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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.

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 are 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 601SBCM and 602SBCM Low-Profile Clamshell is a split frame pipe lathe designed for severing and beveling in-line pipe with a minimum range of 0" pipe through 1" pipe for the 601SBCM and 1" pipe to 2" pipe for the 602SBCM.

Further reference to the Model 601SBCM and the Model 602SBCM will be referred to as Model 600SBCM unless otherwise indicated.

Using standard tool holders the Model 600SBCM may perform the following operations.

- Sever in-line pipe.
- Sever and bevel in-line pipe.
- Sever and double bevel in-line pipe.
- Do socket weld removal.

Design and Operation Features

The easily adjustable precision bearing surfaces pre-load and stabilize the rotating head to provide long life, low maintenance, stability and precision.

The Clamshell splits into two halves for mounting on closed loop systems.

All parts are secured to the two halves, thus avoiding the loss of parts and at the same time providing maximum ease of handling.

The Clamshell is equipped with self-centering clamping collets for quick, easy mounting.

Dual tool blocks with auto-feed sprockets and adjustable slides provide maximum maintainability, life and operator safety, with a minimum of operator training.

The auto-feed sprockets provide .003" (.08mm) of radial feed per revolution of the headstock for a controlled depth of cut.

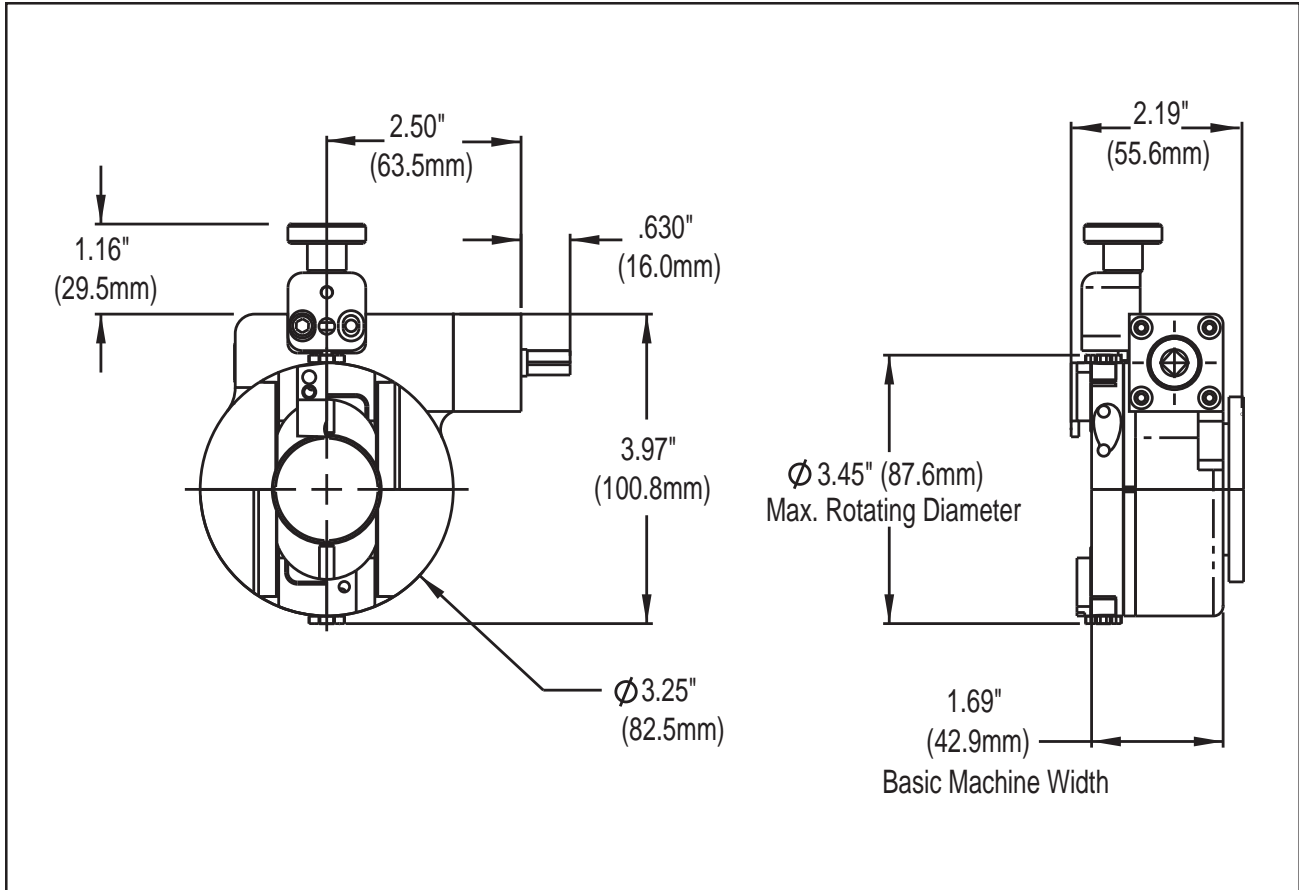
The drive gears and bearing surfaces are covered for operator safety and are shielded to provide protection from dust chips.

The operator's controls are located away from the rotating headstock for operator's safety.

A modular design concept provides quick, easy maintenance and maximum versatility in the drive and tooling options.

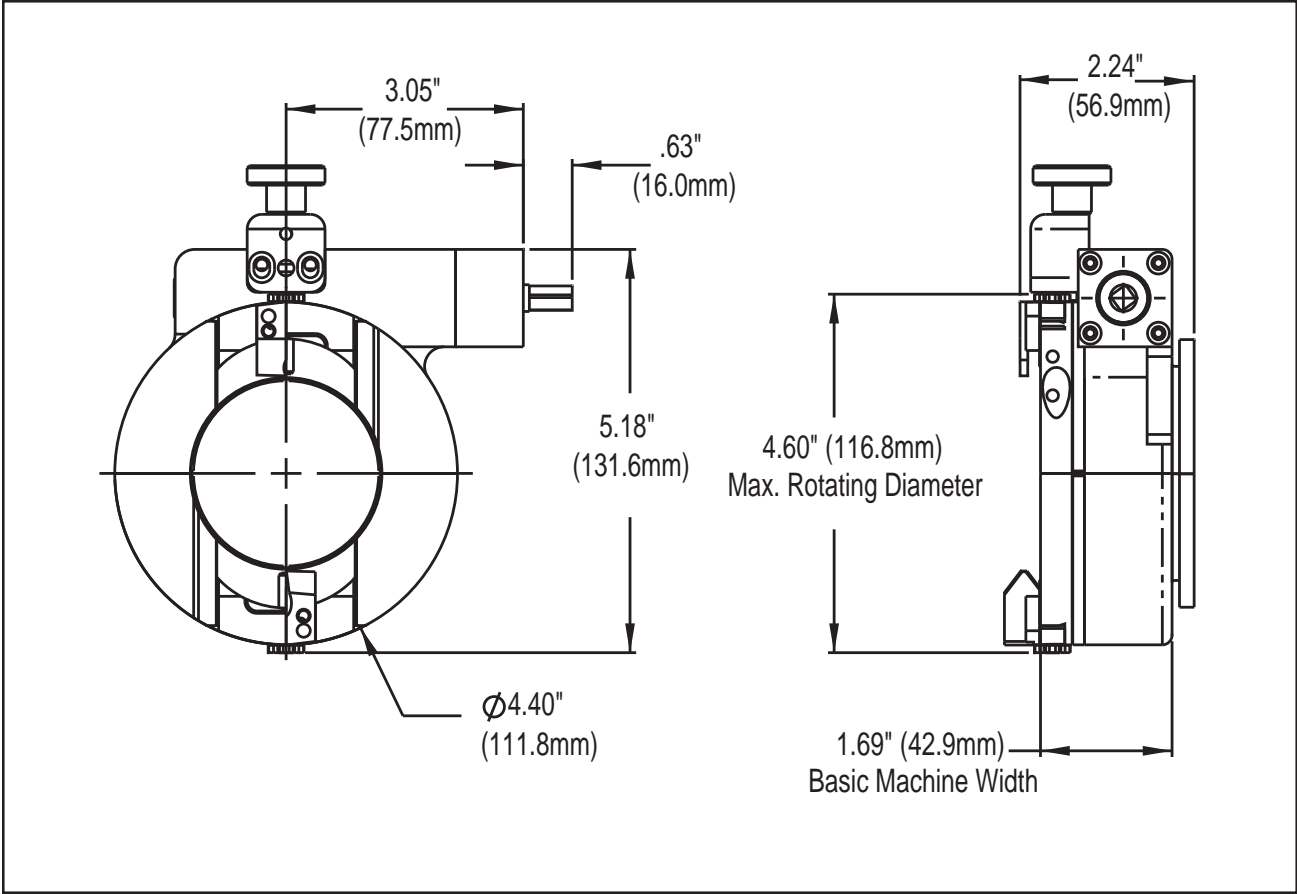
A detachable bayonet type air motor provides maximum handling ease and low axial clearance.

SPECIFICATIONS



601SBCM

Weights:	4 lbs. (1.81kg)
Maximum Rotation Dia:	3.450 (87.6mm)
Axial length:	2.160 (54.9mm)
Main Drive Gear:	Worm Drive
Motor Mount:	Bayonet Type
Clamping:	Collet Type
Range:	0" to 1" Pipe



602SBCM

Weights:	5.9 lbs. (2.68kg)
Maximum Rotation Dia:	4.605 (117.0mm)
Axial length:	2.160 (54.9mm)
Main Drive Gear:	Worm Drive
Motor Mount:	Bayonet Type
Clamping:	Collet Type
Range:	1" to 2" Pipe

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 (90 SSU or lighter).

Air supply for the Model 600SBCM Clamshells with an Air Motor requires an adequate filter/regulator/lubricator (FRL) to be used.

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

If the Clamshell is operated in such a manner that the Tool Block collects debris while cutting, the tool block and the feed screws should be cleaned after each cutting operation.

Recommended Daily Maintenance:

Daily Maintenance should include a visual inspection of all parts for damage due to chips, impact or improper use.

Repair or replace broken or damaged parts as necessary.

Wipe the machine clean of cutting fluids, dirt and grime and then coat it with a light film of oil.

After Every 20 Hours of Actual Operation:

Check the adjustment of the main bearing pre-load.

Drive torque as measured at the drive socket should be 3 to 5 ft.lbs (4 to 7 N.m).

Lubricate the male and female tool block slides and the feed screw.

After Every 40 Hours of Actual Operation:

Thoroughly clean and lubricate main gear, drive gear, male and female tool slides, feed screws and tripper block assembly.

Non-Scheduled Maintenance:

Readjust the main bearing pre-load if the Clamshell generates excessive heat or if the main bearing becomes loose.

Thoroughly clean and check the tool blocks in the event of feed problems.

Storage:

If the Clamshell is to be stored or if it will remain out of service for a significant period of time (30 days or more), it should be thoroughly cleaned, lubricated and sprayed with a rust preventative prior to storage.

Remove the air quick disconnect and spray it with a light weight oil.

Squirt oil into the male quick disconnect.

Reconnect the airline and turn on the air motor for 1 or 2 seconds to disperse oil throughout the vanes and rotor.

OPERATION

Read the operating instructions carefully before attempting to operate the Model 600SBCM Low profile Clamshells.

See section on clamshell configuration for the specific task required.

Do not install the tool bits until the clamshell is installed on the pipe.

Installation of the Clamshell on an In-Line Pipe:

Separate the two halves of the clamshell.

Disengage the air motor by rotating the motor clockwise and removing the air motor from the drive socket.

With a ratchet wrench, rotate the Headstock until the split-lines of the Headstock match the split-lines of the housing.

Unbolt the two halves of the clamshell.

Two locking screws are captured in their holes so that they will not come totally free of the Clamshell.

Separate the clamshell halves.

CAUTION: Do not force open.

Secure the clamshell to the pipe.

Clean the mating surfaces and the ID of the clamshell halves.

Wipe clean the mounting surface of the pipe.

Check to insure that the tool blocks will clear the pipe when the clamshell is mounted.

Close the two halves of the clamshell around the pipe, keeping the main surfaces clean.

Check that the alignment pins have seated the two halves properly.

Bolt the two halves of the clamshell together using the locking screws in the housing and in the Headstock.

Tightening torque should be 5 to 7 ft-lbs (7 to 9 N·m).

Tighten the collet nut with the supplied wrench.

General Machining Sequence:

To set the tool bits, go to paragraph for set-up instructions.

Install the air motor into the drive socket.

NOTE: Check that the air supply filter/regulator/lubricator (FRL) is installed and set properly.

Check for proper alignment of the feed sprockets.

Run the Headstock slowly with the feed pin 'in' to insure that the sprocket is set right. (Do not run at full speed during the first revolution).

NOTE: You will break the feed pin if the feed pin to sprocket alignment is incorrect.

Turn the air motor to full speed by opening the throttle control valve.

NOTE: The air motor working speed will be about one half of the no-load speed.

Engage the feed by pushing the tripper shaft in.

Monitoring the cutting fluid as necessary.

If chips build up so much that they tangle in the clamshell, disengage the feed for 2-3 revolutions to clear the chip.

Then stop the clamshell and remove the chips.

Refer to Machining Procedures section.

When the machine operation is finished, turn off the air motor by closing the throttle control valve.

CAUTION: In-line pipe stores energy.

When the pipe is severed, the pipe may move.

To prevent accidents due to the spring in the pipe system, be sure to secure the pipe on both sides of the sever line in order to prevent differential movement of the pipe ends.

Retract the tool holders so that the tool bit(s) clear the pipe OD.

The tool holders are retracted by rotating the feed sprocket clockwise using the special spanner socket supplied with the clamshell.

Run the air motor until the split-lines of the Headstock and the housing match.

Loosen the collets nut and remove it.

Remove the clamshell from the pipe.

If the clamshell must be split to remove it, be sure that both halves are properly supported.

Mount the tool blocks and tripper block to the clamshell.

Check the adjustment of the sides and mesh of the tripper pin with the feed sprocket.

Select the proper collet.

Install the collet into the clamshell.

Tool Bit Set-Up:

Select the proper tool bit set.

CAUTION: The use of dull tool bits or tool bits not designed 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.

Install the tool bits onto the tool blocks.

Tighten the tool bit retaining screws, and then verify that there is adequate clearance between the tool bits and the pipe by rotating the Headstock by hand.

The leading tool bit should contact the pipe approximately .020" to .040" (.51 mm to 1.02 mm) before the trailing tool bit.

Severing and Single Beveling or Severing and Double Beveling simultaneously:

When the tool bits are within about .040" (1.02 mm) of severing the pipe, disengage the feed pin and let the Headstock rotate two (2) to three (3) times to clear the chip.

Retract the tool holder, which holds the bevel tool bit, be sure that the feed sprocket is aligned properly.

Complete the sever.

After the sever is completed, reposition the bevel tool bit so that it continues cutting until the desired land thickness is obtained.

CUTTING SPEEDS

Use 200 surface inches per minute (5080 surface millimeters per minute) for:

Stainless steels in general when no coolant is allowed, all heavy-wall tube and some chrome/molybdenum steels.

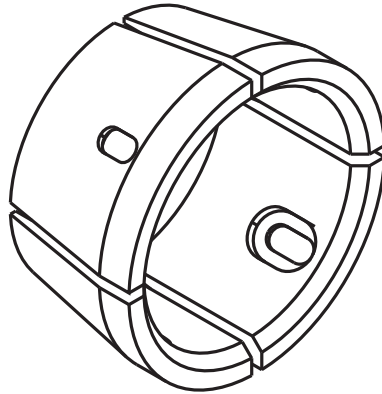
Use 250 surface inches per minute (6350 surface millimeters per minute) for:

Mild steels and some thin-wall stainless steels when coolants are permitted and applied.

Use 300 surface inches per minute (7620 surface millimeters per minute) for:

Aluminum and some thin-wall mild steel and tube with coolants.

COLLETS



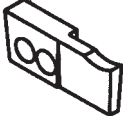
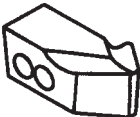
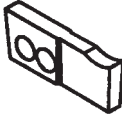
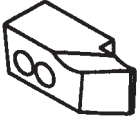



601SBCM Collet Table

Pipe Size	DIA in Fraction	DIA in Decimal	DIA in Metric	Collet P/N
		.405"	10.3 mm	30-2891
		.540"	13.7 mm	30-2892
		.675"	17.1 mm	30-2893
		.840"	21.3 mm	30-2894
		1.050"	26.7 mm	30-2895
		1.315"	1.315 mm	30-2896

602SBCM Collet Table

Pipe Size	DIA in Fraction	DIA in Decimal	DIA in Metric	Collet P/N
		1.315"	33.4 MM	30-2897
		1.660"	42.2 MM	30-2898
		1.900"	48.3 MM	30-2899
		2.375"	60.3 MM	30-2900

TOOL BITS

Sever		99-5941	
Double Bevel	37 1/2°	99-5942	
	42 1/2°	99-6003	
	47 1/2°	99-6004	
Sever Lead		99-5943	
L.H. Single bevel	42 1/2°	99-5999	
	47 1/2°	99-6000	
R.H. Single Bevel	37 1/2°	99-5990	
	42 1/2°	99-6001	
	47 1/2°	99-6002	
Tool Bit Socket Weld inside		99-5997	
Tool Bit Socket Weld outside		99-5998	

TROUBLE SHOOTING

Problem: The Tool Bit Chatters

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

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

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

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

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: The tool bit will not reach the work

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

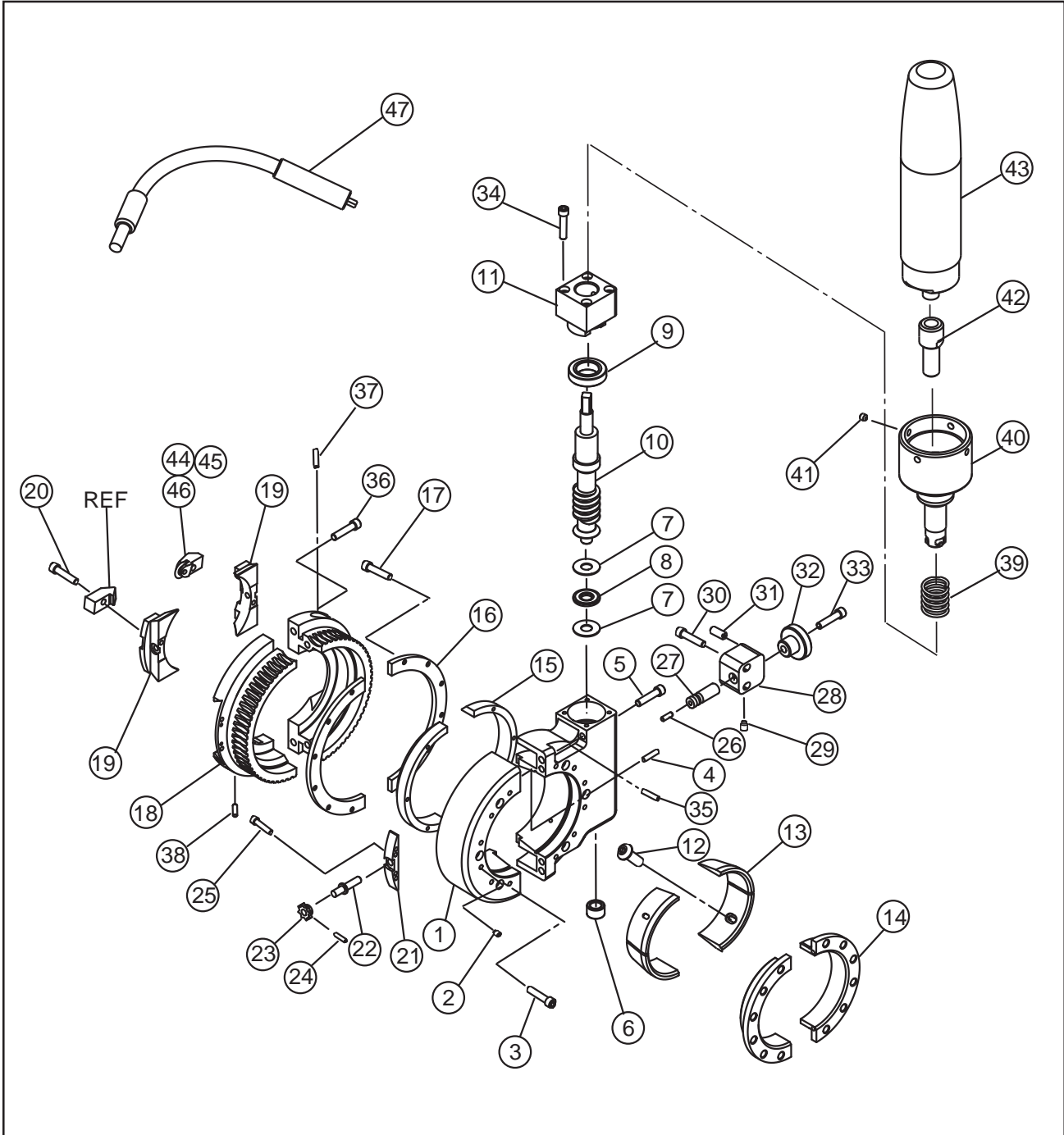
ACCESSORIES

The following accessories are recommended for use with the Models 601SBCM and 602SBCM and are available from TRI TOOL INC.

Item No.	Part No.	Description	Qty
1.	38-0171	SPROCKET, ASSY, FEED SOCKET WELD	1
2.	48-1351	SOCKET WELD REMOVAL TRIPPER BLOCK	1
3.	49-0419	SOCKET WELD REMOVAL TOOL HOLDER	2

ILLUSTRATED PARTS BREAKDOWN

601SBCM



Parts List, 601SBCM

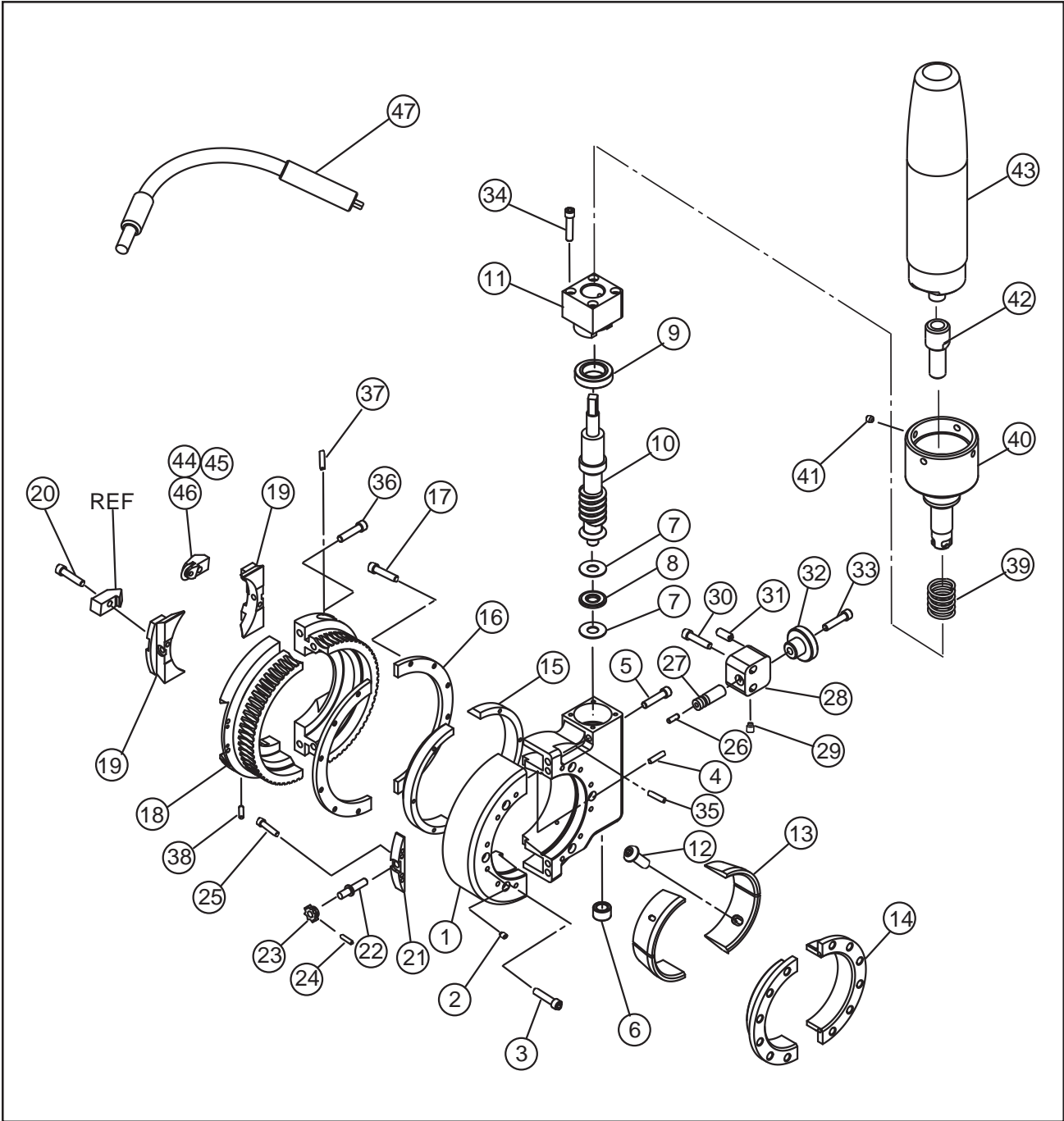
Item No.	Part No.	Description	Qty
1.	19-0903	HOUSING, MAIN	1
2.	33-1605	SCREW, CAP, HALF DOG, 8-32 X 1/4"	12
3.	33-0013	SCREW, CAP	6
4.	32-0598	PIN	2
5.	33-0028	SCREW, CAP, #10-24 X 1/2"	2
6.	29-0404	BEARING, NEEDLE	1
7.	34-0202	WASHER, THRUST	2
8.	29-0190	BEARING, THRUST	1
9.	29-0064	BEARING, BALL	1
10.	39-0914	GEAR, WORM	1
11.	43-0577	COVER, WORM	1
12.	33-0265	CAP SCREW, BUTTON HEAD, #4-40 X 1/4"	4
13.	30-2896	COLLET, SET	REF
14.	35-0589	NUT, COLLET	1
15.	29-0402	BEARING, MAIN	1
16.	24-1793	PLATE, THRUST	1
17.	33-2266	SCREW, CAP, #4-40 X 1/8"	12
18.	39-0913	GEAR, MAIN	1
19.	49-0410	HOLDER, TOOL	2
20.	33-0019	SCREW, CAP, #8-32 X 3/8"	2
21.	48-1311	BLOCK, FEED	2
22.	33-2239	SCREW, FEED	2
23.	38-0160	SPROCKET, FEED	2
24.	32-0273	PIN, DOWEL	2
25.	33-0001	SCREW, CAP, #4-40 X 1/4"	4
26.	32-0220	PIN, DOWEL	1
27.	20-0803	SHAFT, TRIPPER	1
28.	48-1322	BLOCK, TRIPPER	1
29.	33-0954	SCREW, SET, HALF DOG, #10-24 X 1/4"	1
30.	33-2248	SCREW, TRIPPER	2
31.	30-0125	PLUNGER, BALL	1
32.	42-0023	KNOB, TRIPPER	1
33.	33-0029	SCREW, CAP, #10-24 X 5/8"	1

TRI TOOL INC.

Parts List, 601SBCM Continued

Item No.	Part No.	Description	Qty
34.	33-0017	SCREW, CAP, #6-32 X 1"	4
35.	32-0002	PIN, ROLL	2
36.	33-0028	SCREW, CAP, #10-24 X 1/2"	2
37.	32-0002	PIN, ROLL	2
38.	33-0488	SCREW, SET, CUP POINT, #10-24 X 1/4"	4
39.	40-0143	SPRING	1
40.	27-0703	ADAPTOR, BAYONET	1
41.	33-0498	SCREW, SET, CUP POINT, 1/4-20 X 3/16"	4
42.	20-0806	SHAFT, DRIVE	1
43.	57-0257	MOTOR, AIR	1
44.	49-0414	HOLDER, TOOL	1
45.	32-0256	PIN, ROLL	1
46.	61-0118	WHEEL, CUTTING	1
47.	14-0091	SHAFT, DRIVE, FLEXIBLE	1

602SBCM



TRI TOOL INC.

Parts List, 602SBCM

Item No.	Part No.	Description	Qty
1.	19-0904	HOUSING, MAIN	1
2.	33-1605	SCREW, CAP, HALF DOG, 8-32 X 1/4"	12
3.	33-0013	SCREW, CAP, #6-32 X 1/2"	6
4.	32-0598	PIN	2
5.	33-0028	SCREW, CAP, #10-24 X 1/2"	2
6.	29-0404	BEARING, NEEDLE	1
7.	34-0202	WASHER, THRUST	2
8.	29-0190	BEARING, THRUST	1
9.	29-0064	BEARING, BALL	1
10.	39-0916	GEAR, WORM	1
11.	43-0577	COVER, WORM	1
12.	33-0265	CAP SCREW, BUTTON HEAD, #4-40 X 1/4"	4
13.	30-2897	COLLET, SET	REF
14.	35-0592	NUT, COLLET	1
15.	29-0403	BEARING, MAIN	1
16.	24-1803	PLATE, THRUST	1
17.	33-0001	SCREW, CAP, #4-40 X 1/4"	12
18.	39-0915	GEAR, MAIN	1
19.	49-0413	HOLDER, TOOL	2
20.	33-0019	SCREW, CAP, #8-32 X 3/8"	2
21.	48-1321	BLOCK, FEED	2
22.	33-2239	SCREW, FEED	2
23.	38-0160	SPROCKET, FEED	2
24.	32-0273	PIN, DOWEL	2
25.	33-0001	SCREW, CAP, #4-40 X 1/4"	4
26.	32-0220	PIN, DOWEL	1
27.	20-0803	SHAFT, TRIPPER	1
28.	48-1322	BLOCK, TRIPPER	1
29.	33-0954	SCREW, SET, HALF DOG, #10-24 X 1/4"	1
30.	33-2248	SCREW, TRIPPER	2
31.	30-0125	PLUNGER, BALL	1
32.	42-0023	KNOB, TRIPPER	1
33.	33-0029	SCREW, CAP, #10-24 X 5/6"	1

Parts List, 602SBCM Continued

Item No.	Part No.	Description	Qty
34.	33-0017	SCREW, CAP, #6-32 X 1"	4
35.	32-0002	PIN, ROLL	2
36.	33-0028	SCREW, CAP, #10-24 X 1/2"	2
37.	32-0002	PIN, ROLL	2
38.	33-0488	SCREW, SET, CUP POINT, #10-24 X 1/4"	4
39.	40-0143	SPRING	1
40.	27-0703	ADAPTOR, BAYONET	1
41.	33-0499	SCREW, SET, CUP POINT, 1/4-20 X 1/4"	4
42.	20-0806	SHAFT, DRIVE	1
43.	57-0257	MOTOR, AIR	1
44.	49-0414	HOLDER, TOOL	1
45.	32-0256	PIN, ROLL	1
46.	61-0118	WHEEL, CUTTING	1
47.	14-0091	SHAFT, DRIVE, FLEXIBLE	1