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SAFETY PRECAUTIONS

IN GENERAL

When using rotating head cutting equipment, basic safety precautions should always be followed to reduce the risk of personal injury.

Operate this tool only in accordance with specific operating instructions.

WARNING: Do not override the deadman switch on the power unit. Locking down, obstructing, or in any way defeating the deadman switch on the power drive unit may result in serious injury.

DRESS CONSIDERATIONS

Use standard safety equipment. Hard hats, safety shoes, safety harnesses, protective clothes, and other safety devices should always be used when appropriate.

Use safety glasses. Do not operate cutting tools without eye protection.

Dress properly. Do not wear loose clothing or jewelry. They can be caught in rotating and moving parts. Avoid slippery floors or wear nonskid footwear. If you have long hair, wear protective hair covering to contain it.

WORK AREA

Keep the work area clean. Cluttered work areas and benches invite injuries.

Consider the work area environment. Keep the area well lit. Keep electrical cords, cables, rags, rigging straps, and etc. clear of rotating equipment. Do not use power-cutting tools in the presence of flammable liquids and gasses.

Keep visitors away. Do not let visitors or untrained personnel at or near operating tools. Enforce eye protection requirements for all observers.

Do not over reach. Keep proper footing at all times.

Stay alert. Watch what you are doing. Use common sense. Do not operate tools when you are tired.

TOOL CARE

Maintain tools with care. Keep tools in good operating condition. Sharp tool bits perform better and safer than dull tool bits. Well maintained tools function properly when needed.

Check for damaged parts. If a tool has malfunctioned, been dropped or hit, it must be checked for damage. Run no-load tests and feed function checks. Do a complete visual inspection.

Electric motors. Use only with proper AC voltage power sources and observe all normal electric shock hazard procedures.

Do not abuse power and control cords. Pulling or running over cords and cables can result in electrical shock hazards and malfunctions. Keep control and power cords out of all cutting fluids and water.

Hydraulic drives. Observe proper procedures for electrically driven power sources. Avoid damage to hydraulic lines. Keep quick-disconnects clean. Grit contamination causes malfunctions.

Air tools. Check the exhaust muffler. Broken or damaged mufflers can restrict air flow or cause excessive noise. Use air motors only with a filtered, lubricated and regulated air supply. Dirty air, low-pressure air or over pressure air will cause malfunctions, including delayed starting.

AREA EQUIPMENT

Secure work. Whenever possible use clamps, vises, chains and straps to secure pipe.

Make sure the tool is secured; it is safer to have both hands free to operate the tool.

TOOL USE

Use the right tool and tool bit for the job. Do not use a tool, which is incorrect for the job you are doing.

Keep the tool bits fully engaged in the tool bit holders. Loose bits are a safety hazard.

Model 301SP Tube Squaring Machine

Disconnect power supply during setup and maintenance. Use all 'Stop' or Shut off' features available when changing or adjusting tool bits, maintaining the tool, or when the tool is not in use.

Remove adjusting keys and wrenches before applying power to the equipment. Develop a habit of checking the tool before turning it on to make sure that all keys and wrenches have been removed.

Do not force tools. Tools and tool bits function better and safer when used at the feed and speed rate for which they were designed.

Do not reach into rotating equipment. Do not reach into the rotating head stock to clear chips, to make adjustments, or to check surface finish. A machine designed to cut steel will not stop for a hand or an arm.

Handle chips with care. Chips have very sharp edges and are hot. Do not try to pull chips apart with our hands; they are very tough.

Avoid unintentional starts. Do not carry or handle tools with your hand on the operating switches or levers. Do not lay the tool down in a manner that will start the drive. Do not allow the tool to flip around or move when adjusting or changing tool bits.

Store idle tools properly. Disconnect tools from the power source and store in a safe place. Remove tool bits for safe handling of the tool.

GENERAL DESCRIPTION

The Model 301SP Tube Squaring Machine is a lightweight, portable machine designed for facing and squaring .125" to 1.050" (3.2 mm to 26.7 mm) outside diameter tubing with an ability to handle up to 1/8" (3 mm) thick wall.

The Model 301SP features an integral, variable speed 115 VAC Electric Motor, an integral, variable speed 220 VAC Electric Motor and Air motor or a Battery powered Electric Motor.

Precision inside diameter Saddles hold the tubing round to accurately square and face the tubing with a minimum burr.

The Machine accepts its own torque through the Saddle Clamping system.

The Cutting Head accepts Squaring Tool Bits.

All required tools for operation of the Model 301SP are supplied with the Machine.

Model 301SP Tube Squaring Machine

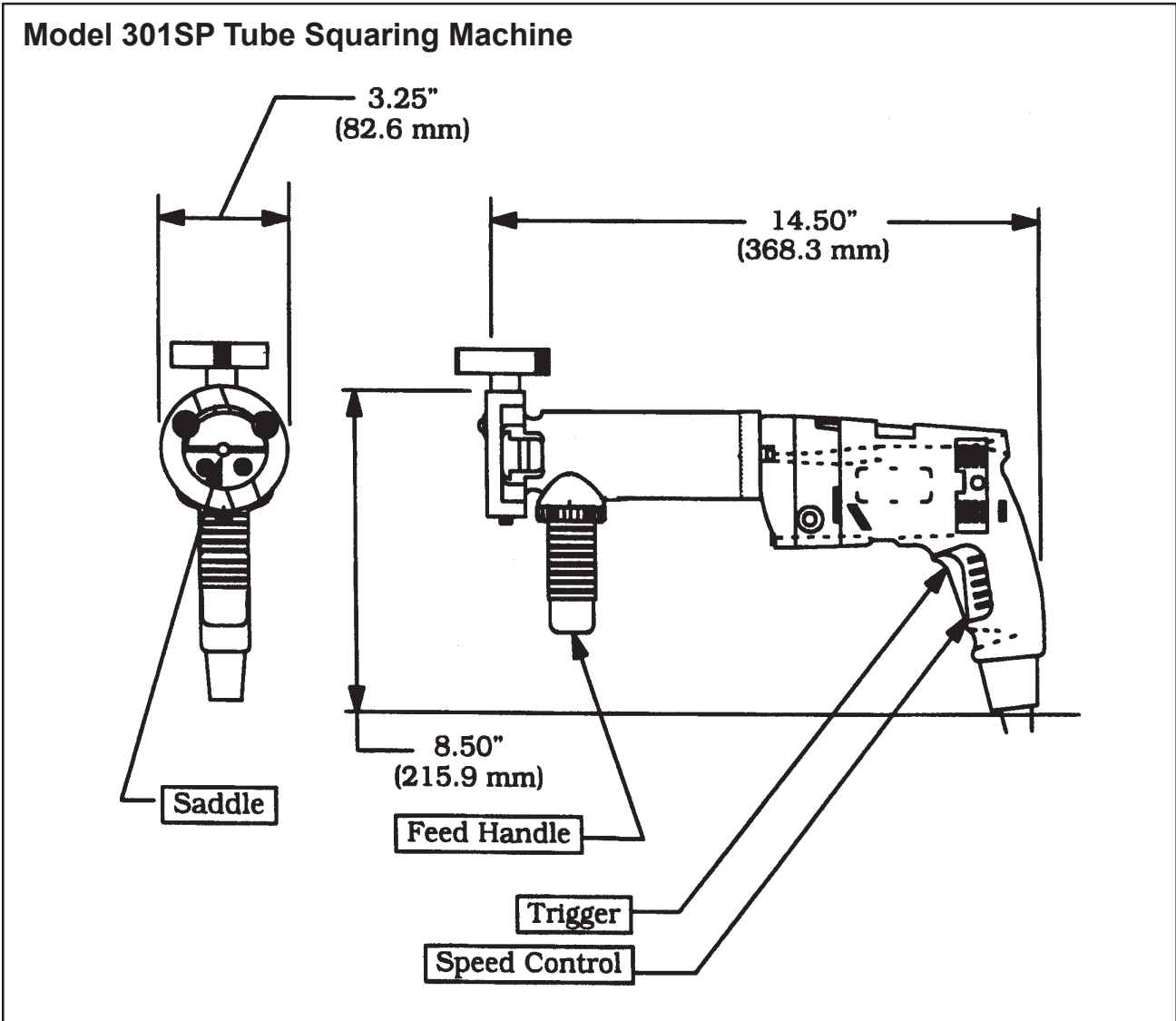
Designations for the Model 301SP		
Model No.	P/N	Description
301SP-E110	01-1292	Tube Squaring Machine 110VAC Electric Motor (Milwaukee)
301SP-E110	01-1296	Tube Squaring Machine 110VAC Electric Motor (Milwaukee) with Bench Stand
301SP-E110	01-1293	Tube Squaring Machine 110VAC Electric Motor (Bosch)
301SP-E110	01-1297	Tube Squaring Machine 110VAC Electric Motor (Bosch) with Bench Stand
301SP-E110	01-1344	Tube Squaring Machine 110VAC Electric Motor (Metabo)
301SP-E110	01-1345	Tube Squaring Machine 110VAC Electric Motor (Metabo) with Bench Stand
301SP-E220	01-1294	Tube Squaring Machine 220VAC Electric Motor (Bosch)
301SP-E220	01-1298	Tube Squaring Machine 220VAC Electric Motor (Bosch) with Bench Stand
301SP-A	01-1295	Tube Squaring Machine Air Motor
301SP-A	01-1299	Tube Squaring Machine Air Motor with Bench Stand
301SP-B	01-1326	Electric Motor, Battery Powered, 14.4V (110V Charger)
301SP-B	01-1353	Tube Squaring Machine Electric Motor, Battery Powered, 14.4V (220V Charger)

SPECIFICATIONS

The Model 301SP with a motor:

Weight: 8.5 lbs. (3.9 kg)(varies with Saddle size and type of Motor).

Power Requirements	
Model 301SP 110	115 VAC +/- 10%, 25 to 60 Hz
Model 301SP 220	220 VAC +/- 10%, 25 to 60 Hz
Model 301SP-A	22 cfm at 90 psi (10 L/s at 621 kPa)



MAINTENANCE

All components should be cleaned and coated with a light film of oil prior to use. Use a clean, non-detergent oil, preferably SAE 10 (90SSU) or lighter.

The air supply for the 301SP with an Air Motor should include an adequate filter, regulator and lubricator (FRL).

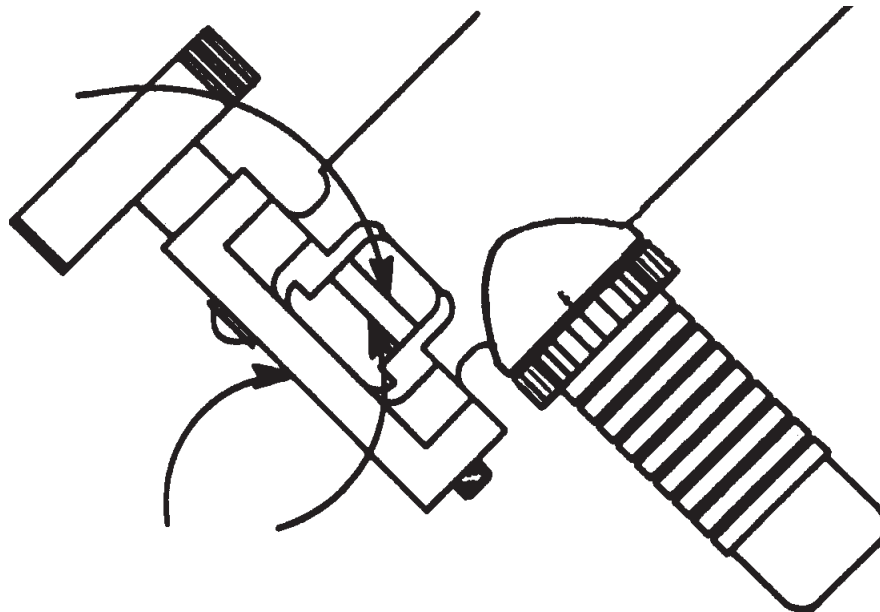
NOTE: The Air Motor warranty is void if damage occurs from contaminated air or lack of lubrication.

If the Model 301SP is operated in the vertical position (Cutting Head up), it should be turned upside down and the chips and/or other debris removed after each cut has been completed.

NOTE: Tool life may be severely shortened, unless chips and/or other debris that have been deposited on the Cutting Head during the machining operation are removed.

Disassembly of the Model 301SP will void the warranty, except when performed by a TRI TOOL Inc. designated repair technician.

Clean Up



OPERATION

Select the tool bit required to machine the end configuration desired.

CAUTION: The use of dull tool bits or tool bits not manufactured by TRI TOOL Inc. may result in poor performance and may constitute abuse of this machine and therefore voids the TRI TOOL Inc. factory warranty.

General guidelines for selecting a tool bit. Selection of the tool bit should be based on tubing material, tubing size, and how critical is it to have a near burr free end.

A standard entrance angle tool bit is recommended for carbon steel. These tool bits also function well with some stainless steel applications where a near burr free end is not a critical requirement.

A high entrance angle tool bit is recommended for most stainless steels. Generally this is the most suitable edge geometry for about 90% of all the stainless steel tubing applications.

An extra hook angle tool bit is recommended for stainless steels, which are very soft. These stainless steels include materials like 316L, which have been bright hydrogen annealed, vacuum annealed or annealed and Electro-polished. Electro-polished stainless steel has a micro-thin surface, which is high in Cr. and Ni, which makes it very soft, but tough and difficult to cut without a burr.

The M-42 tool bits are for use with the exotic alloys where the high heat resistance is required to avoid burning the cutting edge of the tool bit. M-42 can improve the life expectancy of the tool bit under some conditions on stainless steel. It should be noted that M-42 tool bits are more brittle than the standard M-2 tool bits, therefore there is a much greater risk of damaging the M-42 tool bit when installing the tubing in the Tube Squaring Machine. Loss of tool bits from damaged edges may not offset the improved cutting life that those tool bits promised.

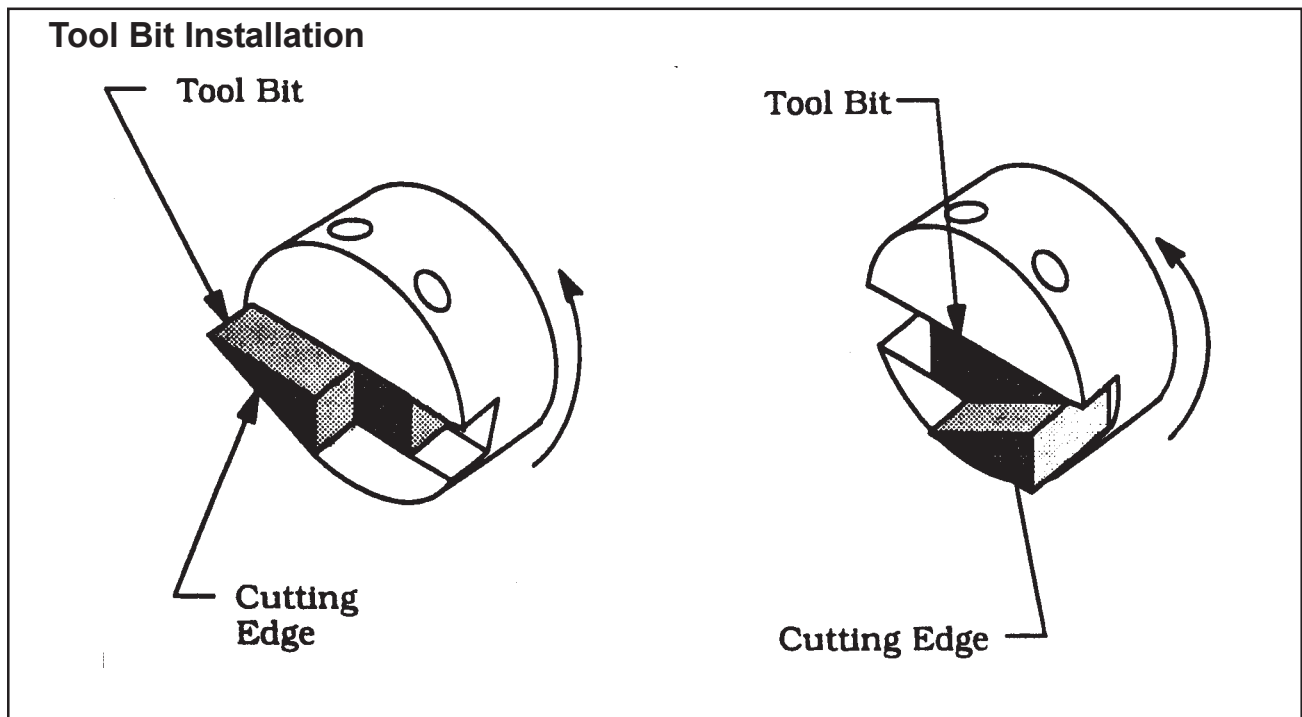
Some of the exotic alloys may require tool bits with both the extra hook angle as well as the M-42 tool steel for heat resistance.

Insert the tool bit into the slot in the Cutting Head.

CAUTION: Ensure that the Model 301SP is disconnected from the power source before installing a tool bit.

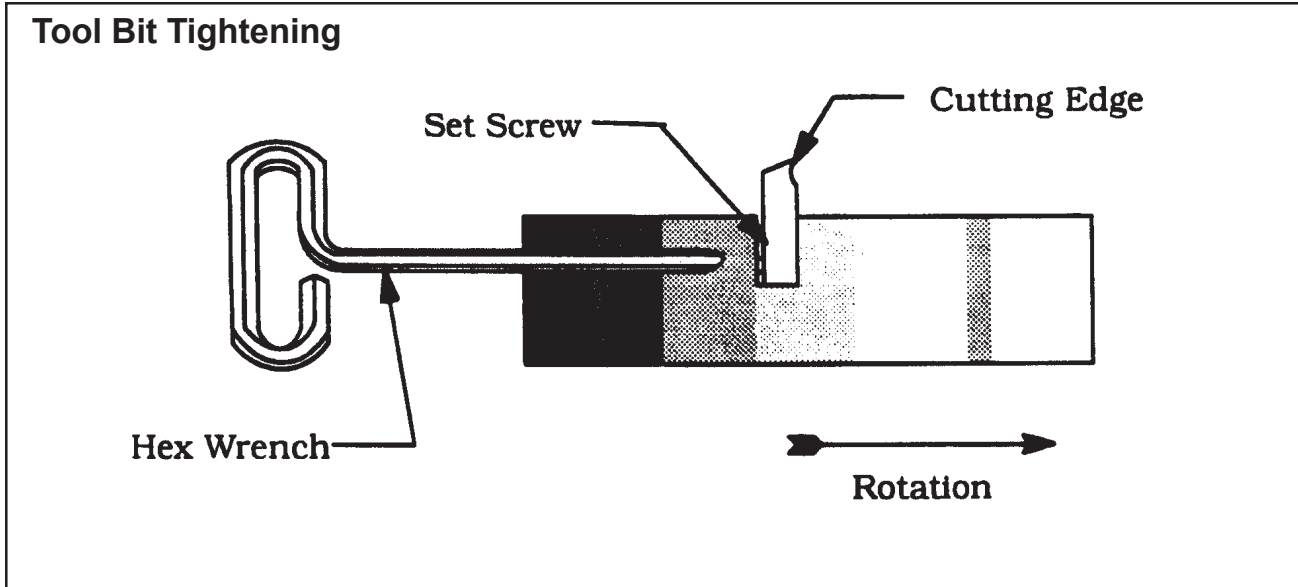
The normal position for the tool bit is illustrated below. This position is used for .50" (12.7 mm) and smaller diameter tubing. This is the designed working position of the tool bit and will leave virtually no burr with standard tubing. When working with Electro-polished stainless steel tubing, slow cutting speeds must be used to minimize the ID burr.

The tool bit may be reversed as illustrated. This reversed position may be used for tubing with an ID greater than .50" (12.7 mm). With the extreme shear cutting action, the burr on the ID will be virtually eliminated.



NOTE: Minimum burr may be obtained with a slow RPM and a slow feed, which will cut a continuous chip.

CAUTION: The cutting edge of the tool bit must be located on the radial centerline. Do NOT install the tool bit backwards.



Tighten the set screws to secure the tool bit to the Cutting Head.

Select the proper size Saddle for the outside diameter of the tube or pipe to be squared.

NOTE: The size of the Saddle is determined by the outside diameter of the tube or pipe to be squared.

CAUTION: Do not drop the Saddle. Always place a hand under the Saddle when installing or removing it from the Model 301SP.

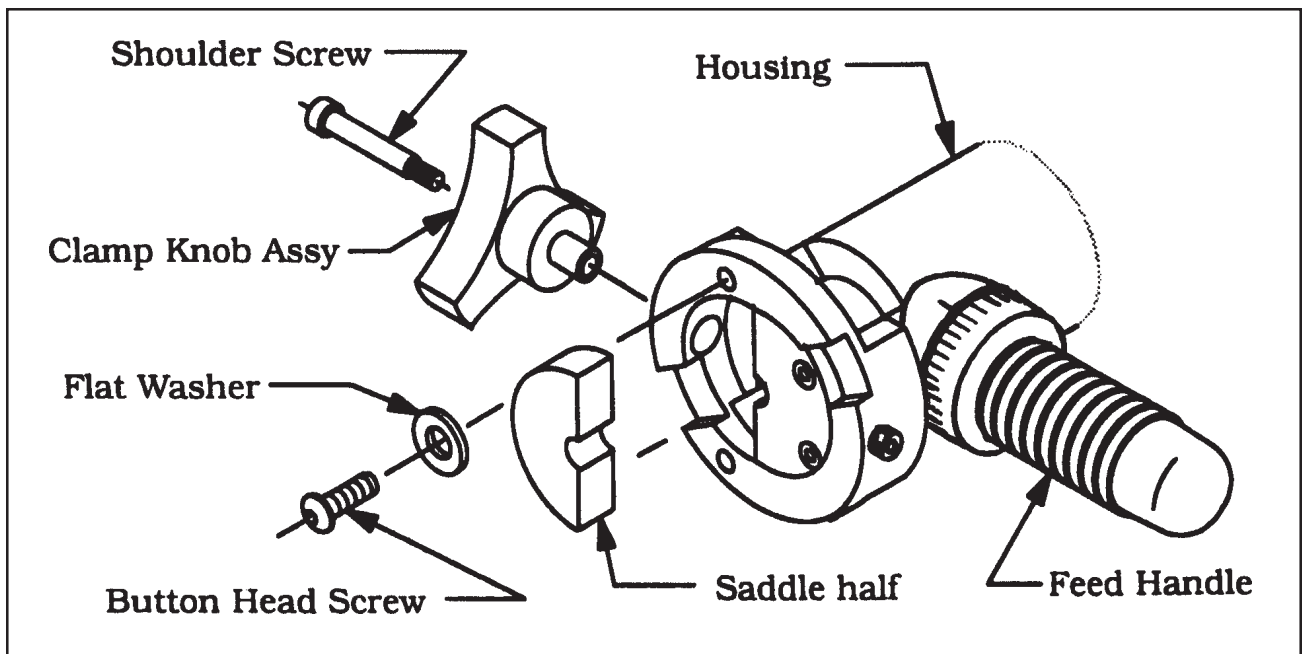
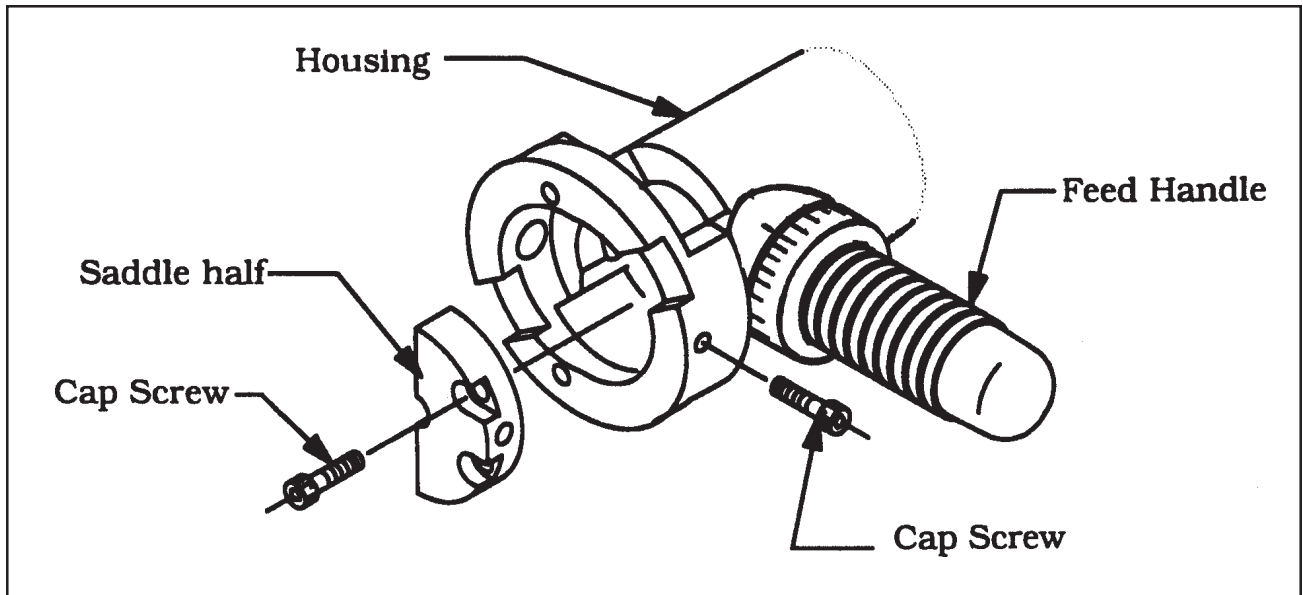
INSTALLING A SADDLE IN THE MODEL 301SP

Select a Saddle for the desired diameter of the tubing to be worked. Place the Saddle half with the (2) two clearance holes in it in the front of the Housing. Thread in the (2) Cap Screws that hold the Saddle half into the front of the Housing. Thread the third Cap Screw into the side of the Housing and into the Saddle half. Tighten all (3) three Cap Screws which retain the Saddle half in the front of the Housing.

Place the other Saddle half in the Housing. Run the Clamp Knob Assy in until it lightly presses the second Saddle half against the first Saddle half. Thread the Shoulder Screw in through the Clamp Knob Assy into the upper half Saddle. Retract the second Saddle half by turning the clamp Knob Assy. Install the (2) two Button Head Screws with the (2) two Flat Washers into the front of the Housing.

Insert the tubing to be worked on into the front of the Model 301SP. Move the tube or pipe approximately 1/16" (1.6 mm) from the tool bit.

Model 301SP Tube Squaring Machine



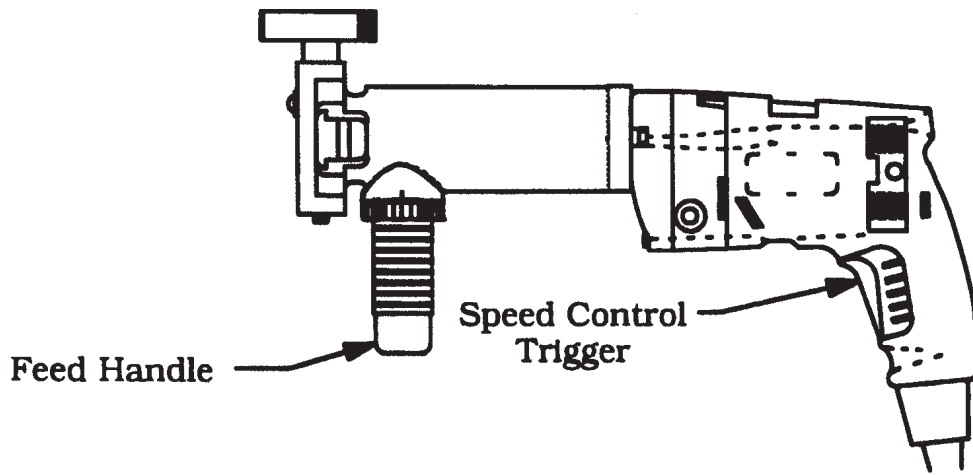
CAUTION: Do not let the tool bit touch the tube or pipe. To do so will cause damage to the tool bit or the Tube Squaring Machine when power is applied.

Tighten the Clamp Knob Assy to tighten the tube in the Saddle.

Connect the Model 301SP to the power source and pull the Trigger to start rotation of the Cutting Head.

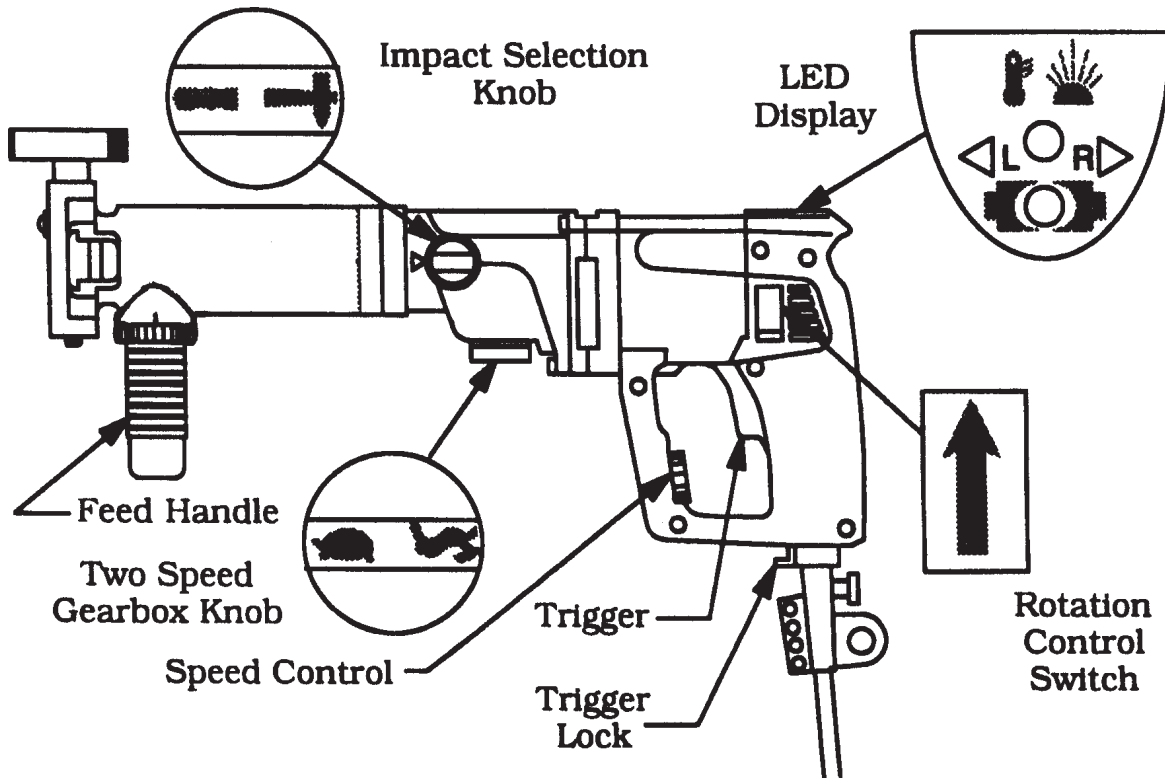
The Feed Handle is used to feed the Shaft with the tool bit into the work.

Milwaukee Motor
Location of various controls



If the Machine has a Milwaukee Motor then the Speed control is built into the Trigger and is used to adjust the cutting speed.

Metabo Motor
Location of various controls



If the Machine has a Metabo Motor then the Speed Control located in the Trigger Guard is used to adjust the cutting speed.

CAUTION: If the Machine has a Metabo Motor then the Two Speed Gearbox Knob should be in the position shown. If the Knob does not snap into the desired position, turn the chuck by hand slightly until the knob snaps into place as shown.

CAUTION: If the Machine has a Metabo Motor then the Impact Knob should be in the position shown.

CAUTION: If the Machine has a Metabo Motor then the Rotation Control Switch should be in the position shown. The 'R' LED on the LED Display should be lit.

NOTE: Refer to Cutting Speeds and Feeds Section.

In order to obtain a minimum burr tube end, it is essential that heat build up be avoided. When either the tube or the tool bit get hot, then the tube material starts to flow or push away from the tool bit edge in the form of a burr, instead of being cut cleanly with a minimum burr. Avoid the conditions which generate excessive heat by keeping the RPM's low; excessive cutting speed will generate unwanted heat. Keep the chip curling loose by avoiding an excessive depth of cut. A dull tool bit will not do the job right, so be sure that there is a sharp tool bit mounted in the Machine.

Rotate the Feed Handle clockwise to bring the Cutting Head and tube closer together. The actual machining operation will begin when the tool bit contacts the tube or pipe.

If the tube end is not square to the tube axis, the tool bit will contact only a small segment of the tube during each revolution. To avoid tool bit damage, the feed rate should be very slow until the tool bit is contacting the tube continually during at least one revolution.

Adjust cutting RPM with the Speed Control Trigger is just above the required cutting speed as the tool bit enters the cut. The tool will slow down slightly as the cutting load increases, apply additional power to hold the cutting speed.

Observe the chip as the Machine is cutting. The ideal chip will come off in a loose pig tail spiral. A chip that is coming off in a tight straight spiral normally indicates that the feed is too heavy. A straight or slightly curled chip normally indicates that the feed is too light. Back off the feed as required to break the chips and let them fall away.

If a significant amount of stock must be removed, occasionally back off out of the cut and let the tool bit spin free in the air to cool.

Continue rotating the Feed Handle clockwise until the end of the pipe is completely machined.

CAUTION: Be careful not to let the tool bit cut into the Saddle or the Saddle Adapter.

Discontinue feed and allow the Cutting Head to rotate one time for stainless steel and up to three times for other materials to improve the finish of the prep surface. Never let a tool bit 'rub' the surface of a stainless steel tube without cutting. This will work harden the material and it will be difficult for the tool bit to get under the material in order to finish the cut. This will also cause excessive tool bit wear.

For precision depth of cutting, engage the tool bit into the end of the tube and use the indicator sleeve located on the Feed Handle to check the depth of the cut. The graduations are in .005" increments on one half of the sleeve and .13 mm increments on the other half.

Rotate the Feed Handle counterclockwise to separate the Cutting Head and the tube.

In order to stop the Cutting Head rotation, release the Trigger.

Continue to rotate the Feed Handle counterclockwise until the Cutting Head clears the tube or pipe by at least 1/8" (3.2 mm) or more.

Loosen the Clamp Knob Assy to release the tube or pipe.

CUTTING SPEEDS AND FEEDS

Cutting Speeds for Tube Squaring			
Outside Diameter of the tube		RPM Range	Time per Head Revolution
.25"	6.4 mm	30 to 60	1 to 2 seconds
.50"	12.7 mm	20 to 40	1.5 to 3 seconds
.75"	19.1 mm	15 to 30	2 to 4 seconds
1.00"	25.4 mm	15 to 25	2.4 to 4 seconds

BASIC FEED RECOMMENDATIONS

Use very light feed for initial facing or until a continuous cut is established.

This is very important for longer tool bit life when cutting through flame cut or out-of-round pipe ends.

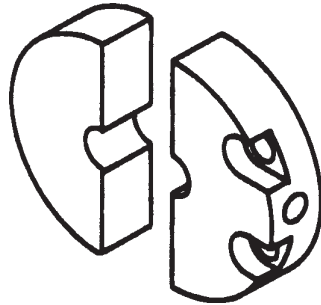
Use adequate feed, .003" to .006" (.08 mm to .15 mm) per revolution thereafter, to establish a continuous chip cut. If the feed is too light, only light stringer chips will be removed. If the feed is too heavy, the drive will start to overload and the chip will start to have a rough or torn appearance.

Stainless steel, which work hardens, must be worked with a heavy enough feed to stay under the work hardened surface (.003" to .006" or .08 mm to .15 mm feed) Never allow the tool bit to burnish the surface.

Reduced feeds and speeds will normally minimize chatter problems.

SADDLE SETS

**Standard Saddles
(Material - Stainless Steel)**



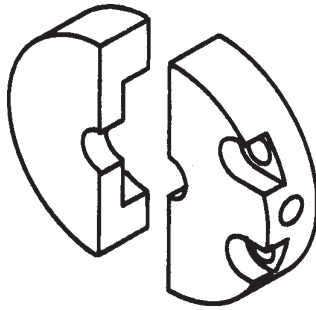
Standard Saddle Sizes				
Pipe Size	Fraction	Decimal	Metric	Saddle P/N
	1/8"	.125"	3.18 mm	67-3635
	5/32"	.156"	3.96 mm	67-3636
		.158"	4.00 mm	67-3637
	3/16"	.188"	4.78 mm	67-3638
		.197"	5.00 mm	67-3701
		.218"	5.54 mm	67-3639
		.236"	6.00 mm	67-3702
	1/4"	.250"	6.35 mm	67-3640
		.276"	7.00 mm	67-3641
	9/32"	.281"	7.14 mm	67-3642
	5/16"	.313"	7.95 mm	67-3643
		.315"	8.00 mm	67-3644
	11/32"	.344"	8.74 mm	67-3645
		.354"	9.00 mm	67-3646
		.359"	9.13 mm	67-3647
		.365"	9.27 mm	67-3648

Model 301SP Tube Squaring Machine

Standard Saddle Sizes, Continued				
Pipe Size	Fraction	Decimal	Metric	Saddle P/N
	3/8"	.375"	9.53 mm	67-3649
		.391"	9.92 mm	67-3650
		.394"	10.00 mm	67-3651
		.400"	10.16 mm	67-3652
1/8"	13/32"	.406"	10.31 mm	67-3653
		.413"	10.50 mm	67-3654
		.422"	10.72 mm	67-3655
		.430"	10.92 mm	67-3656
		.433"	11.00 mm	67-3657
	7/16"	.438"	11.13 mm	67-3658
	15/32"	.469"	11.91 mm	67-3659
		.472"	12.00 mm	67-3660
		.489"	12.42 mm	67-3661
	1/2"	.500"	12.70 mm	67-3662
		.512"	13.00 mm	67-3663
	17/32"	.531"	13.50 mm	67-3664
1/4"		.540"	13.72 mm	67-3665
		.543"	13.80 mm	67-3666
		.547"	13.89 mm	67-3667
		.551"	14.00 mm	67-3668
	9/16"	.563"	14.30 mm	67-3669
		.591"	15.00 mm	67-3670
	19/32"	.594"	15.08 mm	67-3671
		.602"	15.29 mm	67-3672
	5/8"	.625"	15.88 mm	67-3673
		.630"	16.00 mm	67-3674
		.641"	16.27 mm	67-3675

Standard Saddle Sizes, Continued				
Pipe Size	Fraction	Decimal	Metric	Saddle P/N
	21/32"	.656"	16.66 mm	67-3676
		.669"	17.00 mm	67-3677
3/8"		.675"	17.15 mm	67-3678
		.677"	17.20 mm	67-3679
		.681"	17.30 mm	67-3680
	11/16"	.688"	17.48 mm	67-3681
		.709"	18.00 mm	67-3682
	23/32"	.718"	18.24 mm	67-3683
	3/4"	.750"	19.05 mm	67-3684
	25/32"	.781"	19.84 mm	67-3685
		.787"	20.00 mm	67-3686
		.790"	20.07 mm	67-3687
	13/16"	.813"	20.65 mm	67-3688
1/2"		.840"	21.34 mm	67-3689
	27/32"	.844"	21.44 mm	67-3690
		.854"	21.70 mm	67-3691
		.859"	21.83 mm	67-3692
		.866"	22.00 mm	67-3693
		.875"	22.23 mm	67-3694
	29/32"	.906"	23.00 mm	67-3695
	15/16"	.938"	23.83 mm	67-3696
	31/32"	.969"	24.61 mm	67-3697
		.984"	25.00 mm	67-3698
	1"	1.000"	25.40 mm	67-3699
3/4"		1.050"	26.67 mm	67-3700

**Short Perch Saddles
(Material: Stainless Steel)**

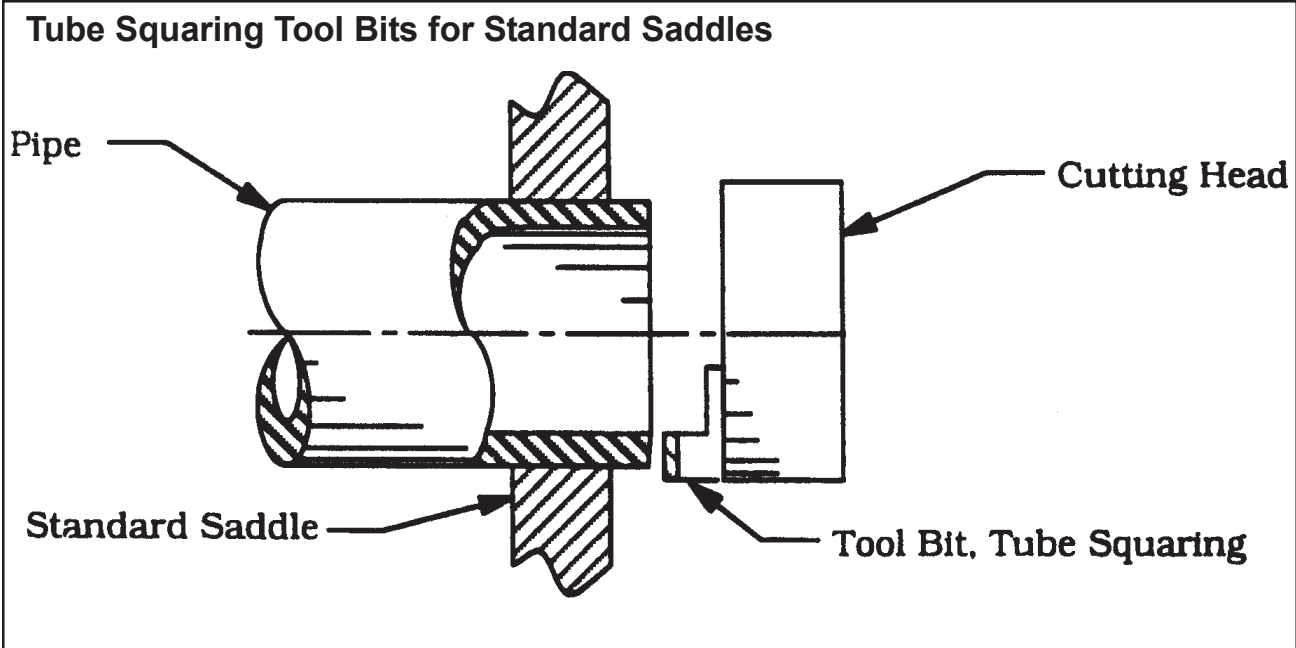


Short Perch Saddle Sizes				
Pipe Size	Fraction	Decimal	Metric	Saddle P/N
	1/8"	.125"	3.18 mm	67-3705
	5/32"	.156"	3.96 mm	67-3706
		.158"	4.00 mm	67-3707
	3/16"	.188"	4.78 mm	67-3708
		.197"	5.00 mm	67-3771
		.218"	5.54 mm	67-3709
		.236"	6.00 mm	67-3772
	1/4"	.250"	6.35 mm	67-3710
		.276"	7.00 mm	67-3711
	9/32"	.281"	7.14 mm	67-3712
	5/16"	.313"	7.95 mm	67-3713
		.315"	8.00 mm	67-3714
	11/32"	.344"	8.74 mm	67-3715
		.354"	9.00 mm	67-3716
		.359"	9.13 mm	67-3717
		.365"	9.27 mm	67-3718
	3/8"	.375"	9.53 mm	67-3719
		.391"	9.92 mm	67-3720
		.394"	10.00 mm	67-3721

Short Perch Saddle Sizes, Continued				
Pipe Size	Fraction	Decimal	Metric	Saddle P/N
		.400"	10.16 mm	67-3722
1/8"	13/32"	.406"	10.31 mm	67-3723
		.413"	10.50mm	67-3724
		.422"	10.72 mm	67-3725
		.430"	10.92 mm	67-3726
		.433"	11.00 mm	67-3727
	7/16"	.438"	11.13 mm	67-3728
	15/32"	.469"	11.91 mm	67-3729
		.472"	12.00 mm	67-3730
		.489"	12.42 mm	67-3731
	1/2"	.500"	12.70 mm	67-3732
		.512"	13.00 mm	67-3733
	17/32"	.531"	13.50 mm	67-3734
1/4"		.540"	13.72 mm	67-3735
		.543"	13.80 mm	67-3736
		.547"	13.89 mm	67-3737
		.551"	14.00 mm	67-3738
	9/16"	.563"	14.30 mm	67-3739
		.591"	15.00 mm	67-3740
	19/32"	.594"	15.08 mm	67-3741
		.602"	15.29 mm	67-3742
	5/8"	.625"	15.88 mm	67-3743
		.630"	16.00 mm	67-3744
		.641"	16.27 mm	67-3745
	21/32"	.656"	16.66 mm	67-3746
		.669"	17.00 mm	67-3747
3/8"		.675"	17.15 mm	67-3748

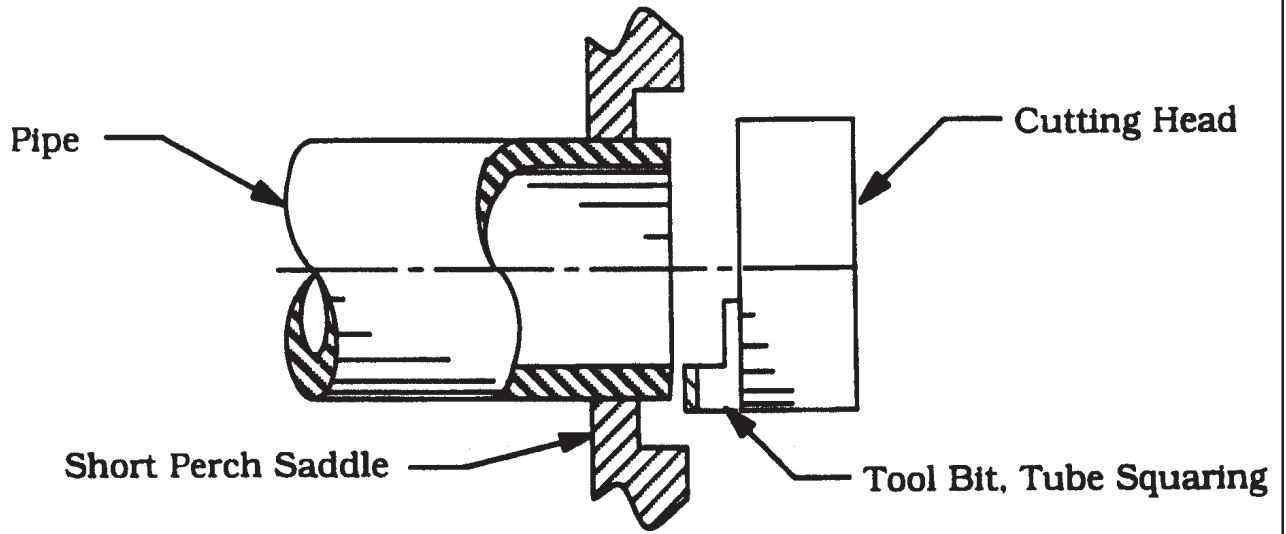
Short Perch Saddle Sizes, Continued				
Pipe Size	Fraction	Decimal	Metric	Saddle P/N
		.677"	17.20 mm	67-3749
		.681"	17.30 mm	67-3750
	11/16"	.688"	17.48 mm	67-3751
		.709"	18.00 mm	67-3752
	23/32"	.718"	18.24 mm	67-3753
	3/4"	.750"	19.05 mm	67-3754
	25/32"	.781"	19.84 mm	67-3755
		.787"	20.00 mm	67-3756
		.790"	20.07 mm	67-3757
	13/16"	.813"	20.65 mm	67-3758
1/2"		.840"	21.34 mm	67-3759
	27/32"	.844"	21.44 mm	67-3760
		.854"	21.70 mm	67-3761
		.859"	21.83 mm	67-3762
		.866"	22.00 mm	67-3763
	7/8"	.875"	22.23 mm	67-3764
	29/32"	.906"	23.00 mm	67-3765
	15/16"	.938"	23.83 mm	67-3766
	31/32"	.969"	24.61 mm	67-3767
		.984"	25.00 mm	67-3768
	1"	1.000"	25.40 mm	67-3769
3/4"		1.050"	26.67 mm	67-3770

TOOL BITS



Tube Squaring Tool Bits for Standard Saddles				
Range	Max Wall Thickness	Pipe or Tube Material	Tool Bit Height	Squaring Tool Bit P/N
.125" OD thru 1.05" OD (3.2 mm OD thru 26.7 mm OD)	.125" (3.2 mm)	CS SS 316L SS	.750" (16.1 mm)	Durabit 1

Tube Squaring Tool Bits for Short Perch Saddles



Tube Squaring Tool Bits for Short Perch Saddles					
Range	Max Wall Thickness	Pipe or Tube Material	Tool Bit Height	Tool Bit Material	Squaring Tool Bit P/N
.125" OD thru 1.05" OD (3.2 mm OD thru 26.7 mm OD)	.125" (3.2 mm)	CS	1.160" (29.5 mm)		Durabit 3
		SS		M2	99-5176
		316L		M2	99-0725
		SS			

TROUBLE SHOOTING

Problem: The Tool Bit Chatters

Probable causes:

- The tool bit is loose or overextended.
- The tool bit is damaged.
- The tool holder is too loose in the slides.
- The cutting speed is too fast.
- The clamping pads are loose on the pipe or tube.
- Cutting fluid is required.
- The main bearing pre-load is loose.

Problem: There is excessive Tool Bit wear

Probable causes:

- The pipe or tube material is too hard or abrasive.
- The cutting speed is too fast.
- Cutting fluid is required.
- A dull Tool Bit is causing surface hardening conditions (Stainless pipe or tubing).
- There is scale or other foreign matter on the pipe or tube, which is dulling the tool bit at the start of the cut.
- The tool bit is incorrect for the material being cut.

Problem: The surface finish is rough

Probable causes:

- The tool bit is dull, chipped, etc.
- Metal build-up on the cutting edge of the tool bit is creating a false cutting edge.
- Cutting fluid is required.

Problem: The tool holder is not feeding

Probable causes:

- The feed pin is broken or out of position.
- The feed sprocket shear pin is broken.
- The feed screw is stripped.
- The feed nut is stripped.
- The slide rails are too tight.

Problem: There is a loss of air power

Probable causes:

- The air supply pressure is too low.
- The air filter is plugged.
- The air line size is insufficient.
- The air line is too long.

Problem: There is a loss of hydraulic power

Probable causes:

- The hydraulic supply pressure is too low.
- The hydraulic filter is plugged.
- The hydraulic line size is insufficient.
- The hydraulic line is too long.

Problem: The tool bit will not reach the work

Probable causes:

- Incorrect tool blocks are installed for the size of the pipe or tube being worked on.
- Incorrect tool bit is installed.

Problem: The hydraulic motor will not start

Probable causes:

- The hydraulic power supply is shut off.
- The hydraulic motor is damaged and will not run free.

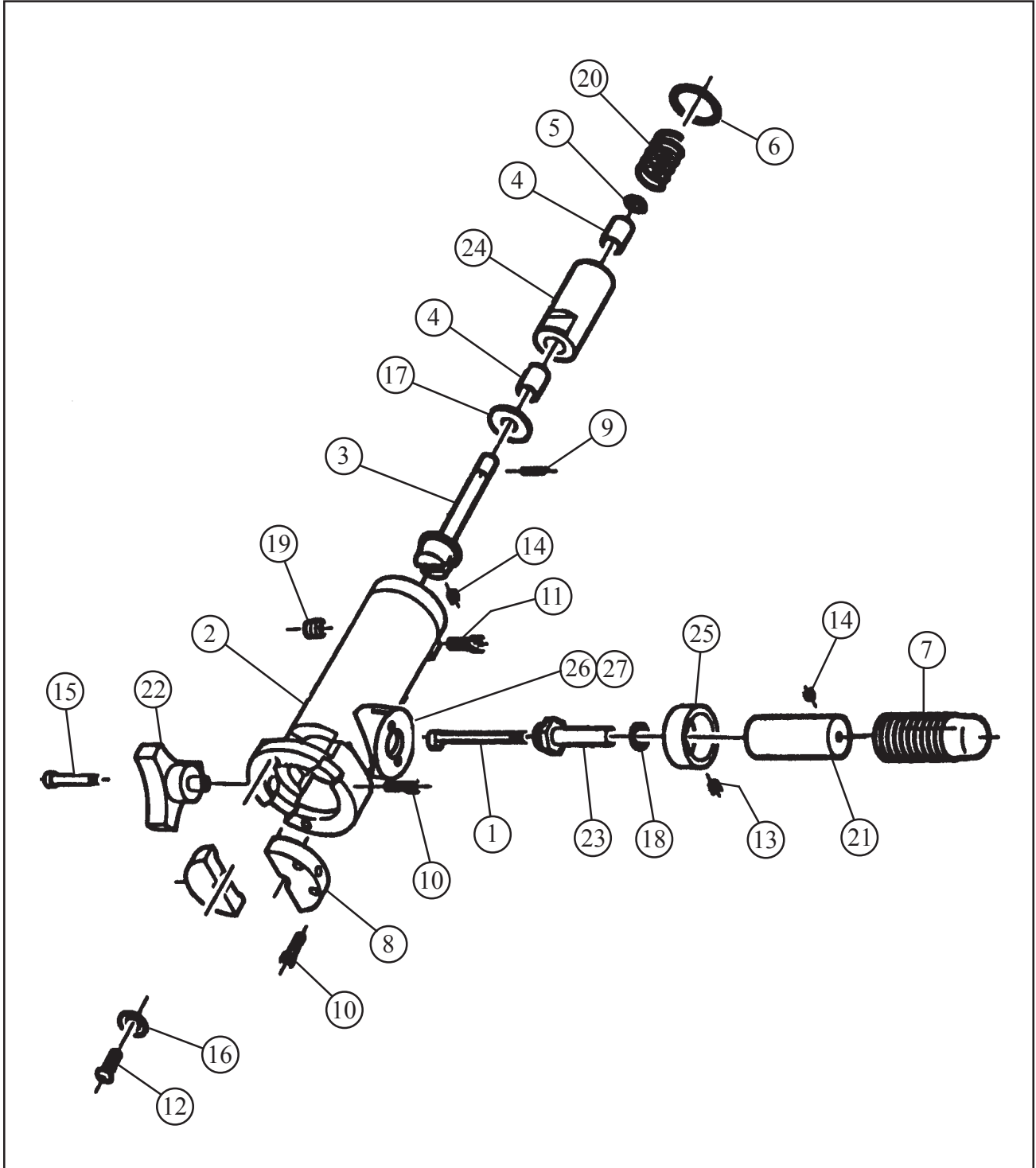
ACCESSORIES

The following accessories are recommended for use with the Model 301SP Tube Squaring Machine and are available from TRI TOOL INC:

1. Electric Foot Pedal
2. Saddles
3. Tool Bits
4. Bench Top Stand (P/N 60-0022)
5. Portable Air Filter (P/N 75-0115)
A Filter/Regulator/Lubricator (FRL) is required to protect the warranty on all TRI TOOL INC air driven tools.
6. Battery Charger Assy:
110V Standard (30-2615)
220V Optional (30-2614)

ILLUSTRATED PARTS BREAKDOWN

MODEL 301SP

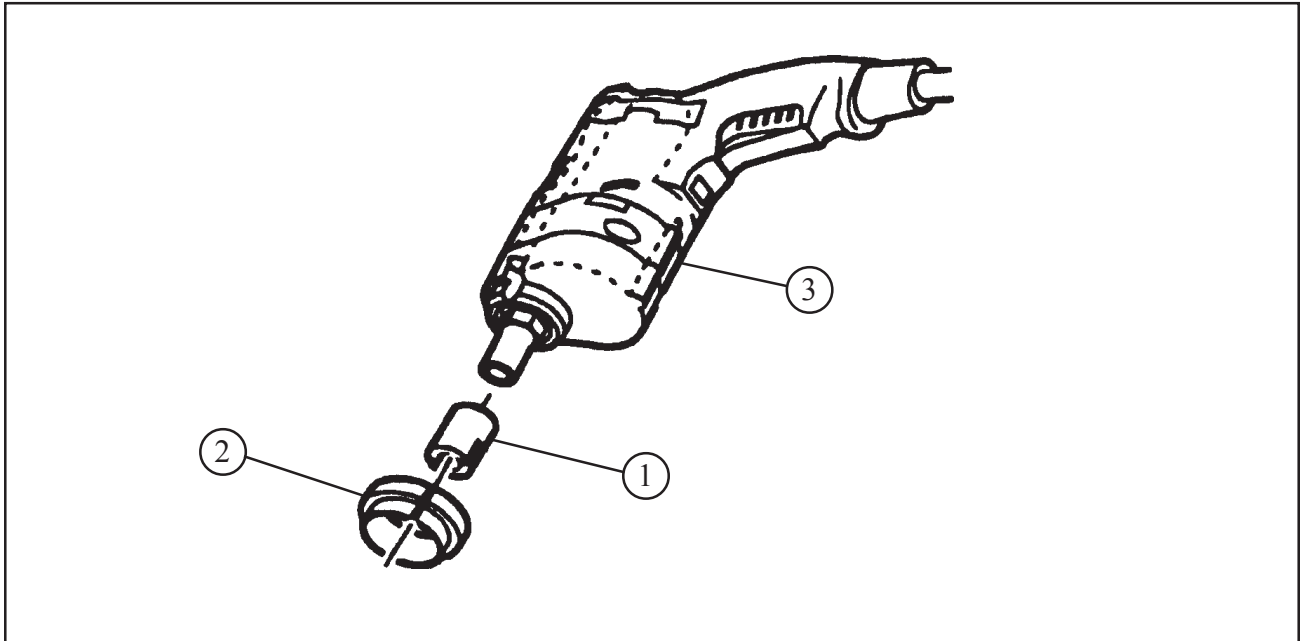


TRI TOOL INC.

Parts List, Model 301SP

Item No.	Part No.	Description	Qty
1	14-0006	SHAFT, ASSY	1
2	19-0736	HOUSING	1
3	20-0016	SHAFT	1
4	29-0028	BEARING, ROLLER	2
5	30-0062	RING, RETAINING, EXTERNAL, 1/2" DIA.	1
6	30-0063	RING, RETAINING, EXTERNAL, 1 3/8" DIA.	1
7	30-2278	GRIP	1
8		SADDLE	REF
9	32-0026	PIN, ROLL, 1/8" DIA. X 3/4"	1
10	32-0030	SCREW, CAP, #10-24 X 3/4"	3
11	33-0041	SCREW, CAP, 1/4-20 X 7/8"	1
12	33-0285	SCREW, 1/4-20 X 1/2", BUTTON	2
13	33-0501	SCREW, SET, 1/4-20 X 3/8", CUP PT	1
14	33-0499	SCREW, SET, 1/4-20 X 1/4"	3
15	33-1924	SCREW, SHOULDER, 1/4" DIA. X 1 1/2", 5/32" HEX	1
16	34-0304	WASHER, FLAT, 1/4" ID	2
17	34-0059	WASHER, FLAT, DELRIN	1
18	34-0060	WASHER, FLAT, DELRIN	1
19	35-0045	NUT, INT. HEX, 1/2-20	1
20	40-0035	SPRING, COMPRESSION	1
21	41-0018	HANDLE	1
22	42-0146	KNOB ASSY., ADJUST	1
23	46-0014	SLEEVE	1
24	46-0016	SLEEVE	1
25	46-0480	SLEEVE, INDICATOR	1
26	27-0614	ADAPTOR, INDICATOR	1
27	33-0013	SCREW, CAP, #6-32 X 1/2"	2

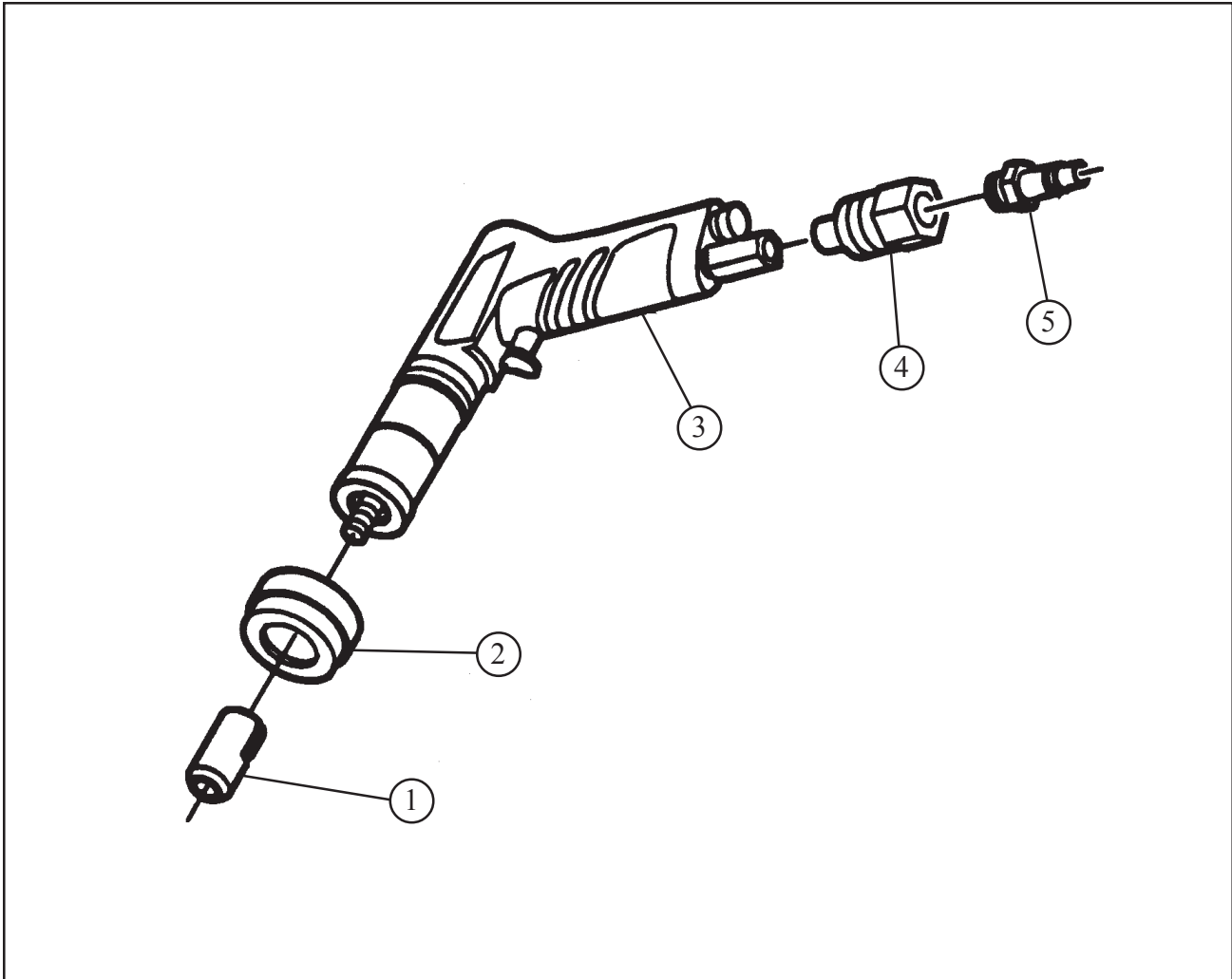
ELECTRIC MOTOR ASSY.



Parts List, Electric Motor Assembly

Item No.	Part No.	Description	Qty
	58-0004	MOTOR ASSY, ELECTRIC, 110 VAC	1
1	27-0018	ADAPTER	1
3	58-0003	MOTOR, ELECTRIC, 110 VAC (Milwaukee)	1
	58-0064	MOTOR ASSY, ELECTRIC, 110 VAC	1
1	27-0018	ADAPTER	1
2	27-0060	ADAPTER	1
3	58-0038	MOTOR, ELECTRIC, 110 VAC (Bosch)	1
	58-0109	MOTOR, ASSY, ELECTRIC, 110 VAC	1
1	27-0018	ADAPTER	1
2	27-0060	ADAPTER	1
3	58-0103	MOTOR, ELECTRIC, 110 VAC (Metabo)	1
Not Shown:	48-0480	SPACER	1
	58-0063	MOTOR ASSY, ELECTRIC, 220 VAC	1
1	27-0018	ADAPTER	1
2	27-0060	ADAPTER	1
3	58-0039	MOTOR, ELECTRIC, 220 VAC (Bosch)	1

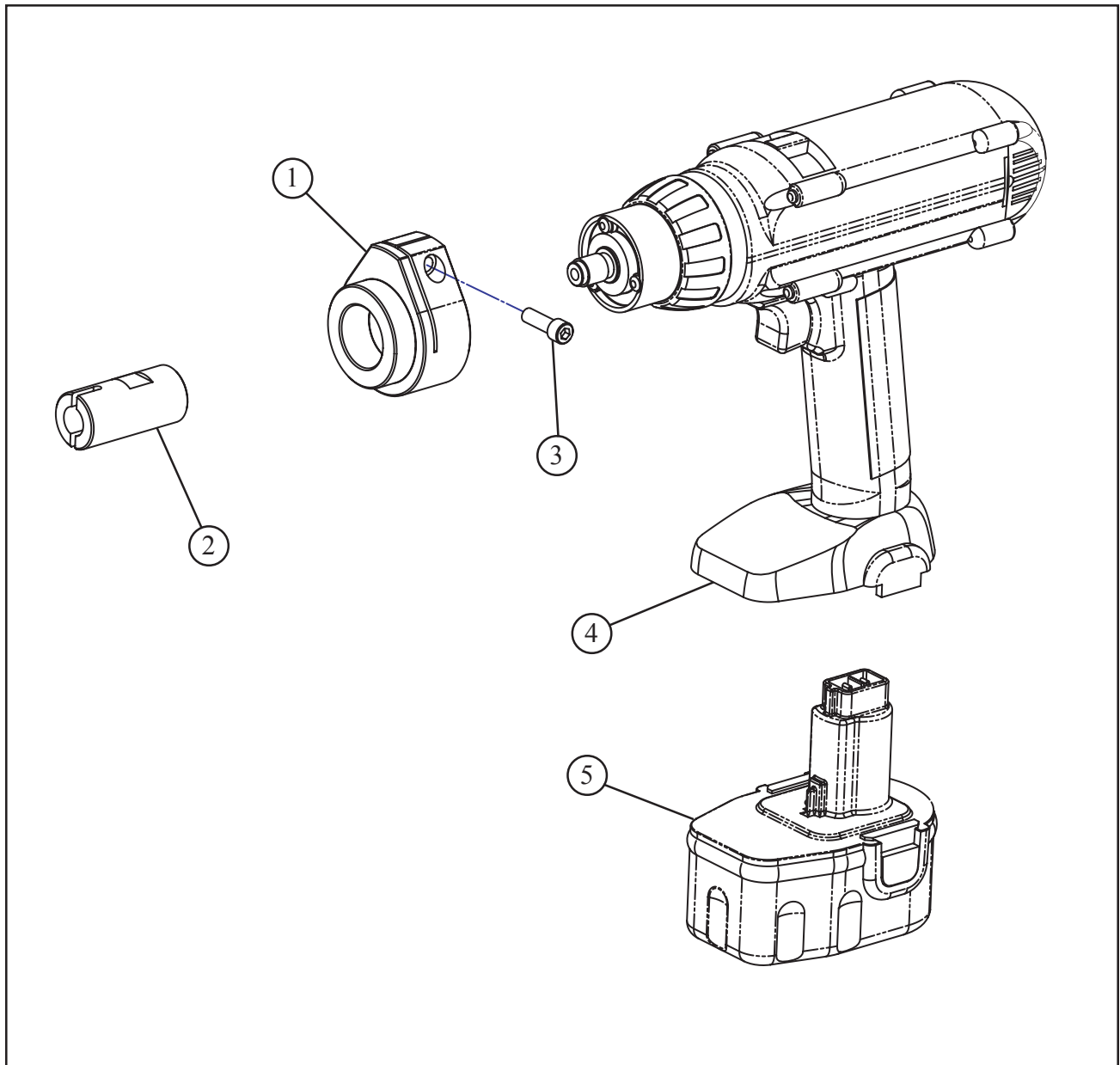
AIR MOTOR ASSEMBLY



Parts List, Motor Assy, Air (P/N 57-0199)

Item No.	Part No.	Description	Qty
	57-0199	AIR MOTOR ASSY	1
1	27-0019	ADAPTER	1
2	46-0377	SLEEVE	1
3	57-0198	AIR MOTOR	1
4	53-0045	VALVE, FLOW CONTROL	1
5	54-0149	COUPLING, MALE, QD	1

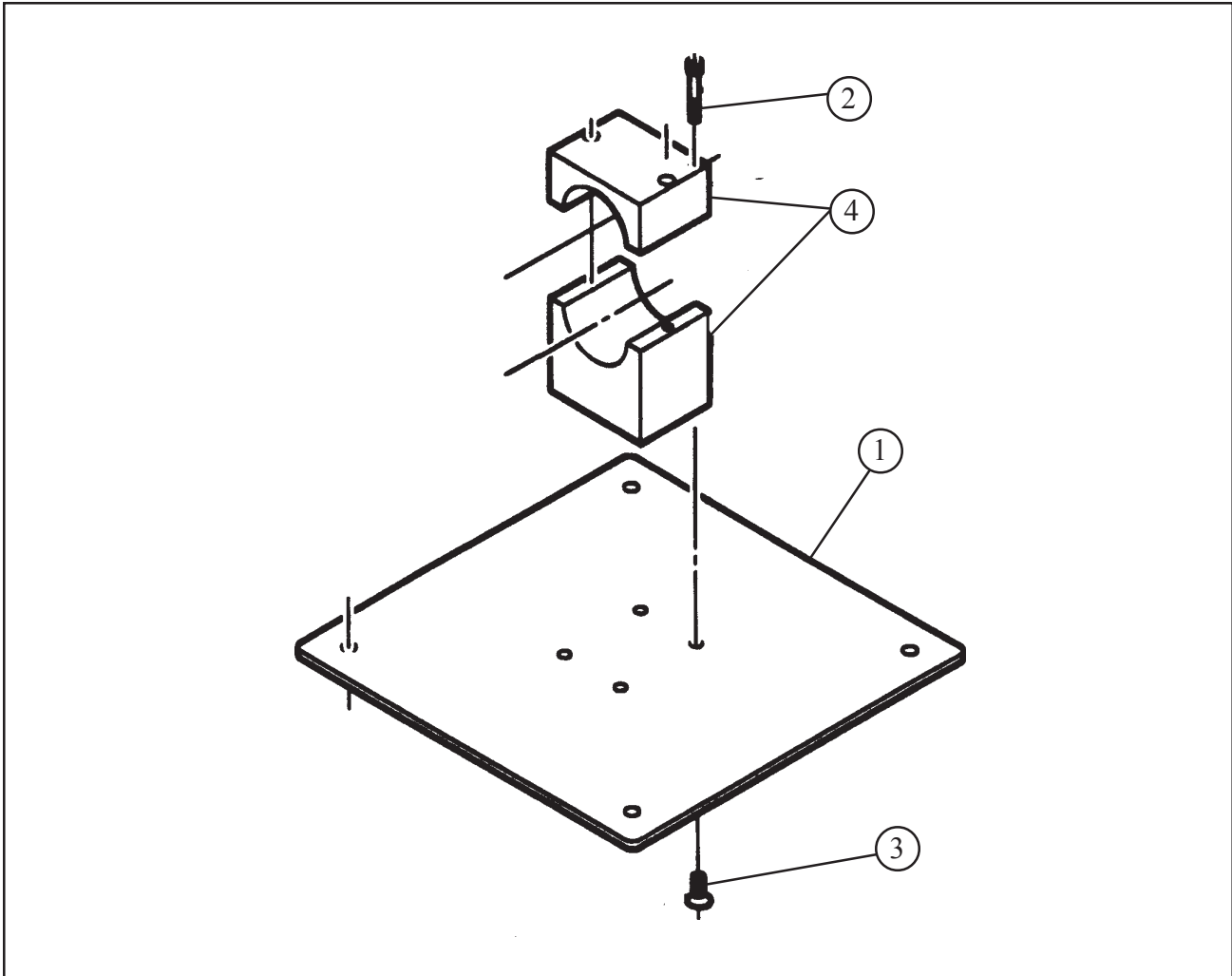
BATTERY POWERED, 14.4V, DRIVE KIT



Parts List, Drive Kit, Battery Powered, 14.4V (P/N 58-0162)

Item No.	Part No.	Description	Qty
1	19-0995	HOUSING, FRONT	1
2	27-0497	ADAPTER	1
3	33-0040	SCREW, CAP, 1/4-20 X 3/4"	1
4	58-0161	MOTOR, CORDLESS, 14.4 VOLT	1
5	30-2350	BATTERY, 14.4v (Dewalt)	1

MOUNTING BASE ASSEMBLY



Parts List, Mounting Base Assembly (P/N 60-0022)

Item No.	Part No.	Description	Qty
1	24-0326	PLATE, RETAINING	1
2	33-0045	SCREW, CAP, 1/4-20 x 1 3/4"	2
3	33-0369	SCREW, FLAT, 5/16-18 X 3/4"	4
4	48-0173	BLOCK, RETAINING	1

Not shown:

36-0007	WRENCH, L, 5/32" HEX	1
36-0008	WRENCH, L, 3/16" HEX	1
36-0010	WRENCH, L, 1/4" HEX	1
36-0018	WRENCH, T, 1/8" HEX	1

DEWALT SAFETY INSTRUCTIONS

The DeWALT Cordless Drill/Driver comes with an 'Instruction Manual' and should be referenced for all safety and operating procedures.