Operation Manual

92-0756 Rev. 180425
Model 300 MICROFACER™

TRI TOOL
BUILDING PERFORMANCE

ABOUT TRI TOOL INC.

Tri Tool's extensive experience in the design, development and manufacture of portable machine tools and welding equipment has resulted in machinery that is designed to meet the highest standards of quality, safety, and performance. Our products are backed by a company totally committed to service, integrity, and customer satisfaction.

Tri Tool Services has developed a solid reputation as a trusted provider of dependable and cost-effective on-site service solutions including turnkey project management, machining services, and mechanized and manual code welding services using experienced and well-trained machinists and welders.

In addition to developing industry leading machining and welding equipment, Tri Tool's engineering team provides custom equipment design and manufacturing solutions to suit the most rigorous requirements of our customers' special applications.

Please contact us for more information on any of our products or services. Company representatives are available for demonstrations of most of our products at your facility.

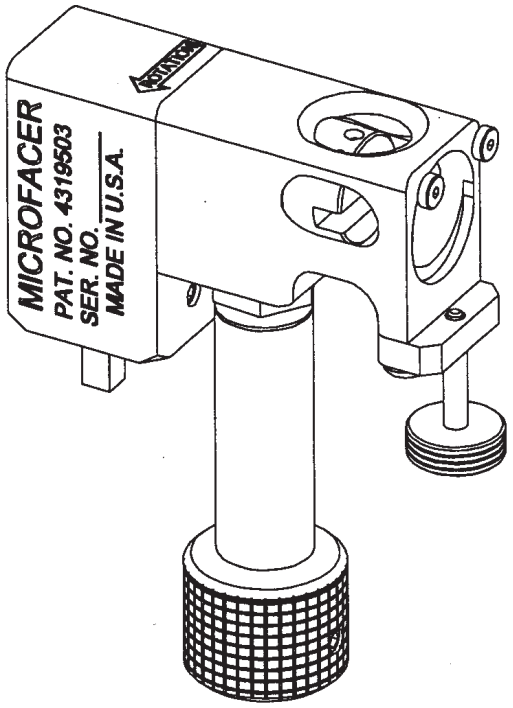


TABLE OF CONTENTS

TRI TOOL INC. Warranty

All products manufactured by Tri Tool Inc. are warranted to be free from defects in materials and workmanship under normal use. Effective October 12, 2018, the period of this warranty shall be three years from the date of shipment for all products, except for welding and custom equipment which shall be one year from the date of shipment.

The purchaser shall bear all shipping, packing and insurance costs and all other costs to and from a designated repair service center. The product will be returned to the purchaser freight prepaid and billed to the purchaser.

This warranty is not transferable and will not apply to tool bits or other consumables, or to those products that have been misused, abused, or altered without the express permission in writing by Tri Tool Inc.

Neither this warranty nor any other warranty, expressed or implied, including implied warranties of mechanical ability, fitness for a particular use, or merchantability, shall extend beyond the warranty period. No responsibility is assumed for any incidental or consequential damages.

Some states do not allow limitations on how long an implied warranty lasts and some states do not allow the exclusion or limitations incidental or consequential damages, so the above limitation of exclusion does not apply to all purchasers. This warranty gives the purchaser specific legal rights. Other rights vary from state to state.

Tool Bit Resharpening Policy

Tri Tool Inc. can not resharpen badly gouged, chipped, or broken tool bits. Check the tool bits before you send them and package them well. Within two working days of receipt, the tool bits are evaluated and the customer is contacted for authorization.

The customer will receive a price and a scheduled return shipment date. The price structure is available from your Tri Tool Inc. sales representative.

Tool bits that are not suitable for resharpening are returned with the tool bits that were resharpened, unless Tri Tool Inc. is instructed otherwise.

The customer is responsible for shipping charges to and from Tri Tool Inc.

This policy only covers tool bits manufactured by Tri Tool Inc.

1. ABOUT THE MANUAL

1.1 Copyright

1.2 Disclaimer

The instructions and descriptions in this manual were accurate when the manual was written. However, the information in the manual is subject to change without notice. Check for updated information before you start any job. The Tri Tool Inc. web site has the most current information.

Do not operate or work on this equipment unless you have read and understood the instructions in this Manual. Failure to follow the instructions or follow the safety instructions could result in serious injury or death. This manual describes conditions and hazards that are common and anticipated during equipment operation. No manual can address all conditions which may occur.

1.3 Safety Symbols

The manual may contain one or more safety symbols. These symbols and the associated text warn you of potentially hazardous conditions. Examples of the safety symbols and the associated text follow:

DANGER: Indicates a hazardous situation that, if not avoided, will result in serious injury or death.

WARNING: Indicates a hazardous situation that, if not avoided, could result in serious injury or death.

CAUTION: Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury, or cause property damage.

2. SAFETY PRECAUTIONS

2.1 In General

Use standard safety equipment such as: hard hats, safety shoes, safety harnesses, protective clothes, and other safety devices when appropriate.

Operate this tool only in accordance with specific operating instructions.

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

2.2 Personal Protective Equipment

Use standard safety equipment such as: hard hats, safety shoes, safety harnesses, protective clothes, and other safety devices when appropriate.

Wear safety glasses.

Do not wear loose clothing or jewelry.

Wear nonskid footwear.

Put long hair in a cap or a net to make sure hair does not get tangled in equipment.

2.3 Personnel

Only personnel who are trained or are being trained may operate the equipment.

Keep the operation manual available where the equipment is used.

The operator must read the operation manual before using the equipment.

The equipment must be operated in accordance with the manual information.

The operator must follow the safety precautions in this manual and good engineering practices to reduce the risk of injury.

Before using the equipment, the operator must ensure that all safety messages on the equipment are legible.

2.4 Work Area

Keep the work area clean.

Keep the area well lit.

Keep items such as electrical cords, cables, rags, rigging straps, away from rotating equipment.

Do not use power-cutting tools in the presence of flammable liquids and gases.

Do not let visitors or untrained personnel near tools that are in use.

Ensure all observers wear eye protection.

Keep proper footing at all times.

2.5 Area Equipment

Secure the pipe with clamps, vises, chains or straps.

Ensure that both sides of the pipe at the cut site is fully supported so that the pipe will not move after the cut is completed. Long lengths of pipe may be under load and the separation of the pipe can release pressure. This pressure can cause both sides of the pipe to move.

2.6 Tool Care

Keep tools in good operating condition. Sharp tool bits perform better and are safer than dull tool bits.

Do not use damaged tools. Always check your tools for damage especially if a tool has malfunctioned, been dropped or hit, check it for damage.

Before you start operating the equipment, do no-load tests and feed function checks.

2.7 Tool Use

Use the right tool and tool bit for the job. Contact Tri Tool to help with your application.

Keep the tool bits fully engaged in the tool bit holders. Loose bits are sharp and can cause cuts or punctures.

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. Check 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 recommended speeds.

Do not reach into rotating equipment.

Do not reach into the rotating head stock to remove chips, to make adjustments, or to check the surface finish.

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

Store tools properly. Disconnect tools from the power source, remove the tool bits, and store in a safe place.

3. SPECIFICATIONS

The Model 300 MICROFACER™ Tube Squaring Tool has been developed to square the ends of up to .75” (19.0 mm) OD tubing.

Weight: 5.35” (2.4 Kg)

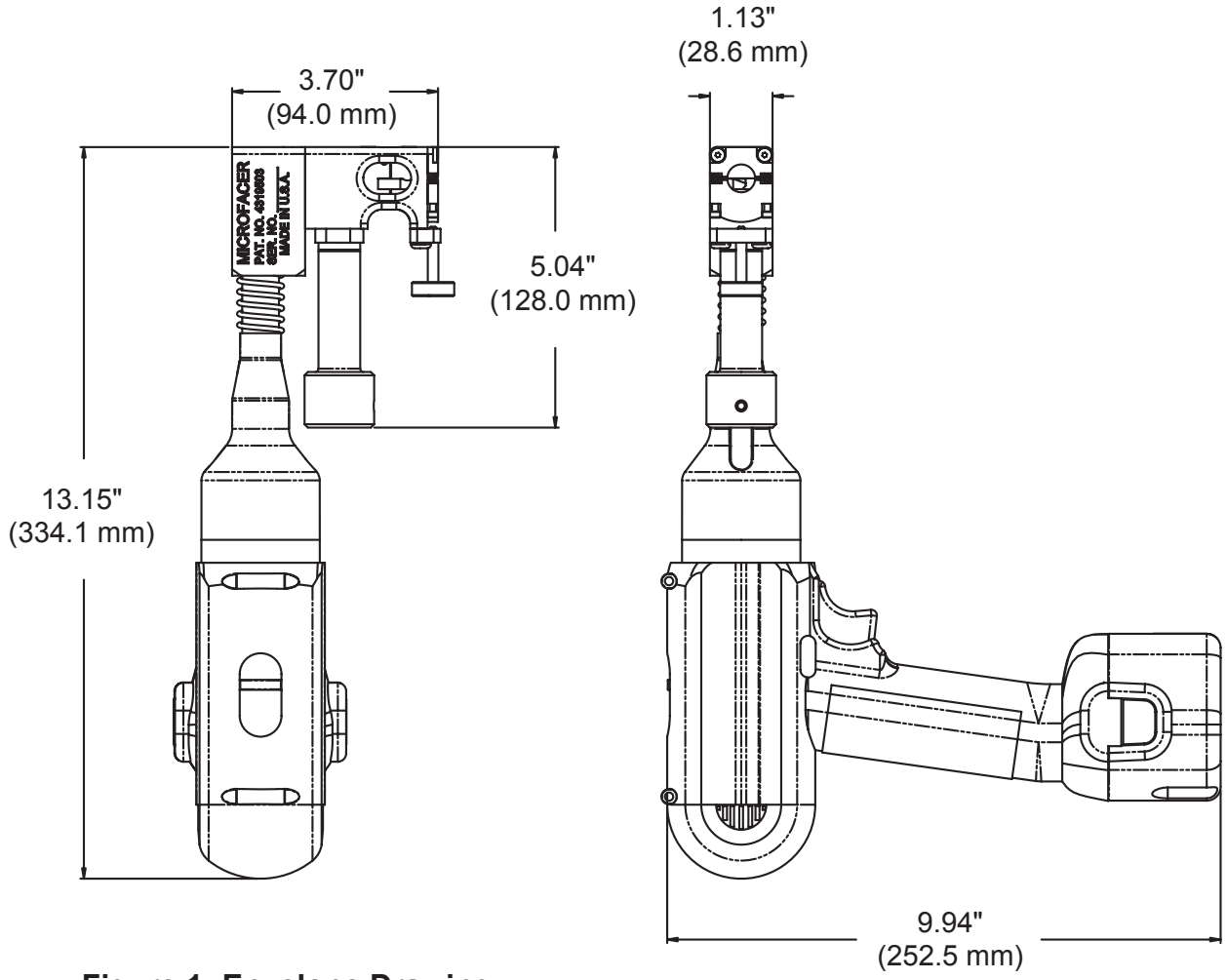


Figure 1: Envelope Drawing

4. 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.

When the Model 300 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 tube squaring operation 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.

5. OPERATION

Read the Operating Instructions carefully before attempting to operate the Model 300 MIROFACER™Tube Squaring Tool.

Use eye protection at all times when operating Model 300.

INSTALLING THE SADDLE SET

Select the saddle set which is the proper size for the OD of the tube which is to be machined.

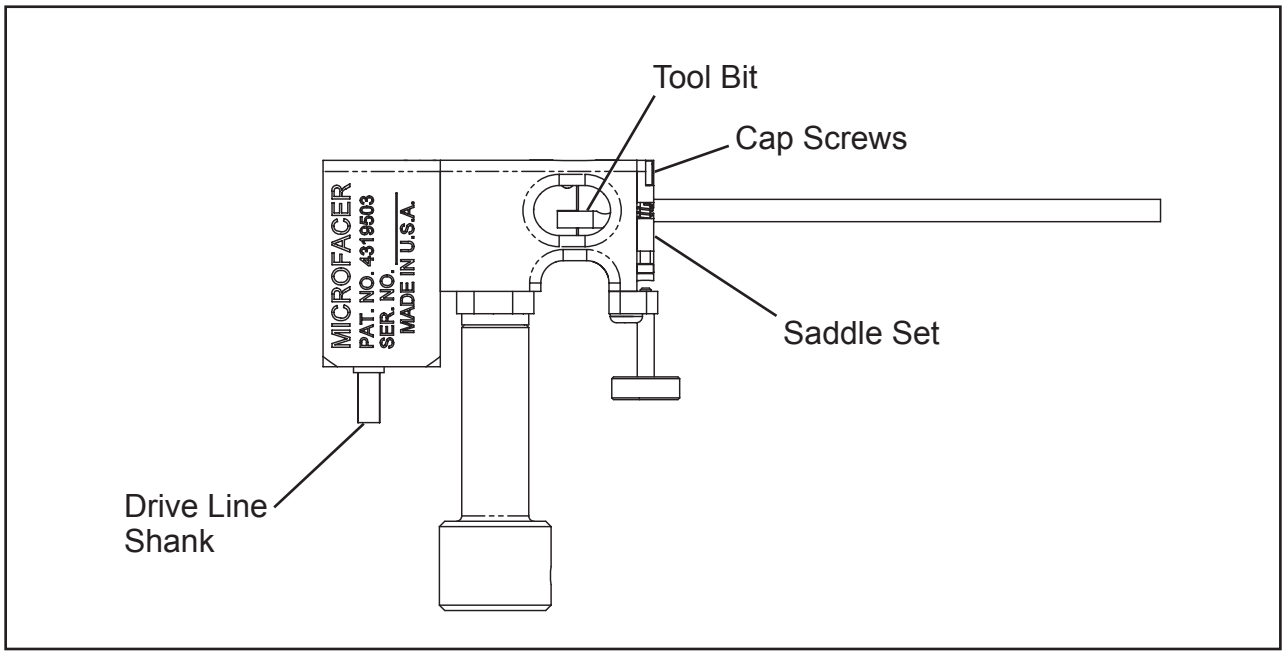
Squeeze the saddle set to compress the springs and insert the saddle set into the front of the Model 300.

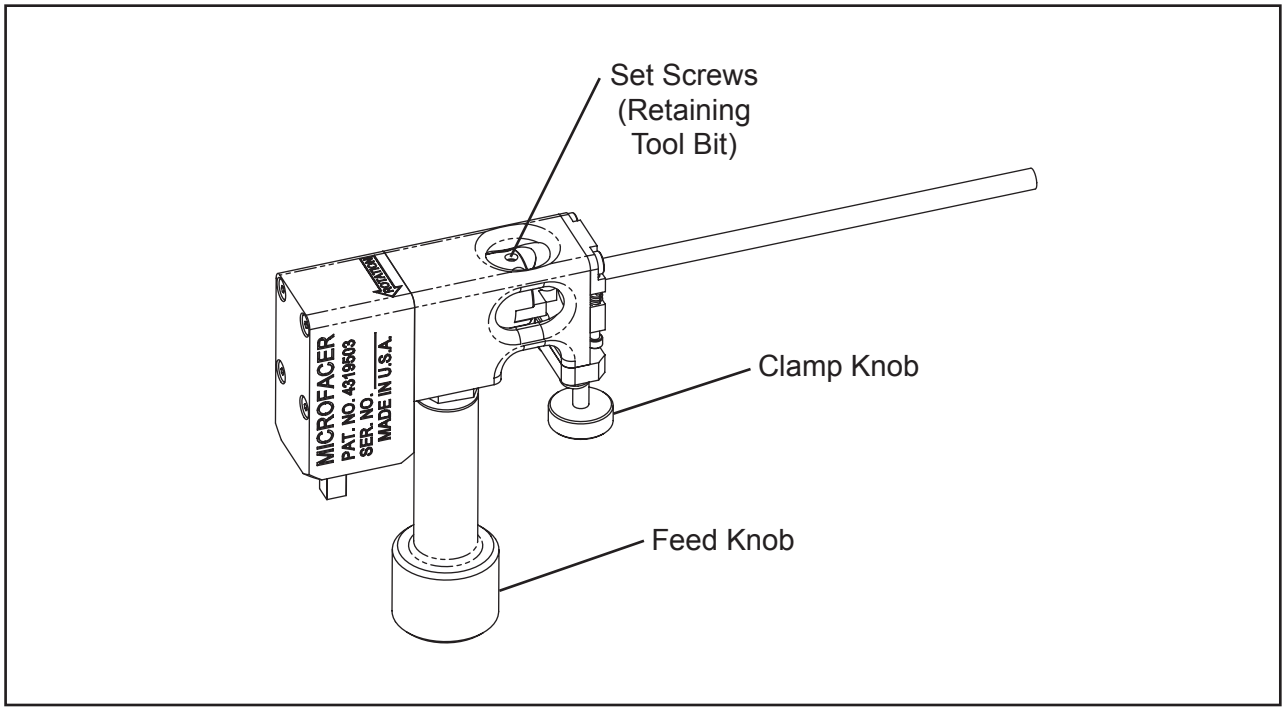
Retain the saddle set by inserting the two (2) cap screws into the front of the saddle set.

INSTALLING THE TOOL BIT

Select the tool bit to be installed.

Slide the tool bit into the slot on front of the main shaft.





INSTALLATION

Slide the tube to be worked on into the saddle, leaving approximately 1/8” (3 mm) between the tool bit and the end of the tube.

INSERT IMAGE

Tighten the saddle set by turning the clamp knob below the saddle set.

MACHINING SEQUENCE

Turn the motor on and let it slowly rotate to ensure that the tool bit does not make contact with the end of the tube at this time.

Loosen the clamp knob to release the saddle set and remove the machined tube.

6. CUTTING SPEEDS AND FEEDS

True DIA		RPM for 200 in/min (5080 mm/min)	RPM for 250 in/min (6350 mm/min)	RPM for 300 in/min (7620 mm/min)
.125"	3.18 mm	509	636	763
.250"	6.35 mm	255	318	382
.375	9.53 mm	170	212	255
.500"	12.70 mm	127	159	191
.625"	15.88 mm	102	127	153
.750"	19.05 mm	85	106	127
Cutting Speed (Approximately)				

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.

BASIC FEED RECOMMENDATION

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

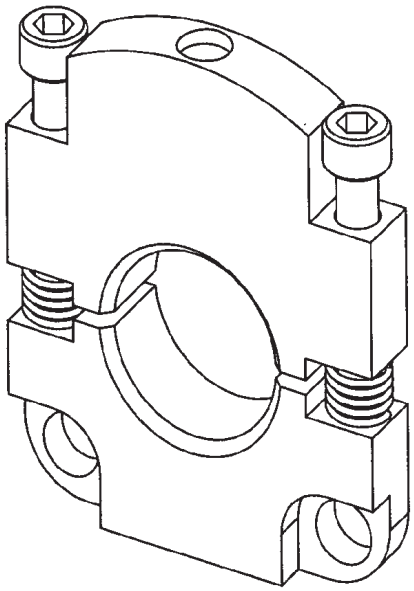
This is very important for longer tool bit life when cutting through flame cut or out of square pipe ends.

Use adequate feed, .003” to .006” (.08mm to .15mm) 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.

7. SADDLE SETS



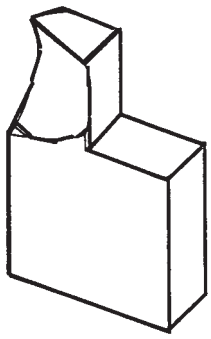
Pipe Size	Fraction	Decimal	Metric	Saddle P/N
	1/8"	.125"	3.18 mm	67-4193
	5/32"	.156"	3.96 mm	67-4194
		.158"	4.00 mm	67-4195
	3/16"	.188"	4.76 mm	67-4196
		.197"	5.00 mm	67-4197
	7/32"	.219"	5.56 mm	67-4198
		.234"	5.95 mm	67-4199
		.236"	6.00 mm	67-4200
	1/4"	.250"	6.35 mm	67-4201
		.276"	7.00 mm	67-4202
	9/32"	.281"	7.14 mm	67-4203
		.283"	7.20 mm	67-4204
	5/16"	.313"	7.95 mm	67-4205

Pipe Size	Fraction	Decimal	Metric	Saddle P/N
		.315"	8.00 mm	67-4206
	11/32"	.344"	8.74 mm	67-4207
		.354"	9.00 mm	67-4208
		.359"	9.13 mm	67-4209
	3/8"	.375"	9.53 mm	67-4210
		.394"	10.00 mm	67-4211
		.400"	10.16 mm	67-4212
1/8"	13/32"	.406"	10.31 mm	67-4213
		.413"	10.50 mm	67-4214
		.422"	10.72 mm	67-4215
		.433"	11.00 mm	67-4216
	7/16"	.438"	11.13 mm	67-4217
	15.32"	.469"	11.91 mm	67-4218
		.472"	12.00 mm	67-4219
	1/2"	.500"	12.70 mm	67-4220
		.512"	13.00 mm	67-4221
		.531"	13.50 mm	67-4222
		.535"	13.60 mm	67-4223
1/4"		.540"	13.72 mm	67-4224
		.543"	13.80 mm	67-4225
		.547"	13.89 mm	67-4226
		.551"	14.00 mm	67-4227
	9/16"	.563"	14.30 mm	67-4228
		.591"	15.00 mm	67-4229
		.594"	15.08 mm	67-4230
		.602"	15.29 mm	67-4231
	5/8"	.625"	15.88 mm	67-4232

Pipe Size	Fraction	Decimal	Metric	Saddle P/N
		.630"	16.00 mm	67-4233
		.641"	16.27 mm	67-4234
		.656"	16.66 mm	67-4235
		.669"	17.00 mm	67-4236
3/8"		.675"	17.15 mm	67-4237
		.677"	17.20 mm	67-4238
		.681"	17.30 mm	67-4239
	11/16"	.688"	17.48 mm	67-4240
		.709"	18.00 mm	67-4241
		.718"	18.24 mm	67-4242
	3/4"	.750"	19.05 mm	67-4243

8. TOOL BITS

Tool Bit, Tube Squaring, P/N 99-0591



9. TROUBLESHOOTING

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: 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.

10. ACCESSORIES

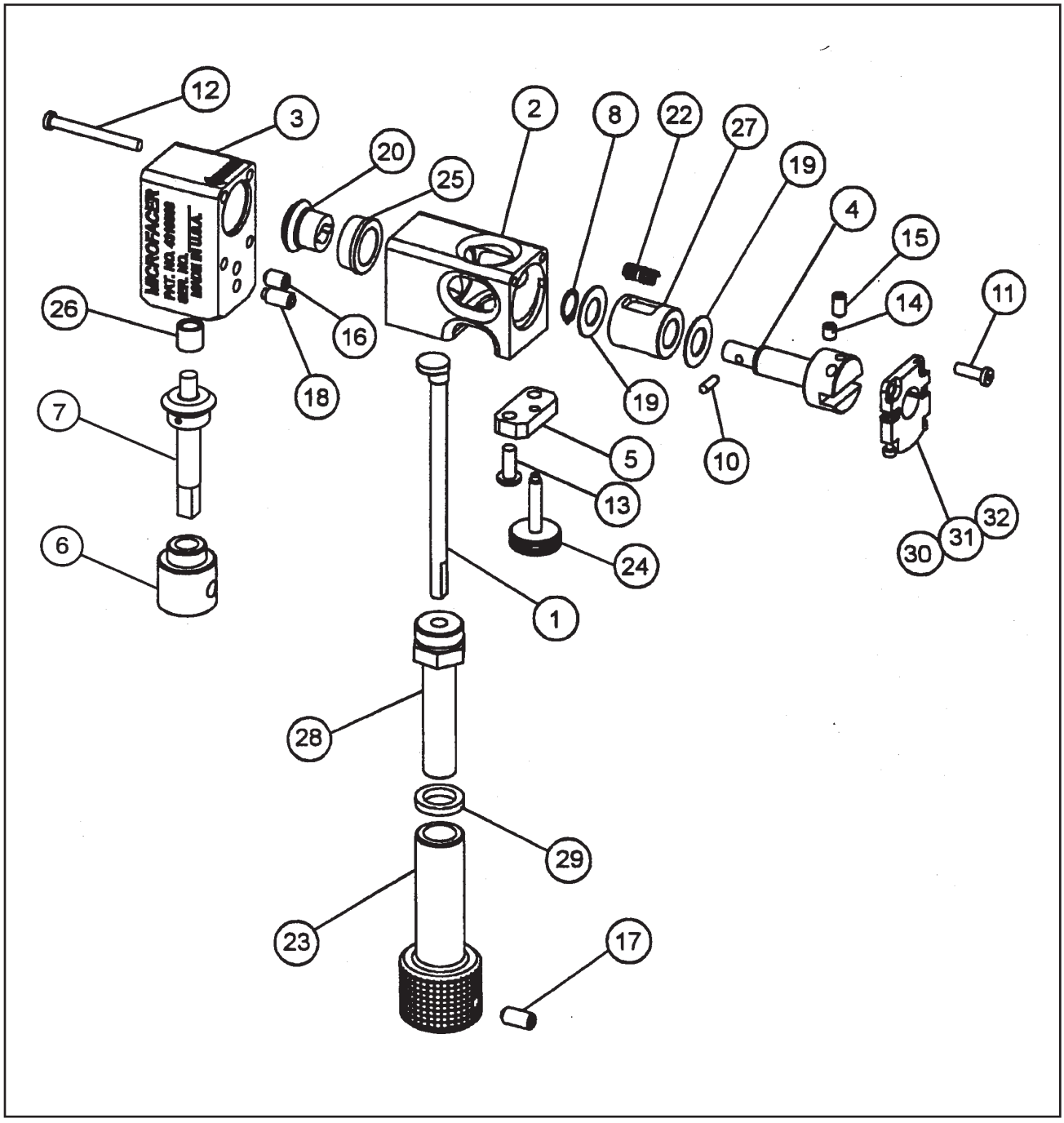
The following accessories are recommended for use with the Model 300 MICROFACER and are available from TRI TOOL INC.

1. Flexable Shaft Assembly (18") - P/N 14-0036
2. Spare Battery, 12V - P/N 30-6570
3. Charger, 110V, 12V Makita - P/N 30-6571
4. Charger, 220V, 12V Makita - P/N 30-6572

A Filter/Regulator/Lubricator (FRL) is required to protect the warranty on all TRI TOOL INC. air driven tools.

11. ILLUSTRATED PARTS BREAKDOWN

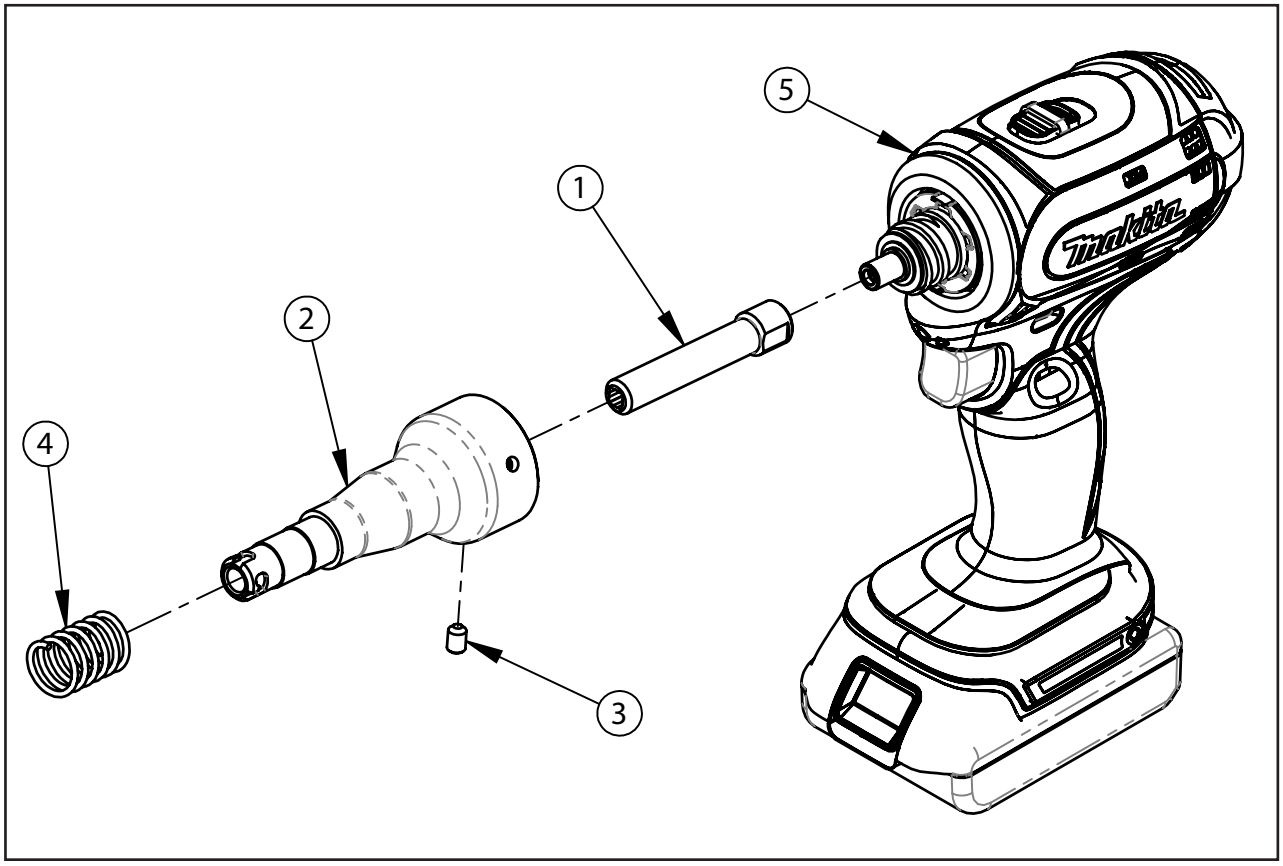
MODEL 300 MICROFACER™ BODY ASSEMBLY (P/N 02-2297)



Parts List, Model 300 MICROFACER™ Body Assembly (P/N 02-2297)

Item No.	Part No.	Description	Qty
1.	14-0006	SHAFT ASSEMBLY	1
2.	19-0838	HOUSING, MAIN	1
3.	19-0796	HOUSING, DRIVE	1
4.	20-0718	SHAFT, MAIN	1
5.	24-1614	PLATE, CLAMP	1
6.	27-0584	ADAPTER, DRIVE BUSHING	1
7.	27-0725	ADAPTER ASSEMBLY, CABLE DRIVE	1
8.	30-0302	RING, RETAINING, EXTERNAL	1
10.	32-0514	PIN, DRIVE, 1/8" DIA	1
11.	33-2110	SCREW, CAP, #8-32 X 1/2"	2
12.	33-2121	SCREW, CAP, #8-32 X 1 1/2"	4
13.	33-2112	SCREW, BUTTON, #10-24 X 1/2"	2
14.	33-0488	SET SCREW, CUP PT, #10-24 X 1/4"	2
15.	33-0490	SET SCREW, CUP PT., #10-24 X 3/8"	1
16.	33-0501	SET SCREW, CUP PT., 1/4-20 X 3/8"	1
17.	33-0503	SET SCREW, CUP PT., 1/4-20 X 1/2"	1
18.	33-0927	SET SCREW, HALF DOG, 1/4-20 X 1/2"	1
19.	34-0351	WASHER, THRUST	2
20.	39-0828	GEAR, BEVEL, MAIN	1
22.	40-0236	SPRING, COMPRESSION	1
23.	42-0174	HANDLE	1
24.	42-0175	KNOB, SADDLE ADJUST	1
25.	45-0306	BUSHING, MAIN	1
26.	45-0296	BUSHING, BRONZE	
27.	46-0462	SLEEVE, MAIN	1
28.	46-0479	SLEEVE	1
29.	34-0060	WASHER	1
30.	67-XXXX	SADDLE SET	REF.
31.	33-2109	SCREW, CAP, #4-40 X 7/8"	REF.
32.	40-0236	SPRING, COMPRESSION	REF.
	NOT SHOWN		
	36-0002	WRENCH, L, 5/64” HEX	1
	36-0003	WRENCH, L, 3/32” HEX	1
	36-0016	WRENCH, T, 3/32” HEX	1

300MF MOTOR ASSEMBLY (P/N 58-0345)



Parts List, 300MF Motor Assembly (P/N 58-0345)

Item No.	Part No.	Description	Qty
1.	20-0911	SHAFT, DRIVE	1
2.	27-1559	ADAPTER, BAYONET	1
3.	33-0501	SCREW, SET, 1/4-20 X 3/8 CUP PT	3
4.	40-0143	SPRING, MUSIC WIRE, LC 085K 03M	1
5.	58-0344	MOTOR, ELECTRIC, 12V, MAKITA, MOD.	1

12. MAKITA SAFETY INSTRUCTIONS

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

WARNING

Read the manual and be familiar with all safety precautions before operating equipment. The following are general warnings for industrial equipment with moving parts. Refer to the manual for specific warnings applicable to your equipment.

EYE HAZARD - Always wear appropriate eye protection while operating the equipment.

PINCH HAZARD - Keep your hands and clothing away from moving parts.

CRUSH HAZARD - The machinery, pipe, or work piece can shift, separate, lurch, or fall.

CHIP HAZARD - Metal chips may be hot and sharp. Be careful when you clear the tooling path or clean up chips.

TIE DOWN HAZARD - Deliberate overriding of safety triggers can result in serious injury. Never lock or tie down any safety triggers.

SHOCK HAZARD - Ensure that the equipment is properly installed and grounded. Ensure that the equipment is not damaged and that the power cord is intact.

OTHER HAZARDS

• Tool bits are sharp and can cause serious injury.
• Do not defate or modify safety features.
• Disconnect power sources before servicing or moving the equipment.
• Remove all loose articles of clothing and jewelry before operating the equipment.

Be Safety Conscious!

TRI TOOL
BUILDING PERFORMANCE

3041 Sunrise Blvd.
Rancho Cordova, CA 95742
(916) 288-6100 • (800) 345-5015
www.tritool.com