

Symmex[®]

C.H. SYMINGTON & COMPANY, INC.

STAR-TRAC SEMI-AUTOMATIC GOUGING TORCH





"STAR-TRAC" SEMI-AUTOMATIC GOUGING TORCH

Principles of Operation

The **SYMEX SEMI-AUTOMATIC GOUGING TORCH** is used by metal fabricators to make machine-like "U" or "J" grooves in light or heavy plate, flat or round. The "**STAR-TRAC**" grooves, bevels, gouges or cuts any kind of metal quickly and at a low cost. This torch can produce a higher quality finished job than grinding, chipping and older methods of plate preparation.

The **SYMEX "STAR-TRAC" TORCH** speeds up metal fabrication because it prepares both plates at the same time. You can square-butt two plates together and gouge a machine-like "U" groove along the seam. This "U" groove is uniform in depth and width and assures the highest quality weld deposit. The groove or cut made by the **SYMEX "STAR-TRAC" SEMI-AUTOMATIC GOUGING TORCH** is bright and clean requiring no further preparation before welding.

The "**STAR-TRAC**" uses current from a welding power source, a **SYMEX** jointed gouging electrode and ordinary compressed air. Both current and air are fed to the torch through a special concentric **SYMEX** cable with an on/off air switch. An arc is produced between the electrode and the metal which is being gouged or cut, melting the metal instantly. At the same time jets of compressed air come out of the torch head and blast the molten metal away. The resulting uniformity and quality of the cut is excellent.

The width and depth of the groove is determined by the diameter of the electrode, the electrode angle and the forward travel speed of the torch. A rack assembly on the torch provides the means for all-direction positioning of the electrode. The electrode may be racked in or out during set-up, thus saving time and permitting perfect alignment of the electrode.

The **SYMEX SEMI-AUTOMATIC** is equipped with a metal shield to protect the operator from radiated heat and metal spatter. The current carrying components of the torch are composed of high quality copper alloys to provide the best electrical conductivity. Both metal and insulating components are specially selected for high temperature use, resistance to shock and low maintenance.

Electrodes

The **SYMEX SEMI-AUTOMATIC TORCH** takes 3/8", 1/2" and 5/8" jointed "**SECURE-FIT**" electrodes. These special-blend electrodes assure superior arc stability and economy. Selection of the proper size for any application depends upon the width of the groove desired.

The **SYMEX TORCH** is equipped with one of three different shoe caps, each accepting only one size electrode. Many

users order one of each size so that the electrode size may be changed whenever necessary. Shoe caps are quickly changed. The catalog number for each cap is shown in the parts list.

Current and Air

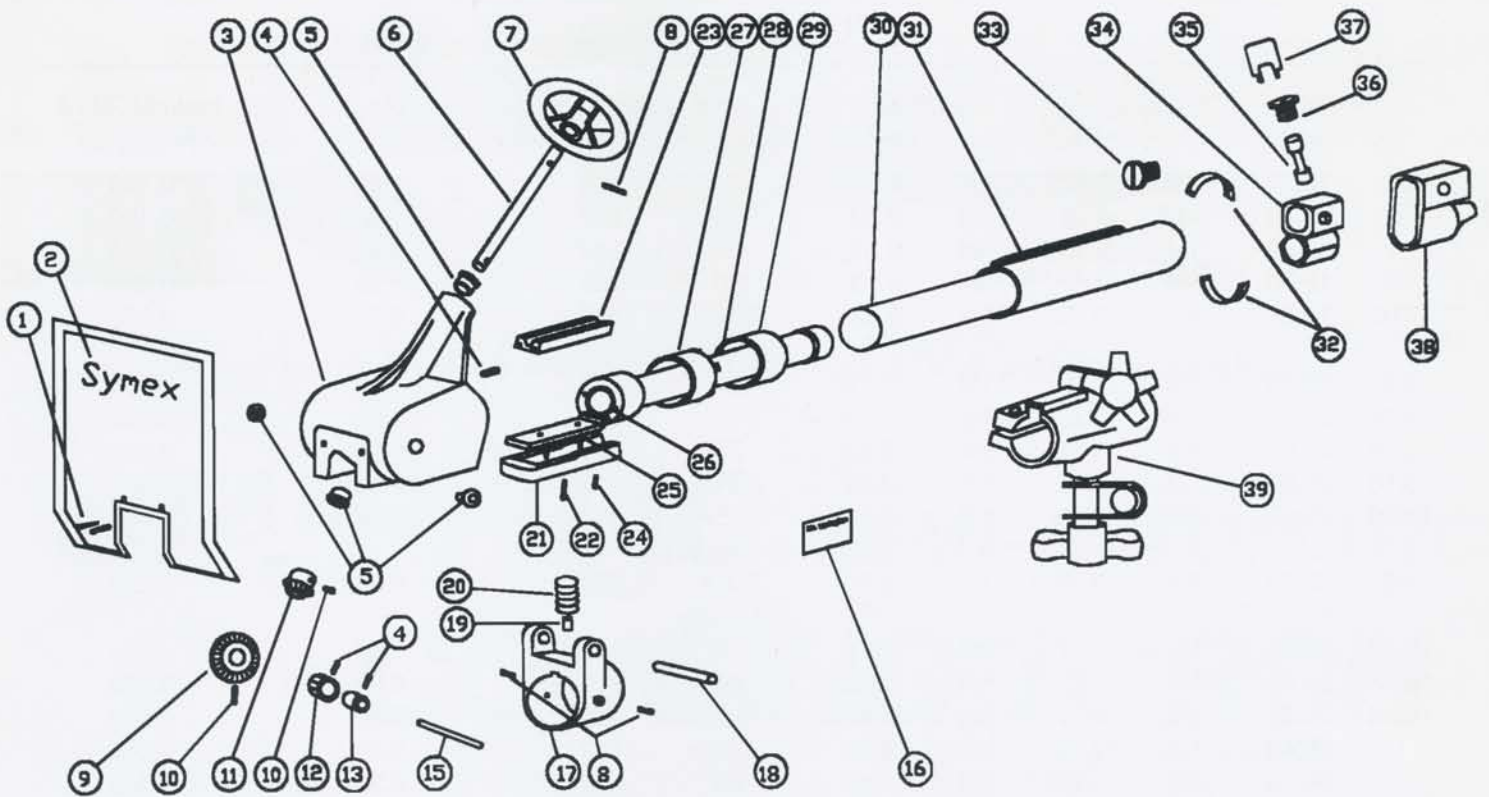
Compressed air at 80 to 100 PSI is required for the operation of the torch. Air is normally obtained from a standard shop supply. The flow of compressed air is controlled by an "on/off" air valve on the back of the torch.

Current is supplied by a standard welding power source. It is imperative that the power source be the proper size to produce the current needed. The amperage required depends upon the diameter of the electrode used. The following are minimum/maximum settings commonly used:

Electrode	3/8"	1/2"	5/8"
Minimum Amps	400	700	900
Maximum Amps	650	1000	1200

Trouble Shooting

Trouble	Cause	Solution
Hard, irregular start	Air not on before striking arc	Be sure air valve is wide open before striking arc.
Sputtering arc w/electrode slow in heating	Low amperage	Increase amperage and check circuit for poor ground or loose connections.
Sputtering arc w/electrode heating rapidly	Wrong polarity	Change polarity (sometimes polarity switch on welding machine is incorrect).
Intermittent gouging action	Travel speed too slow	Increase travel speed.
Carbon deposit	Touching electrode to work	Hold and maintain short arc.
Slag adhering to edges	Low air pressure	Increase air pressure check lines. If pressure cannot be raised, reduce travel speed.
Groove gets deeper	Electrode angle too steep, travel speed too slow	Reduce electrode angle. Increase travel speed.
Groove gets shallower	Electrode angle too flat, travel speed too fast	Increase electrode angle. Reduce travel speed.



Ref. #	Description	Catalog #	Cont.	Ref. #	Description	Catalog #
Symex "Star-Trac" Torch complete w/cable						
	For 3/8" electrode	52220		23	Shoe cap 3/8"	51010
	For 1/2" electrode	52221			Shoe cap 1/2"	51011
	For 5/8" electrode	52222			Shoe cap 5/8"	51012
Symex "Star-Trac" Torch less cable						
	For 3/8" electrode	42220		24	Shoe cap screw, front collar assy.	10091
	For 1/2" electrode	42221		25	Brass Shoe	51031
	For 5/8" electrode	42222		26	Front collar	51032
				27	Front collar insulator	51033
				28	Brass current tube	51034
				29	Rack tube insulator	51035
				30	Current tube insulator	51036
				31	Tube and rack assembly	51037
				32	Rear two-piece insulating collar	51038
				33	Air plug	51039
				34	Valve body assembly	51040
					Valve bonnet assembly	10060
				35	Spool assembly	10067
					Short button	10061
					Brass spool	10062
					Long button	10063
					O-ring (2 req'd)	10064
				36	Bonnet	10068
				37	Spanner wrench	10083
				38	Valve body insulator	51041
				39	Torch holder bracket	51042
1	Shield screw	10092				
2	Shield	51006				
3	Aluminum housing	51015				
4	Allen screw 10-32 x 1/4"	51016				
5	Brass bushing (4 req'd)	51017				
6	Hand wheel shaft	51018				
7	Hand wheel	51001				
8	Allen screw 1/2-20 x 1/2"	51019				
9	Drive gear	51020				
10	Allen screw 10-32 x 3/8"	51021				
11	Pinion gear	51003				
12	Drive roll	51009				
13	Drive roll fiber bushing	51013				
15	Drive roll shaft	51014				
16	Name plate	51023				
17	Bronze clevis	51024				
18	Clevis shaft	51025				
19	Spring retainer pin (2 req'd) 1/4 x 1/2" roll pin	51026				
20	Chrome spring	51027				
21	Insulator only	51028				
22	Insulator screw	51029				

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“U” Groove Data

Width		Depth		Electrode		Travel Speed/Min		Ft/In of	Meters/CM of
(In)	(MM)	(In)	(MM)	(In)	(MM)	(In)	(MM)	Electrode	Electrode
1/2	12.70	1/8	3.18	3/8	9.53	70	1778	1.22	0.146
1/2	12.70	3/16	4.76	3/8	9.53	44	1118	1.00	0.120
1/2	12.70	1/4	6.35	3/8	9.53	35	889	0.61	0.073
1/2	12.70	3/8	9.53	3/8	9.53	20	508	0.29	0.034
9/16	14.31	1/2	12.70	3/8	9.53	35EA	889	0.22	0.026
						(2 Passes)			
11/16	16.49	1/8	3.18	1/2	12.70	96	2438	1.19	0.143
13/16	20.67	1/4	6.35	1/2	12.70	57	1448	0.86	0.103
13/16	20.67	3/8	9.53	1/2	12.70	35	889	0.50	0.060
13/16	20.67	1/2	12.70	1/2	12.70	24	610	0.38	0.046
13/16	20.67	5/8	15.88	1/2	12.70	38EA	965	0.50	0.060
						(2 Passes)			
7/8	22.26	3/4	19.05	1/2	12.70	35EA	889	0.50	0.060
						(2 Passes)			
15/16	24.85	1/8	3.18	5/8	15.88	72	1829	1.12	0.134
15.16	24.85	1/4	6.35	5/8	15.88	48	1219	0.74	0.089
15/16	24.85	3/8	9.53	5/8	15.88	37	940	0.50	0.060
1	25.40	1/2	12.70	5/8	15.88	30	762	0.37	0.044
1	25.40	5/8	15.88	5/8	15.88	23	584	0.33	0.040
1	25.40	3/4	19.05	5/8	15.88	36EA	914	0.50	0.060
						(2 Passes)			
1	25.40	1	25.40	5/8	15.88	28EA	711	0.36	0.043
						(2 Passes)			

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