge the tool bit or replace with new tool bits. Refer to installation step 16
Air Motor weak	The motor vane (blade) wear	Replace with new motor vane
Air Motor does not work	Dirt jam / Parts rust	Clean the air motor and adopt the air treatment (air filter / regulator / lubricator) for compressed air
Electric motor abnormal sound	Check the carbon brush or the motor bearing	Replace with new carbon brush or bearing
Electric Motor burnt	Scrap-iron or water goes into motor. Fluctuating power voltage. Tool bit blunt, result in high load	Replace with new motor rotor or stator Replace complete motor

Torque Settings for Fasteners

Thread	Tensile Strength		Torque Setting	
Ø	kN	lbs	Nm	in - lbs
M3	6.54	1470	2.1	19
M4	11.4	2560	4.6	41
M5	18.5	4160	9.5	85
M6	26.1	5870	16	140
M8	47.6	10700	39	350
M10	75.4	17000	77	680
M12	110	24700	135	1200
M14	150	33700	215	1900
M16	204	45900	330	2900
M20	306	68800	650	5750
M22	374	83950	875	7725
M24	441	99100	1100	9700
M30	701	158000	2250	19900
M32	860	193500	3050	27000
M36	1020	229000	3850	34100

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