



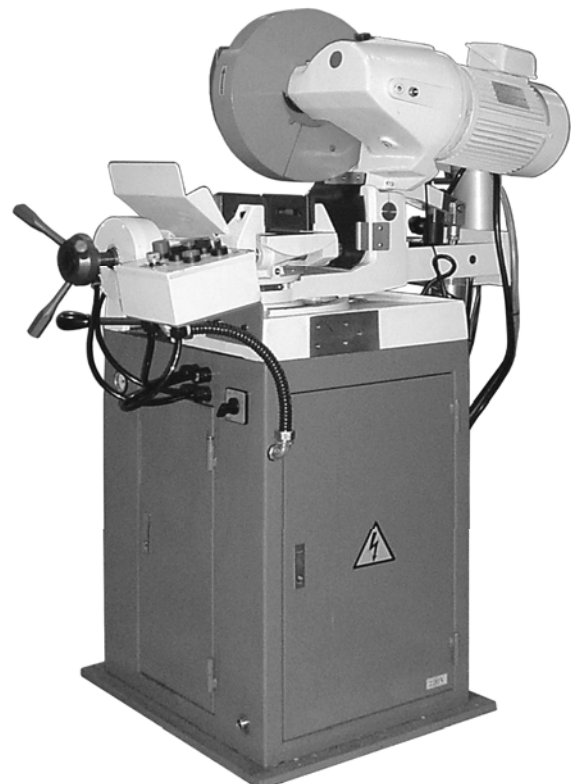
This Manual is Bookmarked

Owner's Manual Cold Saw

Models: FK350-2, FK350-2SX, FK350-4, FK350-4SX



FK350



FK350-SX

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Revision B 02/07
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Warranty and Service





WMH Tool Group, Inc., warrants every product it sells. If one of our tools needs service or repair, one of our Authorized Service Centers located throughout the United States can give you quick service. In most cases, any of these WMH Tool Group Authorized Service Centers can authorize warranty repair, assist you in obtaining parts, or perform routine maintenance and major repair on your WILTON® tools. For the name of an Authorized Service Center in your area call 1-800-274-6848.

MORE INFORMATION

Group distributor, or visit wiltontool.com.

WARRANTY

WILTON products carry a limited warranty which varies in duration based upon the product. (MW = Metalworking)

 <p>Hand Tool Accessories Vise Accessories</p>	 <p>Lubrication Striking Tools</p>	 <p>Bench Power Tools MW Accessories Cold Saws MW Bandsaws Mill/Drill MW Drill Presses Milling Machines MW Finishing Equipment</p> <p>MW Lathes MW Precision Vises Surface Grinders Tapping</p>	 <p>Clamps Fastening Tools Hand Tools-General Purpose Hand Tools-Mechanics</p> <p>Multi-Grip® Unbreakable Hammers Unbreakable Sledges Vises (non-precision)</p>
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WHAT IS COVERED?

This warranty covers any defects in workmanship or materials subject to the exceptions stated below. Cutting tools, abrasives and other consumables are excluded from warranty coverage.

WHO IS COVERED?

This warranty covers only the initial purchaser of the product.

WHAT IS THE PERIOD OF COVERAGE?

The general WILTON warranty lasts for the time period specified in the product literature of each product.

WHAT IS NOT COVERED?

This warranty does not cover defects due directly or indirectly to misuse, abuse, negligence or accidents, normal wear-and-tear, improper repair or alterations, or lack of maintenance.

HOW TO GET SERVICE

The product or part must be returned for examination, postage prepaid, to a location designated by us. For the name of the location nearest you, please call 1-800-274-6848.

You must provide proof of initial purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, we will repair or replace the product, or refund the purchase price, at our option.

We will return the repaired product or replacement at our expense unless it is determined by us that there is no defect, or that the defect resulted from causes not within the scope of our warranty in which case we will, at your direction, dispose of or return the product. In the event you choose to have the product returned, you will be responsible for the handling and shipping costs of the return.

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Table of Contents

Warranty and Service.....	2
Table of Contents.....	3
Warnings.....	4
Introduction.....	6
Specifications.....	6
Cutting Capacity (All Models).....	6
FK350 Features.....	7
Features.....	8
Miter Cutting Head.....	8
Miter Position Lock.....	8
Self-centering Vise.....	8
FK350 Controls.....	8
FK350-SX Controls.....	8
Trigger Handle.....	8
Flood Coolant System.....	8
Installation.....	9
Unpacking the machine.....	9
Anchoring and handling the machine.....	9
Electrical Connections.....	9
Controls.....	10
Control Panel – FK350.....	10
Trigger Handle – FK350.....	10
Control Panel – FK350-SX.....	10
Operation.....	11
FK350.....	11
FK350-SX.....	11
Miter Adjustment.....	12
Trip Adjustment – FK350-SX.....	12
Depth Stop – FK350.....	12
Maintenance.....	13
Maintenance Requirements.....	13
Periodic Maintenance.....	13
Coolant.....	13
Changing the Saw Blade.....	13
Air Prep Unit – FK350-SX only.....	13
Lubrication.....	14
Coolant System.....	14
Blade Selection.....	15
Troubleshooting.....	18
Parts.....	19
Ordering Replacement Parts.....	19
Head Assembly – FK350 & FK350-SX.....	20
Power Feed Assembly – FK350-SX.....	22
Stock Stop Assembly.....	24
Stand Assembly – FK350.....	25
Stand Assembly – FK350-SX.....	26
Base Assembly – FK350.....	28
Base Assembly – FK350-SX.....	30
Manual Vise Assembly – FK350.....	32
Power Vise Assembly – FK350-SX.....	34
Guard Assembly – FK350 & FK350-SX.....	36
In-Feed Table Assembly.....	38
Out-Feed Table.....	39
Pneumatic Drawing – FK350-SX.....	40
Wiring Diagram – FK350.....	40
Wiring Diagram – FK350-SX.....	41

Warnings

1. Read and understand the entire owner's manual before attempting assembly or operation.
2. Read and understand the warnings posted on the machine and in this manual. Failure to comply with all of these warnings may cause serious injury.
3. Replace the warning labels if they become obscured or removed.
4. The cold saw is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe operation of a cold saw, do not use until proper training and knowledge have been obtained.
5. Do not use this cold saw for other than its intended use. If used for other purposes, WMH Tool Group disclaims any real or implied warranty and holds itself harmless from any injury that may result from that use.
6. Always wear approved safety glasses/face shields while using this cold saw. Everyday eyeglasses only have impact resistant lenses; they are not safety glasses.
7. Before operating the cold saw, remove tie, rings, watches and other jewelry, and roll sleeves up past the elbows. Remove all loose clothing and confine long hair. Non-slip footwear or anti-skid floor strips are recommended. Do **not** wear gloves.
8. Wear ear protectors (plugs or muffs) during extended periods of operation.
9. Some dust created by power sanding, sawing, grinding, drilling and other construction activities contain chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
 - ☞ Lead from lead based paint.
 - ☞ Crystalline silica from bricks, cement and other masonry products.
 - ☞ Arsenic and chromium from chemically treated lumber.
10. Your risk of exposure varies, depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well-ventilated area and work with approved safety equipment, such as face or dust masks that are specifically designed to filter out microscopic particles.
11. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
12. Make certain the switch is in the **OFF** position before connecting the machine to the power supply.
13. Make certain the machine is properly grounded.
14. Make all machine adjustments or maintenance with the machine unplugged from the power source.
15. Remove adjusting keys and wrenches. Form a habit of checking to see that keys and adjusting wrenches are removed from the machine before turning it on.
16. Keep safety guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately.
17. Make sure the cold saw is firmly placed on a secure foundation.
18. Check damaged parts. Before further use of the machine, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
19. Provide for adequate space surrounding work area and non-glare, overhead lighting.
20. Keep the floor around the machine clean and free of scrap material, oil and grease.
21. Keep visitors a safe distance from the work area. **Keep children away.**
22. Make your workshop child proof with padlocks, master switches or by removing starter keys.

Warnings

23. Give your work undivided attention. Looking around, carrying on a conversation and “horse-play” are careless acts that can result in serious injury.
24. Maintain a balanced stance at all times so that you do not fall into the blade or other moving parts. Do not overreach or use excessive force to perform any machine operation.
25. Use the right tool at the correct speed and feed rate. Do not force a tool or attachment to do a job for which it was not designed. The right tool will do the job better and safer.
26. Use recommended accessories; improper accessories may be hazardous.
27. Maintain tools with care. Keep saw blades sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories.
28. Turn off the machine before cleaning. Use a brush or compressed air to remove chips or debris — do not use your hands.
29. Do not stand on the machine. Serious injury could occur if the machine tips over.
30. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
31. Remove loose items and unnecessary work pieces from the area before starting the machine.

Familiarize yourself with the following safety notices used in this manual:

CAUTION This means that if precautions are not heeded, it may result in minor injury and/or possible machine damage.

WARNING This means that if precautions are not heeded, it may result in serious injury or possibly even death.

Introduction

The **FK350** and **FK350-SX** are circular saws designed to provide a reliable solution to the needs of machine shops and production environments that work with steel or iron. The FK350 is manually operated: after clamping the material in the vise, the operator presses the trigger handle starting the blade, and brings the operating lever downward to cut the material. The SX offers both *semi-auto* and *manual* mode. When in semi-auto mode, operator positions material, and then presses the cycle-start button. The saw control system activates the vise and clamps the material, and brings the head down completing the cut. The head then is raised and the vise released, completing the cycle. An optional foot switch is available to facilitate convenient cycle-start. The **FK350** and **FK350-SX** can perform miter cuts up to 45° to the right or left.

Specifications

Model.....FK350-2FK350-4.....FK350-2SX..... FK350-4SX

Disc Blade

Disc diameter 14" (350mm) 14" (350mm)..... 14" (350mm) 14" (350mm)
 Hole diameter 1.3" (32mm) 1.3" (32mm)..... 1.3" (32mm) 1.3" (32mm)
 Blade thickness 0.1" (2.5mm) 0.1" (2.5mm)..... 0.1" (2.5mm) 0.1" (2.5mm)

Cutting Speed

Blade Speed (RPM) 44/88 44/88..... 44/88..... 44/88

Motor

Motor 2HP/3HP 2HP/3HP..... 2HP/3HP 2HP/3HP
 Voltage 220VAC 440VAC..... 220VAC 440VAC

Other

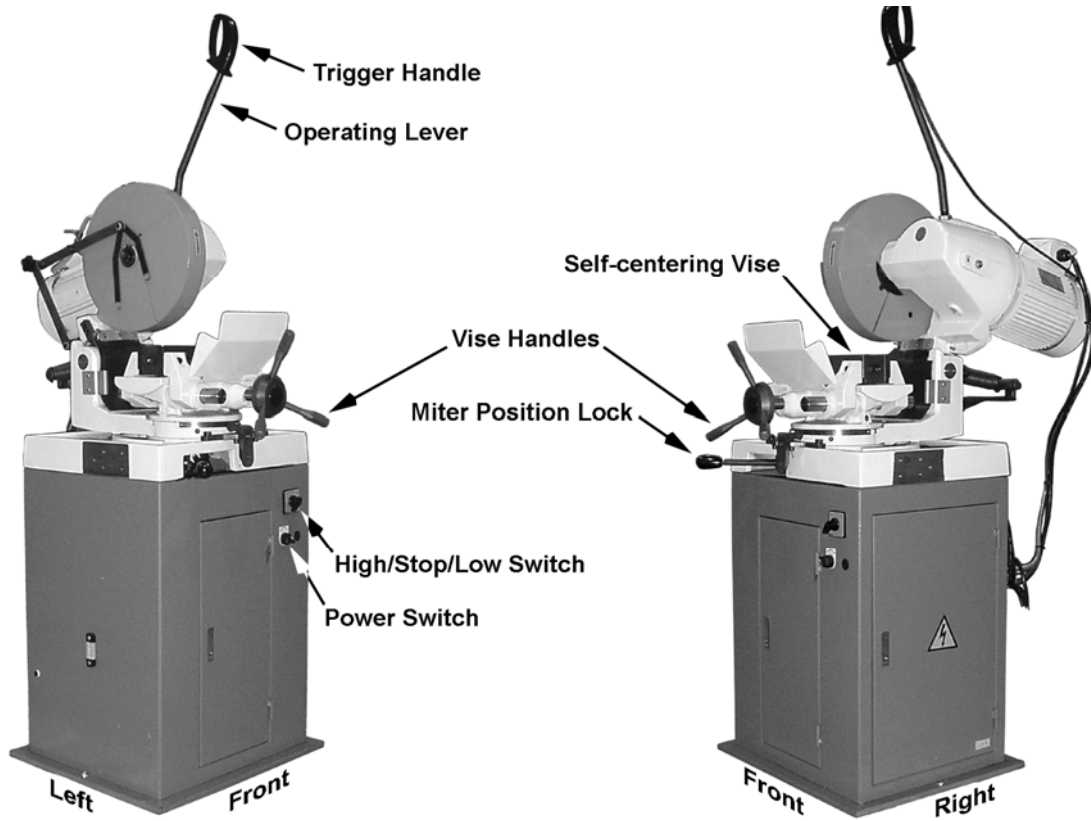
Coolant Capacity.....3 gal.3 gal..... 3 gal..... 3 gal.
 Dimensions 25"L x 43"W x 75"H ...25"L x 43"W x 75"H....28"L x 50"W x 60"H....28"L x 50"W x 60"H
 Weight 720lbs 720lbs..... 800lbs..... 800lbs

Cutting Capacity (All Models)

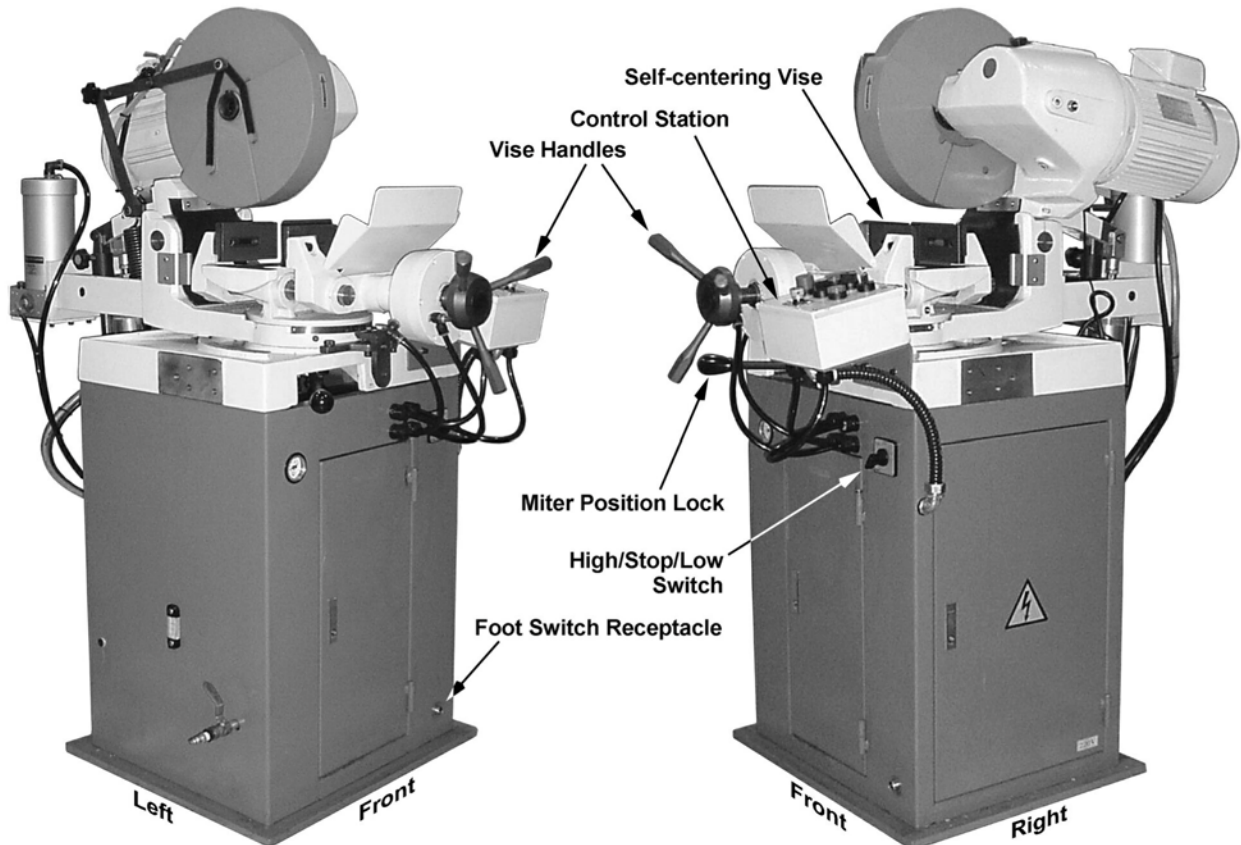
	Degree	Round	Square	Rectangle
Tubing	90°	4.5"	4.25"	5.5" x 3.75"
	45°	3.5"	3.5"	3.5" x 3.5"
Solid	90°	2"	2"	2" x 2"
	45°	1.75"	1.75"	1.75" x 1.75"

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FK350 Features



FK350 Cold Saw



FK350-SX Cold Saw

Features

Miter Cutting Head

The *miter cutting head* is the unit that cuts the material and consists of a cast iron base, blade support unit and guard, transmission unit, and motor. The depth of cut is set by adjusting the *depth cut stop*. The miter cutting head swivels and locks into -45° , 90° , and $+45^\circ$ by means of a *locking mechanism*. Depressing the mechanism overrides the lock, permitting the head to adjust to any position between -45° and $+45^\circ$.

Miter Position Lock

The *miter position lock* secures the miter cutting head from movement. The miter is secured when the lock is pushed all the way to the left and can be positioned when the lock is moved to the right.

Self-centering Vise

The *self-centering vise* holds the work piece in place during cutting. The work piece is secured in the vise by turning the *vise handles*.

FK350 Controls

The *control panel* consists of the *Power (On/Off)* switch and *High/Stop/Low* switch, and an integral coolant system. To operate the machine, the *Power* switch must be set to *on* and the *High/Stop/Low* switch must be set for *Hi* or *Low*. Then depress the trigger handle to start.

FK350-SX Controls

This machine features a 2-speed motor, feed speed control, an integral coolant system, and two modes of operation; manual mode, and semi-automatic mode. In semi-auto, the complete cut cycle is initiated via push button. The semi-auto cut cycle closes the vise clamping the material, powers the head down completing the cut, then raises the head, and opens the vise. In manual mode, head up/down, and vise open/close is initiated by switches.

Trigger Handle

The *trigger handle* (Figure 1) is located on the *operating lever* used to raise and lower the saw. It contains a *micro-switch*, which is activated when the operator depresses the *run trigger*.

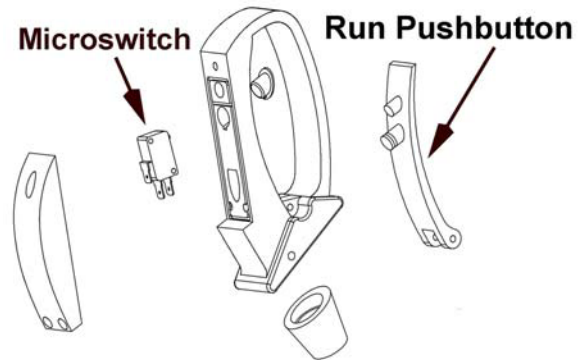


Figure 1

Flood Coolant System

CAUTION The coolant pump must be submerged before operating to prevent damage to the pump.

Coolant is dispensed directed onto the saw blade from a coolant fitting on the upper blade guard. Coolant is provided through tubing from the coolant pump (Figure 2) in the machine base.

Adjust the coolant flow valve on coolant fitting to achieve desired flow. When the coolant switch is in the ON position, flow starts when the drive motor is started. Turning off the coolant switch stops coolant flow.

This coolant system can operate with either a soluble oil base coolant or water-soluble synthetic coolant. Coolant should be changed regularly. Some recommended brands are *DoAll* and *Lenox*. These coolants are available at your local industrial distributor.



Figure 2

Installation

Unpacking the machine

⚠WARNING Do not handle the packed machine using slings.

To install the machine, first remove the packing, paying particular attention not to cut any electric wires or hydraulic hoses. Lift using straps (Figure 3).



Figure 3

Anchoring and handling the machine

The base of the machine must be anchored to the floor by two lag bolts or studs properly anchored into concrete.

Electrical Connections

⚠WARNING All electrical connections must be done by a qualified electrician. All adjustments or repairs must be done with the machine disconnected from the power source, unplugged. Failure to comply may result in serious injury!

FK350-2 and **FK350-2SX** are rated at **220V**.

FK350-4 and **FK350-4SX** are rated at **440V**.

These machines not supplied with a plug. Use a plug and outlet rated at least 20amps. The circuit for the machine should also be protected by at least a 20 amp circuit breaker or fuse.

Make sure that the blade turns in the correct direction. If it does not, simply reverse two of the phase wires on the supply input.

The sawing machine is now ready for use.

Controls

Control Panel – FK350

The *Control Panel* (Figure 4) is located on the front the cabinet stand and consists of the *Power* and *High/Stop/Low* switches, described below.

Power Switch – The *Power* switch has two positions, *Off* and *On*.

High/Stop/Low Switch – This switch controls the blade speed. To operate the saw, the power switch must set to on, *High* or *Low* must be selected *and* the *Run Trigger* depressed.

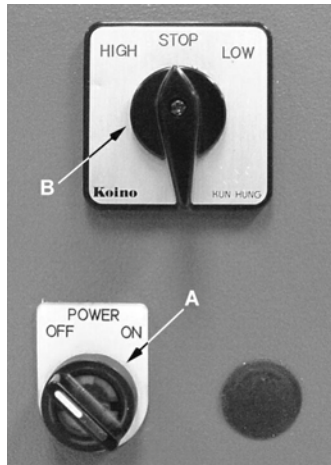


Figure 4

Trigger Handle – FK350

To operate, the *Power* switch must be set to on a *Hi* or *Low* speed selection made, and the trigger handle, depressed.



Figure 5

Control Panel – FK350-SX

Emergency – Emergency Stop: This turns off the controls, and the machine. When used, it requires that “Control On” button be pushed.

Vise – Open/Close (Manual mode)

Mode selection – Select Semi-auto, or Manual mode.

Start – In manual mode, this starts the saw blade. In Semi-auto, this starts the cut-cycle.

Head-UP/ Head-Down – Manual mode only

Feed rate – sets feed rate of cut cycle



Figure 6

High/Stop/Low Switch – Refer to Figure 7; located on the front of the cabinet stand; controls the blade speed (Figure 7).



Figure 7

Operation

Before using the machine:

- £ Check that safety devices (ex., blade guards) are in position and work perfectly and that personal safety requirements are complied with.
- £ Check the sharpness of the blade and verify coolant flow.

FK350

1. Make sure the work piece is securely clamped in the vise.
2. Turn the power on (A, Fig. 8).
3. Select the cutting speed (B, Fig. 8).

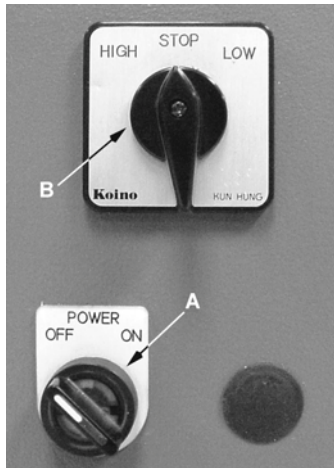


Figure 8

4. Grip the trigger handle (Figure 5) on the control lever.
5. Start the blade by pressing the micro-switch on the handgrip.

The down stroke speed of the head is controlled manually by the operator. The coolant pump is activated during the time that the head is below the upper limit position.

When the cut is complete:

6. Raise the head.
7. Remove the work piece from the vise using the vise hand wheels.

FK350-SX

To operate machine,

1. Clear the *Emergency Stop*.
2. Press *Control On*.
3. Select the desired blade speed.
4. Select *Manual* or *Semi-auto*.

Manual Mode – Position material and tighten the vise. Position the head switch to Head-Down until cut is complete. Position the head switch to Head-Up until head retracts to desired height.

Semi-auto Mode – Set the head travel trips to achieve desired head travel extents. Position material in the vise allowing approximately .125" for proper air vise operation, and then press cycle start. After the cycle is complete, the vise opens for material repositioning.

Note: The coolant pump is activated while the motor is running.



Figure 9

Miter Adjustment

The adjust the miter position follow the steps below while referring to Figure 10:

1. Move the miter position lock (A) to the right to release.
2. Adjust the head to the desired angle ranging from -45° to $+45^{\circ}$ by pushing on the back of the motor to the right or left. The miter position is shown on the scale (B).
3. A detent mechanism locks the head in the -45° , 90° and $+45^{\circ}$ positions and will prevent the head from rotating. For a miter position other than -45° , 90° and $+45^{\circ}$, press the lever (C) to release while rotating the head.
4. When the desired cutting angle is set, move *miter position lock* (A) to the left to secure.

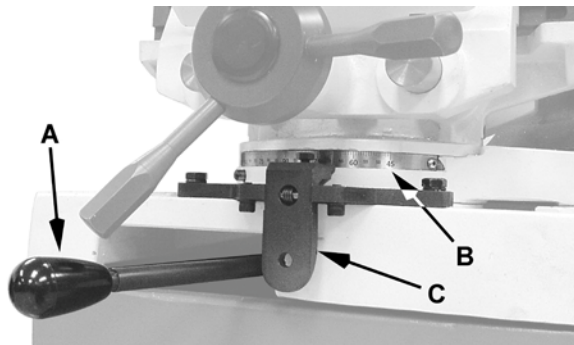


Figure 10

Trip Adjustment – FX350-SX

The *height of retract* and *depth of cut trips* set the travel limit of the head.

To set the trips (refer to Figure 11):

1. Turn the machine on and run in manual mode.
2. Move the head up to the desired height of retract position.
3. Loosen the lock knob (A) and slide the trip (B) down until it makes contact with the trip plate (C).
4. The trip plate fixes the position mechanically while the limit switch (D) signals the control system.
5. Tighten the lock knob.
6. Move the head down to the desired depth of cut position.
7. Loosen the *lock knob* (E) and slide the *trip* (E) up until it makes contact with the *trip plate* (not visible in Figure 11).
8. Tighten the lock knob.

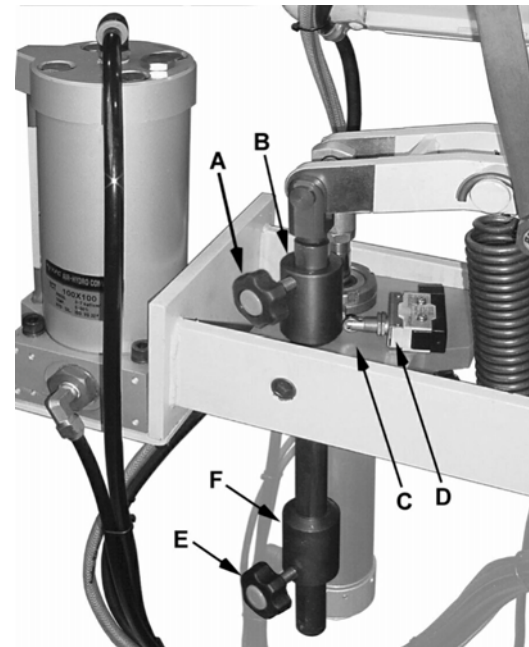


Figure 11

Depth Stop – FK350

The *depth cut stop* adjustment limits the lower travel limit of the saw blade during a cutting operation.

WARNING Remove power when making this adjustment. Failure to comply may result in serious injury!

To adjust the depth of cut (refer to Figure 12):

1. Using two 13mm wrenches, loosen the lock nut (A).
2. With the saw in the fully lowered position, turn the screw (B) until the saw blade bottoms out at the desired level.
3. Tighten the lock nut.

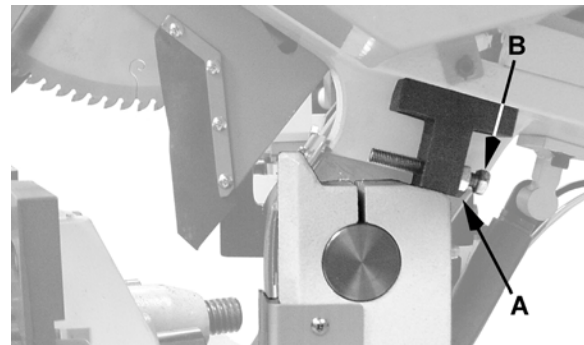


Figure 12

Maintenance

Maintenance Requirements

⚠WARNING All maintenance must be carried out with the *power switched off*. Failure to comply may result in serious injury!

On completion of maintenance, ensure that replaced parts and/or any tools used have been removed from the machine before starting it up.

Periodic Maintenance

- £ Remove chips from the machine, preferably with cloth)
- £ Remove chips from the coolant tank and change coolant regularly (see *Coolant* section)
- £ Top up the coolant level (see *Coolant*)
- £ Check the wear of the blade and change if necessary (see *Changing the Saw Blade*)
- £ Empty the chips out of the base.
- £ Clean the vise and lubricate all the joints and sliding surfaces, using good quality oil.
- £ Attend to daily, weekly and annual lubrication recommendations (see the *Lubrication* section)

Coolant

The *coolant tank access door* is located on the back of the cabinet stand. Remove four hex cap screws with a 5mm hex wrench. Check coolant level in the coolant tank periodically and top off if necessary. Coolant can also be added by pouring directly on the table, which will drain into the tank through the *chip strainer*.

Remove excess chips periodically from the tank.

Use the coolant level gauge to check the coolant level.

Changing the Saw Blade

⚠WARNING The cold saw must not be connected to the power source when changing saw blades. Failure to comply may result in serious injury!

To change the saw blade:

1. Switch off the machine.
2. Release the lower disc guard.
3. Move the lower guard upwards.
4. Remove the blade and replace it with a new one.
5. To secure the saw blade, reverse the preceding steps.

Air Prep Unit – FK350-SX only

The *Air Prep Unit* regulates the air pressure supplied to the saw. It is located in the cabinet stand and is accessible through the access door located below and to the left of the *control panel*. Referring to Figure 13, it consists of a *pressure regulator*, *pressure gauge*, *water trap* and *lubricator*. Air pressure (90lbs. minimum) is supplied to the *air intake valve* located near the bottom of the cabinet on the left side. The *pressure regulator* should be adjusted to 90–120lbs.

Required Maintenance:

- £ Check weekly.
- £ Drain water from the trap when the level exceeds the redline.
- £ Adjust to 2 –3 drops/minute. Refill oil when the level drops below the lower redline. Do not exceed past the upper redline.

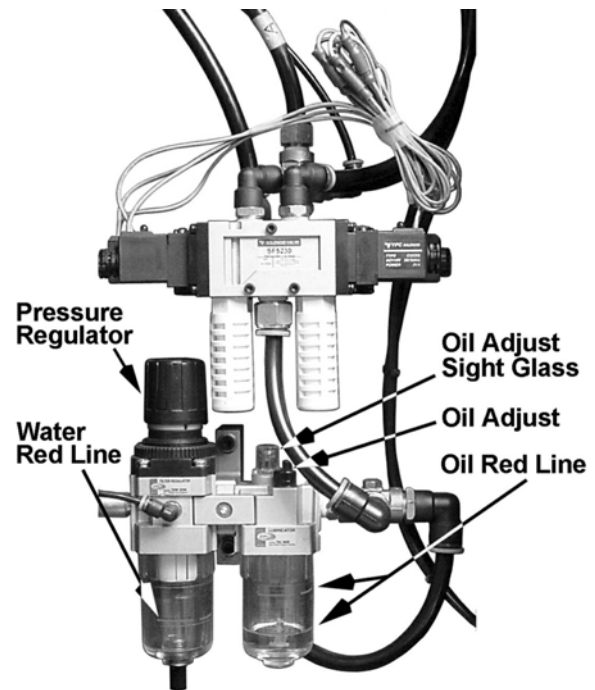


Figure 13

Lubrication

For long life and trouble free operation, it is essential that this machine is kept well lubricated. The vice and leadscrew should be oiled daily. Pivot joints and bearings should be greased weekly. Check the gearbox oil level weekly, full level is top of sight glass with head in full up position. The gearbox oil should be changed annually, and the hydraulic fluid [FK350-SX] should be changed annually.

Recommended Lubricants:

Gearbox

Use Texaco Meropa 460 or equivalent.

Grease fittings

Texaco Starplex 2 or equivalent

Hydraulic fluid [FK350-SX]

Texaco Rando HDZ22 or Spindura 22

Vice and Leadscrew

Regal R & O 68

Coolant System

This coolant system can operate with either a soluble oil base coolant or water-soluble synthetic coolant. Coolant should be changed regularly. Some recommended brands are *DoAll* and *Lenox*. These coolants are available at your local industrial distributor.

Coolant Type:

£ Soluble Oil Base

£ Water-Soluble Synthetic Coolant

Blade Selection

When using the FK350 cold saw, it is important to select the correct type of blade for the material to be cut. This section explains the limitations and specific applications of the different types of blades.

General Characteristics:

Fine Tooth Pitch --used for thin wall materials such as sheet steel, tubes and profiles

Coarse Tooth Pitch --used for large cross-sections -- for soft materials (aluminum alloys and soft alloys in general).

Determining Proper Tooth Pitch





Proper tooth pitch depends on:

- the size of the section;
- the hardness of the material;
- wall thickness.

Solid sections call for discs with a coarse tooth pitch, while small cross-sections require blades with finer teeth. This is because when cutting walls of small cross-section (1-7 mm)



profiles, it is important that the number of teeth actually making the cut should not be too small, otherwise the effect obtained will be one of tearing rather than of chip removal, leading to a large increase in shearing stress. On the other hand, when cutting thick materials or solid sections using an excessively fine tooth pitch, the chip collects as a spiral inside the gullet, and since fine tooth pitches have small gullets, the accumulated chip will exceed the gullet capacity and press against the walls of the workpieces, resulting in poor cutting (same situation with soft materials), greater shearing stress and hence breakage of the blade.

Choice of tooth pitch T as a function of cross-section to be cut for light alloy solid pieces and profiles			
 		 	
S in mm.	Pitch T	S and sp in mm.	Pitch T
10	6	10 sp=0.5	3-4
30	8	30 sp=1.5	4-5
50	10	50 sp=2.5	6-7
70	12	70 sp=3.5	8-9
90	14	90 sp=4.5	8-9
130	18	130 sp=6.5	10

KEY:
 s = diameter or width of the solid piece to be cut in mm.
 sp = thickness of the wall to be cut in mm.
 T = tooth pitch in mm.

Table 1

A larger pitch should be chosen when, as a result of the shape of the piece to be cut, the cross-section at any given point exceeds the average cross-section given above.

Cutting and Feeding Speed

The cutting speed, in m/min, and the head feeding speed, in cm²/min, are limited by the amount of heat generated near to the points of the teeth. If the head feeding speed is too high, the cut will not be straight in either the vertical or the horizontal plane. As we have already said, the cutting speed depends on the strength (kg/mm²) and hardness (HRC) of the material and the dimensions of the thickest section. The feeding speed depends on the cross-section of the material. Solid or thick-walled materials (thickness > 5mm) can therefore be cut at high speed providing there is sufficient swarf removal by the blade, while thin-walled materials such as tubes or thin profiles must be cut with a low feeding speed.

⚠ WARNING A new blade requires a break-in period, during which time about half the normal feeding speed should be used.

Coolant

The cooling fluid ensures that the blade teeth and material in the area of the cut do not overheat. The fluid must be an excellent lubricant so as to prevent abrasion of the teeth and welding of the chips to the teeth themselves (seizing).

Blade Structure

For non-ferrous metals, it is common to use circular saws with brazed hard metal HM cutting edge, consisting of a disc made of alloy tool steel (71Cr1) on which the shape of the teeth and the seats for the cutting edges are made of Widia K10. These saws have shown excellent wear resistance but low resistance to impact, which is in any case a minor problem with non-ferrous materials.

CHEMICAL COMPOSITION:

Blade body	C	Cr	Mn	Mo	V	Co	HRC
steel type	0,71	0,20	0,40	-	-	-	43+/-1
71Cr1	÷ 0,78	÷ 0,30	÷ 0,70	÷ -	÷ -	÷ -	

KEY:

C = Carbon Co = Cobalt Cr = Chromium
 Mo = Molybdenum Mn = Manganese V = Vanadium
 The numbers in the columns indicate the % of the element present in the steel.

Table 2

Types of Blades

The blades fitted to the FK350 and FK350-2SX have dimensions 350 x 32 x 2.5 mm and are of HM hard steel type since the machine is to be used for cutting non-ferrous materials. In addition to the size and pitch of the teeth, however, the blades also have different geometric characteristics in accordance with their particular use:

tooth cutting angle – may be negative or positive

tooth sharpening – may be *BW* with an alternate raked tooth or *C* with a roughing tooth raked on both sides and a non-raked finishing tooth

tooth pitch – the distance between the crest of one tooth and the crest of the next tooth (tooth pitch = T)

Teeth Shape

"C" TYPE SHARPENING (HZ)

Coarse tothing with roughing tooth raked on both sides and non-raked finishing tooth. The roughing tooth is about 0.3 mm higher.

Coarse tothing with roughing tooth and finishing tooth. Used in saws with pitch greater than or equal to 5 mm for cutting ferrous and non-ferrous materials with solid or solid-profiled sections.

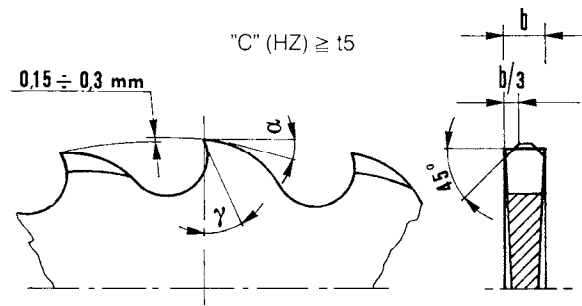


Figure 14

"BW" TYPE SHARPENING DIN 1838--UNI 4014

Coarse tothing with teeth alternately raked to the right and left.

Tothing generally used on cutting-off machines for cutting ferrous and alloy materials with tubular and profiled sections.

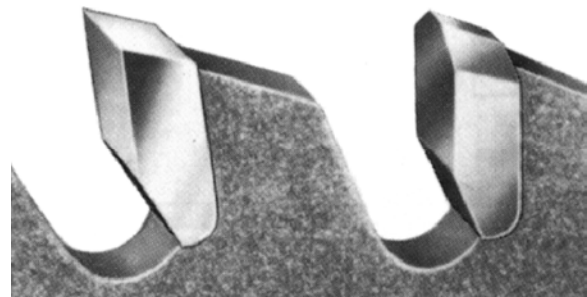


Figure 15

POSITIVE AND NEGATIVE CUTTING ANGLES

The cutting angle may vary from positive to negative depending on the cutting speed, the profile and the type of material to be cut.

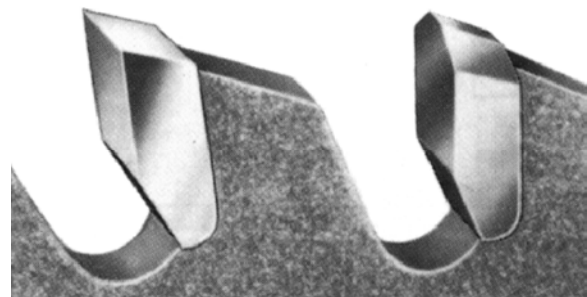


Figure 16

A positive angle determines better penetration of the tool and hence lower shear stress and greater ease of sliding for the swarf over the cutting edge. On the other hand, the cutting edge has lower mechanical resistance, so as the breaking load of the material to be cut increases, the cutting angle decreases from positive until it becomes negative so as to offer a cutting edge with a larger resistant section.

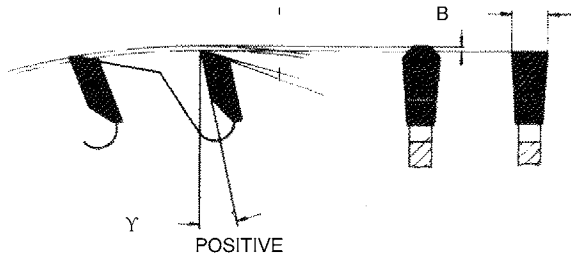


Figure 17

Short swarf material such as brass, bronze, aluminum and hard cast iron require smaller cutting angles because the swarf becomes crushed immediately and the rake angle has little effect during the cutting stage.

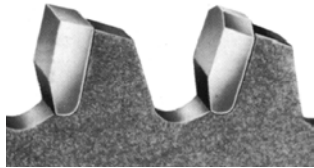


Figure 18

The FK350 uses discs with positive cutting angles for cutting solid materials and with negative cutting angles for cutting hollow profiles. This is because, as a result of the high cutting speeds (3400 rpm), even with non-ferrous materials the tool "strikes" against the wall of the profile to be cut several times, thus requiring a cutting edge with a larger resistant section.

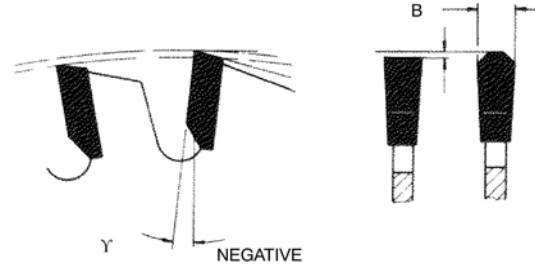


Figure 19

Circular saws can also be characterized by other parameters such as the whine reduction feature, which cuts down noise at high speeds, or expansion, which compensates for the pushing of chips inside the cutting edge, thus reducing the thrust on the walls of the material to be cut.

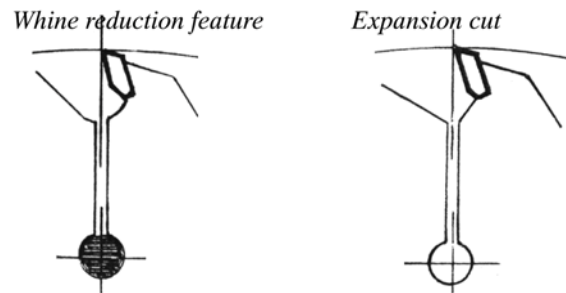


Figure 20

Troubleshooting

Troubleshooting – Blade and Cutting Problems

Problem	Probable Cause	Solution
Teeth breaking	Incorrect lubricant/coolant fluid	Ensure proper coolant flow.
	Material too hard	Check the cutting speed, feed speed and air pressure parameters and the type of blade you are using.
	Disc not worn--in correctly	With a new blade it is necessary to start cutting at half feeding speed. After the wearing--in period (a cutting surface of about 300 cm ² for hard materials and about 1000 cm ² for soft materials) the cutting and feed speeds can be brought up to normal values
	Disc with excessively fine tooth pitch	The swarf wedges into the bottom of the teeth causing excessive pressure on the teeth themselves
	New blade inserted in a partially completed cut	The surface of the cut may have undergone work hardening. When starting work again, use a lower cutting speed and head feed speed. A tooth from the old blade may be left in the cut: check and remove before starting work again.
	Work piece not clamped firmly in place	Any movement of the work piece during cutting can cause broken teeth: check the vise, jaws and clamping pressure.
Rapid tooth wear	Feed speed too slow	The blade runs over the material without removing it: increase feed speed.
	Cutting pressure too high	Reduce cutting pressure.
	Blade speed too high	The teeth slide over the material without cutting it: reduce the blade speed.
	Insufficient coolant	Check the coolant level and clean coolant lines and nozzles.
	Incorrect fluid concentration	Check and use the correct concentration.
	Material defective	The materials may present altered zones either on the surface, such as oxides or sand, or in section, such as under-cooled inclusions. These zones, which are much harder than the blade, cause the teeth to break: discard or clean these materials.
Broken blade	Feed speed too high	Reduce blade speed.
	Teeth in contact with material before starting the cut	Always check the position of the blade before starting a new job.
	Insufficient coolant	Check the coolant level and clean coolant lines and nozzles.

Troubleshooting – Machine Fault & Operating Problems

Problem	Probable Cause	Solution
Spindle motor will not turn	Electrical power supply	Check: the phases; the cables; the plug; the socket. Also check that the motor connections are in place.
	Transformer	Check that the voltages are present both on the input and output. Otherwise replace.
	Contactator	Check that the phases in it are present both on the input and output, that it is not jammed, that it closes when powered and that it is not causing short circuits. Change if any of these problems are found.
	Thermal relay	Make sure it is closed, ie check that the phases are present in input and output that it is not causing short circuits and responds when the reset coil is closed. If it has tripped to protect the motor, check the amperage setting, reset, and check the motor. Change if necessary.
	Motor	Check that it has not burnt out, that it turns freely and that there is no moisture in the connection terminal board box. The winding can be rewound or replaced.
For SX version: Cutting vise will not close or will not open	Cutting Vise Valve	Make sure the valve is operating correctly, replace if necessary.
	Compressed air supply hose	Check that air is not leaking through the cylinder seals.
	Vise cylinder	Check the hose is not kinked or blocked. Remove the obstruction. Replace cylinder or cylinder seals

Parts

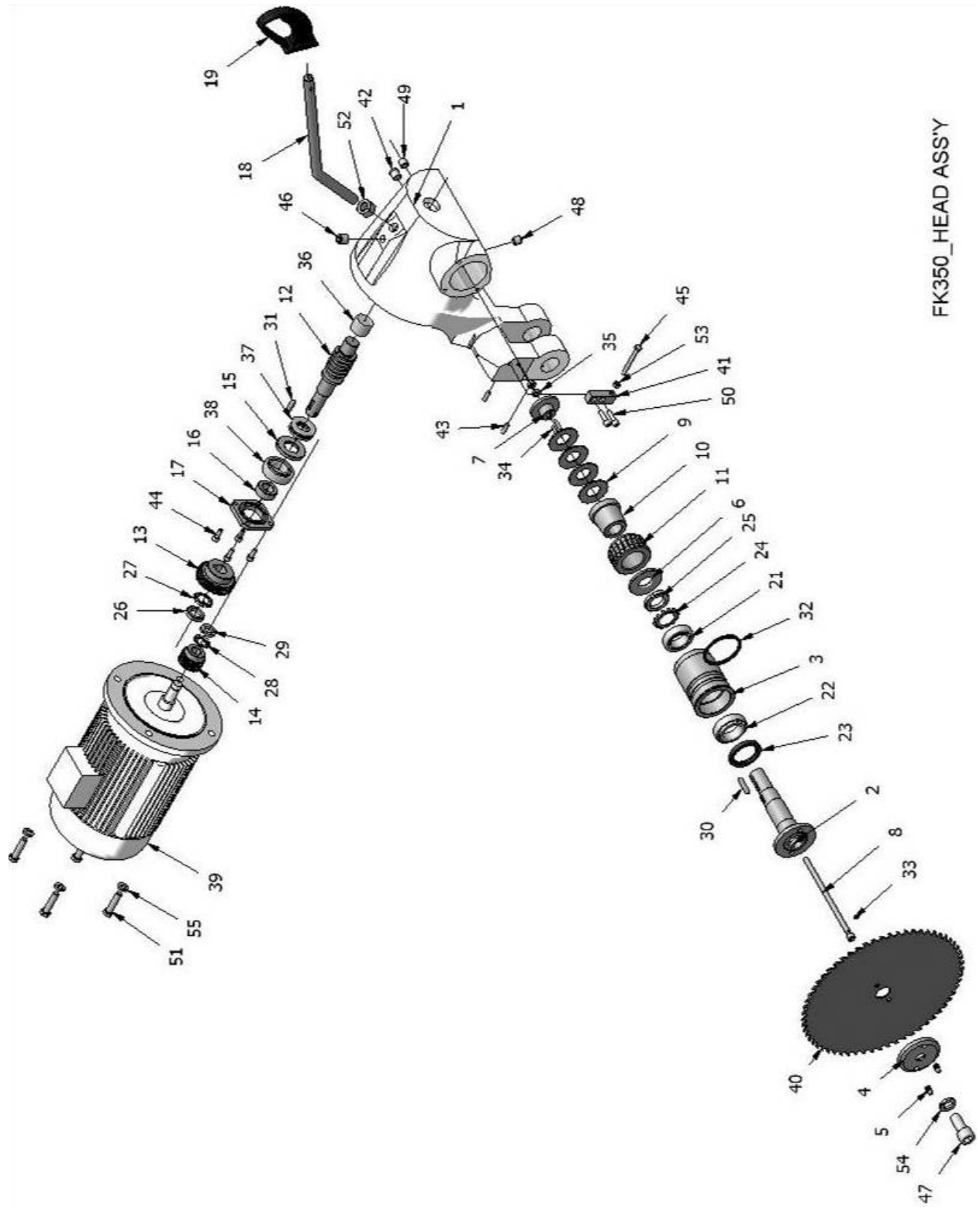
Ordering Replacement Parts

To order parts or reach our service department, call 1-800-274-6848 between 7:30am and 5:30pm (CST), Monday through Friday. Having the Model Number and Serial Number of your machine available when you call will allow us to serve you quickly and accurately.

Head Assembly – FK350 & FK350-SX

Index No.	Part No.	Description	Size	Qty
1	FK350-201	Head Body		1
2	FK350-202	Spindle		1
3	FK350-203	Spindle Housing		1
4	FK350-204	Cutter Cap		1
5	FK350-205	Cutter Cap Pin		2
6	FK350-206	Stopper Ring		1
7	FK350-207	Spring Block		1
8	FK350-208	Tension Bolt		1
9	FK350-209	Belleville Spring		4
10	FK350-210	Taper Shaft		1
11	FK350-211	Worm Wheel		1
12	FK350-212	Worm Shaft		1
13	FK350-213	36NTGear		1
14	FK350-214	21NTGear		1
15	FK350-215	Collar A		1
16	FK350-216	Collar B		1
17	FK350-217	Bearing Cover		1
18	FK350-218	Handle		1
19	FK350-219	Handle Switch		1
21	BB-32007	Tapered Roller Bearing	#32007	1
22	BB-32008	Tapered Roller Bearing	#32008	1
23	FK350-223	Retainer		1
24	FK350-224	Tooth Washer		1
25	FK350-225	Retainer Nut		1
26	FK350-226	Retainer Nut		1
27	FK350-227	Tooth Washer		1
28	FK350-228	Tooth Washer		1
29	FK350-229	Retainer Nut		1
30	FK350-230	Flat Key	8x7x42mm	1
31	FK350-231	Flat Key	8x7x27mm	1
32	FK350-232	O-Ring		1
33	FK350-233	O-Ring	P8	1
34	FK350-234	Pin	5mm Dia. x 28	2
35	TS-1540071	Hex Nut	M10	2
36	FK350-236	Needle Roller Bearing	BK3026	1
37	BB-51206	Thrust Bearing	#51206	1
38	BB-6206	Deep Groove Ball Bearing	#6206	1
39	FK350-239	Motor 220V		1
	FK350-239-4	Motor 440V		1
40		Saw Blade		1
41	FK350-241	Stopper		1
42	FK350-242	Oil Sight Glass		1
43	TS-1504051	Socket Head Cap Screw M8x25		2
44	TS-1504041	Socket Head Cap Screw M8x20		4
45	TS-1504131	Socket Head Cap Screw M8x70		1
46	FK350-246	Oil Plug		1
47	TS-223E451	Socket Head Cap Screw M20x45		1
48	FK350-248	Oil Plug		1
49	FK350-249	Oil Plug		1
50	TS-1504061	Socket Head Cap Screw M8x30		2
51	TS-1492051	Hex Cap Screw M12x50		4
52	TS-154012	Hex Nut M20		1
53	TS-1540061	Hex Nut M8		1
54	TS-2361201	Lock Washer M20		1
55	TS-2361121	Lock Washer M12		4

Head Assembly – FK350 & FK350-SX

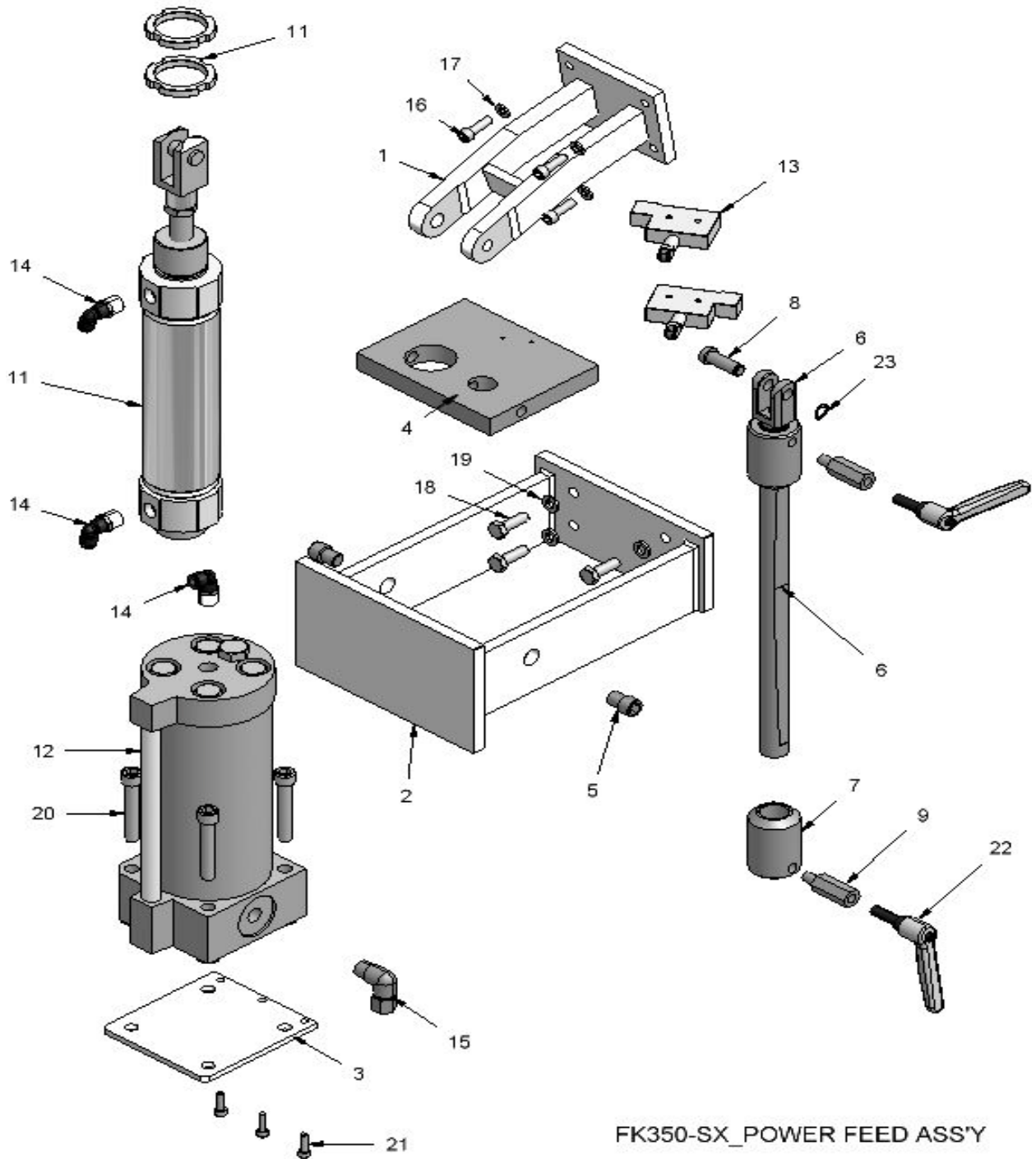


FK350_HEAD ASS'Y

Power Feed Assembly – FK350-SX

Index No.	Part No.	Description	Size	Qty
1	FK350SX-701	Spring Bracket A		1
2	FK350SX-702	Spring Bracket B		1
3	FK350SX-703	Converter Bracket		1
4	FK350SX-704	Cylinder Bracket		1
5	FK350SX-705	Hinge Bolt		2
6	FK350SX-706	Limit Rod		1
7	FK350SX-707	Limit Dog		2
8	FK350SX-708	Knuckle Pin		1
9	CK350SX-709	Thread Extension		2
11	FK350SX-711	Cylinder		1
12	FK350SX-712	Converter		1
13	FK350SX-713	Limit Switch		2
14	FK350SX-714	Elbow Push Fitting	PT 3/8	3
15	FK350SX-715	Compression Fitting		1
16	TS-1504061	Socket Head Cap Screw	M8x30	4
17	TS-1551061	Lock Washer	M8	4
18	TS-1491041	Hex Cap Screw	M10x30	4
19	TS-2361101	Lock Washer	M10	4
20	TS-1506111	Socket Head Cap Screw	M12x70	4
21	TS-1503051	Socket Head Cap Screw	M6x20	3
22	FK350SX-722	Handle		2
23	FK350SX-723	Snap Ring	S12	1

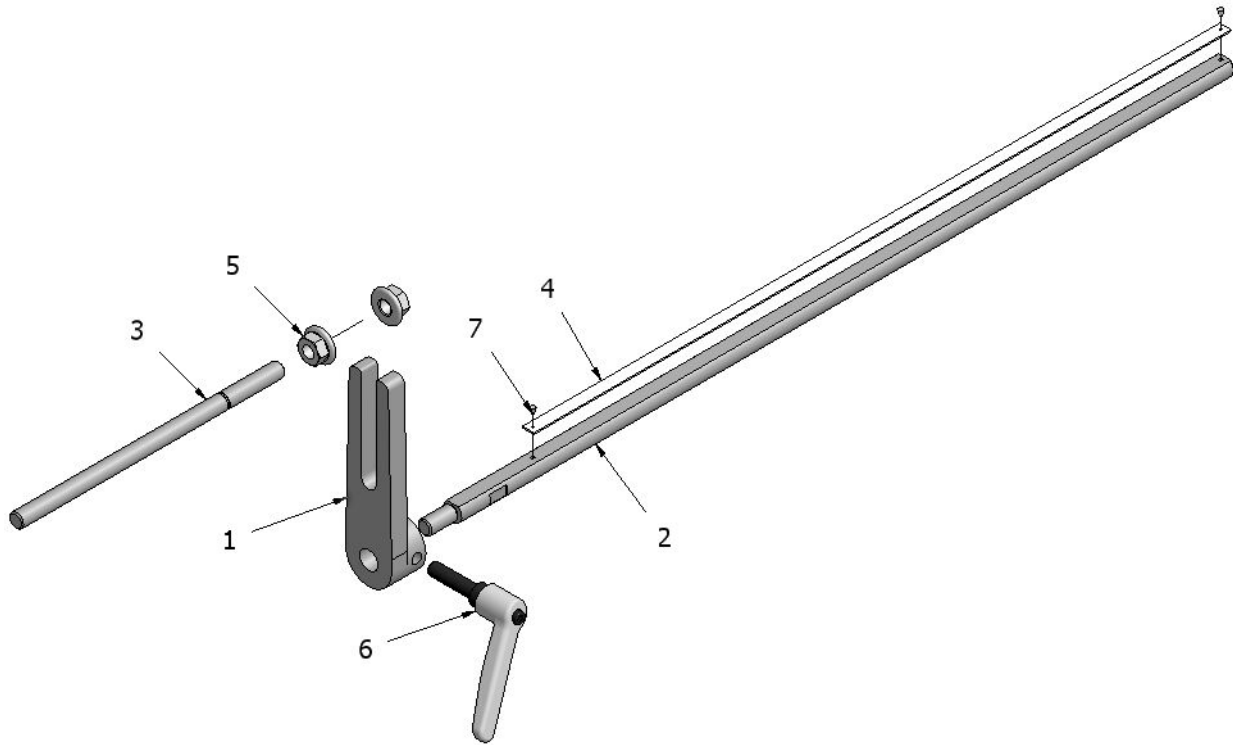
Power Feed Assembly – FK350-SX



FK350-SX_POWER FEED ASS'Y

Stock Stop Assembly

Index No.	Part No.	Description	Size	Qty
1	FK350-501	Block		1
2	FK350-502	Shaft		1
3	FK350-503	Stop Rod		1
4	FK350-504	Scale (Inch)		1
6	FK350-506	Handle	M8x30	2
7	FK350-505	Rivet		2



Stand Assembly – FK350

Index No.	Part No.	Description	Size	Qty
1	FK350-601	Cabinet Stand		1
2	FK350-602	Coolant Pump		1
3	FK350-603	Cam Switch		1
4	FK350-604	Magnetic Switch		1
5	FK350-605	Overload Relay		1
6	FK350-606	Lighted Selector Switch		1
7	TS-1502051	Socket Head Cap Screw	M5x20	4
8	TS-1551031	Lock Washer	M5	4
9	FK350-609	Cable Lock		3
10	FK350-610	Rear Cover		1
11	TS-1503021	Socket Head Cap Screw	M6x10	4
12	FK350-612	Tapered Plug	PT1/4	1
13	FK350-613	Coolant Gauge		1
14	TS-1502051	Socket Head Cap Screw	M5x20	2

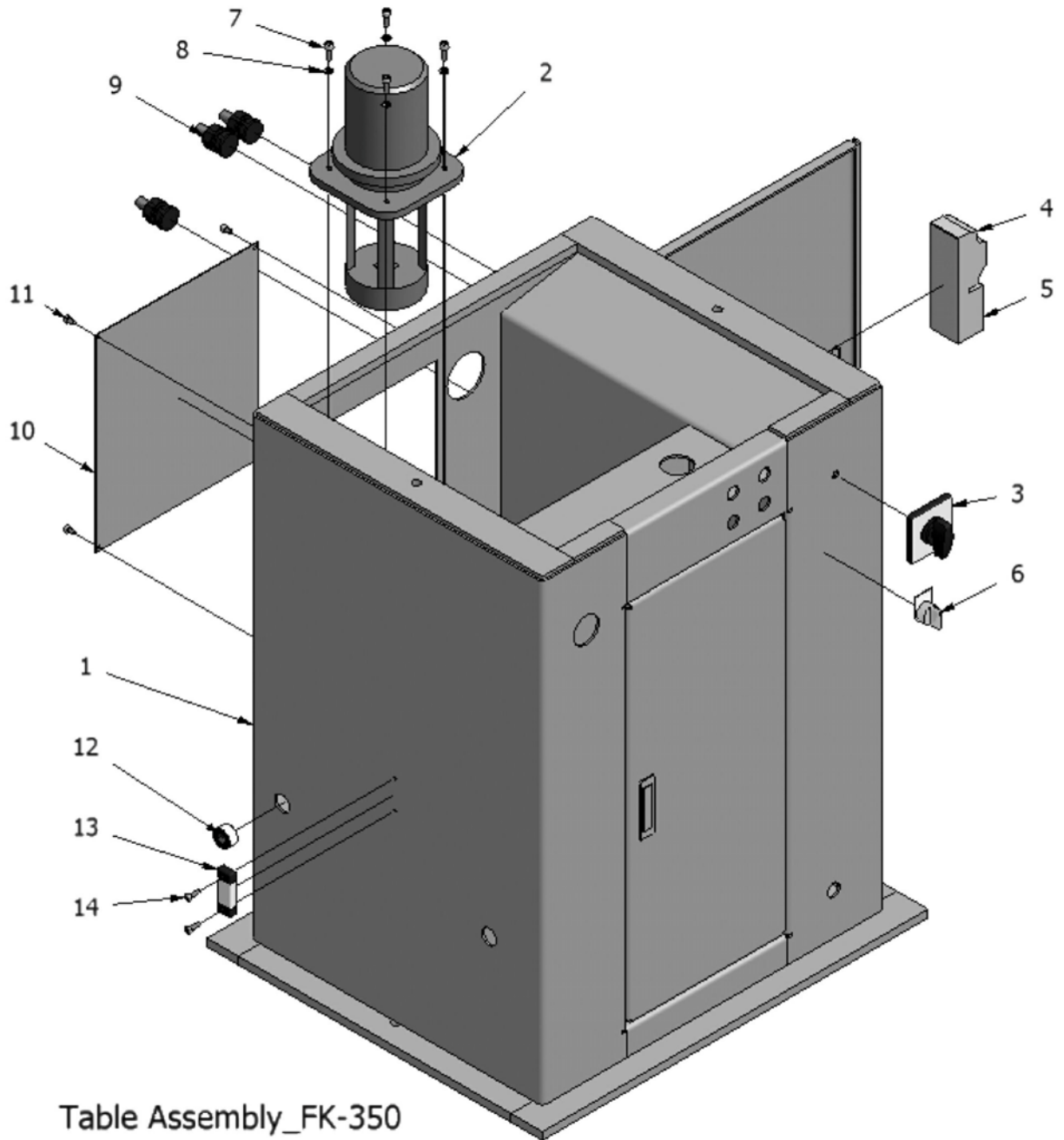


Table Assembly_FK-350

Stand Assembly – FK350-SX

Index No.	Part No.	Description	Size	Qty
1	FK350SX-601	Cabinet Stand		1
2	FK350SX-602	Foot Switch (Optional)		1
3	FK350-603	Cam Switch		1
4	FK350-604	Magnetic Switch		1
5	FK350SX-605	Overload Relay		1
7	FK350SX-607	Control Box Bracket		1
8	FK350SX-608	Control Box		1
9	FK350-609	Cable Lock		6
10	FK350-610	Rear Cover		1
11	TS-1503021	Socket Head Cap Screw	M6x10	4
12	FK350-612	Tapered Plug	PT1/4	1
13	FK350-613	Coolant Gauge		1
14	TS-1502051	Socket Head Cap Screw	M5x20	2
15	FK350SX-615	Lighted Push Button Switch		1
16	FK350SX-616	Lighted Push Button Switch		1
17	FK350SX-617	Emergency Switch		1
18	FK350SX-618	Selector Switch		2
19	FK350SX-619	Selector Switch		1
20	FK350SX-620	Flow Control Valve		1
21	TS-1504041	Socket Head Cap Screw	M8x20	2
22	TS-1551061	Lock Washer	M8	2
23	FK350SX-623	Flexible Connector		2
24	FK350SX-624	Transformer		1
25	FK350SX-625	Circuit Breaker		1
26	FK350SX-626	Fuse	5A, 30mm	2
27	FK350SX-627	Fuse Holder		1
28	FK350SX-628	Relay		5
29	FK350SX-629	Relay Socket		5
30	FK350SX-630	Relay		1
31	FK350SX-631	Relay Socket		1
32	FK350SX-632	Timer Relay		2
33	FK350SX-633	Terminal Block		30
34	FK350SX-634	Air Unit		1
35	FK350SX-635	Elbow Push Fitting	PT3/8	4
36	FK350SX-636	Elbow Push Fitting	PT1/4	1
37	FK350SX-637	Elbow Push Fitting	PT1/8	1
38	FK350SX-638	Nipple Push Fitting	PT3/8	4
39	FK350SX-639	Nipple	PT3/8	2
40	FK350SX-640	Reducer	PT3/8x1/4	1
41	FK350SX-641	T-Union	PT3/8	2
42	FK350SX-642	Solenoid Valve		1
43	FK350SX-643	Solenoid Valve		1
44	FK350SX-644	Socket Head Cap Screw	M4x60	3
45	TS-1550021	Flat Washer	M4	3
46	FK350SX-646	Silencer	PT3/8	4
47	FK350SX-647	Pipe		1
48	FK350SX-648	Ball Valve		1
49	FK350SX-649	Quick Coupler		1
50	FK350SX-650	Pressure Gauge		1
51	FK350-602	Coolant Pump		1
52	TS-1502051	Socket Head Cap Screw	M5x20	4
53	TS-1551031	Lock Washer	M5	4

Stand Assembly – FK350-SX

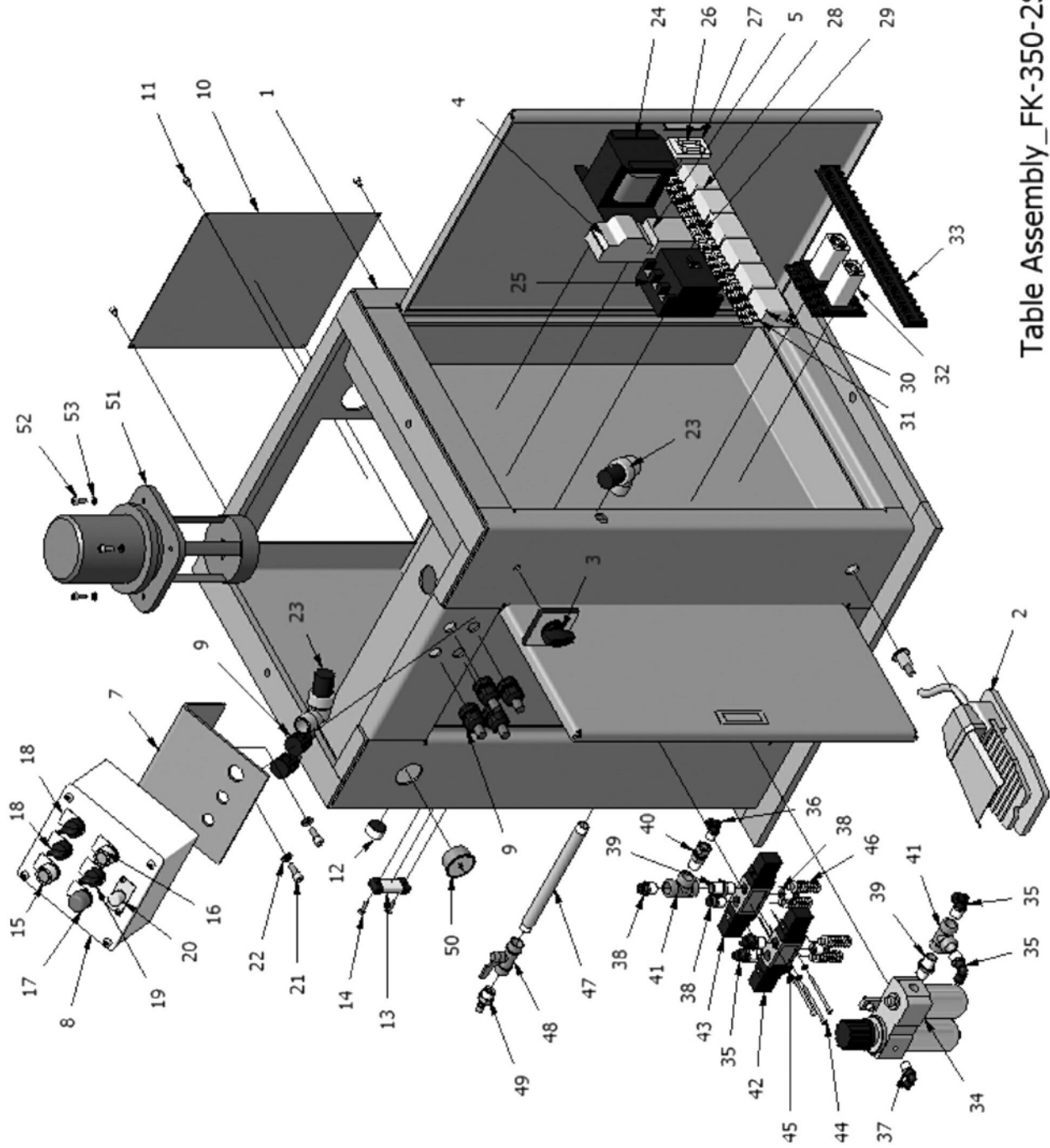
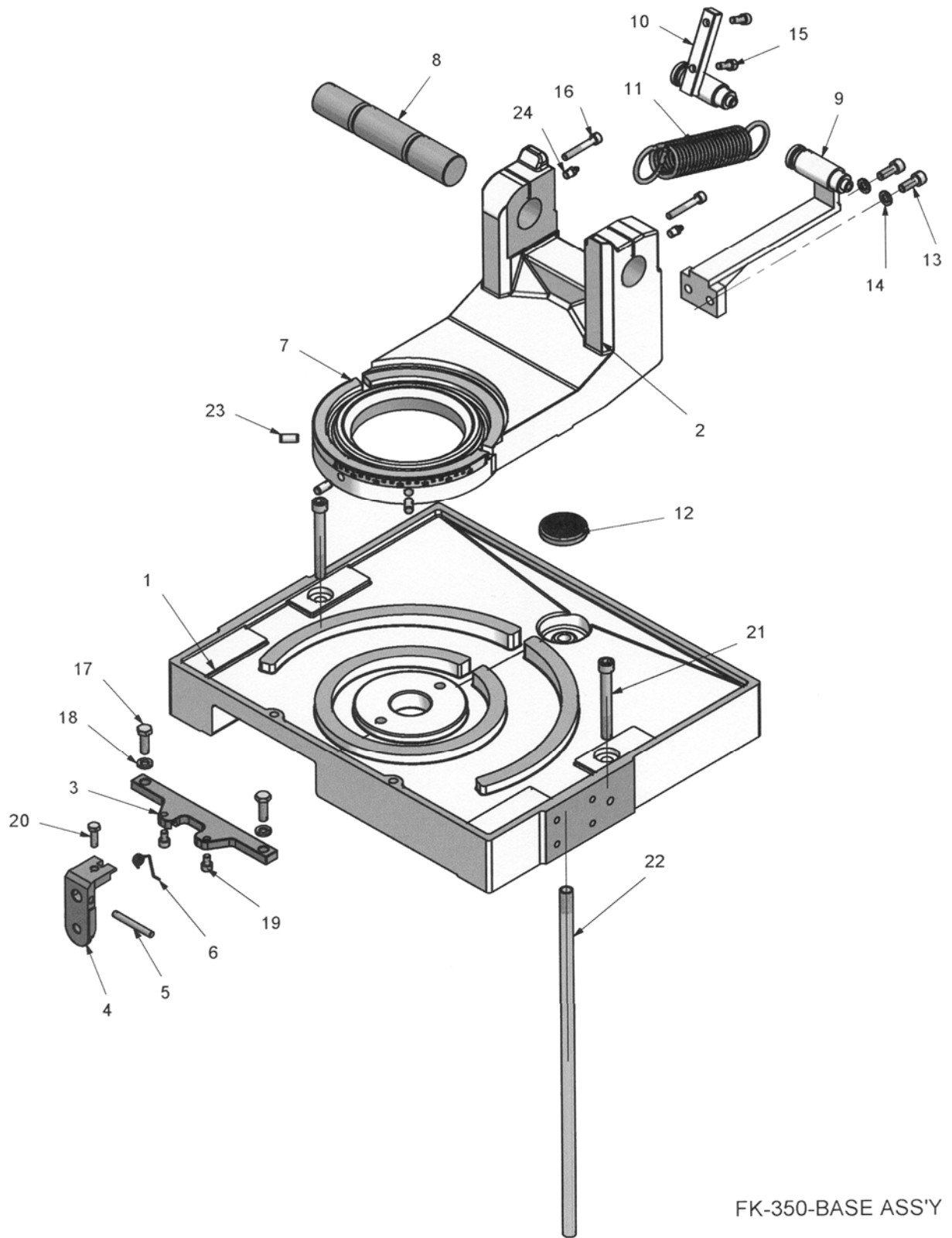


Table Assembly_FK-350-2SX

Base Assembly – FK350

Index No.	Part No.	Description	Size	Qty
1	FK350-101	Base		1
2	FK350-102	Hinge Body		1
3	FK350-103	Locking Mount		1
4	FK350-104	Release Handle		1
5	FK350-105	Pin		1
6	FK350-106	Coil Spring		1
7	FK350-107	Scale		1
8	FK350-108	Pivot Shaft		1
9	FK350-109	Spring Bracket A		1
10	FK350-110	Spring Bracket B		1
11	FK350-111	Return Spring		1
12	FK350-112	Chip Screen		1
13	TS-1505031	Socket Head Cap Screw	M10x25	2
14	TS-1551071	Lock Washer	M10	2
15	TS-1504041	Socket Head Cap Screw	M8x20	2
16	TS-1504101	Socket Head Cap Screw	M8x50	2
17	TS-1491041	Hex Cap Screw	M10x30	2
18	TS-2361101	Lock Washer	M10	2
19	TS-1504021	Socket Head Cap Screw	M8x12	2
20	TS-1490041	Hex Cap Screw	M8x25	1
21	TS-223A911	Socket Head Cap Screw	M12x100	2
22	FK350-122	Pipe		1
23	FK350-123	Pin	10mm Dia. x 22	3
24	FK350-124	Grease Fitting	PT 1/8	2

Base Assembly – FK350

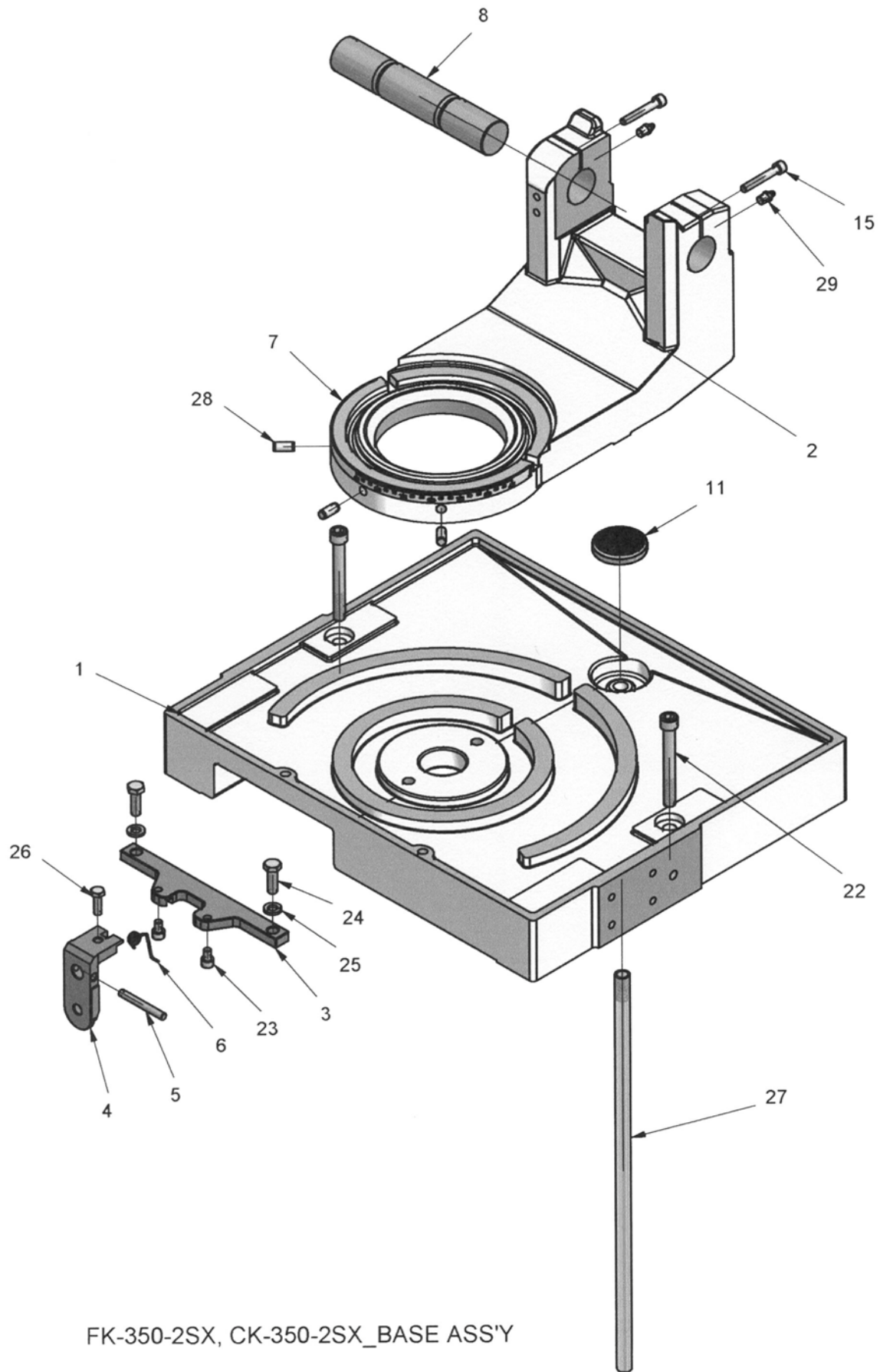


FK-350-BASE ASS'Y

Base Assembly – FK350-SX

Index No.	Part No.	Description	Size	Qty
1	FK350-101	Base		1
2	FK350-102	Hinge Body		1
3	FK350-103	Locking Mount		1
4	FK350-104	Release Handle		1
5	FK350-105	Pin		1
6	FK350-106	Coil Spring		1
7	FK350-107	Scale		1
8	FK350-108	Pivot Shaft		1
11	FK350-112	Chip Screen		1
15	TS-1504101	Socket Head Cap Screw	M8x50	2
20	TS-1490041	Hex Cap Screw	M8x25	1
22	TS-223A911	Socket Head Cap Screw	M12x100	2
23	TS-1504021	Socket Head Cap Screw	M8x12	2
24	TS-1491041	Hex Cap Screw	M10x30	2
25	TS-2361101	Lock Washer	M10	2
27	FK350-122	Pipe		1
28	FK350-123	Pin	10mm Dia. x 22	3
29	FK350-124	Grease Fitting	PT 1/8	2

Base Assembly – FK350-SX

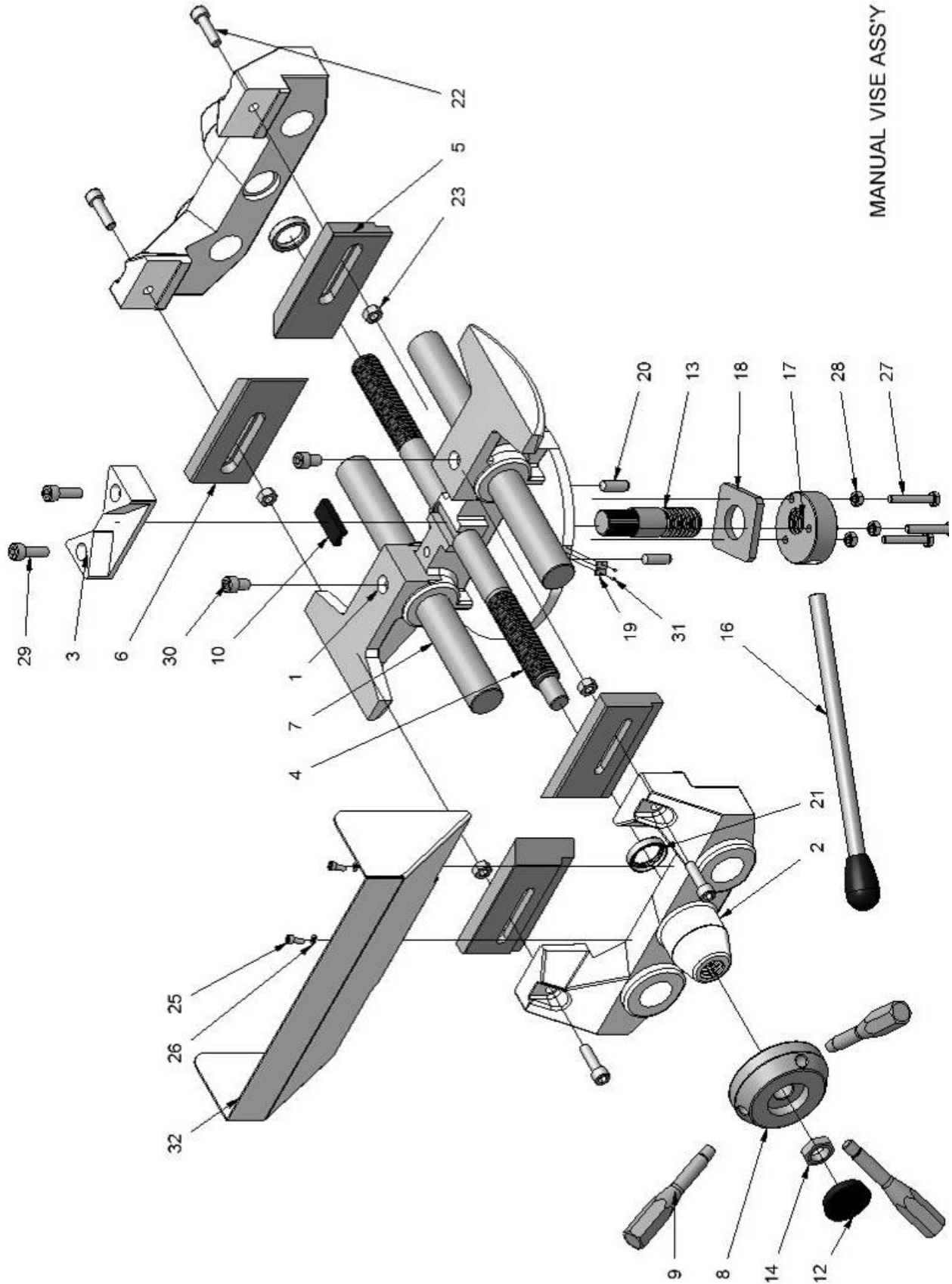


FK-350-2SX, CK-350-2SX_BASE ASS'Y

Manual Vise Assembly – FK350

Index No.	Part No.	Description	Size	Qty
1	FK350-301	Base		1
2	FK350-302	Vise Jaw		2
3	FK350-303	Tip		1
4	FK350-304	Vise Screw		1
5	FK350-305	Jaw Insert A (Steel, Smooth)		2
	FK350-305ST	Jaw Insert A (Steel, Serrated)		2
6	FK350-306	Jaw Insert B (Steel, Smooth)		2
	FK350-306ST	Jaw Insert B (Steel, Serrated)		2
7	FK350-307	Guide Rod		2
8	FK350-308	Handle Hub		1
9	FK350-309	Handle		3
10	FK350-310	Filling Block		1
12	FK350-312	Cap		1
13	FK350-313	Setting Screw		1
14	FK350-314	Hex Nut	M20x1.5P	1
15	FK350-315	Cover		1
16	FK350-316	Tension Handle		1
17	FK350-317	Tension Nut		1
18	FK350-318	Pressure Plate		1
19	FK350-319	Scale Centering		1
20	FK350-320	Pin	10mm Dia. x 30	2
21	FK350-321	Retainer		2
22	TS-1505051	Socket Head Cap Screw	M10x35	4
23	TS-1540071	Hex Nut	M10	4
25	TS-1502031	Socket Head Cap Screw	M5x12	2
26	TS-1550031	Flat Washer	M5	2
27	TS-1490091	Hex Cap Screw	M8x50	3
28	TS-1540061	Hex Nut	M8	3
29	TS-1505041	Socket Head Cap Screw	M10x30	2
30	TS-1505011	Socket Head Cap Screw	M10x16	2
31	FK350-331	Rivet	2mm Dia. x 4	2

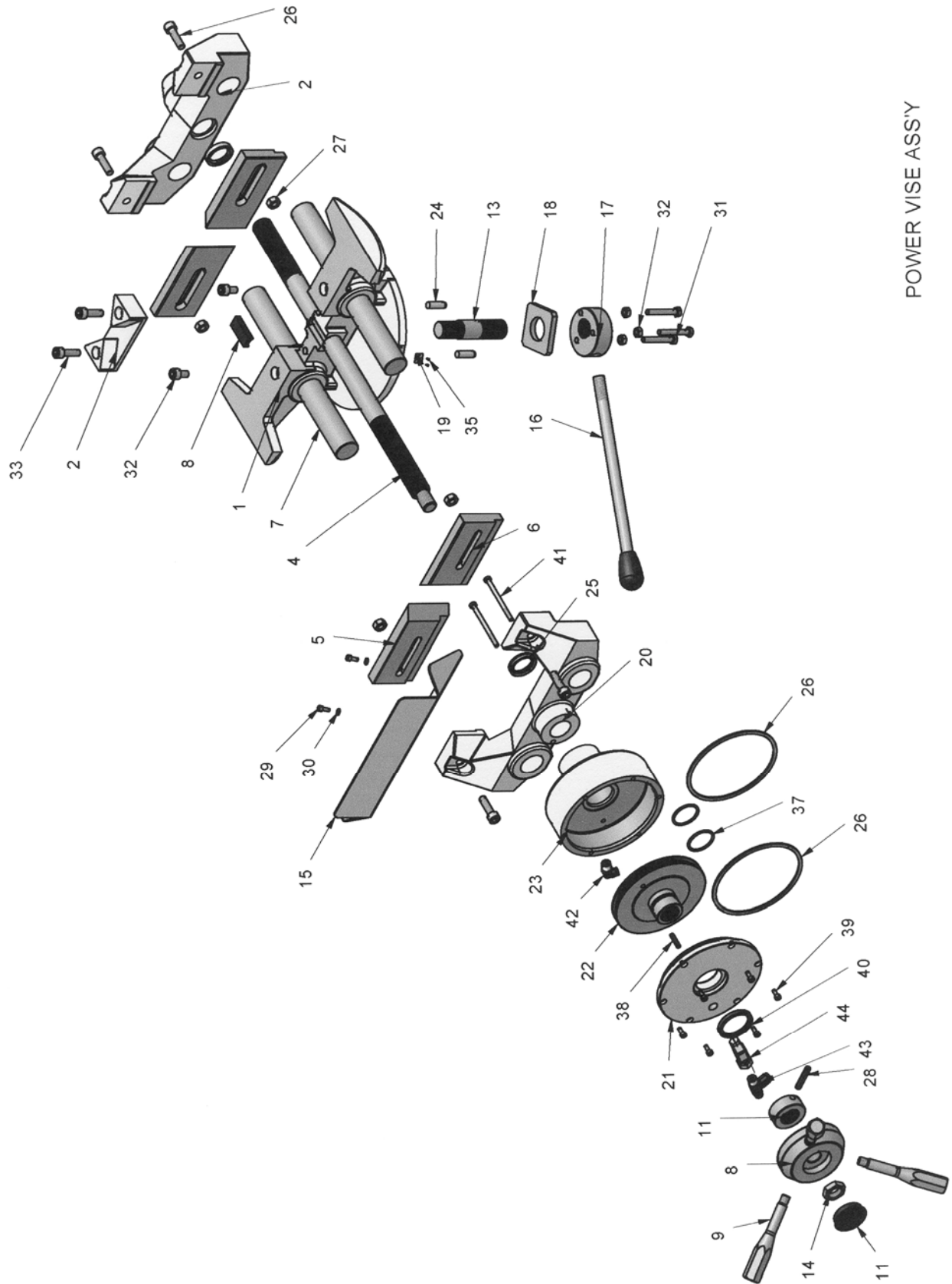
Manual Vise Assembly – FK350



Power Vise Assembly – FK350-SX

Index No.	Part No.	Description	Size	Qty
1	FK350-301	Base		1
2	FK350-302	Vise Jaw		1
3	FK350-303	Tip		1
4	FK350SX-304	Vise Screw, Semi-Auto		1
5	FK350-305	Jaw Insert A (Steel, Smooth)		2
	FK350-305ST	Jaw Insert A (Steel, Serrated)		2
6	FK350-306	Jaw Insert B (Steel, Smooth)		2
	FK350-306ST	Jaw Insert B (Steel, Serrated)		2
7	FK350-307	Guide Rod		2
8	FK350-308	Handle Hub		1
9	FK350-309	Handle		3
10	FK350-310	Filling Block		1
11	FK350-311	Locking Nut		1
12	FK350-312	Cap		1
13	FK350-313	Setting Screw		1
14	FK350-314	Hex Nut	M20x1.5P	1
15	FK350-315	Cover		1
16	FK350-316	Tension Handle		1
17	FK350-317	Tension Nut		1
18	FK350-318	Pressure Plate		1
19	FK350-319	Scale Centering		1
20	FK350SX-320	Front Vise Jaw		1
21	FK350SX-321	Cylinder Cover		1
22	FK350SX-322	Piston		1
23	FK350SX-323	Vise Cylinder		1
24	FK350-320	Pin	10mm Dia. x 30	2
25	FK350-321	Retainer		2
26	TS-1505051	Socket Head Cap Screw	M10x35	4
27	TS-1540071	Hex Nut	M10	4
28	TS-209605	Roll Pin	M8x40	1
29	TS-1502031	Socket Head Cap Screw	M5x12	2
30	TS-1550031	Flat Washer	M5	2
31	TS-1490091	Hex Cap Screw	M8x50	3
32	TS-1540061	Hex Nut	M8	3
33	TS-1505041	Socket Head Cap Screw	M10x30	2
34	TS-1505011	Socket Head Cap Screw	M10x16	2
35	FK350-331	Rivet	2mm Dia. x 4	2
36	FK350SX-336	O-Ring	P130	2
37	FK350SX-337	O-Ring	P35	2
38	FK350SX-338	Spring Pin	6mm Dia. x 25	1
39	TS-1502031	Socket Head Cap Screw	M5x12	6
40	FK350SX-340	Dust Seal		1
41	TS-2236801	Socket Head Cap Screw	M6x80	2
42	FK350SX-342	Elbow Push Fitting	PT1/4	1
43	FK350SX-343	Speed Control	PT1/4	1
44	FK350SX-344	Elbow	PT1/4	1

Power Vise Assembly – FK350-SX

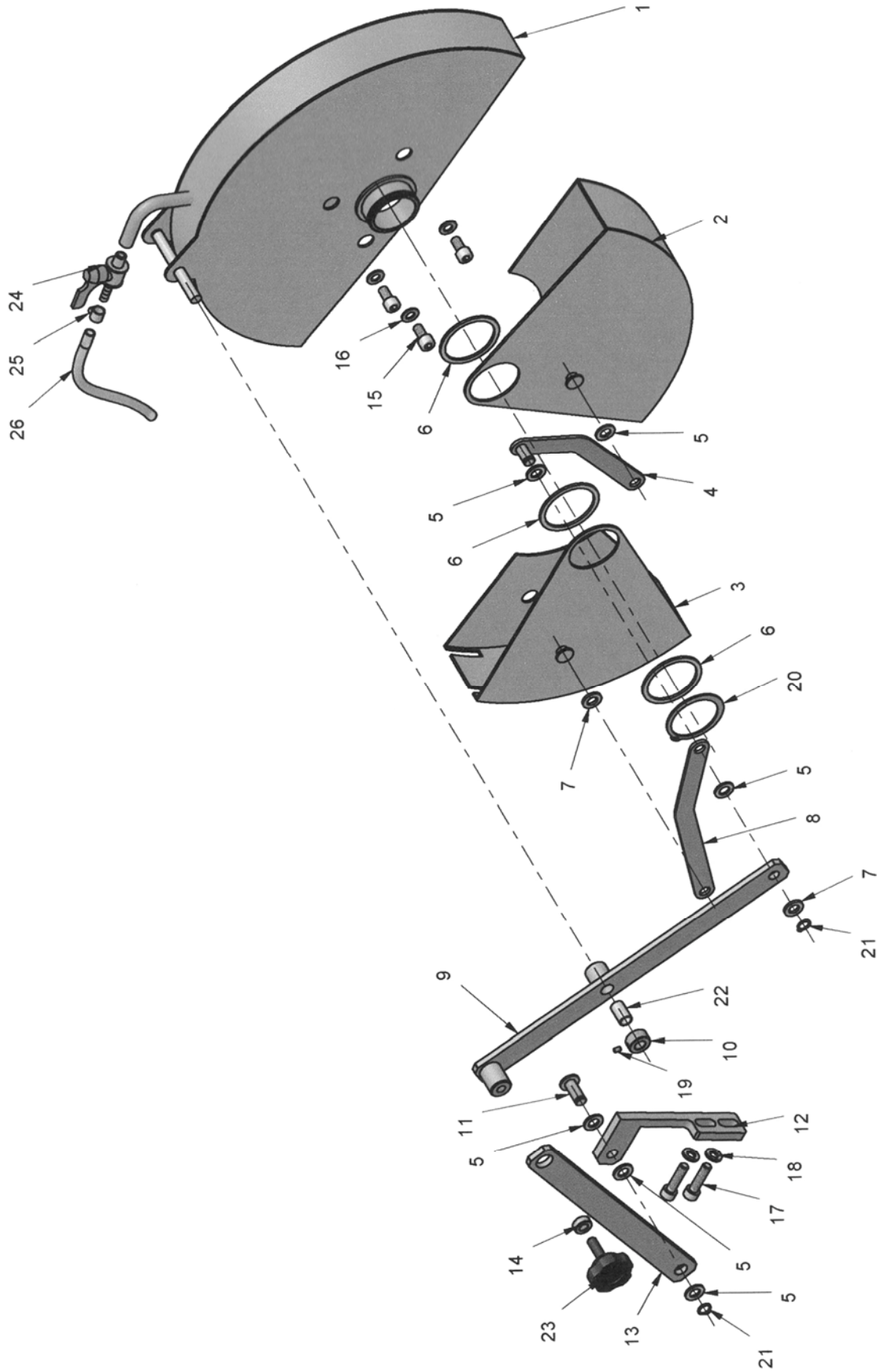


POWER VISE ASS'Y

Guard Assembly – FK350 & FK350-SX

Index No.	Part No.	Description	Size	Qty
1	FK350-401	Guard A		1
2	FK350-402	Guard B		1
3	FK350-403	Guard C		1
4	FK350-404	Link A		1
5	FK350-405	Nylon Spacer A		6
6	FK350-406	Nylon Spacer B		3
7	FK350-407	Nylon Spacer C		2
8	FK350-408	Link B		1
9	FK350-409	Link C		1
10	FK350-410	Link Ring		1
11	FK350-411	Link Pin		1
12	FK350-412	Link Bracket		1
13	FK350-413	Link D		1
14	FK350-414	Link D Ring		1
15	TS-1504031	Socket Head Cap Screw	M8x16	3
16	TS-1550061	Flat Washer	M8	3
17	TS-1504061	Socket Head Cap Screw	M8x30	2
18	TS-1551061	Lock Washer	M8	2
19	TS-1521021	Set Screw	M4x6	1
20	FK350-420	Snap Ring	S48	1
21	FK350-421	Snap Ring	S10	2
22	FK350-422	Bushing		1
23	FK350-423	Knob	M8x30	1
24	FK350-424	Shut off Valve		1
25	FK350-425	Hose Band		1
26	FK350-426	Hose		1

Guard Assembly – FK350, FK350-2SX

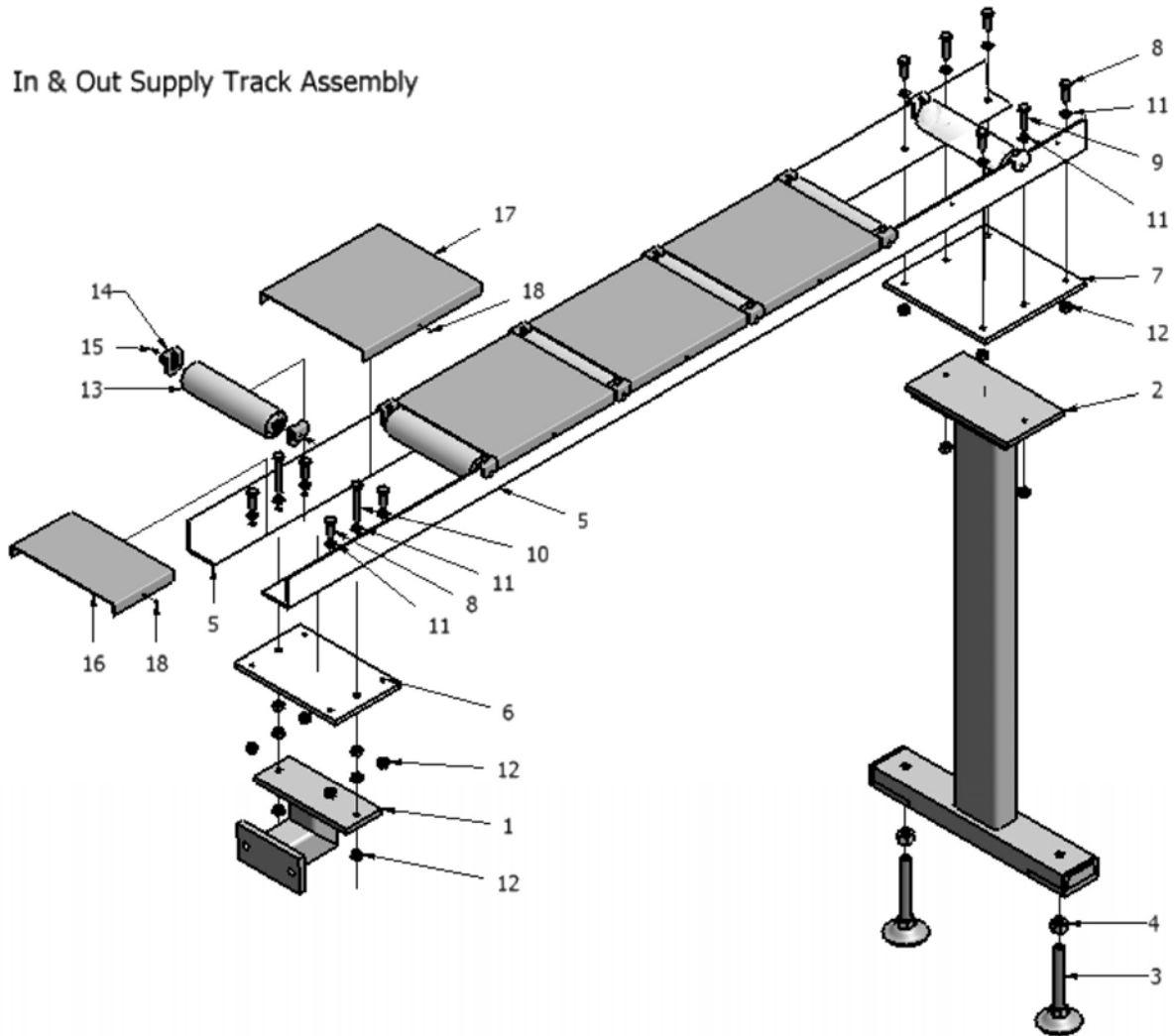


FK-350, FK-350-2SX_GUARD ASS'Y

In-Feed Table Assembly

Index No.	Part No.	Description	Size	Qty
1	FK350-701	Bracket		1
2	FK350-702	Stand		1
3	FK350-703	Leveling Foot		2
4	TS-154010	Hex Nut M16		2
5	FK350-705	Angle Rail		2
6	FK350-706	Base A		1
7	FK350-707	Base B		1
8	TS-1491041	Hex Cap Screw	M10x30	8
9	TS-1491061	Hex Cap Screw	M10x40	2
10	TS-1491121	Hex Cap Screw	M10x70	2
11	TS-2361101	Lock Washer	M10	12
12	TS-1540071	Hex Nut	M10	16
13	FK350-713	Roller		6
14	FK350-714	Roller Bracket		12
15	TS-1502021	Socket Head Cap Screw	M5x10	12
16	FK350-716	Cover A		2
17	FK350-717	Cover B		5
18	TS-1533032	Pan Head Screw	M5x10	7

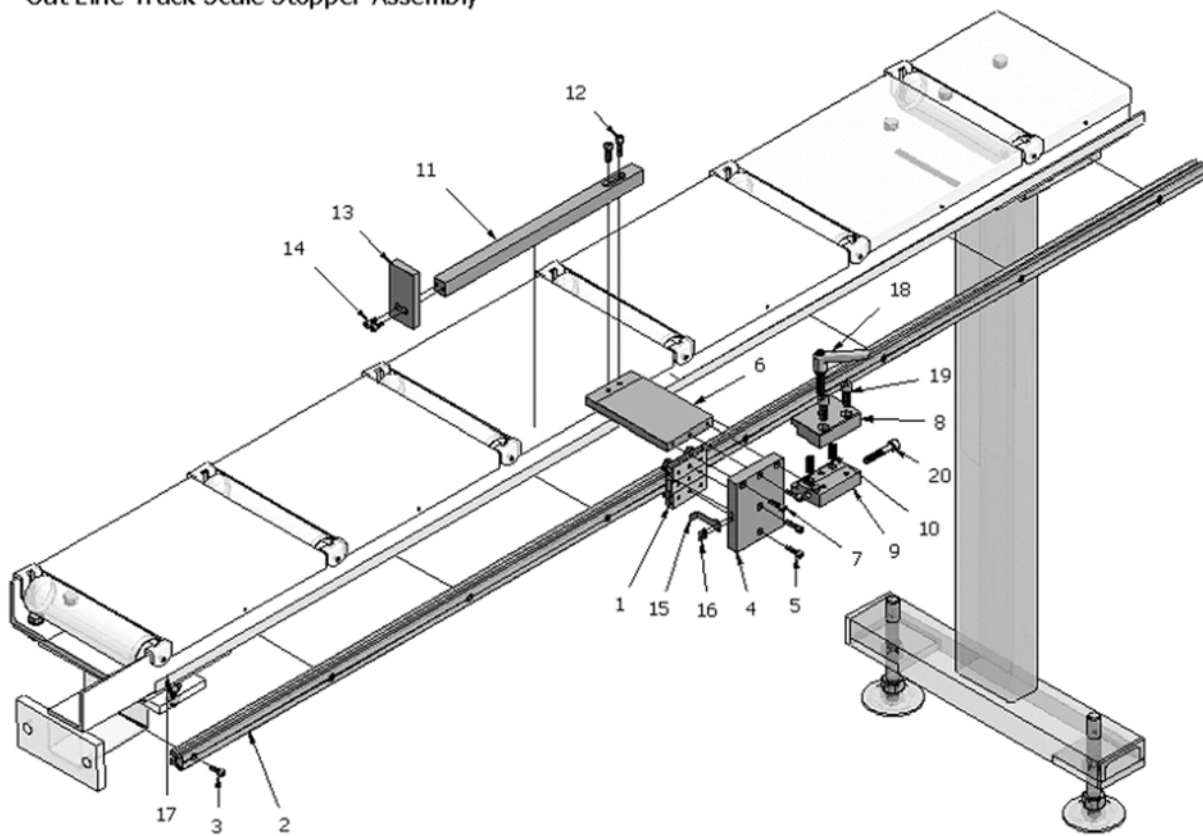
In & Out Supply Track Assembly



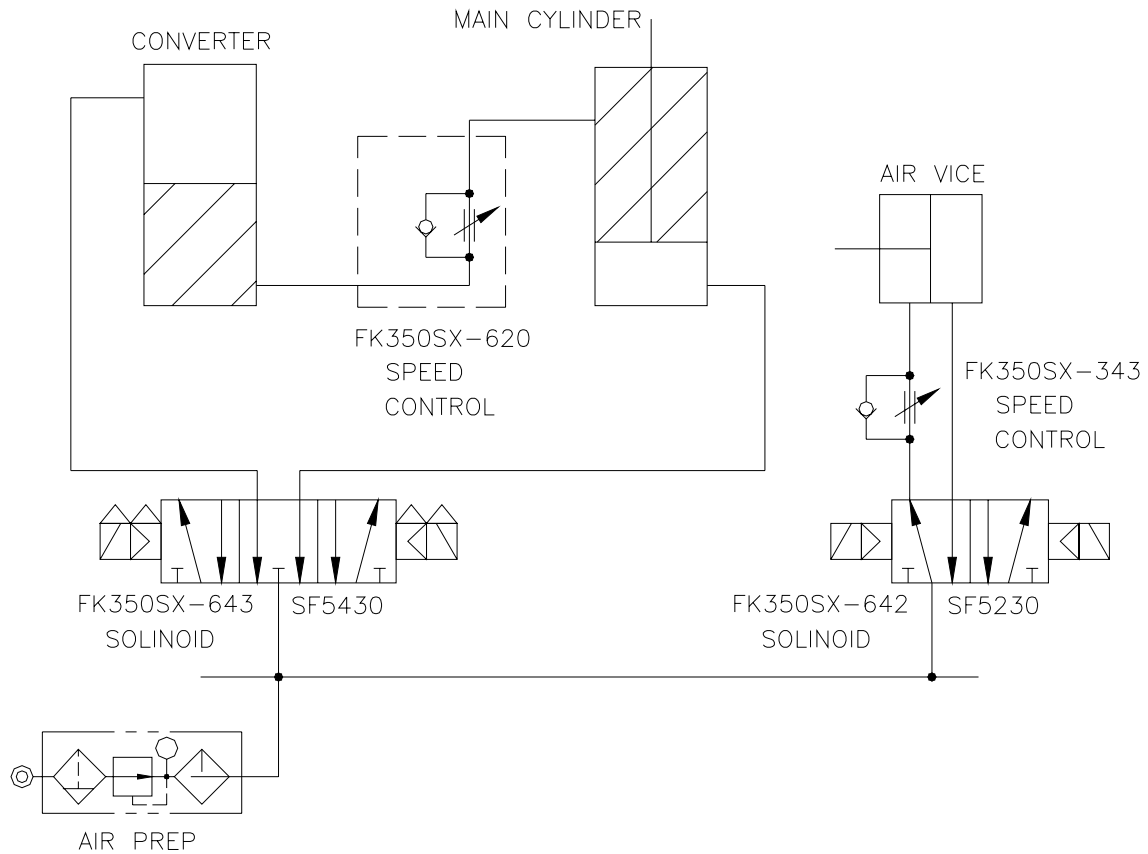
Out-Feed Table

1	FK350-801	Guide Block		EA
2	FK350-802	Guide Rail		EA
3	TS-1502051	Socket Head Cap Screw	M5x20	EA
4	FK350-804	Stopper Base		EA
5	TS-1502051	Socket Head Cap Screw	M5x20	EA
6	FK350-806	Connecting Plate		EA
7	TS-1502071	Socket Head Cap Screw	M5x30	EA
8	FK350-808	Lock Block A		EA
9	FK350-809	Lock Block B		EA
10	FK350-818	Spring		EA
11	FK350-811	Stopper		EA
12	TS-1503051	Socket Head Cap Screw	M6x20	EA
13	FK350-813	Stopper Pad		EA
14	TS-1502041	Socket Head Cap Screw	M5x16	EA
15	FK350-815	Scale Indicator		EA
16	FK350-816	Rivet		EA
17	FK350-817	Inch Scale		EA
18	FK350-810	Handle		EA

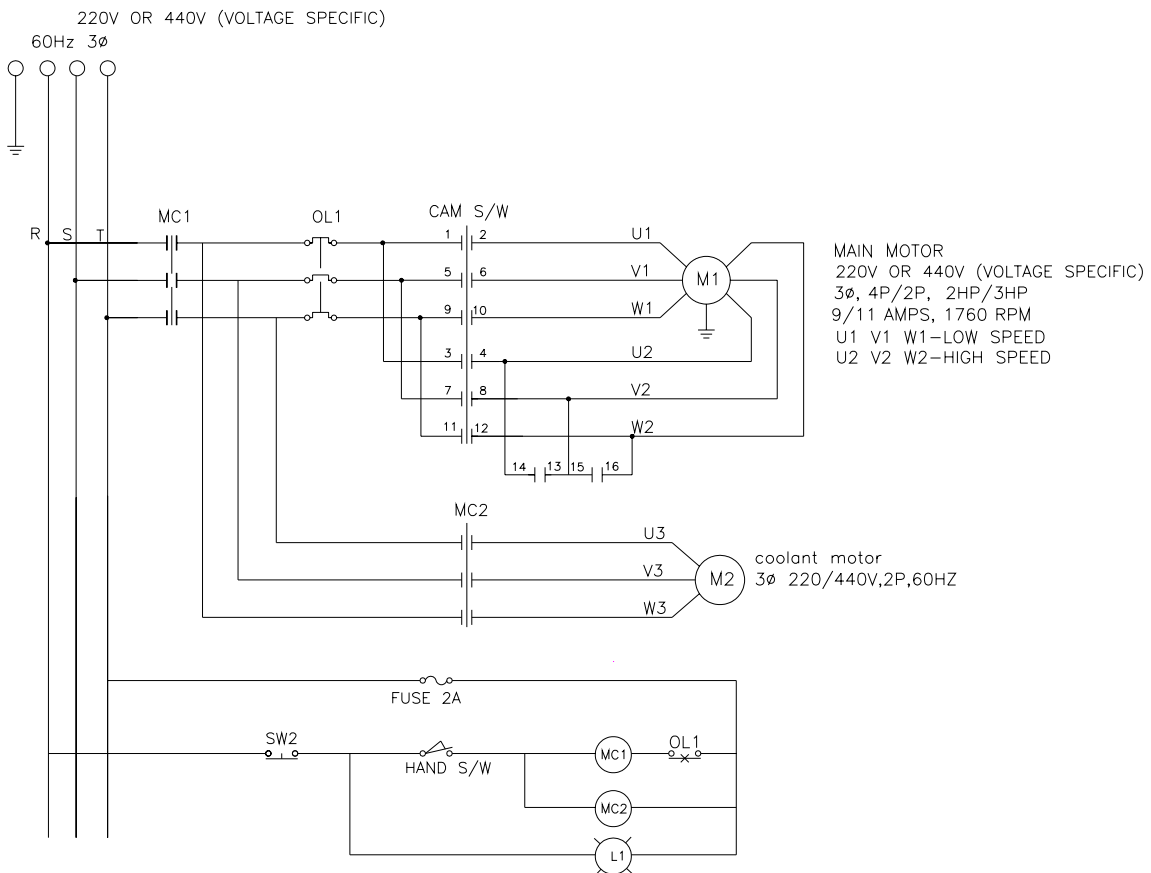
Out Line Track Scale Stopper Assembly



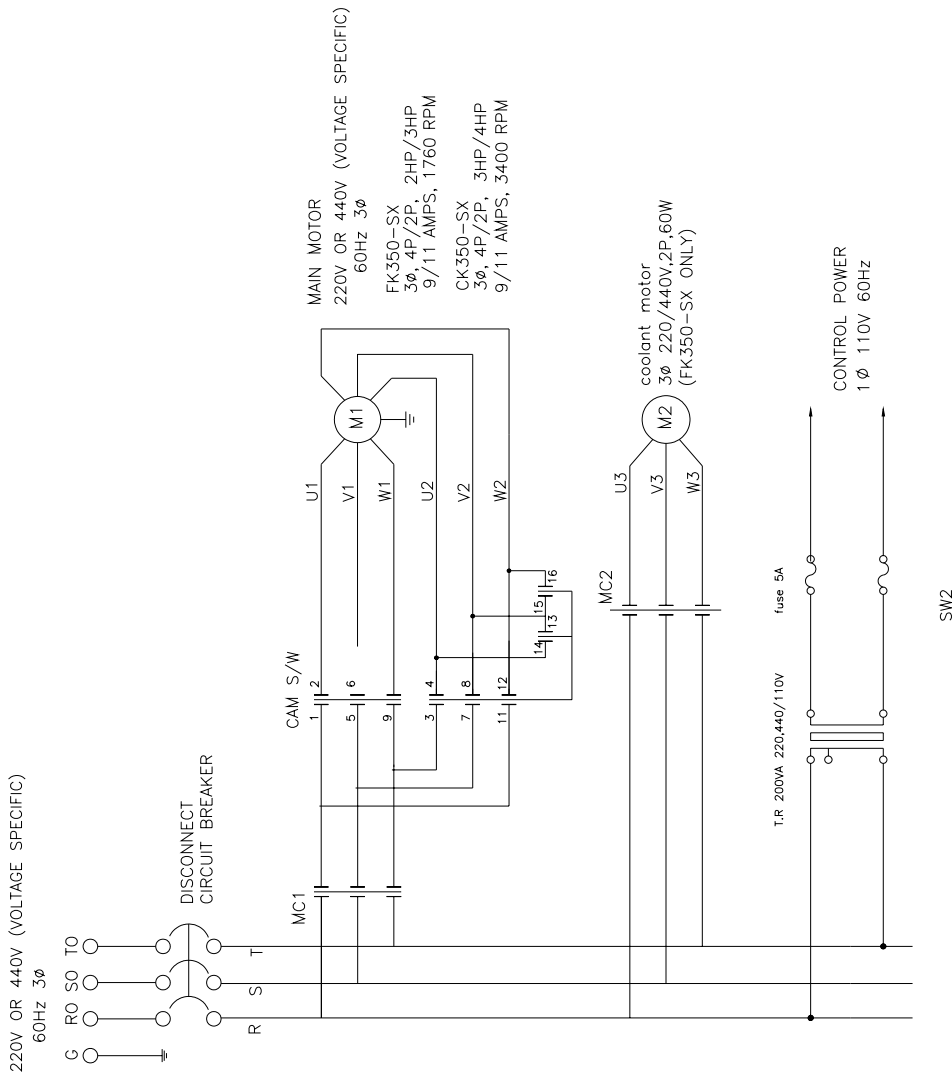
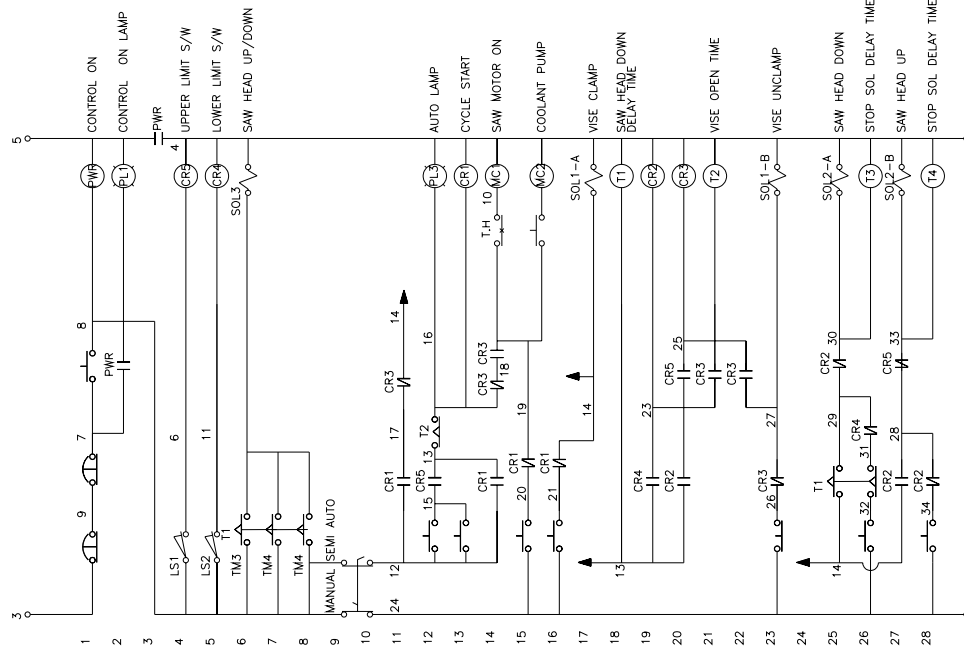
Pneumatic Drawing – FK350-SX



Wiring Diagram – FK350



Wiring Diagram – FK350-SX



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