



OM-199 706D

March 2005

Processes



MIG (GMAW) Welding



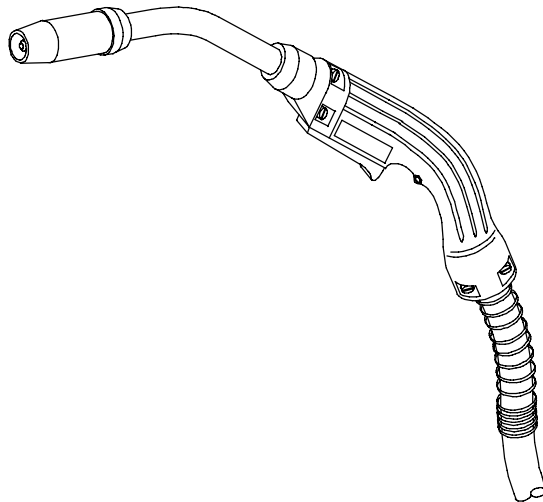
Flux Cored (FCAW) Arc
Welding

Description



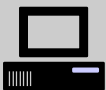
Semi-Automatic, Air-Cooled,
MIG (GMAW) Welding Gun

Roughneck[®] C-Series



300, 400, 500, And 600 Ampere MIG Welding Guns

OWNER'S MANUAL



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Thank you and congratulations on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

Today, the people that build and sell Miller products continue the tradition. They're just as committed to providing equipment and service that meets the high standards of quality and value established in 1929.

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite.

We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide the exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.



Miller is the first welding equipment manufacturer in the U.S.A. to be registered to the ISO 9001:2000 Quality System Standard.

Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual catalog sheets. **To locate your nearest distributor or service agency call 1-800-4-A-Miller, or visit us at www.MillerWelds.com on the web.**



Working as hard as you do – every power source from Miller is backed by the most hassle-free warranty in the business.



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SECTION 1 –SAFETY PRECAUTIONS FOR GMAW WELDING GUNS – READ BEFORE USING

SR7_8/03

1-1. Symbol Usage



Means Warning! Watch Out! There are possible hazards with this procedure! The possible hazards are shown in the adjoining symbols.

▲ Marks a special safety message.

☞ Means NOTE; not safety related.



This group of symbols means Warning! Watch Out! Possible ELECTRIC SHOCK and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1-2. GMAW Gun Hazards



WARNING

GMAW WELDING can be hazardous.

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR.

In welding, as in most jobs, exposure to certain hazards occurs. Welding is safe when precautions are taken. The safety information given below is only a summary of the more complete safety information found in the wire feeder and welding power source Owner's Manuals. Read and follow all safety precautions.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.

	<p>ELECTRIC SHOCK can kill.</p> <ol style="list-style-type: none"> 1. Always wear dry insulating gloves. 2. Insulate yourself from work and ground. 3. Do not touch live electrode or electrical parts. 4. Repair or replace worn, damaged, or cracked gun or cable insulation. 5. Turn off welding power source before changing contact tip or gun parts. 6. Keep all covers and handle securely in place. 		<p>ARC RAYS can burn eyes and skin.</p> <ol style="list-style-type: none"> 1. Wear welding helmet with correct shade of filter. 2. Wear correct eye and body protection. 3. Cover exposed skin with spatter-resistant clothing.
	<p>FUMES AND GASES can be hazardous to your health.</p> <ol style="list-style-type: none"> 1. Keep your head out of the fumes. 2. Ventilate area, or use breathing device. 3. Read Material Safety Data Sheets (MSDSs) and manufacturer's instructions for material used. 		<p>HOT SURFACES can burn skin.</p> <ol style="list-style-type: none"> 1. Allow gun to cool before touching. 2. Do not touch hot metal. 3. Protect hot metal from contact by others.
	<p>WELDING can cause fire or explosion.</p> <ol style="list-style-type: none"> 1. Do not weld near flammable material. 2. Do not weld on closed containers. 3. Watch for fire; keep extinguisher nearby. 		<p>NOISE can damage hearing; SOME APPLICATIONS, SUCH AS PULSING, are noisy.</p> <ol style="list-style-type: none"> 1. Check for noise level limits exceeding those specified by OSHA. 2. Use approved ear plugs or ear muffs if noise level is high. 3. Warn others nearby about noise hazard.
	<p>BUILD UP OF GAS can injure or kill</p> <ol style="list-style-type: none"> 1. Shut off shielding gas supply when not in use. 2. Always ventilate confined spaces or use approved air-supplied respirator. 		<p>WELDING WIRE can cause puncture wounds.</p> <ol style="list-style-type: none"> 1. Keep hands and body away from gun tip when trigger is pressed.

EMF INFORMATION

NOTE



Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, *Biological Effects of Power Frequency Electric & Magnetic Fields – Background Paper*, OTA-BP-E-53 (Washington, DC: U.S. Government Printing Office, May 1989): “. . . there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields can interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks.”

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around the body.
4. Keep welding power source and cables as far away as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

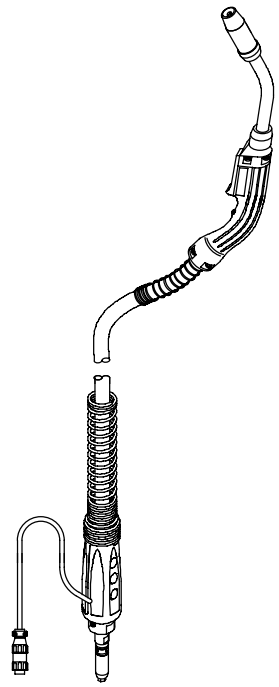
About Pacemakers:

The above procedures are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.



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SECTION 2 – INSTALLATION

2-1. Specifications

 <p style="text-align: right;">Ref. 802 626-B</p>	<p>Air-Cooled Guns For GMAW Welding Note: Using mixed gases other than CO₂ reduces duty cycle ratings by 10-50%.</p>
	<p>C-30 Gun Feeds .023 To 5/64 in (0.6 To 2.0 mm) Wire Duty Cycle Rating: 100%: 300 A With CO₂ Shielding Gas Weight With 15 Ft (Heaviest) Power Cable: 7.5 lb (3.4 kg) Maximum Recommended Wire Size – 5/64 in</p>
	<p>C-40 Gun Feeds .023 To 5/64 in (0.6 To 2.0 mm) Wire Duty Cycle Rating: 100%: 400 A With CO₂ Shielding Gas Weight With 15 Ft (Heaviest) Power Cable: 10.3 lb (4.7 kg) Maximum Recommended Wire Size – 5/64 in</p>
	<p>C-50 Gun Feeds .023 To 1/8 in (0.6 To 3.2 mm) Wire Duty Cycle Rating: 100%: 500 A With CO₂ Shielding Gas Weight With 15 Ft (Heaviest) Power Cable: 13 lb (5.9 kg) Maximum Recommended Wire Size – 1/8 in</p>
	<p>C-60 Gun Feeds .023 To 1/8 in (0.6 To 3.2 mm) Wire Duty Cycle Rating: 100%: 600 A With CO₂ Shielding Gas Weight With 15 Ft (Heaviest) Power Cable: 14.5 lb (6.6 kg) Maximum Recommended Wire Size – 1/8 in</p>

2-2. Duty Cycle And Overheating






100% Duty Cycle At Following Amperes:
 C-30 Gun: 300 A With CO₂ Shielding Gas
 C-40 Gun: 400 A With CO₂ Shielding Gas
 C-50 Gun: 500 A With CO₂ Shielding Gas
 C-60 Gun: 600 A With CO₂ Shielding Gas

Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating.

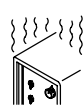



Using mixed gases other than CO₂ reduces duty cycle ratings 10–50% depending on gas mixture and welding parameters.


▲ Exceeding duty cycle can damage unit and void warranty.

Continuous Welding

Overheating



→

→

Minutes
→

→



A or V

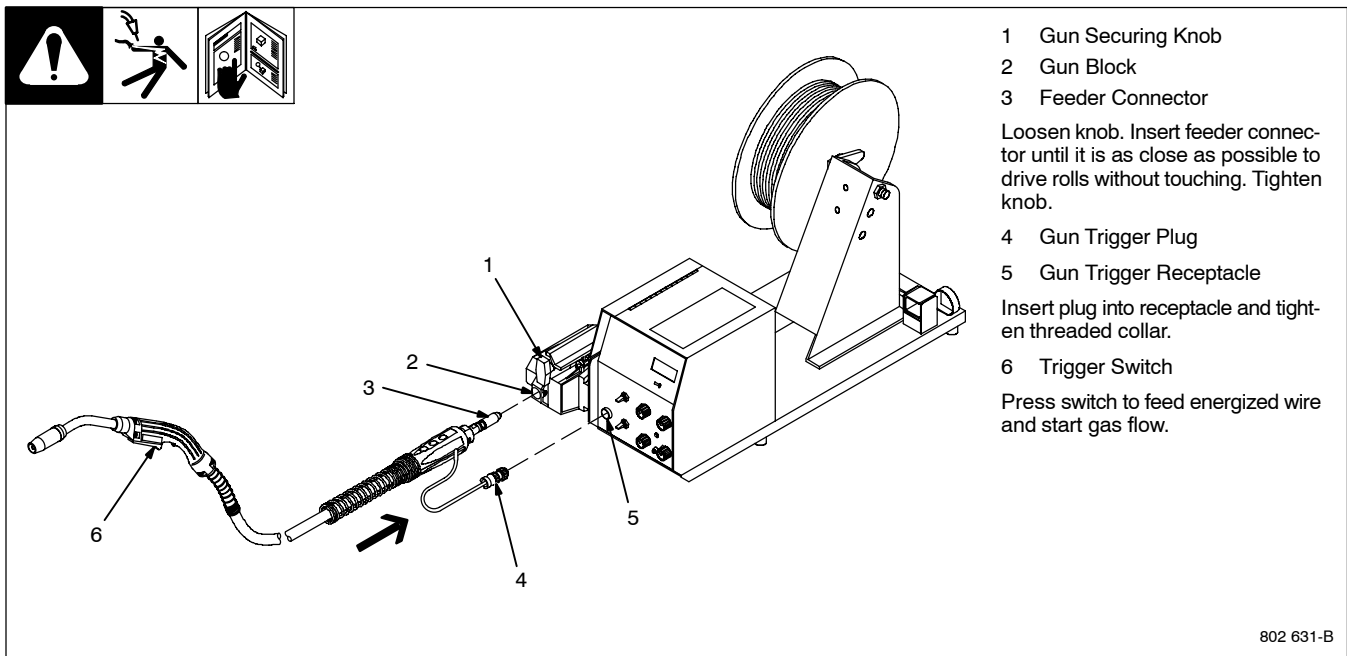
OR

Reduce Duty Cycle

→


sduty1 5/95

2-3. Gun Connection And Operation

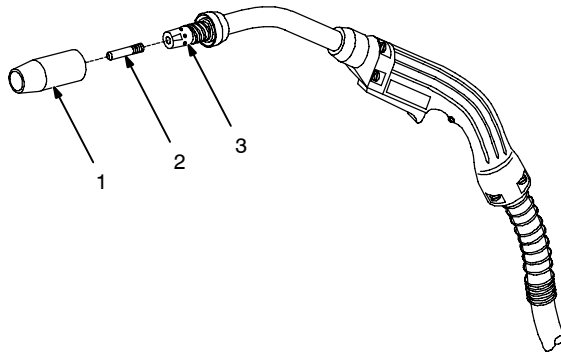


SECTION 3 – MAINTENANCE & TROUBLESHOOTING

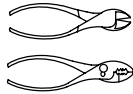
3-1. Routine Maintenance

		▲ Disconnect power before maintaining.		<i>Maintain more often during severe conditions.</i>	
Each Spool Of Wire					
Clean Nozzle And Check Contact Tip			Blow Out Gun Casing		
3 Months					
Replace Damaged Or Unreadable Labels		Clean And Tighten Weld Terminals		Replace Damaged Gas Hose	
Repair Or Replace Cracked Cables And Cords					

3-2. Replacing The Contact Tip



Tools Needed:



▲ Turn Off welding power source and wire feeder and be sure gun is cool before proceeding.

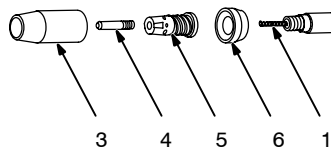
Cut off wire at contact tip.

- 1 Nozzle
- 2 Contact Tip
- 3 Diffuser

☞ Correct wire size is stamped on tip. Be sure to use indicated wire size.

Ref. 802 661-A

3-3. Installing Or Replacing The Liner



▲ Turn Off welding power source and wire feeder and be sure gun is cool before proceeding.

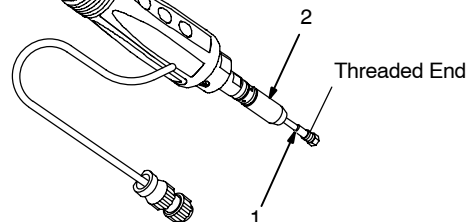
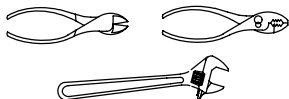
- 1 Liner
- 2 Feeder Connector
- 3 Nozzle
- 4 Contact Tip
- 5 Diffuser
- 6 Insulator

Lay gun cable out straight. Remove nozzle, tip, diffuser and insulator. Remove existing liner from adapter by unscrewing threaded end of liner and removing liner from gun cable.

Insert new liner into feeder connector and feed liner into connector. Rotate threaded end of liner into adapter to secure liner in place.




At opposite end of gun cable, cut liner so 7/8 in extends beyond end of gooseneck as shown. Reinstall insulator, diffuser, tip and nozzle.

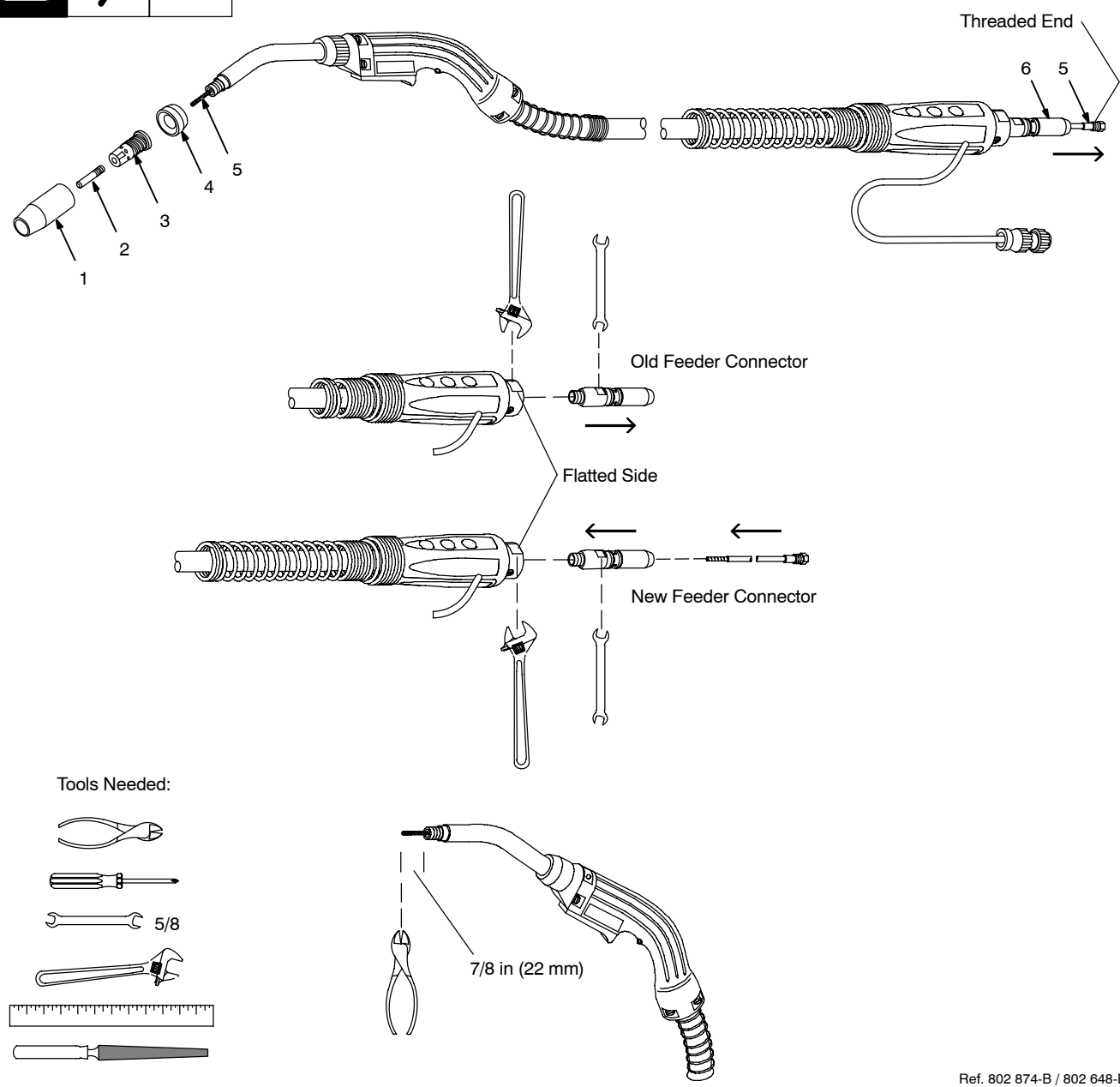
Tools Needed:



802 648-D

3-4. Replacing Feeder Connector



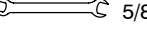

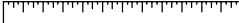







Threaded End
6 5

Old Feeder Connector
Flatted Side
New Feeder Connector

Tools Needed:

- 
- 
-  5/8
- 
- 
- 

7/8 in (22 mm)

▲ Turn Off welding power source and wire feeder and be sure gun is cool before proceeding.


- 1 Nozzle
- 2 Contact Tip
- 3 Diffuser
- 4 Insulator
- 5 Liner
- 6 Feeder Connector

Lay gun cable out straight.

Remove nozzle, contact tip, diffuser, and insulator. Remove existing liner from feeder connector by unscrewing threaded end of liner and removing liner from gun cable.

Using wrenches on handle insert and feeder connector, remove old feeder connector from handle insert.

Install new feeder connector.

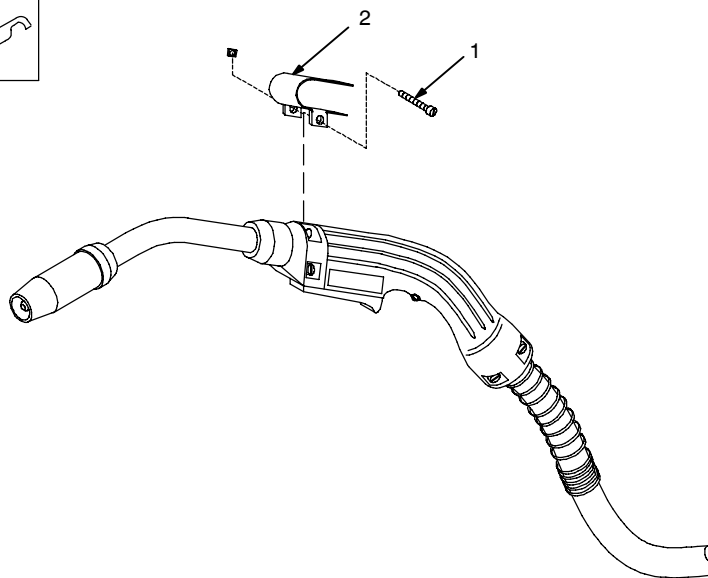
 Gun cable must be straight when new liner is inserted or new liner will be cut to incorrect length, causing wire feed problems.

Insert new liner into new feeder connector and feed liner into feeder connector. Rotate threaded end of liner into feeder connector and tighten to secure liner in place.

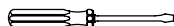
At opposite end of gun cable, cut liner so 7/8 in (22 mm) extends beyond end of goose-neck as shown. Reinstall insulator, diffuser, tip and nozzle.

Ref. 802 874-B / 802 648-D

3-5. Installing Optional Gun Hook 199 662



Tools Needed:



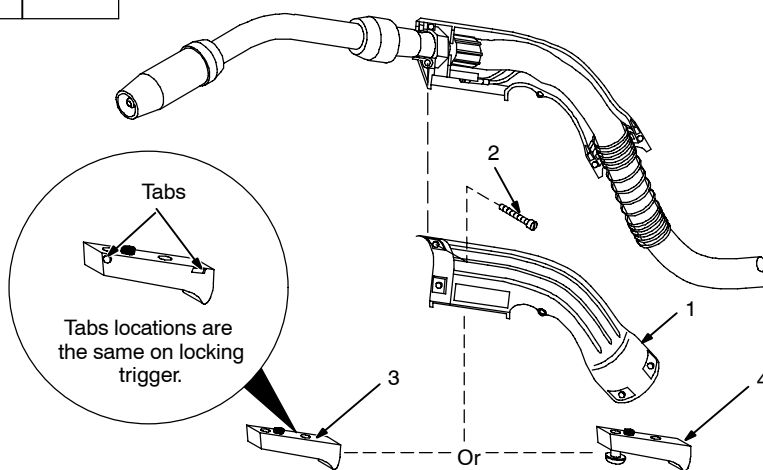
▲ Turn Off welding power source and wire feeder and be sure gun is cool before proceeding.

- 1 Retaining Screw
- 2 Gun Hook

Remove single retaining screw in location shown, position gun hook in place, and reinstall retaining screw.

Ref. 802 658-A

3-6. Installing Replacement Trigger 199 628 And Optional Locking Trigger 199 661



Tools Needed:



▲ Turn Off welding power source and wire feeder and be sure gun is cool before proceeding.

- 1 Left Half Of Handle
- 2 Retaining Screw (Four Total)

☞ When retaining screws are removed, matching nuts are not held in place.

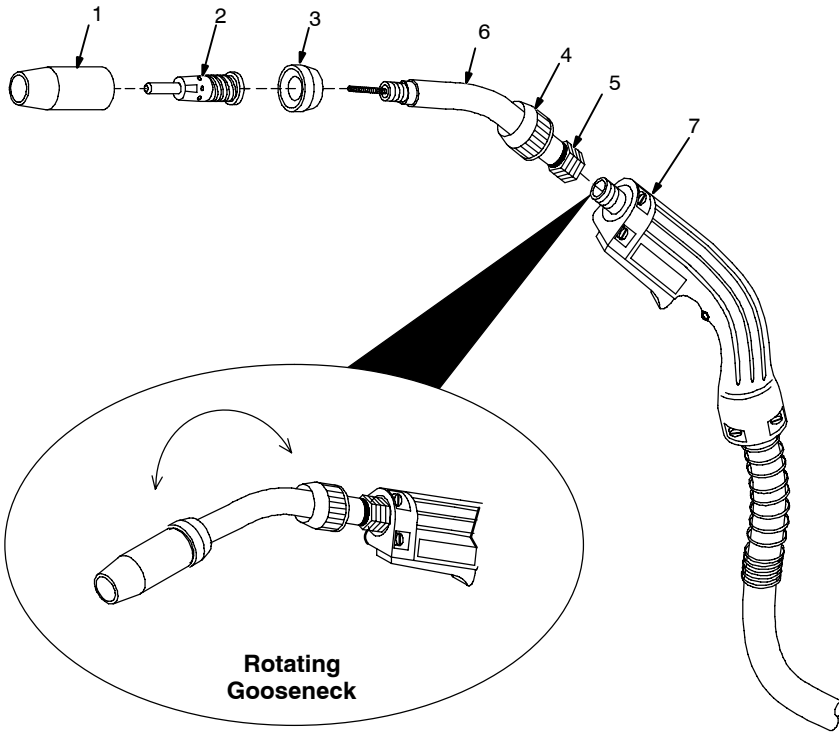
Remove retaining screws and left half of handle as shown.

- 3 Trigger
- 4 Locking Trigger

Align tabs on applicable trigger (see illustration) with indentations in handle portion still on gun and install trigger in place. Reinstall handle portion removed earlier and secure in place with retaining screws.

Ref. 802 660-A

3-7. Gooseneck Parts Replacement And Rotation Procedure



▲ Turn Off welding power source and wire feeder and be sure gun is cool before proceeding.

To remove front items from gooseneck, follow the order shown.

- 1 Nozzle
- 2 Diffuser
- 3 Insulator

To remove gooseneck, proceed as follows:

- 4 Nut Cover
- 5 Nut
- 6 Gooseneck
- 7 Handle

Loosen nut cover completely and slide it up on gooseneck.

Loosen nut completely and remove gooseneck from handle.

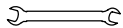
To rotate gooseneck, proceed as follows:

Loosen nut cover completely and slide it up on gooseneck.

Loosen nut slightly and rotate gooseneck to desired position.

Tighten nut and reinstall nut cover.

Tools Needed:



803 350

3-8. Troubleshooting

Trouble	Remedy
Wire does not feed.	Check contact tip and check for kinks in gun cable.
	Check connections at welding power source/wire feeder.
	Have nearest Factory Authorized Service Agent check gun trigger switch.
Wire is not energized.	Check contact tip and check for kinks in gun cable.
	Have nearest Factory Authorized Service Agent check gun trigger switch.
Wire feeds unevenly.	Check contact tip. Check for kinks in gun cable. Blow out liner and gun casing.

SECTION 4 – PARTS LIST INCLUDING CONSUMABLES

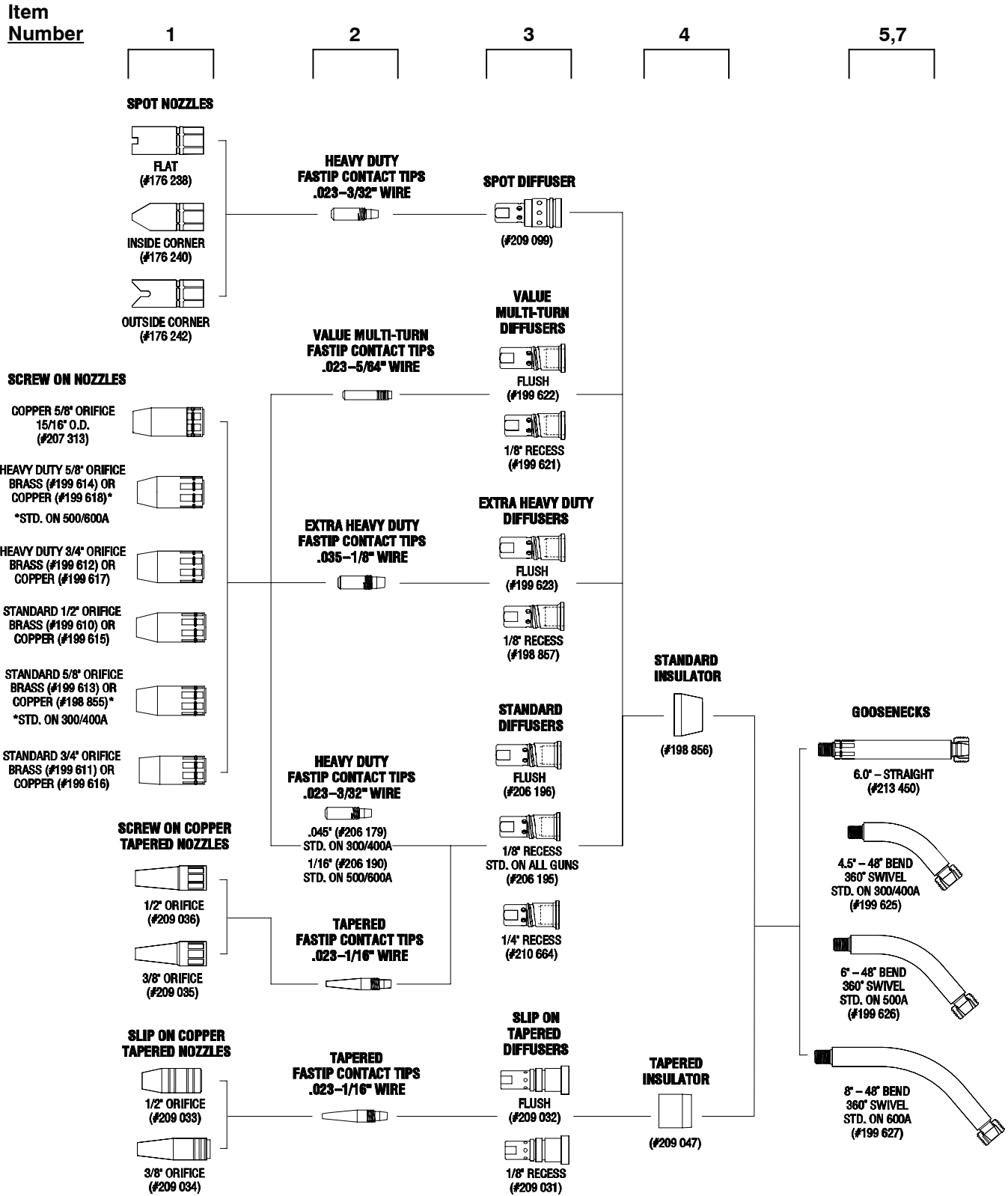


Figure 4-1. Consumables Flowchart

Item No.	Part No.	Description	Quantity
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Figure 4-1. Consumables Flowchart

Table 4-1. Nozzles

...	1	...	◆176238	..	NOZZLE, spot flat (requires diffuser 209099, used with any heavy duty FasTip™ contact tip)	1
...	1	...	◆176240	..	NOZZLE, spot inside corner (requires diffuser 209099, used with any heavy duty FasTip™ contact tip)	1
...	1	...	◆176242	..	NOZZLE, spot outside corner (requires diffuser 209099, used with any heavy duty FasTip™ contact tip)	1
...	1	...	◆199 610	..	NOZZLE, screw on brass 1/2 in orifice	1
...	1	...	◆199 611	..	NOZZLE, screw on brass 3/4 in orifice straight	1
...	1	...	◆199 612	..	NOZZLE, screw on brass 3/4 in orifice straight heavy duty	1
...	1	...	◆199 613	..	NOZZLE, screw on brass 5/8 in orifice	1
...	1	...	◆199 614	..	NOZZLE, screw on brass 5/8 in orifice heavy duty	1
...	1	...	◆199 615	..	NOZZLE, screw on copper 1/2 in orifice	1
...	1	...	◆199 616	..	NOZZLE, screw on copper 3/4 in orifice	1
...	1	...	◆199 617	..	NOZZLE, screw on copper 3/4 in orifice heavy duty	1
...	1	...	198 855	..	NOZZLE, screw on copper 5/8 in orifice (standard on 300 & 400 amp models)	1
...	1	...	199 618	..	NOZZLE, screw on copper 5/8 in orifice heavy duty (standard on 500 & 600 amp models)	1
...	1	...	◆207 313	..	NOZZLE, screw on copper 5/8 in orifice 15/16 OD	1
...	1	...	◆209 033	..	NOZZLE, slip on copper 1/2 in orifice tapered (requires diffuser 209031 or 209032 and insulator 209047, used with any tapered FasTip™ contact tip)	1
...	1	...	◆209 034	..	NOZZLE, slip on copper 3/8 in orifice tapered (requires diffuser 209031 or 209032 and insulator 209047, used with any tapered FasTip™ contact tip)	1
...	1	...	◆209 035	..	NOZZLE, screw on copper 3/8 in orifice tapered (requires diffuser 206195, 206196 or 210664, used with any tapered FasTip™ contact tip)	1
...	1	...	◆209 036	..	NOZZLE, screw on copper 1/2 in orifice tapered (requires diffuser 206195, 206196 or 210664, used with any tapered FasTip™ contact tip)	1

Table 4-2. Heavy Duty FasTip™ Contact Tips*

...	2	...	◆206 184	..	.023 in (0.6 mm)	1
...	2	...	◆206 185	..	.030 in (0.8 mm)	1
...	2	...	◆206 186	..	.035 in (0.9 mm)	1
...	2	...	◆206 187	..	.040 in (1.0 mm)	1
...	2	...	206 188	..	.045 in (1.2 mm) (standard on 300 & 400 amp models)	1
...	2	...	◆206 189	..	.052 in (1.3 mm) or 3/64 in (1.2 mm) aluminum wire	1
...	2	...	206 190	..	1/16 in (1.6 mm) (standard on 500 & 600 amp models)	1
...	2	...	◆206 191	..	.068 in (1.7 mm) or 1/16 in (1.6 mm) aluminum wire	1
...	2	...	◆206 192	..	5/64 in (2.0 mm)	1
...	2	...	◆206 193	..	3/32 in (2.4 mm)	1

Table 4-3. Extra Heavy Duty FasTip™ Contact Tips*

...	2	...	◆199 605	..	.035 in (0.9 mm)	1
...	2	...	◆199 606	..	.040 in (1.0 mm)	1
...	2	...	◆198 851	..	.045 in (1.2 mm)	1
...	2	...	◆198 852	..	.052 in (1.3 mm) or 3/64 in (1.2 mm) aluminum wire	1
...	2	...	◆198 853	..	1/16 in (1.6 mm)	1
...	2	...	◆198 854	..	.068 in (1.7 mm) or 1/16 in (1.6 mm) aluminum wire	1
...	2	...	◆199 607	..	5/64 in (2.0 mm)	1
...	2	...	◆199 608	..	3/32 in (2.4 mm)	1
...	2	...	◆199 609	..	7/64–1/8 in (2.8 mm)	1

Item No.	Part No.	Description	Quantity
----------	----------	-------------	----------

Figure 4-1. Consumables Flowchart (Continued)

Table 4-4. Tapered FasTip™ Contact Tips*

... 2	◆209024	.. .023 in (0.6 mm)	1
... 2	◆209025	.. .030 in (0.8 mm)	1
... 2	◆209026	.. .035 in (0.9 mm)	1
... 2	◆209027	.. .045 in (1.2 mm)	1
... 2	◆209028	.. 3/64 in (1.2 mm)	1
... 2	◆209029	.. .052 in (1.3 mm)	1
... 2	◆209030	.. 1/16 in (1.6 mm)	1

Table 4-5. Value Multi-Turn Contact Tips*

... 2	◆087 300	.. .023 in (0.6 mm)	1
... 2	◆071 825	.. .030 in (0.9 mm)	1
... 2	◆054 202	.. .035 in (0.9 mm)	1
... 2	◆054 201	.. .045 in (1.2 mm)	1
... 2	◆199 593	.. 3/64 in (1.2 mm) aluminum wire	1
... 2	◆044 006	.. .052 in (1.3 mm)	1
... 2	◆047 566	.. 1/16 in (1.6 mm)	1
... 2	◆202 933	.. 1/16 in (1.6 mm) aluminum wire	1
... 2	◆199 594	.. .068 in (1.7 mm)	1
... 2	◆047 565	.. 5/64 in (2.0 mm)	1

Table 4-6. Gas Diffusers

... 3	◆198 857	.. 1/8 in tip recess – for extra heavy duty FasTip contact tips	1
... 3	◆199 623	.. Flush tip – for extra heavy duty FasTip contact tips	1
... 3	◆199 621	.. 1/8 in tip recess – for value multi-turn contact tips	1
... 3	◆199 622	.. Flush tip – for value multi-turn contact tips	1
... 3	206 195	.. 1/8 in tip recess – for heavy duty FasTip contact tips (standard on all guns)	1
... 3	◆210 664	.. 1/4 in tip recess – for heavy duty FasTip contact tips	1
... 3	◆206 196	.. Flush tip – for heavy duty FasTip contact tips	1
... 3	◆209 031	.. Slip on recessed diffuser (requires nozzle 209033 or 209034 and insulator 209047, used with any tapered FasTip contact tip)	1
... 3	◆209 032	.. Slip on flush diffuser (requires nozzle 209033 or 209034 and insulator 209047, used with any tapered FasTip contact tip)	1
... 3	◆209 099	.. Spot diffuser (requires spot nozzle 176238 or 176240 or 176242)	1

Table 4-7. Insulators

... 4	198 856	.. INSULATOR, Rubber	1
... 4	209 047	.. INSULATOR, Teflon (required when using diffuser 209031 or 209032 with nozzle 209033 or 209034)	1
... 5	202 292	.. COVER, nut	1

Table 4-8. Liners

... 6	◆202 889	.. LINER, monocoil .023–.030 wire x 16.5 ft round wound	1
... 6	202 890	.. LINER, monocoil .035–.045 wire x 16.5 ft round wound (standard on 300 & 400 amp models)	1
... 6	202 891	.. LINER, monocoil .052–1/16 wire x 16.5 ft round wound (standard on 500 & 600 amp models)	1
... 6	◆202 892	.. LINER, monocoil 1/16–.078 wire x 16.5 ft flat wound	1
... 6	◆202 893	.. LINER, monocoil 5/64–3/32 wire x 16.5 ft flat wound	1
... 6	◆202 894	.. LINER, monocoil 7/64–1/8 wire x 16.5 ft flat wound	1
... 6	◆202 895	.. LINER, monocoil 3/64–1/16 AL wire x 16.5 ft	1

Item No.	Part No.	Description	Quantity
----------	----------	-------------	----------

Figure 4-1. Consumables Flowchart (Continued)

Table 4-9. Goosenecks

... 7	+199 625	.. GOOSENECK, jacketed 4.5 in/50deg wrench swivel (standard on 300 & 400 amp models)	1
... 7	+199 626	.. GOOSENECK, jacketed 6 in/50deg wrench swivel (standard on 500 amp models)	1
... 7	+199 627	.. GOOSENECK, jacketed 8 in/50deg wrench swivel (standard on 600 amp models)	1
... 7	+♦213 450	.. GOOSENECK, jacketed 6.0" straight	1

♦OPTIONAL

+Includes nozzle insulator 198 856 and threaded nut cover 202 292.

*All contact tips are packaged in bags of 25.

BE SURE TO PROVIDE MODEL WHEN ORDERING REPLACEMENT PARTS.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model is required when ordering parts from your local distributor.

Standard Consumables Chart				
	300 Amp Guns	400 Amp Guns	500 Amp Guns	600 Amp Guns
Contact Tip	206 188	206 188	206 190	206 190
Nozzle	198 855	198 855	199 618	199 618
Diffuser	206 195	206 195	206 195	206 195
Liner	202 890	202 890	202 891	202 891
Gooseneck	199 625	199 625	199 626	199 627

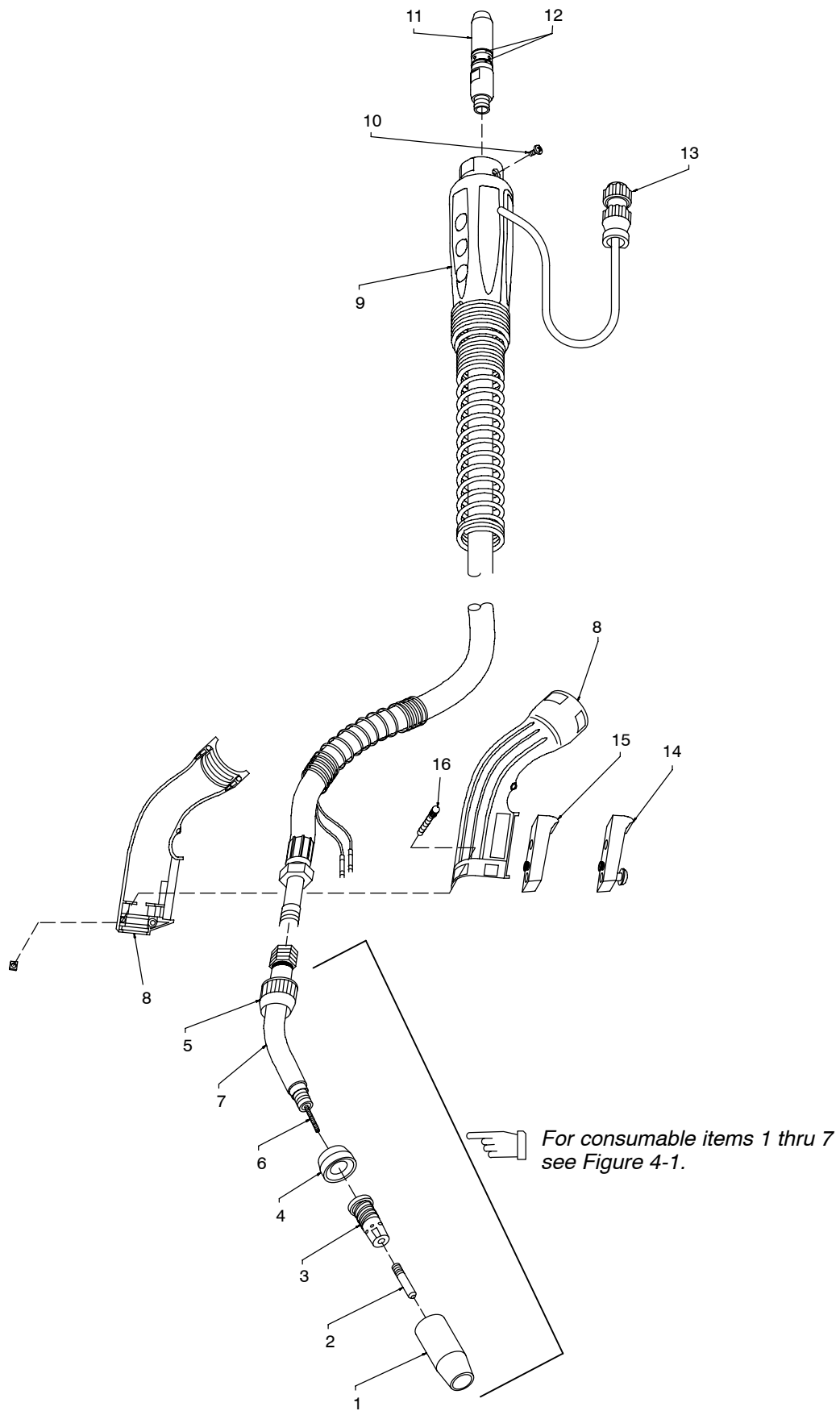


Figure 4-2. C-30, C-40, C-50, And C-60 Guns

Item No.	Part No.	Description	Quantity
----------	----------	-------------	----------

Figure 4-2. C-30, C-40, C-50, And C-60 Guns

Table 4-10. Parts

8	199 630	HANDLE KIT, 300 & 400 amp models (includes)	1
	199 632	SCREW, M4 x 18	4
	199 633	NUT, M4	4
	199 634	SCREW, M3 x 11	1
	199 635	NUT, M3	1
	199 647	LABEL, gun handle Miller Roughneck	2
8	199 631	HANDLE KIT, 500 & 600 amp models (includes)	1
	199 632	SCREW, M4 x 18	4
	199 633	NUT, M4	4
	199 647	LABEL, gun handle Miller Roughneck	2
9	199 648	LABEL, back-end C-3010	1
9	199 649	LABEL, back-end C-3012	1
9	199 650	LABEL, back-end C-3015	1
9	199 651	LABEL, back-end C-4010	1
9	199 652	LABEL, back-end C-4012	1
9	199 653	LABEL, back-end C-4015	1
9	199 654	LABEL, back-end C-5010	1
9	199 655	LABEL, back-end C-5012	1
9	199 656	LABEL, back-end C-5015	1
9	199 657	LABEL, back-end C-6010	1
9	199 659	LABEL, back-end C-6012	1
9	199 660	LABEL, back-end C-6015	1
10	199 637	SCREW, machine binding head	1
11	199 640	ADAPTER, Miller power pin (includes)	1
12	079 974	O-RING, Miller power pin	2
13	079 878	HOUSING, plug and pins (includes)	1
	079 531	CONN, circ cpc clamp str rlf size 11 .453 OD	1
14	◆199 661	SWITCH, locking trigger	1
15	199 628	SWITCH, trigger (standard on all guns)	1
16	199 629	SWITCH, contact pin	2
	◆199 662	HOOK, gun	1
	◆199 663	KIT, adapter Miller to old Hobart/Thermal/Tweco (includes)	1
	202 916	ADAPTER, Roughneck to old Hobart	1
	201 727	CONTROL LEADS, Hobart	1
	◆199 664	KIT, adapter Miller to Lincoln (includes)	1
	202 918	ADAPTER, Roughneck to Lincoln	1
	201 728	CONTROL LEADS, Lincoln	1

◆ OPTIONAL

+Includes nozzle insulator 198 856 and threaded nut cover 202 292.

*All contact tips are packaged in bags of 25.

BE SURE TO PROVIDE MODEL WHEN ORDERING REPLACEMENT PARTS.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model is required when ordering parts from your local distributor.

Notes

Lined area for taking notes.



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Notes

DECIMAL EQUIVALENTS

	$\frac{1}{64}$.015625
	$\frac{1}{32}$.03125
	$\frac{3}{64}$.046875
$\frac{1}{16}$	$\frac{5}{64}$.0625
	$\frac{7}{64}$.078125
	$\frac{9}{32}$	.09375
	$\frac{11}{64}$	.109375
$\frac{1}{8}$	$\frac{13}{64}$	.125
	$\frac{15}{64}$	.140625
	$\frac{17}{32}$	.15625
	$\frac{19}{64}$	.171875
$\frac{3}{16}$	$\frac{21}{64}$	.1875
	$\frac{23}{64}$	.203125
	$\frac{25}{32}$	.21875
	$\frac{27}{64}$	.234375
$\frac{1}{4}$	$\frac{29}{64}$	.25
	$\frac{31}{64}$	.265625
	$\frac{33}{32}$	.28125
	$\frac{35}{64}$	.296875
$\frac{5}{16}$	$\frac{37}{64}$	.3125
	$\frac{39}{64}$	.328125
	$\frac{41}{32}$	.34375
	$\frac{43}{64}$	.359375
$\frac{3}{8}$	$\frac{45}{64}$	.375
	$\frac{47}{64}$	.390625
	$\frac{49}{32}$	.40625
	$\frac{51}{64}$	.421875
$\frac{7}{16}$	$\frac{53}{64}$	.4375
	$\frac{55}{64}$	.453125
	$\frac{57}{32}$	.46875
	$\frac{59}{64}$	.484375
$\frac{1}{2}$	$\frac{61}{64}$	.5
	$\frac{63}{64}$	.515625
	$\frac{65}{32}$	.53125
	$\frac{67}{64}$	.546875
$\frac{9}{16}$	$\frac{69}{64}$	.5625
	$\frac{71}{64}$	.578125
	$\frac{73}{32}$	.59375
	$\frac{75}{64}$	.609375
$\frac{5}{8}$	$\frac{77}{64}$	.625
	$\frac{79}{64}$	.640625
	$\frac{81}{32}$	.65625
	$\frac{83}{64}$	.671875
$\frac{11}{16}$	$\frac{85}{64}$	.6875
	$\frac{87}{64}$	.703125
	$\frac{89}{32}$	.71875
	$\frac{91}{64}$	.734375
$\frac{3}{4}$	$\frac{93}{64}$	.75
	$\frac{95}{64}$	.765625
	$\frac{97}{32}$	.78125
	$\frac{99}{64}$	.796875
$\frac{13}{16}$	$\frac{101}{64}$	.8125
	$\frac{103}{64}$	.828125
	$\frac{105}{32}$	.84375
	$\frac{107}{64}$	.859375
$\frac{7}{8}$	$\frac{109}{64}$	.875
	$\frac{111}{64}$	.890625
	$\frac{113}{32}$	.90625
	$\frac{115}{64}$	.921875
$\frac{15}{16}$	$\frac{117}{64}$	.9375
	$\frac{119}{64}$	.953125
	$\frac{121}{32}$	.96875
	$\frac{123}{64}$	.984375
1		1.

TRUE BLUE[®]

WARRANTY

Effective January 1, 2005

(Equipment with a serial number preface of "LF" or newer)

This limited warranty supersedes all previous Miller warranties and is exclusive with no other guarantees or warranties expressed or implied.

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LIMITED WARRANTY - Subject to the terms and conditions below, Miller Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to a North American distributor or eighteen months after the equipment is sent to an International distributor.

1. 5 Years Parts — 3 Years Labor
 - * Original main power rectifiers
 - * Inverters (input and output rectifiers only)
2. 3 Years — Parts and Labor
 - * Transformer/Rectifier Power Sources
 - * Plasma Arc Cutting Power Sources
 - * Semi-Automatic and Automatic Wire Feeders
 - * Inverter Power Sources (Unless Otherwise Stated)
 - * Water Coolant Systems (Integrated)
 - * Intelligig
 - * Maxstar 150
 - * Engine Driven Welding Generators
(NOTE: Engines are warranted separately by the engine manufacturer.)
3. 1 Year — Parts and Labor Unless Specified
 - * DS-2 Wire Feeder
 - * Motor Driven Guns (w/exception of Spoolmate Spoolguns)
 - * Process Controllers
 - * Positioners and Controllers
 - * Automatic Motion Devices
 - * RFCS Foot Controls
 - * Induction Heating Power Sources and Coolers
 - * Water Coolant Systems (Non-Integrated)
 - * Flowgauge and Flowmeter Regulators (No Labor)
 - * HF Units
 - * Grids
 - * Maxstar 85, 140
 - * Spot Welders
 - * Load Banks
 - * Arc Stud Power Sources & Arc Stud Guns
 - * Racks
 - * Running Gear/Trailers
 - * Plasma Cutting Torches (except APT & SAF Models)
 - * Field Options
(NOTE: Field options are covered under True Blue[®] for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
4. 6 Months — Batteries
5. 90 Days — Parts
 - * MIG Guns/TIG Torches

- * Induction Heating Coils and Blankets
- * APT & SAF Model Plasma Cutting Torches
- * Remote Controls
- * Accessory Kits
- * Replacement Parts (No labor)
- * Spoolmate Spoolguns
- * Canvas Covers

Miller's True Blue[®] Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, slip rings, relays or parts that fail due to normal wear. (Exception: brushes, slip rings, and relays are covered on Bobcat, Trailblazer, and Legend models.)**
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at Miller's option: (1) repair; or (2) replacement; or, where authorized in writing by Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Miller service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. Miller's option of repair or replacement will be F.O.B., Factory at Appleton, Wisconsin, or F.O.B. at a Miller authorized service facility as determined by Miller. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

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Owner's Record

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Model Name

Serial/Style Number

Purchase Date

(Date which equipment was delivered to original customer.)

Distributor

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City

State

Zip



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