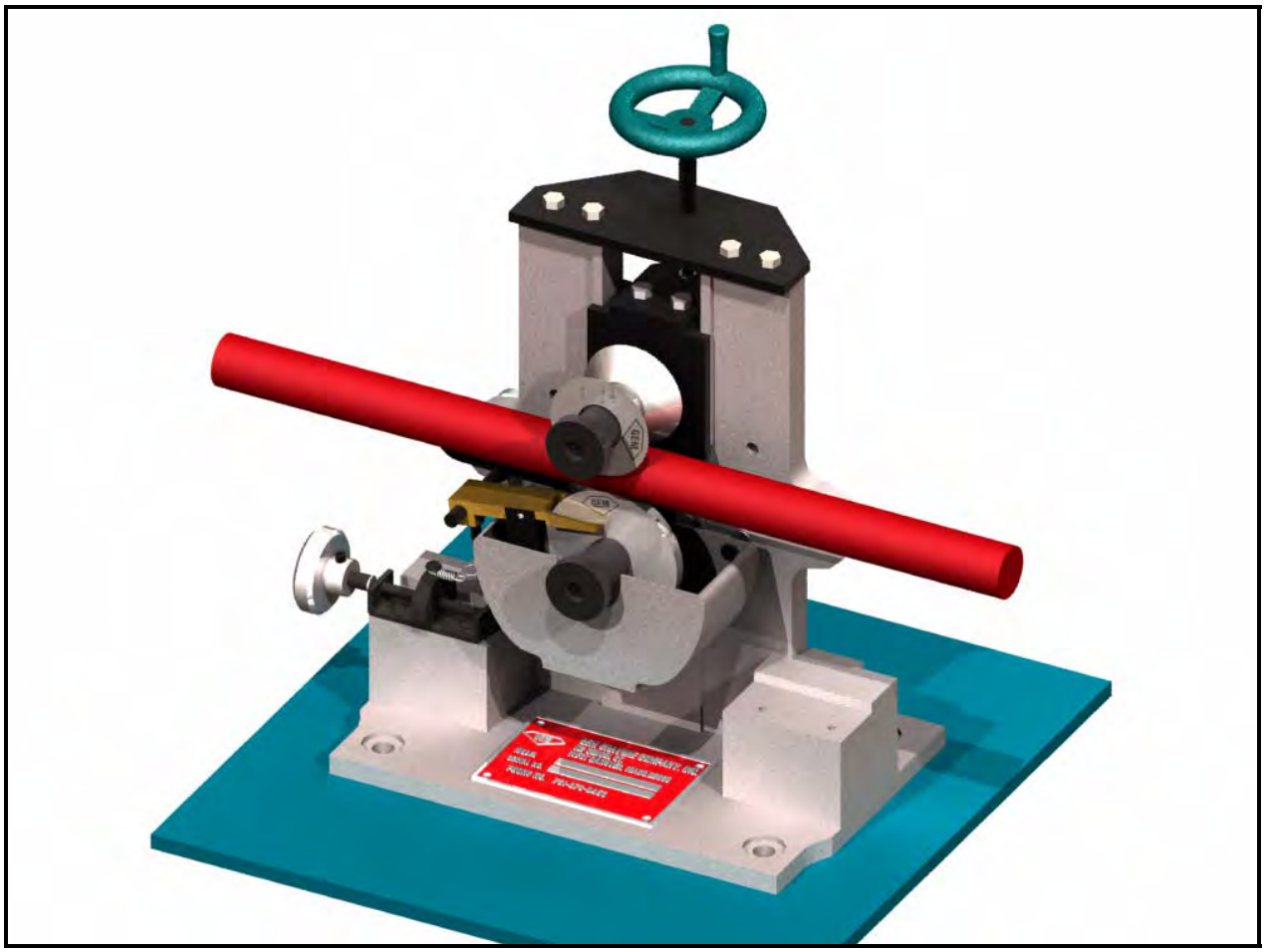
GEM GRAVURE COMPANY, INC

Gem

Type AM Marker

Parts and Assembly Manual



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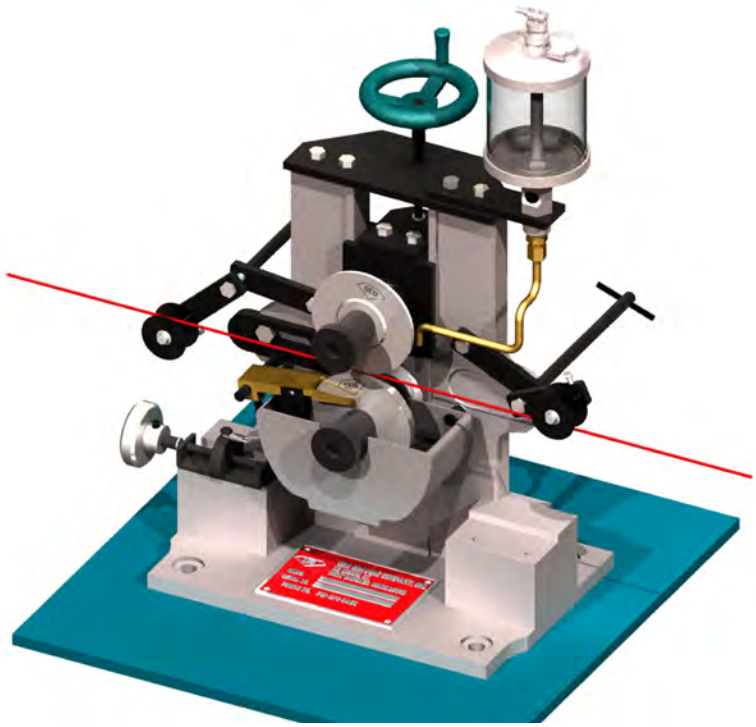
Type AM Marker With Stand



GEM Type AM Marker
Shown With Options, Options sold separately.

It is the responsibility of the user of this equipment to provide his employees with a safe place to work, including proper tools, devices, and safety equipment.

It is essential that all personnel operating this equipment be instructed by their supervisors in safety precautions as outlines on the following pages as well as proper operating procedure.

Do not make any adjustments of the machine without first shutting off all electrical power and air.

Introduction

The Gem Type AM Marker has been designed to mark wire, cable or pipe up to 3-inches in diameter at operational speeds.

- The machine accommodates standard marking wheels which utilize flat, concave or convex printing surfaces photo-engraved for striping, numbering or lettering.
- As delivered, the machine is set up and ready for use with marking wheels ordered.
- For high-speed drying and clean, sharp impressions, it is essential that Gem inks be used. Gem formulates and processes a full line of inks for marking wire- and cable- coverings of natural or synthetic rubber, polyvinyl chloride, nylon, polyethylene or “Teflon.”
- Properly maintained and cleaned, the Gem Type AM Marker can be expected to provide years of dependable service.

Set Up & Operation

- Locate the marking machine between two water troughs in the extruding line. The first trough should be of relatively short length (Cf. Note 1). Also, it should be equipped with a portable sponge weir (or dam) and should have one or more air-wipers at the outgoing end. The second trough should be of standard length.
- Note 1: The length of water in the first trough should be shortened by use of sponge dam to the point where, as the hot insulated wire emerges from the cooling water, the surface of the wire is covered with beads of water. Under this condition the air wipers drive off the remaining water from the surface most effectively.
- Adjust the height of the machine so that the wire-run passes between the bottom marking wheel and the upper guide wheel. Under operating tension the wire should just clear the bottom marking wheel. It should be necessary to crank down the guide wheel, applying a slight pressure, in order to bring the wire in contact wit the printing surface of the marking wheel.
- Center the marker so that the wire is directly over the etched legend on the marking wheel. Once the guide wheel is lowered to apply pressure on the wire, slight centering adjustments can be made by loosening the shaft-housing lock screws on the back of the machine and sliding either the top or bottom shafts in or out.

- Install wiper holder, selecting proper holder and wiper for the style of marking wheel in use (i.e., flat wiper holder for flat surface wheel; concave holder for concave surface wheel).
- Flat wiper holders use a precut, flat, poly or nylon blade, usually 1 ½" x ½" x 1/8".
- Concave wiper holders use round poly or nylon rod of varying diameters, depending on the size of the concave marking wheel in use.
- Note: Wiper rod is furnished in one foot lengths, usually 1 ¼" long. One end should be cut cleanly at a 30° angle. The wiper rod should be positioned and clamped in the wiper holder so that the angled edge fits into the concave face of the marking wheel when the wiper is positioned against the wheel.
- All the wiper holders are made to allow a small clearance between the wiper-holder side fingers and the sides of the marking wheel when positioned within the wiper.
- Mounted on the machine, the wiper holder should be at an approximately 15° angle, when contacting the printing face of the marking wheel. To accomplish this, it may be necessary to reposition the wiper-holder support assembly. Test the positioning by attaching the tension spring and cranking a slight degree of pull on the spring forcing the wiper edge against the marking wheel. Turn the wheel by hand to see if the wiper edge contacts the full face of the wheel.
- Proper wiping is essential, since the insulated wire must be clean and dry for good printing. It is not necessary to exert considerable tension on the wiper. If positioning is correct, and if the wiper edge is sharp and clean, wiping will be accomplished easily and with minimum tension.
- Excessive wiping tensions wear out wipers quickly. Further, the added top pressure required to make the wire overcome the added drag on the marking wheel causes splayed or blurred printing and shortens the life of the etched printing surface.

  Fill the inkwell only to a point where the ink covers approximately ½" of the bottom of the marking wheel. This is sufficient to provide a puddle of ink under the wiping edge of the wiper holder. Excessive filling will result in ink being splashed over the wire and the equipment.

- Ink cans should be thoroughly shaken before use each day. When not in use, cans should be capped.

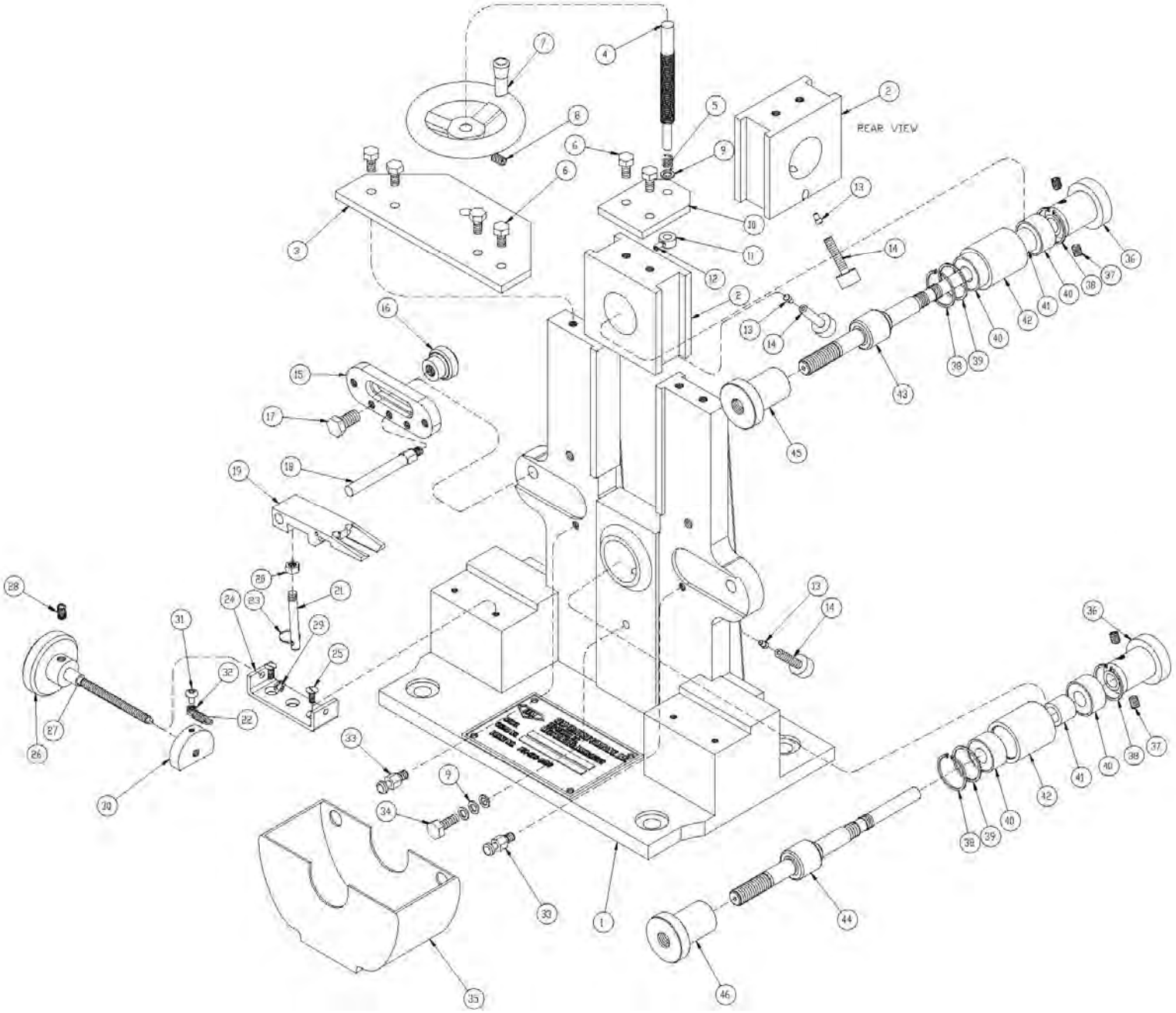
  Ink viscosities vary according to application but, for most purposes, the ink should approximate the consistency of light coffee cream.
- Under operating conditions the viscosity level of the ink can be controlled by the solvent dripper. Filled with thinner, this attachment can be set to allow one drop of solvent to penetrate the ink in the inkwell every 5 to 8 seconds.

  After completing the run, the ink remaining in the inkwells may be poured back in the can for re-use, provided the ink is relatively free of impurities. If the ink has been mixed with water or otherwise adulterated, do not return to can, but discard.
- The inkwells should be cleaned before re-filling for the next run.
- The marking wheels should be washed in a solvent and cleaned as soon as possible after use. Care should be taken to prevent ink from caking on the wheels.

Procedure to Reverse Marker Direction

1. Remove wiper holder.
2. Remove slide plate assembly to opposite side of machine. Make sure that the wiper support pin is in the same relative position in order to keep the proper angle between wiper holder and the marking wheel.
3. Remove the two 10-32 x 3/8 flathead screws that fasten the wiper tension assembly to the base casting. Turn the wiper tension assembly around, reversing position. Insert screws and fasten to the opposite side for the base casting.
4. Replace wiper holder on the side with the re-positioned slide plate and wiper tension assemblies.
5. Interchange the top and bottom shaft assemblies. This is necessary to provide the proper thread direction to keep roll nuts from loosening when marker is running.
6. If machine is equipped with a solvent dripper, remove and install on the opposite side.
    - The marker is now ready to operate in the reverse direction.

Type AM Marker Exploded Parts View



Parts List

Ref. No.	GEM Part No.	Generic Part No.	Name
1	40-1001	61-1	Base Casting
2	40-1002	61-7	Adjustable Wheel Carrier
3	40-1003	61-2	Top Plate
4	40-1004	61-3	Top Roll Adjusting Screw
5	40-1005	61-5	Top Roll Adjusting Screw Spring
6	96-0046		¼ - 20 x 5/8” Hex. H. Cap Screw
7	40-1006	61-36	Hand Wheel
8	96-0712		¼ - 20 x ¼” Socket Head Cup Point Set Screw
9	40-1007		¼” Burr
10	40-1008	61-6	Carrier Plate
11	40-1009	61-4	Top Roll Adjusting Screw Collar
12	96-0706		10 – 32 x 1/8” Socket Head Cup Point Set Screw
13	40-1010	61-10	Brass Plug for Lock Screw
14	40-1011	61-9	Bearing Housing Lock Screw
15	40-1012	61-19	Slide Plate
16	40-1268	61-34	Adjusting Knob
17	96-0216		3/8 – 24 x 1-1/4” Hex. H. Cap Screw
18	40-1014	61-20	Wiper Support Arm
19		61-64	Wheel Wiper (See page 4 for various sizes of flat and concave wipers)
20	96-0026		¼ - 20 Jam Nut
21	40-1015	61-28	Wheel Wiper Stud
22	40-1016	61-27	Wiper Spring (Tension)
23	40-1102	61-47	Split Key Ring 5/8” I.D.
24	40-1017	61-110	Tension Adjusting Bracket
25	96-0703		10 – 32 x 3/8” Flat Head S.C.S
26	40-1018	61-68	Knob for Wiper Blade Tension Screw
27	40-1019	61-69	Wiper Blade Tension Screw
28	96-0028		¼ - 20 x ¼” Cup Pt. Soc Set Screw
29	98-0237	98407A120	E-Clip
30	40-1020	61-26	Tension Follow Nut
31	96-0702		10 – 32 x 3/8” Button H. Soc. Cap Screw
32	40-1021		#10 Internal Lock Washer
33	40-1022	61-22	Ink Reservoir Pins
34	96-0014		¼ - 20 x ½” Hex. H. Cap Screw
35	40-1023	61-21	Ink Reservoir (See page 4 for various types of ink reservoirs)
36	40-1024	61-38	Rear Roll Nut
37	96-0027		1/4 – 20 x 5/16” Cup Pt. Soc. Set Screw
38	40-1025	5000-112	TruArc Retaining Ring

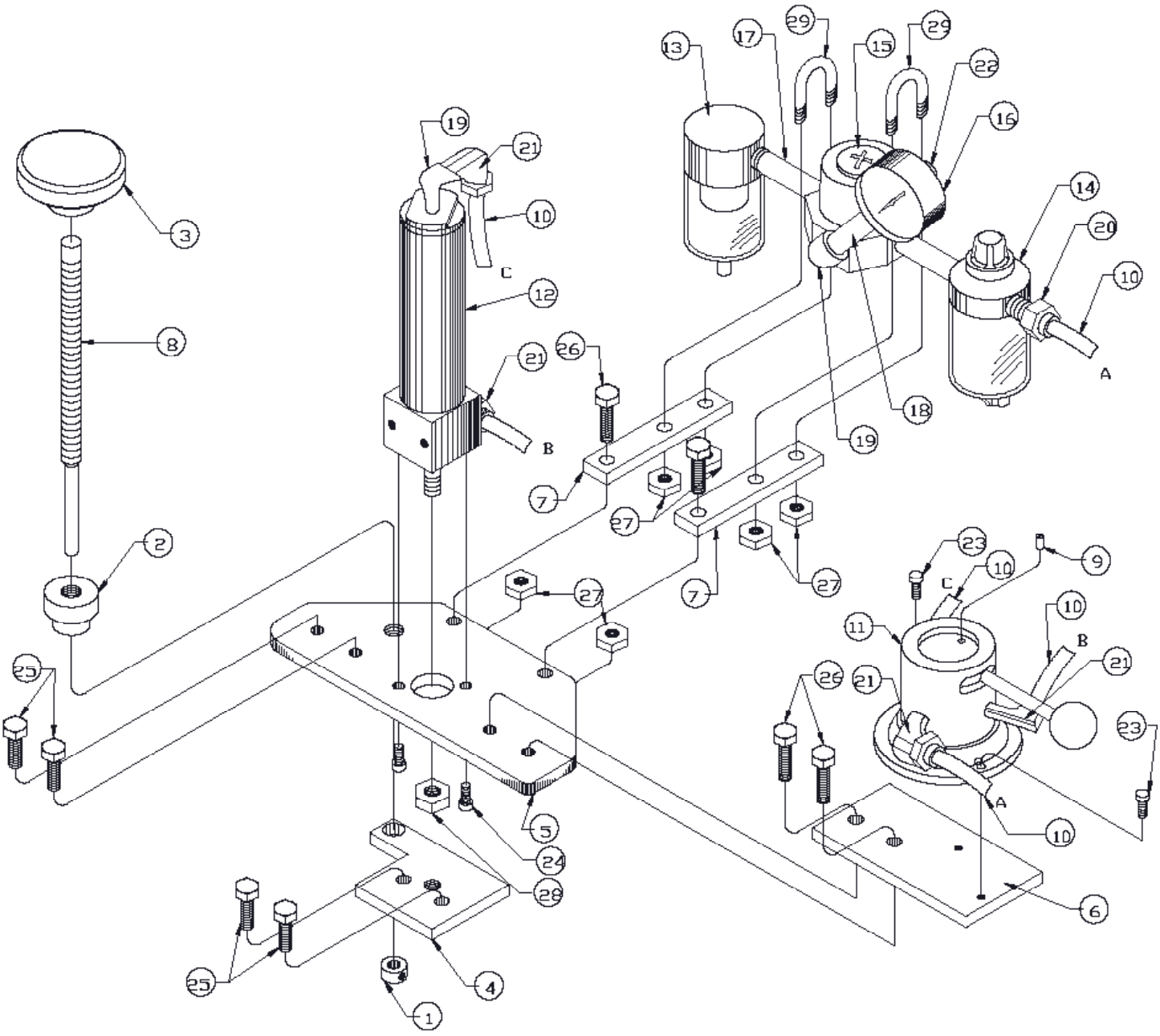
Ref. No.	GEM Part No.	Generic Part No.	Name
39	40-1273	R-8	Wavy Spring Washer
40	40-1266		Bearings
41	40-1028	61-12	Bearing Spacer
42	40-1029	61-13	Bearing Housing
43	40-1030	61-16R	Wheel Shaft (R. H.)
44	40-1031	61-16L	Wheel Shaft (L.H.)
45	40-1032	61-17R	Roll Nut (R. H.)
46	40-1033	61-17L	Roll Nut (L. H.)
*47	40-103	61-42	Wheel Spacers

*Use when running .437 wheels or smaller

Also available

. . . GEM Marking Wheels . . . GEM Inks . . . GEM Thinner . . . GEM Cleaner

Optional Air Assembly For AM - 61-21A



Parts List 61-21A

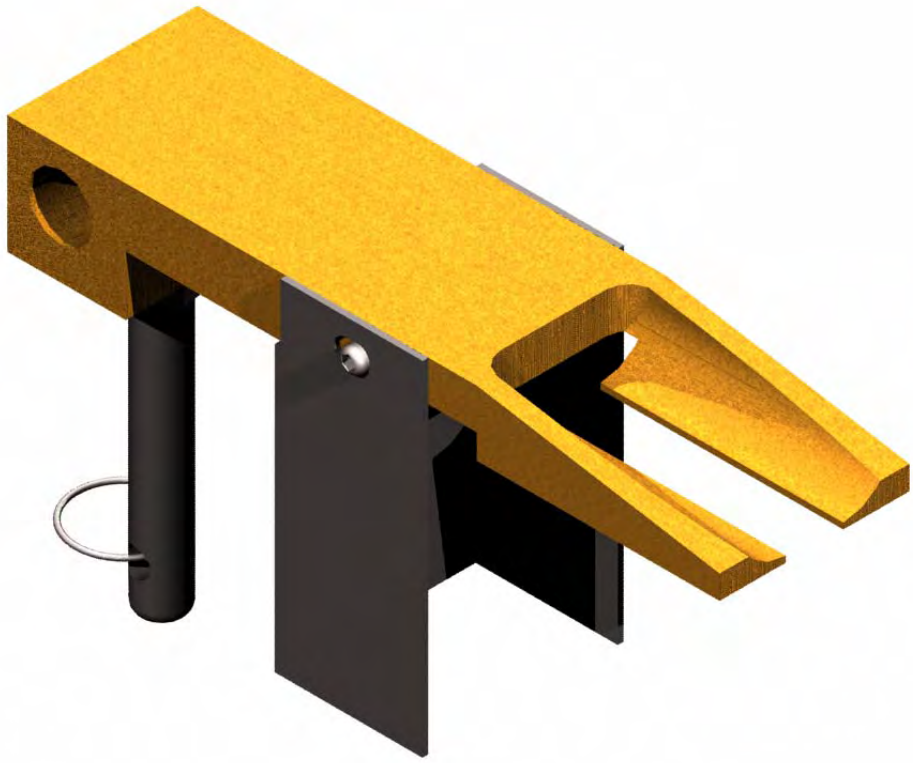
REF. #	GEM #	PART #	NAME
1	40-1009	61-4	Top Roll Adjusting Screw Collar
2	40-1268	61-34	Adjusting Knob
3	40-1018	61-68	Knob
4	40-1105	61-141	Carrier Plate
5	40-1289	61-142	Top Plate
6	40-1115	61-143	Air Valve Support Plate
7	40-1114	61-144	Air Gage Support
8	40-1120	61-145	Stop Adjustinbg Screw
9	40-1516	61-152	Choke
10	98-110		1/4 Poly Tubing
11	40-1518	4MV8	Bimba 4 way Valve
12	40-1519	BF094-D	Bimba Air Cylinder
13	40-1520	504-2	Watts Filter
14	40-1521	508-2	Watts Lubricater
15	40-1535	364-2	Watts Regulator
16	40-2166	274Z-60	Gage 0-60 PSI
17	97-0010	113-B	1/4”x1-1/2” Nipple
18	97-0005		1/8”x3” nipple
19	97-0029	116-B	1/8 Pt. Street Elbow
20	97-8878	268-P	1/8x1/4 Tube Male Connector
21	97-0060	269-P	1/8x1/4 Tube Male Elbow
22	97-0028	270-P	1/4x1/4 Tube Female Elbow
23	96-0802		8-32x1/4” Soc. Hd. Cap Screw
24	96-0705		10-32x1/2” Soc. Hd. Cap Screw
25	96-0014		1/4-20x1/2” Hex Hd. Cap Screw
26	96-0013		1/4-20x3/4” Hex Hd. Cap Screw
27	96-0040		1/4-20 Hex Nut
28			5/16-24 Hex Nut
29			1/4” U-Bolts

Parts Ordering Information

Flat Wiper Holder

Flat Wiper Holder				Poly Or Nylon Wiper Materials	
GEM Part No.	Generic Part No.	Wheel Width	Wheel Type	Corresponding Wiper Material	Wiper Materials
40-1037	61-10A.300	.300”	Flat-HS	1½” x ½” x 1/8” Poly or Nylon	Poly Wipe- 40-9033 Nylon Wipe - 40-9031
40-1038	61-10A.437	.437”	Flat-HS	1½” x ½” x 1/8” Poly or Nylon	
40-1039	61-11A.625	.625”	Flat	1½” x ½” x 1/8” Poly or Nylon	
40-1040	61-11A.750	.750”	Flat	1½” x ½” x 1/8” Poly or Nylon	
40-1041	61.11A.100	1.000”	Flat	1½” x ½” x 1/8” Poly or Nylon	

*Note: Poly or Nylon Flat Wipes purchased in packs of 100.
Note: Ink Skirt Optional



Concave Wiper Holder

Concave Wiper Holder				Wiper Materials	
GEM Part No.	Generic Part No.	Wheel Width	Wheel Radius	Wiper Material	
40-1044	61-9A #1	.080”	3/64”	3/16" Poly Rod – 40-9039	3/16" Nylon Rod – 40-9076
40-1045	61-9A #2	.093”	4/64” (1/16”)	3/16" Poly Rod – 40-9039	3/16" Nylon Rod – 40-9076
40-1046	61-9A #3	.125”	5/64”	1/4" Poly Rod – 40-9069	1/4" Nylon Rod – 40-9068
40-1047	61-9A #4	.156”	3/32”	1/4" Poly Rod – 40-9069	1/4" Nylon Rod – 40-9068
40-1048	61-9A #5	.187”	4/32” (1/8)	1/4" Poly Rod – 40-9069	1/4" Nylon Rod – 40-9068
40-1049	61-9A #6	.235”	5/32"	5/16" Poly Rod – 40-9080	5/16" Nylon Rod – 40-9079
40-1050	61-9A #7	.300”	6/32”	3/8" Poly Rod – 40-9078	3/8" Nylon Rod – 40-9077
40-1051	61-9A #8	.375”	7/32”	13/32" Poly Rod – 40-9067	13/32" Nylon Rod – 40-9066
40-1052	61-9A #9	.437”	8/32” (1/4”)	1/2" Poly Rod – 40-9065	1/2" Nylon Rod – 40-9075
			9/32”		
			13/32”		
			17/32”		
			21/32”		

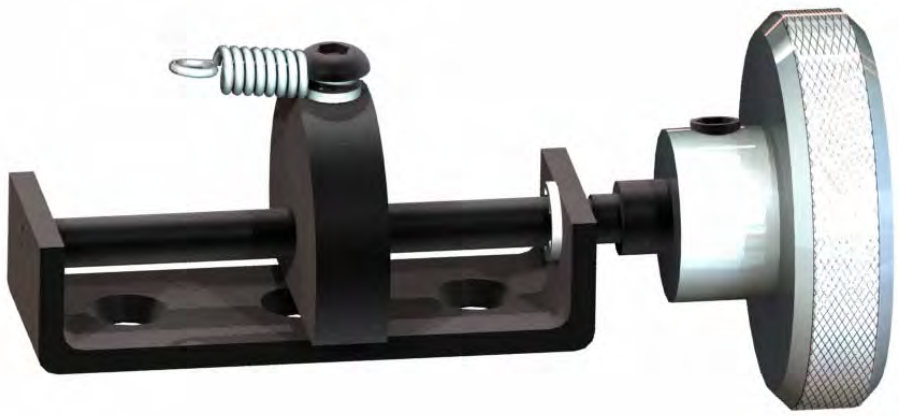
Note: Poly or Nylon Rod may be purchased in 1-ft lengths

40-1035 TOP RETAINING SPRING FOR CONCAVE WIPER
40-1026 SMALL WIPER SKIRT FOR CONCAVE WIPER OR .300 AND .437 FLAT WIPER
40-1036 LARGE WIPER SKIRT FOR .625”, .750”. AND 1.00” FLAT WIPER

Wiper Tension Assembly

40-1072 - #61 – 14A Wiper Tension Assembly, complete
Complete Assembly includes:

Qty	GEM Part Number	Generic Part Number	Description
1	40-1018	#61-68	Knob
1	40-1017	#61-110	Tension Adjusting Bracket
1	40-1019	#61-69	Tension Screw
1	40-1020	#61-26	Tension Follow Nut
1	40-1016	#61-27	Tension Spring
1	96-9706		#10-32 x 3/8” Button Head Cap Screw
1	40-1021	-	#10 Internal Lock Washer
1	96-0028	-	¼ - 20 x ¼” Cup Pt. Soc. Set Screw
1	98-0237	98407A120	E-Clip
2	96-0703	-	#10-32 x 3/8” Flat Head Screws



Wheel Shaft Assembly

Qty	Gem Part No.	Generic Part No.	Description
1	40-1073	#61-6A	Shaft Assembly, complete (R.H.)*
1	40-1074	#61-4A	Shaft Assembly, complete (L.H.)*

*Left to right machine operation
Note: When machine is operating right to left, top shaft will be L. H. and bottom R. H.

Complete Assembly includes:

Qty	Gem Part No.	Generic Part No.	Description
1	40-1031	#61-16L	Wheel Shaft (L. H.)
1	40-1030	#61-16R	Wheel Shaft (R.H.)
1	40-1033	#61-17L	Roll Nut (L. H.)
1	40-1032	#61-17R	Roll Nut (R. H.)
2	98-0298		Bearings
2	40-1025	5000-112	1-1/8” Snap Rings
1	40-1028	#61-12	Bearing Spacer
1	40-1273	R-8	Wavy Spring Washer
1	40-1024	#61-38	Rear Roll Nut
1	40-1029	#61-13	Bearing Housing

Solvent Dripper Assembly

Qty	Gem Part No.	Generic Part No.	Description
1	40-1075	#61-39A	Dripper Assembly, complete

Inkwells

Qty	Gem Part No.	Generic Part No.	Description
1	40-1077	#61-21T	Teflon Coated
1	40-1023	#61-21	Standard
1	40-1066	#61-21S	Hi-Speed (Slotted)
1	40-1078	#61-21L	Large
1	40-1079	#61-21WC	Water-cooled Reservoir (with standard hose fitting)

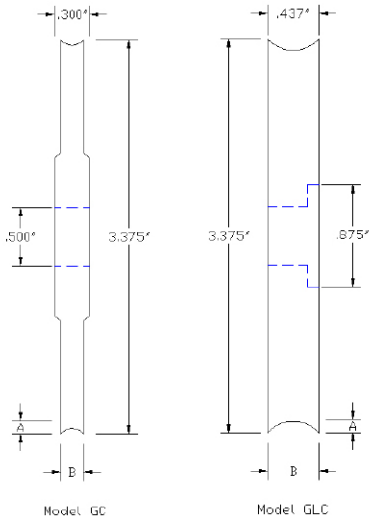
PN# 40-1080 Slide Plate Assemble Generic PN# 61-26A			
Qty	**Gem Part No.**	**Generic Part No.**	**Description**
1	40-1012	#61-19	Slide Plate
1	40-1268	#61-34	Adjusting Knob
1	96-0216		3/8 – 24 x 1 ¼” Hex Cap Screw
1	40-1014	#61-20	Wiper Support Arm

PN# 40-1081 Wire Guide Assembly

Qty	Gem Part No.	Generic Part No.	Description
1	40-1081	#61-5A	In-Out Adjusting Wire Guide (L.H. & R.H)
1	40-1082	-	Small V-Groove Roll

"V" Groove Guide Wheels

Qty		Generic Part No.	Description
1	40-1083	#61-57	¼" to ½" O.D.
1	40-1084	#61-53	½" to 1" O.D.
1	40-1085	#61-54	1" to 1 ½" O.D.
1	40-1086	#61-55	1 ½" to 2" O.D.
1	40-1118	#61-56	2" to 2 ½" O.D.



Standard Concave Guide Rolls

Min. to Max. O.D. of Insulation	Gem Part No.	Wheel Radius (A)	Width of Wheel (B)
.040 to .070	40-1090	3/64	.080
.070 to .095	40-1091	4/64 (1/16)	.093
.095 to .115	40-1092	5/64	.125
.115 to .135	40-1093	3/32	.156
.135 to .190	40-1094	4/32 (1/8)	.187
.190 to .235	40-1095	5/32	.235
.235 to .280	40-1096	6/32 (3/16)	.300
.280 to .330	40-1097	7/32	.375
.330 to .400	40-1098	8/32 (1/4)	.435
.400 to .430	40-1099	9/32	.437
.430 to .500	40-1100	13/32	.437

Adjustable Stand

Minimum height 28” to maximum height 41” with marker;
Minimum wire center line to floor 34” to maximum of 47”

98-0072 Complete Assembly

Complete Assembly Includes:

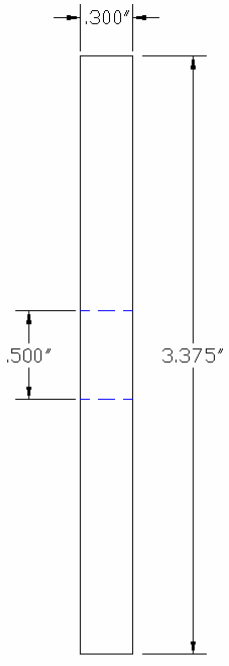
Qty	Gem Part No.	Generic Part No.	Description
1	98-0217	61-37A	AM Stand Top
1	98-0218	61-41A	AM Stand Bottom

Flat Print Wheels

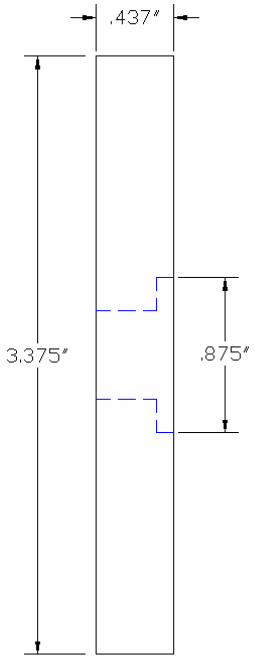
For printing on wire covering with Min.-Max. O.D. Range of:	Wheel Model-Width	Type Size	Wiper Required	Wiper Material Poly or Nylon
.040 – 0.080”	G - .300”	1/32”	.300” Flat Hi-Speed	½” x ½” x 1/8”
.080 – 0.100”	G - .300”	1/32”	(same)	(same)
.100 – 0.125”	G - .300”	3/64”	(same)	(same)
.125 – 0.200”	G - .300”	1/16”	(same)	(same)
.200 – 0.300”	GL - .437”	5/64”	.437” Flat Hi Speed	(same)
.300 – 0.400”	GL - .437”	3/32”	(same)	(same)
.400 – 0.500”	GL - .437”	7/64”	(same)	(same)
.500 – 0.700”	GM - .625”	1/8”	.625” Flat Standard	(same)
.700 – 1.000”	GP - .750”	1/8”	.750” Flat Standard	(same)
1.000 – 2.000”	GR – 1.000”	5/32”	1.000 Flat Standard	(same)

Wheels are induction hardened to Rockwell 64 and “industrial hard” chrome plated

NOTE: Models GM, GP and GR have same profile as Model GL, differing only in dimensions



Model G

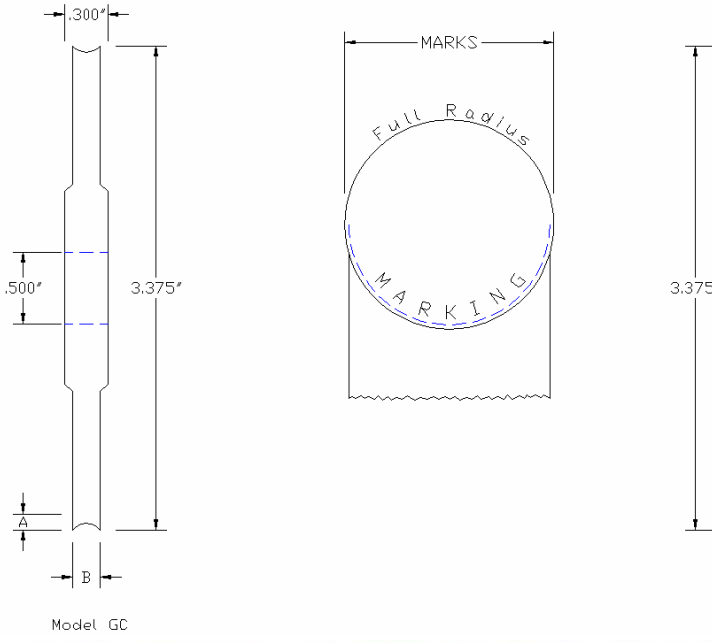


Model GL

Concave Print Wheels

For Printing on wire covering with Min.-Max. O.D. Range of:	Wheel Model-Width	Wheel Radius	Type Size	Wiper Required (concave)	Wiper Material Poly Rod or Nylon
.045 – 0.070”	GC - .080”	3/64”	1/32”	# 1	3/16” Dia.
.070 – 0.095”	GC - .093	1/16”	1/32”	# 2	3/16” Dia.
.095 – 0.115”	GC - .125”	5/64”	3/64”	# 3	¼” Dia.
.115 – 0.135”	GC - .156”	3/32”	1/16”	# 4	¼” Dia.
.135 – 0.190”	GC - .187”	1/8”	1/16”	# 5	¼” Dia.
.190 – 0.235”	GC - .235”	5/32”	5/64”	# 6	5/16” Dia.
.235 – 0.280”	GC - .300”	3/16”	3/32”	# 7	3/8” Dia.
.280 – 0.330”	GLC- .375”	7/32”	3/32”	# 8	13/32” Dia.
.330 – 0.400”	GLC- 437”	¼”	1/8”	# 9	½” Dia.
.400 – 0.430”	GLC – 437”	9/32”	1/8”	# 10	½” Dia.
.430 – 0.500”	GLC - .437”	13/32”	3/16”	# 10	½” Dia.
.500 – 0.750”	GLC - .437”	17/32”	3/16”	# 10	½” Dia.
.750 – 1.000”	GLC - .437”	21/32”	¼”	# 10	½” Dia.

Wheels are induction hardened to Rockwell 64 and “industrial hard” chrome plated



Model GLC

Model GC