Cylinder Connections

CGA Connections

Regulator inlet connections are available for most worldwide standards. Each connection includes nut, gland, and washer (if appropriate) on the inlet side to connect to the cylinder and ¼" MPT connection on the outlet side to connect to the inlet of any CONCOA regulator. CGA (Compressed Gas Association) connections are manufactured in accordance with CGA standard V-1 (1997).

BS and DIN Connections

BS (British Standard) connections are manufactured in accordance with BS 341(1990) and DIN (German Industrial Standards Organization) connections are manufactured in accordance with DIN 477 (1991). Please consult the gas supplier or appropriate standard to determine the correct connection for particular gases. Other international standard connections are available upon request.

NOTE: BS and DIN connections not available as individual parts. Connections available only on completely configured regulator systems.

Ordering Information

Connection	Brass	Stainless Steel	Chrome-Plated Brass
CGA 170	N/A	550-1004-170	550-1009-170
CGA 180	N/A	550-1004-180	550-1009-180
CGA 240	N/A	N/A	N/A
CGA 280	N/A	N/A	550-1009-280
CGA 290	N/A	550-1004-290	N/A
CGA 296	550-1002-296	550-1004-296	550-1009-296
CGA 300	550-1002-300	550-1004-300	550-1009-300
CGA 320	550-1002-320	550-1004-320	550-1009-320
CGA 326	550-1002-326	550-1004-326	550-1009-326
CGA 330	N/A	N/A	N/A
CGA 346	550-1002-346	550-1004-346	550-1009-346
CGA 347	550-1002-347	550-1004-347	550-1009-347
CGA 350	550-1002-350	550-1004-350	550-1009-350
CGA 500	N/A	N/A	550-1009-500
CGA 510	550-1002-510	550-1004-510	550-1009-510
CGA 540	550-1002-540	550-1004-540	550-1009-540
CGA 555	550-1002-555	550-1004-555	550-1009-555
CGA 577	550-1002-577	550-1004-577	550-1009-577
CGA 580	550-1002-580	550-1004-580	550-1009-580
CGA 590	550-1002-590	550-1004-590	550-1009-590
CGA 660	N/A	N/A	N/A
CGA 670	N/A	550-1004-670	N/A
CGA 677	N/A	N/A	N/A
CGA 679	N/A	N/A	N/A
CGA 680	550-1002-680	550-1004-680	550-1009-680
CGA 695	550-1002-695	550-1004-695	550-1009-695
CGA 702	N/A	N/A	N/A
CGA 703	N/A	N/A	N/A
CGA 705	N/A	N/A	N/A
BS 341 #01	550-1002-B01	N/A	550-1009-B01
BS 341 #02	550-1002-B02	550-1004-B02	550-1009-B02
BS 341 #03	550-1002-B03	550-1004-B03	550-1009-B03
BS 341 #04	550-1002-B04	550-1004-B04	550-1009-B04
BS 341 #08	550-1002-B08	550-1004-B08	550-1009-B08
BS 341 #10	N/A	550-1004-B10	N/A
BS 341 #13	550-1002-B13	550-1004-B13	550-1009-B13
BS 341 #14	550-1002-B14	550-1004-B14	550-1009-B14
BS 341 #15	550-1002-B15	550-1004-B15	550-1009-B15
DIN 477 #01	550-1002-D01	550-1004-D01	550-1009-D01
DIN 477 #03	550-1002-D03	N/A	550-1009-D03
DIN 477 #05	N/A	550-1004-D05	N/A
DIN 477 #06	550-1002-D06	550-1004-D06	550-1009-D06
DIN 477 #07	N/A	550-1004-D07	N/A
DIN 477 #08	N/A	550-1004-D08	N/A
DIN 477 #09	550-1002-D09	N/A	550-1009-D09
DIN 477 #10	550-1002-D10	550-1004-D10	550-1009-D10
DIN 477 #11	550-1002-D11	N/A	550-1009-D11
DIN 477 #12	550-1002-D12	N/A	550-1009-D12
DIN 477 #13	550-1002-D13	N/A	550-1009-D13
DIN 477 #14	550-1002-D14	550-1004-D14	550-1009-D14
DIN 477 #15	550-1002-D15	550-1004-D15	550-1009-D15

Fittings and Adaptors

Materials and Specifications

- *Temperature Range*
  -450°F to 1500°F (-265°C to 815°C)
- *Oxygen Service*
  Cleaned to CGA G4.1 specifications
- *Weight*
  1.5 ounces (550-0760 and 550-0761)
  1.5 ounces (550-0763)
  3.0 ounces (550-0762 and 550-0764)

Ordering Information

Part Number	Description	Connections	Body Material
529-0019	½" x ½" Manifold Connector	½" MPT x ½" MPT (3,000 PSIG max)	Stainless Steel
529-0024	½" x ¼" Manifold Connector	½" MPT x ¼" MPT (3,000 PSIG max)	Stainless Steel
529-0224	¼" x ¼" Manifold Connector	½" MPT x ¼" MPT (3,000 PSIG max)	Stainless Steel
550-0760	Male pipe to male tube	½" MPT x CGA 295 (liquid nitrogen and argon)	Brass
550-0761	Male pipe to male tube	⅜" MPT x CGA 440 (liquid oxygen)	Brass
550-0762	90° elbow extension	CGA 440 x CGA 440 (liquid oxygen)	304 Stainless Steel
550-0764	90° elbow extension	CGA 295 x CGA 295 (liquid nitrogen and argon)	304 Stainless Steel
829-1839	Union Gland	½" MPT (3,000 PSIG max)	Brass
829-1840	Union Nut	1" (3,000 PSIG max)	Brass
830-6498	Union Connector	½" MPT (3,000 PSIG max)	Brass
830-6163	Reducing Adapter	½" MPT x ¼" FPT (3,000 PSIG max)	Brass
830-6164	Reducing Adapter	½" MPT x ¼" FPT (4,500 PSIG max)	Stainless Steel
830-9805	Reducing Adapter	½" MPT x ⅜" FPT (3,000 PSIG max)	Brass
830-6155	½" Tee	½" FPT (3,000 PSIG max)	Brass
830-6499	½" Male Nipple	½" MPT x ⅜" (3,000 PSIG max)	Brass
803-4250	¼" Male Nipple	¼" MPT (3000 PSIG max)	Brass
555-0221	¼" Tube Fitting	¼" Tube x ¼" MPT (3000 psig max)	Brass
554-0121	⅛" Tube Fitting	⅛" Tube x ¼" MPT (3000 psig max)	Brass
550-0167	6 mm Tube Fitting	6mm Tube x ¼" MPT (3000 psig max)	Brass
830-5371	½" Tube Fitting	½" Tube Fitting x ½" MPT (3000 psig max)	Brass
550-0035	¼" Male Nipple	¼" MPT (3000 PSIG max)	Chrome Brass
550-0031	¼" Tube Fitting	¼" Tube x ¼" MPT (3000 psig max)	Chrome Brass
554-0032	⅛" Tube Fitting	⅛" Tube x ¼" MPT (3000 psig max)	Chrome Brass
550-0142	6 mm Tube Fitting	6mm Tube x ¼" MPT (3000 psig max)	Chrome Brass
553-4104	¼" Male Nipple	¼" MPT (6000 PSIG max)	316L Stainless Steel
555-0220	¼" Tube Fitting	¼" Tube x ¼" MPT (6000 psig max)	316L Stainless Steel
554-0120	⅛" Tube Fitting	⅛" Tube x ¼" MPT (6000 psig max)	316L Stainless Steel
550-0165	6 mm Tube Fitting	6mm Tube x ¼" MPT (6000 psig max)	316L Stainless Steel
830-6149	½" Tube Fitting	½" Tube Fitting x ½" MPT (6000 psig max)	316L Stainless Steel

Conversion Factors

Length

	Å	cm	ft	in	m	micron	mm	yd
				Multiply By				
Å	--------	1×10^{-8}	3.28×10^{-9}	3.93×10^{-9}	1×10^{-10}	1×10^{-4}	1×10^{-7}	1.09×10^{-10}
cm	1×10^{8}	--------	3.28×10^{-2}	3.94×10^{-1}	1×10^{-2}	1×10^{4}	10	1.09×10^{-2}
ft	3.04×10^{9}	3.048×10^{1}	--------	1.2×10^{1}	3.04×10^{-1}	3.04×10^{5}	3.04×10^{2}	3.33×10^{-1}
in	2.54×10^{8}	2.54×10^{0}	8.33×10^{-2}	--------	2.54×10^{2}	2.54×10^{4}	2.54×10^{1}	2.77×10^{2}
m	1×10^{10}	1×10^{2}	3.281×10^{0}	3.93×10^{1}	--------	1×10^{6}	1×10^{3}	1.09×10^{0}
micron	1×10^{4}	1×10^{-4}	3.28×10^{-6}	3.93×10^{-5}	1×10^{-6}	--------	1×10^{-3}	1.09×10^{-6}
mm	1×10^{7}	1×10^{-3}	3.28×10^{-3}	3.93×10^{-2}	1×10^{-2}	1×10^{3}	--------	1.09×10^{-3}
yd	9.14×10^{9}	9.14×10^{1}	3×10^{0}	3.6×10^{1}	9.14×10^{-1}	9.14×10^{5}	9.14×10^{2}	--------

Flow

	cm^3/min	cm^3/sec	ft^3/hr	ft^3/min	m^3/hr	m^3/min	L/hr	L/min
				Multiply By				
cm^3/min	--------	1.66×10^{-2}	2.12×10^{-3}	3.53×10^{-5}	6×10^{-5}	1×10^{-6}	6.0×10^{-2}	1×10^{-3}
cm^3/sec	6×10^{1}	--------	1.27×10^{-1}	2.12×10^{-3}	3.6×10^{-3}	6×10^{-5}	3.6×10^{0}	6×10^{-2}
ft^3/hr	4.72×10^{2}	7.87×10^{1}	--------	1.67×10^{-2}	2.83×10^{-2}	4.72×10^{-4}	2.83×10^{1}	4.72×10^{-1}
ft^3/min	2.83×10^{4}	4.72×10^{2}	6.0×10^{1}	--------	1.7×10^{1}	2.83×10^{-2}	1.7×10^{-2}	2.83×10^{1}
m^3/hr	1.67×10^{4}	2.78×10^{2}	3.53×10^{1}	5.89×10^{-2}	--------	1.67×10^{-2}	1×10^{3}	1.67×10^{1}
m^3/min	1×10^{6}	1.67×10^{4}	2.12×10^{3}	3.53×10^{1}	6.0×10^{1}	--------	6.0×10^{4}	1×10^{3}
L/hr	1.67×10^{1}	2.78×10^{-1}	3.53×10^{-2}	5.89×10^{-4}	1×10^{-3}	1.67×10^{-5}	--------	1.67×10^{-2}
L/min	1×10^{3}	1.67×10^{1}	2.12×10^{0}	3.53×10^{-2}	6.0×10^{-2}	1×10^{-3}	6.0×10^{1}	--------

Pressure

	atm	BAR	Ft of H_2O	in of Hg	in of H_2O	kg/cm^2	kPa	mm of Hg	PSI
				Multiply By					
atm	--------	1.013	33.932	29.921	407.183	1.033	101.317	760	14.696
BAR	0.987	--------	33.488	29.530	401.859	1.019	100	750.062	14.504
Ft. of H_2O	0.029	0.029	--------	0.883	12	0.030	2.989	22.419	0.433
in of Hg	0.033	0.034	1.134	--------	13.6	0.035	3.377	25.4	0.491
in of H_2O	0.002	0.002	0.083	0.074	--------	0.003	0.025	1.868	0.036
kg/cm^2	0.968	0.981	32.808	28.959	393.701	--------	98.039	735.559	14.223
kPa	0.009	0.010	0.335	0.296	4.015	0.010	--------	7.501	0.145
mm of Hg	0.001	0.001	0.045	0.039	0.535	0.001	0.133	--------	0.019
PSI	0.06805	0.06895	2.3089	2.0360	27.7085	0.07031	6.89465	51.175	--------

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Weight

	gm	kg	mg	oz	lbs	Ton
			Multiply By			
gm	--------	.001	1000	0.035	0.002	1.1×10^{-6}
kg	1000	--------	1×10^{6}	3.53×10^{1}	2.205	0.001
mg	0.001	1×10^{-6}	--------	3.53×10^{-4}	2.205×10^{-6}	1.1×10^{-9}
oz	2.83×10^{1}	2.83×10^{-2}	2.83×10^{4}	--------	6.25×10^{-2}	3.13×10^{-5}
lbs	4.54×10^{2}	4.54×10^{1}	4.54×10^{5}	16	--------	5.0×10^{-4}
Ton	9.07×10^{5}	9.07×10^{2}	9.07×10^{8}	3.2×10^{4}	2.0×10^{3}	--------

Volume

	cm^3 (ml)	ft^3	in^3	m^3	US gal.	L
			Multiply By			
cm^3 (ml)	--------	3.53×10^{-5}	6.10×10^{-2}	1×10^{-6}	2.56×10^{-3}	1×10^{-3}
ft^3	2.83×10^{4}	--------	1.73×10^{3}	2.83×10^{-2}	7.48	28.32
in^3	1.64	5.79×10^{-6}	--------	1.64×10^{-5}	4.33×10^{-3}	1.64×10^{-2}
m^3	1×10^{6}	3.53	6.10×10^{4}	--------	2.64×10^{2}	1×10^{3}
US gal.	3.79×10^{3}	1.34×10^{-1}	2.31×10^{2}	3.79×10^{-3}	--------	3.79
L	1×10^{3}	3.54×10^{-2}	6.10×10^{1}	1×10^{-3}	2.64×10^{-1}	--------

Concentration

Concentration	Equivalent
1,000,000 ppm	100%
100,000 ppm	10%
10,000 ppm	1%
1,000 ppm	0.1%
100 ppm	0.01%
10 ppm	0.001%
1 ppm	0.0001%
1,000 ppb	1 ppm
100 ppb	0.1 ppm
10 ppb	0.001 ppm

Temperature

	°C	°F	°K	°R
		Multiply By		
°C + 17.78	--------	1.8	--------	--------
°C + 273.16	--------	--------	1	--------
°F - 32	0.55556	--------	--------	--------
°F + 459.72	--------	--------	--------	1
°K + 273.16	1	--------	--------	--------
°R - 459.72	--------	1	--------	--------

Physical Constants

	Value	Units
Avagardro's Number	6.022×10^{23}	molecules/gm-mole
Gas Law Constant	1.98719	cal/(gm-mol)(°K)
	1.98719	Btu/(lbs-mole)(°R)
	82.0568	$(cm^3)(atm)/(gm\text{-}mole)(°K)$
	0.0820568	(L)(atm)/(gm-mole)(°K)
	10.7314	$(ft^3)(lb)/(in^2)(lbs\text{-}mole)(°R)$
	0.730228	$(ft^3)(atm)/(lbs\text{-}mole)(°R)$

Density

	gms/cm^3	kg/cm^3	lbs/ft^3	lbs/in^3	lbs/US gal.
			Multiply By		
gms/cm^3	--------	1000	6.24×10^{1}	3.61×10^{-2}	8.35
kg/cm^3	1×10^{-3}	--------	6.24×10^{-2}	3.61×10^{-3}	8.35×10^{-3}
lbs/ft^3	1.60×10^{-2}	1.60×10^{1}	--------	3.61×10^{-5}	1.33×10^{-1}
lbs/in^3	2.77×10^{1}	2.77×10^{4}	1.73×10^{3}	--------	2.31×10^{2}
lbs/US gal.	1.2×10^{-1}	1.2×10^{2}	7.48	4.33×10^{-3}	--------

Scientific Notation

Notation	Equivalent	Notation	Equivalent
1×10^{10}	10,000,000,000	1×10^{-1}	0.1
1×10^{9}	1,000,000,000	1×10^{-2}	0.01
1×10^{8}	100,000,000	1×10^{-3}	0.001
1×10^{7}	10,000,000	1×10^{-4}	0.0001
1×10^{6}	1,000,000	1×10^{-5}	0.00001
1×10^{5}	100,000	1×10^{-6}	0.000001
1×10^{4}	10,000	1×10^{-7}	0.0000001
1×10^{3}	1,000	1×10^{-8}	0.00000001
1×10^{2}	100	1×10^{-9}	0.000000001
1×10^{1}	10	1×10^{-10}	0.0000000001

PURE GASES CGA SELECTION CHART FOR FITTINGS

CGA Fittings Required	Pure Gases
510/300	Acetylene
590/346/347/702	Air
240/660/705	Ammonia
580/680/677	Argon
350	Arsine*
320	Carbon Dioxide
350	Carbon Monoxide
660	Chlorine
510	Cyclopropane
350	Deuterium
350	Ethane
350	Ethylene
510	Ethylene Oxide
580/680/677	Helium
350/695/703	Hydrogen
330	Hydrogen Chloride
330	Hydrogen Sulfide
580	Krypton, KR-85
350/695/703	Methane
510	Methyl Chloride
580/680/677	Neon
580/680/677	Nitrogen
326	Nitrous Oxide
540/577/701	Oxygen*
350	Phosphine
510	Propane
350	Silane*
668/660	Sulfur Dioxide
590	Sulfur Hexaflouride
580/680/677	Xenon

MIXED GASES CGA SELECTION CHART FOR FITTINGS

CGA Fittings Required	Mixed Gases	
	Minor Component	**in Major Component**
240/660/705	Ammonia	Nitrogen
350	Butane	Nitrogen
296	Carbon Dioxide	Oxygen
580	Carbon Dioxide	Helium or Nitrogen
580	Carbon Dioxide and/or Nitrogen	Helium
330	Chlorine	Nitrogen
350	Diborane	Argon, Helium, Hydrogen, Nitrogen
580	Freon-12	Nitrogen
296	Helium	Oxygen
350	Hexane	Nitrogen
350	Isobutane	Nitrogen
350	Krypton-85	Carbon Monoxide, Hydrogen orMethane
330	Krypton-85	Chlorine
540	Krypton-85	Oxygen
580	Moisture	Argon, Helium or Nitrogen
660	Nitric Oxide	Nitrogen
660	Nitrogen Dioxide	Air or Nitrogen
590	Ntrous Oxide	Nitrogen
590	Oxygen	Nitrogen or Helium
350	Propane*	Nitrogen or Helium
660	Sulfur Dioxide	Air or Nitrogen
590	Sulfur Hexaflouride	Argon, Helium or Nitrogen
350	Sulfur Hexaflouride	Hydrogen
350	Tritium	Argon, Carbon Dioxide, Hydrogen, Methane, Neon, Nitrogen, Krypton, or Xenon

It is recommended that the user thoroughly familiarize himself with the specific properties of these gases.

The Compressed Gas Association (CGA) has selected and standardized the valve outlet to be used on each gas cylinder. These standards, contained in the document "CGA STANDARD V-1, Compressed Gas Cylinder Valve Outlet Connections" , have been adopted to prevent the inadvertent mixing of gases which could be reactive and to avoid other possible misuse hazards.

The above chart may be used for guide purposes only. Consult your gas supplier to determine the actual CGA connection required when ordering a regulator.

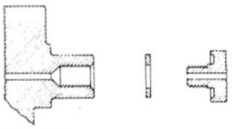
*Exceptions: Flammables in Air or Oxidizers

*Propane in Air, Methane in Air, Carbon Monoxide in Air: CGA 590

Since the combined characteristics of a mixture of gases often differ from the properties of the separate components, different CGA connections are often required. The chart above can be used as a reference for the CGA connections.

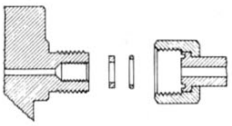
Mixtures which use the same CGA connection as if the minor component were in its pure gas form have not been included for the sake of brevity. The proper fitting for these mixtures can be determined by looking up the minor component on the chart for pure gases.

CGA CONNECTIONS

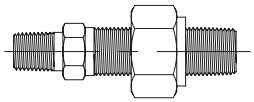


CGA 110
.3125-32UNEF-2B-RH-INT

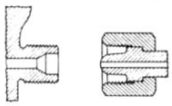
CGA 165
.4375-20UNF-2A-RH=EXT (1/4 in. SAE Flare)



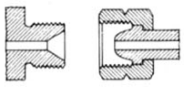
CGA 180
.625-18UNF-2A-RH-EXT



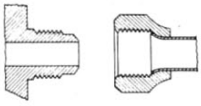
CGA 240
.375-18NGT-RH-INT



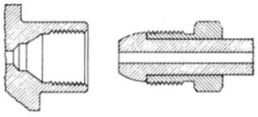
CGA 280
.745-14NGO-RH-EXT



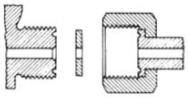
CGA 290
.745-14NGO-LH-EXT



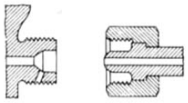
CGA 295
.750-16UNF-2A-RH-EXT (1/2in. SAE Flare)



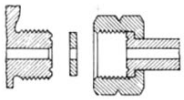
CGA 296
.804-14UNS-2B-RH-INT



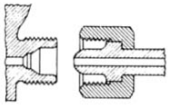
CGA 320
.825-14NGO-RH-EXT (Flat Nipple)



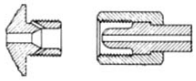
CGA 326
.825-14NGO-RH-EXT (Small Round Nipple)



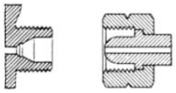
CGA 330
.825-14NGO-LH-EXT (Flat Nipple)



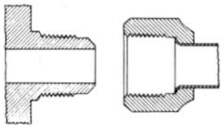
CGA 346
.825-14NGO-RH-EXT (Large Round Nipple)



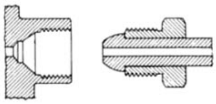
CGA 347
.825-14NGO-RH-EXT (Long Round Nipple)



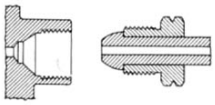
CGA 350
.825-14NGO-LH-EXT (Round Nipple)



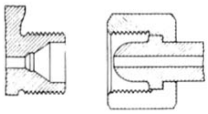
CGA 440
.875-14UNF-2A-RH-EXT (5/8-in. SAE Flare)



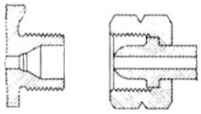
CGA 500
.885-14NGO-RH-INT (Bullet Nipple)



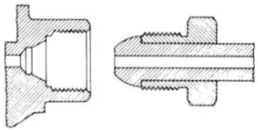
CGA 510
.885-14NGO-LH-INT (Bullet Nipple)



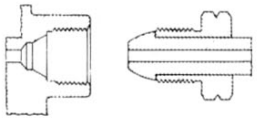
CGA 540
.903-14NGO-RH-EXT



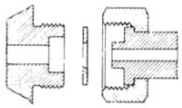
CGA 555
.903-14NGO-LH-EX



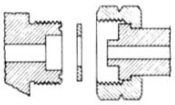
CGA 580
.965-14NGO-RH-INT



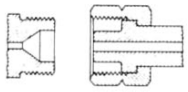
CGA 590
.965-14NGO-LH-INT



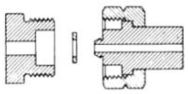
CGA 660
1.030-14NGO-RH-EXT (Face Washer)



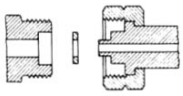
CGA 670
1.030-14NGO-LH-EXT (Face Washer)



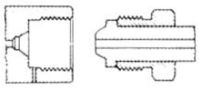
CGA 677
1.030-14NGO-LH-EXT (Round Nipple)



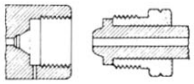
CGA 678
1.030-14NGO-LH-EXT (Recessed Washer)



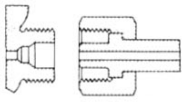
CGA 679
1.030-14NGO-LH-EXT (Tipped Nipple)



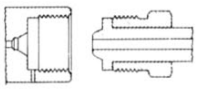
CGA 680
1.045-14NGO-RH-INT



CGA 695
1.045-14NGO-LH-INT

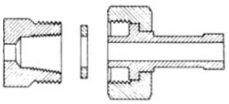


CGA 701
1.103-14NGO-RH-EXT

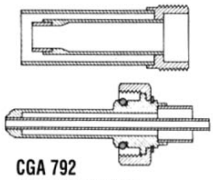


CGA 702
1.125-14NGO-RH-INT

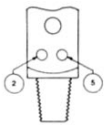
CGA 703
1.123-14NGO-LH-INT



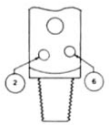
CGA 705
1.125-14UNS-2A-RH-EXT



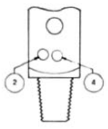
CGA 792
1.500-12UNF-2A-RH-EXT



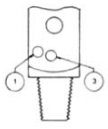
CGA 870
PIN-INDEXED YOKE, PINS 2-5



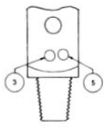
CGA 880
PIN-INDEXED YOKE, PINS 2-6



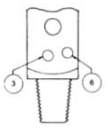
CGA 890
PIN-INDEXED YOKE, PINS 2-4



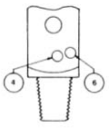
CGA 900
PIN-INDEXED YOKE, PINS 1-3



CGA 910
PIN-INDEXED YOKE, PINS 3-5



CGA 920
PIN-INDEXED YOKE, PINS 3-6



CGA 930
PIN-INDEXED YOKE, PINS 4-6

CGA 940
PIN-INDEXED YOKE, PINS 1-6

CGA 950
PIN-INDEXED YOKE, PINS 1-5

CGA 960
PIN-INDEXED YOKE, PINS 1-4

CGA 965
PIN-INDEXED YOKE, PIN NO. 7

CGA 973
PIN-INDEXED YOKE, PINS 11-24