



C-67 MACHINE CUTTING TORCHES

CAUTION

These instructions are for experienced operators. If you are not fully familiar with the principles of operation and safe practices for oxy-fuel gas equipment, we urge you to read our booklet "Precautions and Safe Practices for Gas Welding, Cutting, and Heating", Form 2035. Do NOT permit untrained persons to operate this equipment. Do NOT attempt to operate this equipment until you have read and fully understand these instructions. If you do not fully understand these Instructions, contact your supplier for further information.

The cutting torches covered by these instructions are listed by Third Party Listed only when using cutting nozzles and parts manufactured by the ESAB Welding & Cutting Products to the specifications on file with Third Party Listed, and when they are used in the gas service for which they are designed and listed. The use of other parts that cause damage or failure to the equipment will void the manufacturer's warranty.

Table 1 - Standard C-67 Torch Assemblies

Torch Model	Part No.	Type of Injector Installed*	Overall Length of Torch
C-67-20-I	28X31	LLPMC	20-1/2-in.
C-67-20-II	28X28	LPHC	20-1/2-in.
C-67-20-III	28X29	LPMC	20-1/2-in.
C-67-12-II	28X35	LPHC	12-3/4-in.

Note: For listing of C-67 torches made for special customer orders, see page 6.

**For explanation, see Introduction.*

INTRODUCTION

The C-67 machine cutting torches are designed for use with any fuel gas such as FG-2 and other propylene gases, natural gas, propane, MAPP, etc. but NOT for acetylene. DO NOT USE C-67 TORCH WITH ACETYLENE.

The C-67-1400 torches have three-hose connections for independent supply of cutting oxygen, preheat oxygen, and fuel gas. They are equipped with valves. All have 1-3/8-in. diameter casing and are equipped with 32-pitch rack for use with any ESAB cutting machine.

The capability of the torch depends on the type of injector installed in the torch. Each torch listed in Table 1 is equipped with a particular injector. Table 2 lists interchangeable injectors which are available as accessories. The injectors are defined as follows:

Table 2 - C-67 Accessory Injectors

For C-67 Torch Length	Injector Part No.		
	LLPMC	LPHC	LPMC
20	01Y61	01Y57	01Y56
12	N / A	01Y75	01Y74

LLPMC Injector Type I — low, pressure, medium capacity for cutting up to 8-in. thick steel at any usable fuel gas pressure from near zero psig on up. This injector is best suited for multi-torch operation since it is very insensitive to manifold pressure changes resulting from changing the number of torches in use.

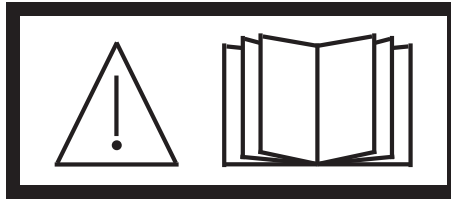
LPHC Injector Type II — low pressure, high capacity for cutting up to 20-in. thick steel at any usable fuel gas pressure from 3 psig on up. This injector is recommended for heavy preheat applications such as beveling, auxiliary preheat, etc. It is not recommended for use in multi-torch operation.

LPMC Injector Type III — low, pressure, medium capacity for cutting up to 14-in. thick steel at any usable fuel gas pressure from one psig on up. This injector can provide a heavier preheat than the LLPMC injector and it is slightly sensitive to pressure changes in a multi-torch operation.

**Be sure this information reaches the operator.
You can get extra copies through your supplier.**



ESAB Welding & Cutting Products



READ AND UNDERSTAND INSTRUCTION MANUAL BEFORE INSTALLING OR OPERATING. PROTECT YOURSELF AND OTHERS!

CAUTION

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USER RESPONSIBILITY

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and/or inserts when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically. Malfunctioning or poorly maintained equipment should not be used. Parts that are broken, missing, worn, distorted or contaminated should be replaced immediately. Should such repair or replacement become necessary, the manufacturer recommends that a telephone or written request for service advice be made to the Authorized Distributor from whom it was purchased.

This equipment or any of its parts should not be altered without the prior written approval of the manufacturer. The user of this equipment shall have the sole responsibility for any malfunction which results from improper use, faulty maintenance, damage, improper repair or alteration by anyone other than the manufacturer or a service facility designated by the manufacturer.

IMPORTANT SAFEGUARDS

When using Oxy-Fuel Gas Torches, basic safety precautions should always be followed:

- a. Never use Acetylene gas at a pressure over 15 psig.
- b. Never use damaged equipment.
- c. Never use oil or grease on or around Oxygen equipment.
- d. Never use Oxygen or fuel gas to blow dirt or dust off clothing or equipment.
- e. Never light a torch with matches or a lighter. Always use a striker.
- f. Always wear the proper welding goggles, gloves and clothing when operating Oxy-Acetylene equipment. Pants should not have cuffs.
- g. Do not carry lighters, matches or other flammable objects in pockets when welding or cutting.
- h. Always be aware of others around you when using a torch.
- i. Be careful not to let welding hoses come into contact with torch flame or sparks from cutting.
- j. SAVE THESE INSTRUCTIONS.

**BE SURE THIS INFORMATION REACHES THE OPERATOR.
YOU CAN GET EXTRA COPIES THROUGH YOUR SUPPLIER.**

SAVE THESE INSTRUCTIONS!

SAFETY PRECAUTIONS

WARNING

These Safety Precautions are for your protection. They summarize precautionary information from the references listed in Additional Safety Information section. Before performing any installation or operating procedures, be sure to read and follow the safety precautions listed below as well as all other manuals, material safety data sheets, labels, etc. Failure to observe Safety Precautions can result in injury or death.



PROTECT YOURSELF AND OTHERS - Some welding, cutting and gouging processes are noisy and require ear protection. Hot metal can cause skin burns and heat rays may injure eyes. Training in the proper use of the processes and equipment is essential to prevent accidents. Also:

1. Always wear safety glasses with side shields in any work area, even if welding helmets, face shields, or goggles are also required.
2. Wear flameproof gauntlet type gloves, heavy long-sleeve shirt, cuffless trousers, high-topped shoes, and a welding helmet or cap for hair protection, to protect against hot sparks and hot metal. A flameproof apron may also be desirable as protection against radiated heat and sparks.
3. Hot sparks or metal can lodge in rolled up sleeves, trousers cuffs, or pockets. Sleeves and collars should be kept buttoned, and open pockets eliminated from the front of clothing.
4. Protect other personnel from hot sparks with a suitable non-flammable partition or curtains.
5. Use goggles over safety glasses when chipping slag or grinding. Chipped slag may be hot and can travel considerable distances. Bystanders should also wear goggles over safety glasses.



FIRES AND EXPLOSIONS - Heat from a flame can act as an ignition source. Hot slag or sparks can also cause fires or explosions. Therefore:

1. Remove all combustible materials well away from the work area or completely cover the materials with a protective non-flammable covering. Combustible materials include wood, cloth, sawdust, liquid and gas fuels, solvents, paints and coatings, paper, etc.
2. Hot sparks or hot metal can fall through cracks or crevices in floors or wall openings and cause a hidden smoldering fire on the floor below. Make certain that such openings are protected from hot sparks and metal.
3. Do not weld, cut, or perform any other hot work on materials, containers, or piping until it has been completely cleaned so that no substances on the material can produce flammable or toxic vapors. Do not do hot work on closed containers. They may explode.
4. Have fire extinguishing equipment handy for instant use, such as a garden hose, a pail of water or sand, or portable fire extinguisher. Be sure you are trained in its use.
5. After completing operations, inspect the work area to be sure that there are no hot sparks or hot metal which could cause a later fire. Use fire watchers when necessary.
6. For additional information, refer to NFPA Standard 51B, "Fire Prevention in Use of Cutting and Welding Processes", which is available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.



FUMES AND GASES - Fumes and gases, particularly in confined spaces, can cause discomfort or injury. Do not breathe fumes or gases from welding or cutting. Therefore:

1. Always provide adequate ventilation in the work area by natural or mechanical ventilation means. Do not weld, cut, or gouge on materials such as galvanized steel, stainless steel, copper, zinc, lead, beryllium, or cadmium unless positive mechanical ventilation is provided. Do not breathe fumes and gases from these materials.
2. If you develop momentary eye, nose, or throat irritation while operating, this is an indication that ventilation is not adequate. Stop work at once and take necessary steps to improve ventilation in the work area. Do not continue to operate if physical discomfort persists.

3. Refer to ANSI/ASC Standard Z49.1 listed below for specific ventilation recommendations.

4. **WARNING:** This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code §25249.5 et seq.)



EQUIPMENT MAINTENANCE - Faulty or improperly maintained equipment, such as torches, hoses and regulators, can result in poor work, but even more important, it can cause injury or death through fires. Therefore:

1. Always have qualified personnel perform the installation, troubleshooting, and maintenance work. Do not operate or repair any equipment unless you are qualified to do so.
2. Keep all oxy-fuel equipment free of grease or oil. Grease, oil, and other similar combustible materials, when ignited, can burn violently in the presence of oxygen.
3. Do not abuse any equipment or accessories. Keep equipment away from heat and wet conditions, oil or grease, corrosive atmospheres and inclement weather.
4. Keep all safety devices in position and in good repair.
5. Use equipment for its intended purpose. Do not modify it in any manner.



GAS CYLINDER HANDLING - Gas cylinders, if mishandled, can rupture or explode violently. Sudden rupture of a cylinder, valve or relief device can injure or kill you. Therefore:

1. Use the proper gas for the process and use the proper pressure reducing regulator designed to operate from the compressed gas cylinder. Do not use adaptors to mount the regulator on the cylinder. Maintain hoses and fittings in good condition. Follow manufacturer's operating instructions for mounting the regulator to the gas cylinder.
2. Always secure cylinders in an upright position by chain or strap to suitable hand trucks, benches, walls, post, or racks. Never secure cylinders to work tables or fixtures where they may become part of an electrical circuit.
3. When not in use, keep cylinder valves closed. Have the valve protection cap in place on top of the cylinder if no regulators is installed. Secure and move cylinders by using suitable hand trucks. Avoid rough handling of cylinders.
4. Locate cylinders away from heat, sparks, or flame of a welding, cutting, or gouging operation. Never strike an arc on a cylinder.
5. For additional information, refer to CGA Standard P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders", which is available from the Compressed Gas Association, 1235 Jefferson Davis Highway, Arlington, VA 22202.



ADDITIONAL SAFETY INFORMATION - For more information on safe practices for oxy-fuel welding and cutting equipment, ask your distributor for a copy of "Precautions and Safe Practices for Gas Welding, Cutting, and Heating", Form 2035. Gas apparatus safety guidelines are also available on video cassettes from your distributor.

The following publications, which are available from the American Welding Society, 550 N.W. LeJuene Road, Miami, FL 33126, are recommended to you:

1. ANSI/AWS Z49.1 - "Safety in Welding and Cutting".
2. AWS F4.1 - "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances".
3. AWS SP - "Safe Practices" - Reprint, Welding Handbook.



MEANING OF SYMBOLS - As used throughout this manual: Means Attention! Be Alert! Your safety is involved.

! DANGER

Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.

! WARNING

Means potential hazards which could result in personal injury or loss of life.

! CAUTION

Means hazards which could result in minor personal injury.

OPERATING INSTRUCTIONS

CONNECTING

1. Follow all instructions supplied with the regulators. Attach one regulator for cutting oxygen supply, one for preheat oxygen, and one for fuel gas.

NOTE: *If gas is being supplied from a pipeline, a check valve or a hydraulic must be installed between pipeline shut-off valve and torch (Ref: National Fire Protection Association Standard No. 51.)*

2. Attach hoses from each regulator to the proper connections on the torch (the green oxygen hoses have right-hand threaded nuts and the red fuel gas connection nuts are left-handed). Tighten all connection nuts with a wrench.
3. Attach nozzle to torch head, and tighten nozzle nut with a wrench.
4. Check throttle valve packing nuts for tightness.



WARNING

Flashbacks can cause serious burns.

Be sure gas flow is sufficient for head or nozzle size. Adjust regulators for proper PSIG pressures. Adjust throttle valves properly. Keep torch in good repair. **DO NOT** throttle back gases to use large head or nozzle on thin material.

ADJUSTING GAS PRESSURES

Fuel Gas: If fuel gas is supplied from a station outlet through a check valve or hydraulic, merely open the station valve. If fuel gas is being supplied through a station or cylinder regulator, open the fuel gas valve on the torch, turn in the pressure-adjusting screw on the regulator until the regulator delivery-pressure gauge indicates the desired pressure. (See operating data on page 3.) Then close the cutting oxygen valve.

Repeat procedure with the preheat oxygen.

NOTE: *When gaugeless regulators are used, do not open torch valves. Merely turn in the pressure-adjusting screws to desired pressures as indicated on the scales of regulator caps.*

TESTING FOR LEAKS

Every welding and cutting outfit should be thoroughly tested for leaks after it is first hooked up, and at regular intervals thereafter. After all connections have been made, make sure all valves on the torch handle are closed. Then turn in the pressure adjusting screw on each regulator until its delivery pressure gauge registers a reading greater than the normal operating pressure. Using Leak Test Solution suitable for oxygen service, such as P/N 998771 (8 oz. container), check for leaks at the cylinder valves, the cylinder-to-regulator connections, the regulator-to-hose connections, and the hose-to-torch connections. If bubbling at any point indicates leakage, tighten the connection. If this does not stop the leakage, close the appropriate cylinder valve, open the torch valve to remove all pressure from the line, and finally release the regulator pressure-adjusting screw by turning it counterclockwise. Then break the leaky connection, wipe metal seating surfaces with a clean, dry cloth, and examine them for nicks and scratches. Remake the connection(s) and retest. Do not try to light the torch until you are satisfied that all connections are gas-tight. After lighting the torch, and adjusting the flames, use leak test solution to check for leakage at all torch valves.

LIGHTING AND FLAME ADJUSTMENT

Open the preheat valve wide (two turns). Open the fuel gas valve about one turn. Light the gas at the nozzle with a friction lighter. Then open the cutting oxygen valve and adjust flames with the fuel gas valve. The hottest flames are obtained when the inner cones are as short as possible. Do not throttle the preheat oxygen valve unless flames blow off, or burn away from the nozzle.

NOTE: *Because of the several factors involved (injector nozzle size, gas pressures) the adjustment procedures given above do not apply in all situations. However, this is a good rule-of-thumb if you want preheat flames of maximum effectiveness: you should usually be able to keep one preheat valve wide open if regulator oxygen pressure has been set correctly for the nozzle in use.*

SHUTTING OFF

Close the cutting oxygen valve. Then close the fuel gas valve, and finally the preheat oxygen valve.

If operations are to be stopped for a half-hour or more, all pressure should be released from the torch, hoses, and regulators by doing the following:

1. Close each cylinder or station valve.
2. Open torch valves.
3. After relieving the gases, back out the pressure-adjusting screw of each regulator and close the torch valves.

OPERATING PRECAUTIONS

Flow: There must be proper flow of gases for safe operation and full performance. This requires the following three conditions: (1) the regulators that determine the inlet pressure to the hoses must be set to the correct pressure; (2) the hoses and their connectors must have adequate capacity for the job (hoses that are too long, too small or have connectors with small passageways can cause problems); and (3) the throttle valves on the torch must be adjusted with the procedure shown in these instructions.

Note: *Items (1) and (2) can be checked by measuring the gas pressures at the torch. Gauge adaptors are available for this purpose.*

Backfire: Improper operation of the torch may cause the flames to go out with a loud 'pop'. Such a backfire may be caused by contact of nozzle with the work, by spatter from the work, by the use of incorrect gas pressures, or by leakage at the cutting nozzle seats due to dirt or nicks on seats or to a loose nozzle nut.

Flashback: *Under certain circumstances, the flame may not 'pop' out (backfire) but instead burn back in side the torch with a shrill hissing or squeal. This is called a 'flashback'. A flashback should never occur if (1) the equipment is in good condition; (2) preheat ports on cutting nozzles or welding tips are cleaned frequently; (3) operating pressures are correct; and (4) throttle valves are adjusted properly. Should a flashback occur, IMMEDIATELY shut off the torch. Allow it to cool off for at least a minute. Then check your nozzle or tip, gas pressures, readjust regulator if necessary, and relight the torch. If flashback recurs, send the cutting torch with nozzle to your distributor for repair.*

OPERATING DATA

NOTES:

1. The tables show average values based on typical conditions. The type and quality of steel, its surface condition, the purity of oxygen, etc. will always have a bearing on the end results.
2. If cutting up to 4-in. thick steel and using medium-pressure fuel gas, 1/4-in. oxygen and fuel gas hoses up to 25-ft. long are suitable. For heavier cuts, low-pressure fuel gas or if longer hoses are required, 3/8-in. hoses are recommended.
3. Preheat gas pressures will depend on the type injector installed in the torch. (See Introduction on cover page for explanation and limitations of each type of injector.) Refer to Table 3A for preheat pressure settings.
4. Cutting oxygen pressure will depend on the nozzle used for the cutting operation. Refer to Table 3B, C, or D. Cutting oxygen pressure should be measured at the torch by using test gauge adaptor, P/N 07X17.
5. Selection of nozzle external sleeve depends on the type of fuel gas used and/or process parameters.

Table 3A - Minimum Preheat Gas Pressures Required for Various Injectors

Steel Thickness Range, inches	Min. Preheat Gas Pressures (psig) for Various Injectors						Preheat Gas Consumption cu. ft./hr.			
	LLPMC		LPHC		LPMC		Oxy - FG-2*		Oxy-Nat. Gas	
	Preh. Oxy.	Fuel Gas	Preh. Oxy.	Fuel Gas	Preh. Oxy.	Fuel Gas	Oxy.	FG-2	Preh. Oxy.	Natural Gas.
1/8 - 1	27		4		7	1/2-1	24 - 38	7 - 11	34 - 43	20 - 25
1-1-1/2	27		5		9		28 - 42	8 - 12	34 - 51	20 - 30
2 - 3	27	0 - 1/2	7		15		35 - 49	10 - 14	51 - 67	30 - 40
4 - 5	27		8		20		52 - 73	15 - 21	60 - 77	35 - 45
6 - 8	58		40	2-3	60		52 - 73	15 - 21	68 - 85	40 - 50
10	**	**	40		65		77 - 100	22 - 29	68 - 85	40 - 50
12	**	**	55		70		77 - 100	22 - 29	68 - 85	40 - 50
14	**	**	20		50		87 - 122	25 - 35	110 -145	65 - 85
16	**	**	30		**	**	87 - 122	25 - 35	110 -145	65 - 85
18	**	**	40		**	**	87 - 122	25 - 35	110 -145	65 - 85

* Consumption of Oxy-MAPP or Oxy-Propane is approximately the same as Oxy-FG-2.

**Not recommended for use in this range.

Table 3B - 1566 "HS" Series - High Speed Fuel Gas Two Piece Cutting Nozzles (High Preheat)

Nozzle		External Sleeve Part No.			Steel Thickness		Cutting Oxygen*		Cutting Speed in./min.
Size	Part No.	Nat. Gas Propane	FG-2 MAPP	FG-2 MAPP††	in.	mm	Pressure, psig	Consumption, ft ³ /hr.	
1/2 HS	639600	639322	998277	998557	1/2	13	90	70	21 - 26
3/4 HS	639601				3/4	19		101	20 - 25
1 HS	639602				1	25		129	18 - 23
1-1/2 HS	639603				1-1/2	38		180	13 - 18
2 HS	639604				2	50		250	12 - 17
2-1/2 HS	639605				2-1/2	64		295	10 - 15
4 HS	639606				4	100		370	7 - 13
6 HS	639607				6	150		502	6 - 10
8 HS	998739	14Z39	114Z08	998561	8	200	90	548	4 - 6
10 HS	998740	14Z77	639755	998558	10	250	90	815	3 - 4
					12	300			
14 HS	998741				14	350	90	1140	2 - 3
					16	400			1 - 3

NOTE: Clean cutting oxygen bores with "HS" Cleaning Kit - P/N 755F00. Use soft bristle brush (750F99) for cleaning preheat slots.

*For preheat gas pressures, see Table 3A.

† Heavy-duty sleeve, P/N 14Z96, may be substituted for the 14Z77 sleeve.

††Use where high preheat intensity is desired.

Table 3C - 1535 Series - High-Speed Fuel Gas Two-Piece Cutting Nozzles

Nozzle		External Sleeve Part No.			Steel Thickness		Cutting Oxygen*		Cutting Speed in./min.	Cleaning Tool** (Cutting)			
Size	Part No.	Nat. Gas Propane	FG-2 MAPP	FG-2 MAPP††	in.	mm	Pressure, psig	Consumption, ft ³ /hr.					
31 40 43 47 52	14Z56 14Z57 14Z58 14Z59 14Z60	14Z38	114Z07	998560	1/2	13	70 - 80	80 - 100	21 - 26	5190086			
								3/4	19		60 - 70	110 - 130	20 - 25
								1	25		65 - 75	140 - 160	19 - 24
								1-1/2	32		70 - 80	155 - 175	15 - 20
					2	38	70 - 80	205 - 225	14 - 17				
60	14Z61	14Z39	114Z08	998561	3	50	85 - 95	305 - 325	10 - 15	5190086			
								4	100		95 - 105	330 - 350	8 - 12
80	14Z64				6	150	80 - 90	515 - 535	6 - 10	5190082			
					8	200	105 - 115	670 - 690	4 - 6				

* For preheat gas pressures, see Table 3A.

** Clean cutting oxygen bores only with tapered tools listed. Use soft bristle brush (750F99) for cleaning preheat slots.

† Heavy-duty sleeve, P/N 14Z96, may be substituted for the 14Z77 sleeve.

†† Use where high preheat is desired.

Table 3D - 1567 Series - General Purpose Fuel Gas Two-Piece Cutting Nozzles (High Preheat)

Nozzle Size	Nozzle (Internal) Part No.	Sleeve (External) Part No.			Steel Thickness		Cutting Oxygen*		Cutting Speed in./min.	Cleaning Drill Size Cutting**			
		Nat. Gas Propane	FG-2 MAPP	FG-2 MAPP††	in.	mm	Pressure psig	Consumption, ft ³ /hr					
1/8	639614	639322	998277	998557	1/8	3	40	20 - 40	23 - 26	79			
	639615										45 - 65	20 - 25	69
1/2	639616								1/2	13	65 - 85	18 - 25	65
3/4	969617								3/4	19	70 - 90	15 - 24	61
	639618								1	25	95 - 115	14 - 20	54
	639619				2	50		175 - 200	10 - 14	51			
3	639620				3	75		235 - 260	7 - 11	47			
4	998734	14Z39	114Z08	998561	4	100		300 - 335		46			
8	998735	14Z77 †	639755	998558	6	150	40	450 - 480	4 - 6	39			
									8		200	560 - 590	3 - 5
12	998736				10	250	50 - 60	840 - 900	3 - 4	31			
					12	300	60 - 70	900 - 970	3 - 4				
16	998737	14Z69	998269	998559	14	350	50 - 60	1120 - 1340	3 - 4	20			
								16	400		60 - 70	1340 - 1480	2 - 3
20	998738				18	450	50 - 60	1560 - 1890	2 - 3	8			
					20	500	60 - 75	1615 - 1975	1 - 3				

* For preheat gas pressure, see Table 3A.

** Use soft-bristled brush to clean preheat slots of internal nozzles.

† Heavy-duty sleeve (14Z96) available for use in place of 14Z77 sleeve.

†† Use where high preheat is desired.

Table 3E 1534 Series - General Purpose Fuel Gas Two-Piece Cutting Nozzle (Medium Preheat)

Nozzle		External Sleeve Part No.			Steel Thickness		Cutting Oxygen*		Cutting Speed in./min.	Cleaning Drill Size Cutting*
Size	Part No.	Nat. Gas Propane	FG-2 MAPP	FG-2 MAPP††	in.	mm	Pressure psig	Consumption, ft ³ /hr		
1/8"	14Z66	14Z38	114Z07	998560	1/8	3	20 - 30	25 - 45	32 - 34	76
3/8"	14Z50				1/4	6	25 - 35	45 - 65	21 - 25	68
					3/8	10	25 - 35	55 - 75	20 - 24	
1/2"	14Z51				1/2	13	25 - 35	70 - 90	18 - 23	60
1"	14Z52	14Z39	114Z08	998561	3/4	19	25 - 35	125 - 145	15 - 21	53
					1	25	30 - 40	140 - 160	14 - 18	
					1-1/2	38	35 - 45	150 - 170	10 - 15	
4"	14Z53				2	50	20 - 30	200 - 220	10 - 14	46
					2-1/2	64	30 - 40	245 - 265	9 - 13	
					4	100	30 - 40	300 - 335	6 - 10	

* For preheat gas pressure, see Table 3A.

** Use soft-bristled brush to clean preheat slots of internal nozzles.

† Heavy-duty sleeve (14Z96) available for use in place of 14Z77 sleeve.

†† Use where high preheat is desired.

Table 3-F - 1564 Series One-Piece Cutting Nozzles FG-2 and MAPP Fuel Gases)

Nozzle		Steel Thickness		Cutting Oxygen*		Cutting Speed in./min.	Cleaning Drill Size	
Size	Part No.	in.	mm	Pressure, psig	Consumption, ft ³ /hr.		Cutting	Preheat
1/2"	638983	1/4	6	20 - 25	55 - 60	18 - 24	60	67
		1/2	13	30 - 35	70 - 80	14 - 22		
1-1/2"	638984	3/4	19	30 - 35	135 - 155	12 - 20	53	64
		1	25	35 - 40	150 - 165	11 - 17		
		1-1/2	38	40 - 45	160 - 210	10 - 15		
4"	638985	2	50	25 - 30	215 - 245	9 - 13	46	62
		3	75	30 - 35	235 - 290	7 - 10		
		4	100	35 - 40	270 - 320	6 - 9		
8"	638986	5	125	25 - 35	325 - 410	5 - 7	39	59
		6	150	35 - 45	410 - 480	4 - 6		
		8	200	55 - 65	580 - 670	3.5 - 4.5		
12"	638987	10	250	40 - 50	680 - 805	2.5 - 3.5	31	56
		12	300	55 - 65	845 - 975	2 - 3		

* For preheat gas pressures, see Table 3A.

Table 3G - 1515 Series One-Piece Cutting Nozzles (Propane or Natural Gas only)

Nozzle		Steel Thickness		Cutting Oxygen*		Cutting Speed in./min.	Cleaning Drill Size	
Size	Part No.	in.	mm	Pressure, psig	Consumption, ft ³ /hr.		Cutting	Preheat
1/2"	08Z85	1/4 1/2	6 13	20 - 25 30 - 35	55 - 60 70 - 80	18 - 24 14 - 22	60	67
1-1/2"	08Z86	3/4 1 1-1/2	19 25 38	30 - 35 35 - 40 40 - 45	135 - 155 150 - 165 160 - 210	12 - 20 11 - 17 10 - 15	53	64
4"	08Z87	2 3 4	50 75 100	25 - 30 30 - 35 35 - 40	215 - 245 235 - 290 270 - 320	9 - 13 7 - 10 6 - 9	46	62
8"	08Z88	5 6 8	125 150 200	25 - 35 35 - 45 55 - 65	325 - 410 410 - 480 580 - 670	5 - 7 4 - 6 3.5 - 4.5	39	59
12"	08Z89	10 12	250 300	40 - 50 55 - 65	680 - 805 845 - 975	2.5 - 3.5 2 - 3	31	56
16"	65Z12	16	400	60 - 70	1350 - 1450	2 - 3	20	54
18"	65Z13	18	450	70 - 80	1500 - 1700	1.5 - 2	15	53
20"	65Z14	20	500	80 - 90	1750 - 1900	1.0 - 1.5	8	52

* For preheat gas pressures, see Table 3A.

MAINTENANCE INSTRUCTIONS

For all repairs other than those covered below, send the torch to your ESAB distributor or to ESAB Remanufacturing Center, Ebenezer Road, Florence, S. C. 29501. Improperly repaired apparatus is hazardous.

Torch Valves: Leakage around a throttle valve can usually be corrected by tightening the packing nut slightly. If this does not stop the leakage, replace the throttle valve assembly.

If a valve fails to shut off completely, remove the throttle valve assembly from the torch. With a clean cloth, wipe the ball in the end of the stem. Then reinsert valve assembly and tighten it several times with maximum force. If this does not eliminate leakage, try a new throttle valve assembly. If then the throttle valve does not shut off completely, send the torch to your ESAB distributor for reseating of the body.

After installing a new throttle valve assembly, tighten the packing nut until the valve can be turned only with great difficulty. Set the unit aside for three or four hours at least, to set the packing. Then back off the packing nut until the throttle valve turns readily.

Injector: To remove the injector for inspection or replacement, first unscrew the injector chamber plug and remove the injector spring. Then run a long No. 10-32 machine screw into the threads in the end of the injector and withdraw the injector by pulling on the screw.

Before reinstalling a previously-used injector, be sure that the O-rings at each end of the injector assembly are in good condition. Replace them if necessary. Also be sure the injector chamber plug is fitted with an O-ring in good condition (even in cases where the plug carried no O-ring originally).

Cleaning Cutting Nozzles: If a cutting nozzle does not produce straight, uniform flames, or if any of the nozzle orifices become clogged, the nozzle should be cleaned. Use a soft bristle brush for cleaning the preheat slots on the internal nozzles of two-piece nozzles.

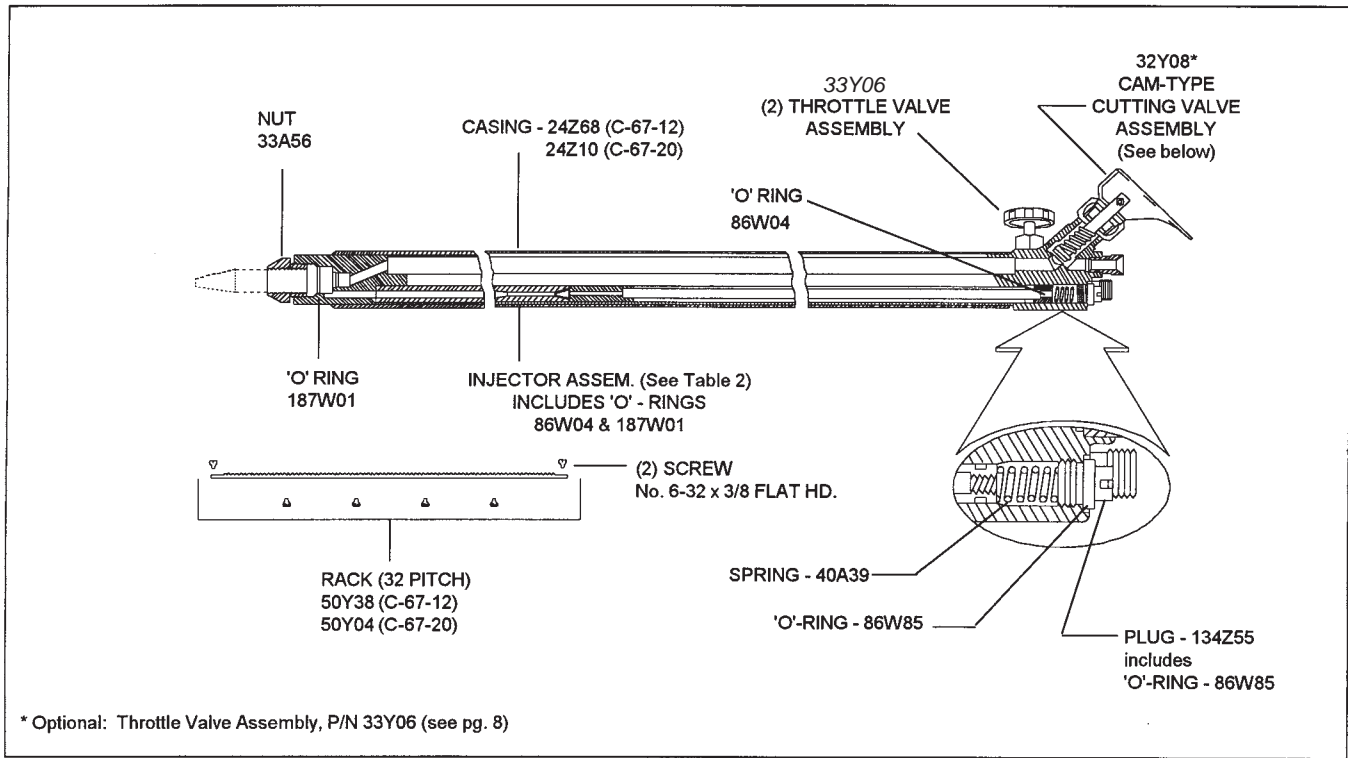
For cleaning cutting oxygen orifices on the 1566 HS series nozzles, use the non-cutting wires and tapered reamers included in the OXWELD "HS" Nozzle Cleaning Kit (P/N 755F00). On the 1535 series use only the tapered cleaning tools listed in Table 3C. Do NOT use notched type wires or twist drills on these nozzles since any metal removal will destroy the precision cutting characteristics.

Proper size twist drills or OXWELD tip cleaners (see Table 3D) can be used for cleaning oxygen orifices on the 1534 series nozzles. The relationship between OXWELD tip cleaners and drill sizes is shown on the tip cleaner case. If using twist drills, insert carefully and push it back and forth but DO NOT twist the drill.

For longer life, nozzles should be cleaned periodically in a solution of OXWELD Nozzle Cleaning Compound (P/N 761F00) made up and used as directed on the container in which it is packed.

PARTS INFORMATION

All parts which can be replaced without breaking soldered or brazed joints are illustrated and listed below. When ordering parts, please give both part number and description (including size where appropriate). Parts may be ordered from you ESAB distributor or from ESAB Welding & Cutting Products, Customer Service Department, Florence, S. C.



C-67-12 and C-67-20 Torch Assemblies

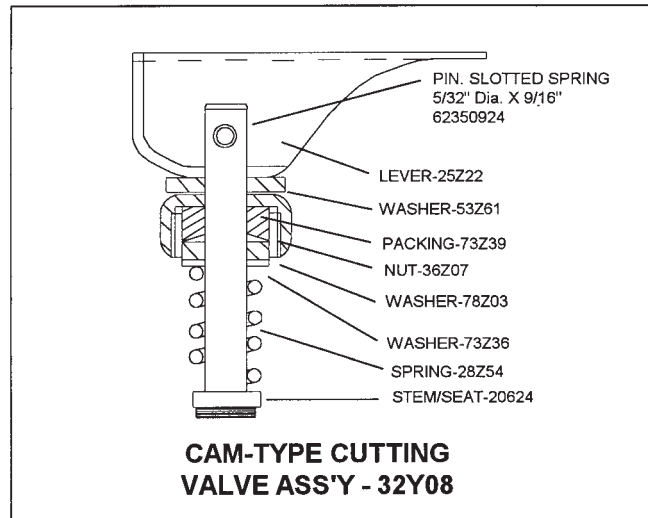
SPECIAL CUSTOMER ORDERS

The C-67 torches listed in Table 4 below can be manufactured and tested by special customer request. It may be necessary to allow a lead time of at least 60 days.

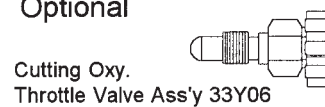
Table 4 - C-67 Torches & Injectors Available by Special Orders

Torch Length	Part No.	Type & Part No. of Injector Installed
20-1/2-in.	28X22	MPHC-01Y58
12-3/4-in.	28X34 28X33	LPMC-01Y74 MPHC-01Y73

NOTES: The special MPHC injectors should only be used with high preheat capacity nozzles such as the 1515 series nozzles and sizes 16 and 20 of the 1534 series nozzles.



Optional



**ESAB Welding & Cutting Products, Florence, SC Welding Equipment
COMMUNICATION GUIDE - CUSTOMER SERVICES**

- A. CUSTOMER SERVICE QUESTIONS:
Telephone: (800)362-7080 / Fax: (800) 634-7548 Hours: 8:00 AM to 7:00 PM EST
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- B. ENGINEERING SERVICE:
Telephone: (843) 664-4416 / Fax : (800) 446-5693 Hours: 7:30 AM to 5:00 PM EST
Warranty Returns Authorized Repair Stations Welding Equipment Troubleshooting
- C. TECHNICAL SERVICE:
Telephone: (800) ESAB-123/ Fax: (843) 664-4452 Hours: 8:00 AM to 5:00 PM EST
Part Numbers Technical Applications Specifications Equipment Recommendations
- D. LITERATURE REQUESTS:
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- E. WELDING EQUIPMENT REPAIRS:
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Repair Estimates Repair Status
- F. WELDING EQUIPMENT TRAINING
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Training School Information and Registrations
- G. WELDING PROCESS ASSISTANCE:
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- H. TECHNICAL ASST. CONSUMABLES:
Telephone : (800) 933-7070 Hours: 7:30 AM to 5:00 PM EST

IF YOU DO NOT KNOW WHOM TO CALL

Telephone: (800) ESAB-123
Fax: (843) 664-4462
Hours: 7:30 AM to 5:00 PM EST
or
visit us on the web at <http://www.esabna.com>
The ESAB web site offers
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