

Catalog 4010
December, 2000



Veriflo Division

The Compressed Gas Association (CGA) has established and maintains a standardized set of valve outlet and inlet connections to help minimize the possibility of hazardous misconnections of incompatible gases. The need for standardization was recognized by both industry and the military during the World War I era when the multiplicity of connections then in use created unsafe conditions.

Over the past two decades, the growth of the semiconductor and other high technology industries, combined with the development of new gases, further accelerated the need for classification and assignment of gases to specific CGA connections.

EWAL*, a member Company of the Association since 1980, is committed to manufacturing and supplying ultra high integrity CGA, DIN** and JIS*** connections including nipples, nuts, gaskets, caps and plugs. The technical expertise involved in the research, design, development, and manufacture of each component ensures the integrity of the connection.

* EWAL was acquired by Parker Hannifin Corporation in July, 1997 and is now a part of the Veriflo Division

** Deutscher Institute für Normung (German Standard)

*** Japanese Industrial Standard

 **WARNING**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

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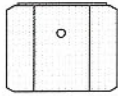
All dimensions are in inches, are for reference only, and are subject to change.

STANDARD FEATURES

UHP CGA CONNECTIONS

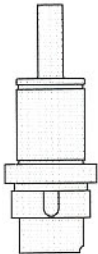
FOR ULTRA HIGH INTEGRITY GAS SERVICE

NUTS



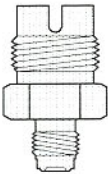
- Stainless steel silver plated.
- Dual leak test ports.

NIPPLES



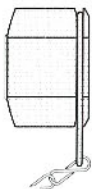
- 316L stainless steel semiconductor grade (SCG™).
- Non-rotating design.
- Permanently heat code marked; material traceable to original mill certificate of test.
- Critical surfaces are 100% visually inspected using fiber optic lighting and magnification.
- Electropolished (EP), "OMEGA" D.I. cleaned and packaged in a certified clean room.

OUTLET ADAPTERS



- 316L stainless steel.
- Non-rotating design.
- Critical surfaces are 100% visually inspected using fiber optic lighting and magnification.
- Electropolished (EP), "OMEGA" D. I. cleaned and packaged in a certified clean room.

CYLINDER VALVE OUTLET CAPS



- 316L stainless steel.
- Non-rotating gas tight design.
- Nickel gasket, ring and chain included.

GASKETS

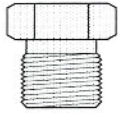


- Available in Nickel 200, KEL-F® or Aluminum.
- Retainer ring included.
- *SPECTRA TITE*™ processing ensures consistent leak tight seals.
- Labeled with *SPECTRA TITE*™ processing batch number; material traceable to original mill certificate of test.
- Critical surfaces are 100% visually inspected using fiber optic lighting and magnification.
- "OMEGA" D.I. cleaned and packaged in a certified clean room.

*Nickel & HASTELLOY® C-22™ connections are available on request.
Minimum order quantities may apply.*

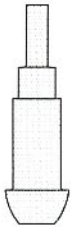
STANDARD FEATURES

CGA, DIN AND JIS CONNECTIONS



NUTS

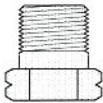
- 303 stainless steel.



NIPPLES

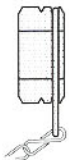
- 316L stainless steel.
- Critical surfaces are 100% visually inspected using fiber optic lighting and magnification.
- Electropolished (EP) I.D. components are "OMEGA" D.I. cleaned and packaged in a certified clean room. Non-electropolished components are ultrasonically D.I. cleaned and heat seal packaged.

**Automatic tube weld glands only.*



OUTLET ADAPTORS

- 316L stainless steel



CYLINDER VALVE OUTLET CAPS

- 303 stainless steel.
- Gas tight designs available for most connections.
- Polyethylene disc, ring and chain included.



WASHERS and SEAL ENHANCERS

- Washers available in KEL-F[®]81 or PCTFE.
Packaged in quantities of 25 pieces.

As of April 1, 1996 CGA KEL-F[®] gaskets and washers will be supplied using PCTFE material: KEL-F[®] 81 plastic or equivalent PCTFE plastic.

- Seal Enhancers available in Nickel 200.
Packaged in quantities of 10 pieces.

CGA connections are also available in brass, brass chrome plated, monel, nickel or HASTELLOY[®] C-22[™].

SPECIAL SIZES, CONFIGURATIONS, MATERIALS AND PACKAGING ARE AVAILABLE UPON REQUEST.

ULTRA HIGH PURITY PIGTAILS FABRICATED PER YOUR DESIGNS.

GAS CONNECTION ASSIGNMENT TABLE **

For pressures up to 4704 psig (320 bar) dependent on CGA, DIN, JIS, ISO organization specifications.

GAS	UHP CGA	CGA	DIN	JIS
Ammonia	720	705	DIN 6	22-R
Argon	718	580	DIN 6	22-R or 23-R
Arsenic Pentafluoride	642	-	-	-
Arsine	632	350	-	22-L
Boron Trichloride	634	660	DIN 8	-
Boron Trifluoride	642	330	DIN 8	22-L
Carbon Dioxide	716	320	DIN 6	-
Carbon Monoxide	724	350	DIN 5	22-L
Chlorine	728	-	DIN 8	26-R
Diborane	632	350	-	22-L
Dichlorosilane	636	678*	DIN 5	-
Diethylzinc	726	510*	-	-
Diethyltelluride	726	-	-	-
Dimethylzinc	726	-	-	-
Disilane	632	-	-	-
Germane	632	350 or 660	-	-
Halocarbon 11	716	660	-	-
Halocarbon 115	716	660	DIN 6	-
Halocarbon 12	716	660	DIN 6	-
Halocarbon 13	716	660	DIN 6	-
Halocarbon 14	716	320 or 580	DIN 6	-
Halocarbon 23	716	660	DIN 6	-
Halocarbons 116	716	660	-	-
Helium	718	580	DIN 6	22-R OR 23-R
Hydrogen	724	350	DIN 1	22-L
Hydrogen Bromide	634	330	DIN 8	26-R
Hydrogen Chloride	634	330	DIN 8	26-R
Hydrogen Fluoride	638	660 or 670	-	26-R
Hydrogen Sulfide	722	330	DIN 5	-
Krypton	718	580	DIN 6	22-R OR 23-R
Neon	718	580	DIN 6	22-R OR 23-R
Nitrogen	718	580	DIN 10	22-R OR 23-R
Nitrogen Trifluoride	640	330 or 670	DIN 8	-
Nitrous Oxide	712	326	DIN 8	-
Oxygen	714	540	DIN 9	22-R OR 23-R
Perfluoropropane	716	660	-	-
Phosphine	632	350 or 660	DIN 1	-
Phosphorus Pentafluoride	642	330 or 660	-	-
Silane	632	350	-	-
Silicon Tetrachloride	636	-	-	-
Silicon Tetrafluoride	642	330	-	22-L
Sulphur Hexafluoride	716	590	DIN 6	26-R
Trichlorosilane	636	-	-	-
Triethylaluminum	726	510*	-	-
Tungsten Hexafluoride	638	670	DIN 8	-
Xenon	718	580	DIN 6	22-R

* Consult CGA, DIN, JIS, ISO organization specifications for pressure limits.

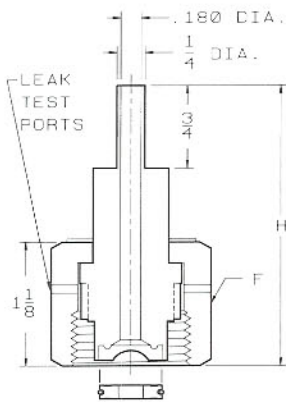
**Information in this table was obtained from reliable sources (see pg.16). It shall be used for reference only. Actual gas assignments are subject to periodic change and the user must verify all information in this table at time of use. For verification, contact the Compressed Gas Association Offices.

UHP CGA INLET CONNECTIONS

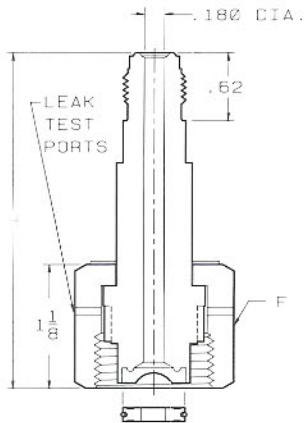
FOR ULTRA HIGH INTEGRITY GAS SERVICE

Includes: Nut, Nipple and Gasket

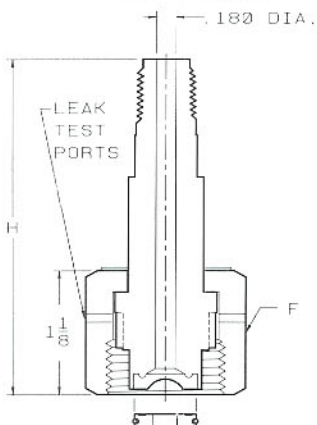
Auto Tube Weld



VacuSeal® Male



NPT Male



CGA Number	End Connection	Part Number	H Overall Length	F Hex Flat	Internal Surface Finish*	SpectraTite™ Gasket Material
632	1/4" Auto Tube Weld	54-632-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-632-4VM2-N	3.00	1-1/4	9 Ra EP	Nickel
	1/4" NPT Male	54-632-4M2-N	3.00			
634	1/4" Auto Tube Weld	54-634-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-634-4VM2-N	3.00	1-1/4	9 Ra EP	Nickel
	1/4" NPT Male	54-634-4M2-N	3.00			
636	1/4" Auto Tube Weld	54-636-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-636-4VM2-N	3.00	1-1/4	9 Ra EP	Nickel
	1/4" NPT Male	54-636-4M2-N	3.00			
638	1/4" Auto Tube Weld	54-638-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-638-4VM2-N	3.00	1-1/4	9 Ra EP	Nickel
	1/4" NPT Male	54-638-4M2-N	3.00			
640	1/4" Auto Tube Weld	54-640-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-640-4VM2-N	3.00	1-1/4	9 Ra EP	Nickel
	1/4" NPT Male	54-640-4M2-N	3.00			
642	1/4" Auto Tube Weld	54-642-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-642-4VM2-N	3.00	1-1/4	9 Ra EP	Nickel
	1/4" NPT Male	54-642-4M2-N	3.00			
712	1/4" Auto Tube Weld	54-712-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-712-4VM2-N	3.00	1-3/8	9 Ra EP	Nickel
	1/4" NPT Male	54-712-4M2-N	3.00			
714	1/4" Auto Tube Weld	54-714-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-714-4VM2-N	3.00	1-3/8	9 Ra EP	Nickel
	1/4" NPT Male	54-714-4M2-N	3.00			
716	1/4" Auto Tube Weld	54-716-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-716-4VM2-N	3.00	1-3/8	9 Ra EP	Nickel
	1/4" NPT Male	54-716-4M2-N	3.00			
718	1/4" Auto Tube Weld	54-718-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-718-4VM2-N	3.00	1-3/8	9 Ra EP	Nickel
	1/4" NPT Male	54-718-4M2-N	3.00			
720	1/4" Auto Tube Weld	54-720-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-720-4VM2-N	3.00	1-3/8	9 Ra EP	Nickel
	1/4" NPT Male	54-720-4M2-N	3.00			
722	1/4" Auto Tube Weld	54-722-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-722-4VM2-N	3.00	1-3/8	9 Ra EP	Nickel
	1/4" NPT Male	54-722-4M2-N	3.00			
724	1/4" Auto Tube Weld	54-724-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-724-4VM2-N	3.00	1-3/8	9 Ra EP	Nickel
	1/4" NPT Male	54-724-4M2-N	3.00			
726	1/4" Auto Tube Weld	54-726-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-726-4VM2-N	3.00	1-3/8	9 Ra EP	Nickel
	1/4" NPT Male	54-726-4M2-N	3.00			
728	1/4" Auto Tube Weld	54-728-4TW2-N	2.50			
	1/4" VacuSeal® Male	54-728-4VM2-N	3.00	1-3/8	9 Ra EP	Nickel
	1/4" NPT Male	54-728-4M2-N	3.00			

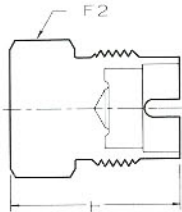
*5 Ra available on request

UHP CGA Connections are "OMEGA" cleaned, inspected and packaged in a monitored and validated Federal Standard 209D clean room. Each wetted surface component is double-bagged with a nylon inner bag and a polyethylene outer bag. Inner bag is purged with filtered nitrogen. Both bags are heat sealed.

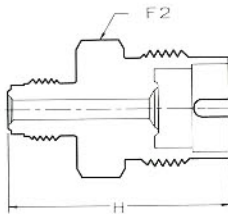
UHP CGA OUTLET ADAPTORS AND BLANK PLUGS

FOR ULTRA HIGH INTEGRITY GAS SERVICE

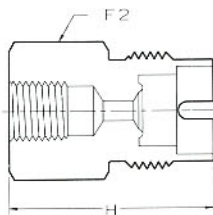
Blank Plug



VacuSeal® Male



NPT Female

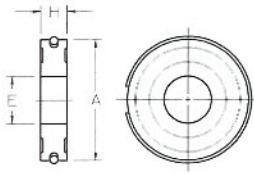


CGA Number	End Connection	Part Number	H Overall Length	F2 Hex Flat
632	Blank Plug	57-63MXX-2	1.53	
	1/4 VacuSeal® Male	57-632M4VM-2	2.00	1-1/8
	1/4" NPT Female	57-632M4F-2	1.85	
634	Blank Plug	57-63MXX-2	1.53	
	1/4 VacuSeal® Male	57-634M4VM-2	2.00	1-1/8
	1/4" NPT Female	57-634M4F-2	1.85	
636	Blank Plug	57-63MXX-2	1.53	
	1/4 VacuSeal® Male	57-636M4VM-2	2.00	1-1/8
	1/4" NPT Female	57-636M4F-2	1.85	
638	Blank Plug	57-63MXX-2	1.53	
	1/4 VacuSeal® Male	57-638M4VM-2	2.00	1-1/8
	1/4" NPT Female	57-638M4F-2	1.85	
640	Blank Plug	57-63MXX-2	1.53	
	1/4 VacuSeal® Male	57-640M4VM-2	2.00	1-1/8
	1/4" NPT Female	57-640M4F-2	1.85	
642	Blank Plug	57-63MXX-2	1.53	
	1/4 VacuSeal® Male	57-642M4VM-2	2.00	1-1/8
	1/4" NPT Female	57-642M4F-2	1.85	
712	Blank Plug	57-70MXX-2	1.53	
	1/4 VacuSeal® Male	57-712M4VM-2	2.00	1-1/4
	1/4" NPT Female	57-712M4F-2	1.85	
714	Blank Plug	57-70MXX-2	1.53	
	1/4 VacuSeal® Male	57-714M4VM-2	2.00	1-1/4
	1/4" NPT Female	57-714M4F-2	1.85	
716	Blank Plug	57-70MXX-2	1.53	
	1/4 VacuSeal® Male	57-716M4VM-2	2.00	1-1/4
	1/4" NPT Female	57-716M4F-2	1.85	
718	Blank Plug	57-70MXX-2	1.53	
	1/4 VacuSeal® Male	57-718M4VM-2	2.00	1-1/4
	1/4" NPT Female	57-718M4F-2	1.85	
720	Blank Plug	57-72MXX-2	1.53	
	1/4 VacuSeal® Male	57-720M4VM-2	2.00	1-1/4
	1/4" NPT Female	57-720M4F-2	1.85	
722	Blank Plug	57-72MXX-2	1.53	
	1/4 VacuSeal® Male	57-722M4VM-2	2.00	1-1/4
	1/4" NPT Female	57-722M4F-2	1.85	
724	Blank Plug	57-72MXX-2	1.53	
	1/4 VacuSeal® Male	57-724M4VM-2	2.00	1-1/4
	1/4" NPT Female	57-724M4F-2	1.85	
726	Blank Plug	57-72MXX-2	1.53	
	1/4 VacuSeal® Male	57-726M4VM-2	2.00	1-1/4
	1/4" NPT Female	57-726M4F-2	1.85	
728	Blank Plug	57-72MXX-2	1.53	
	1/4 VacuSeal® Male	57-728M4VM-2	2.00	1-1/4
	1/4" NPT Female	57-728M4F-2	1.85	

UHP CGA Connections are "OMEGA" cleaned, inspected and packaged in a monitored and validated Federal Standard 209D clean room. Each wetted surface component is double-bagged with a nylon inner bag and a polyethylene outer bag. Inner bag is purged with filtered nitrogen. Both bags are heat sealed.

SPECTRA TITE™ GASKETS

FOR ULTRA HIGH INTEGRITY GAS SERVICE

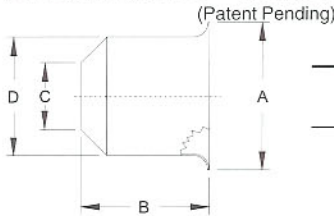


Gaskets for UHP CGA 632 - 728

Material	Part Number	A	H	E
Nickel 200	50-63-NI	.56	.105	.21
Kel-F®	50-63-K	.56	.105	.21
Aluminum	50-63-AL	.56	.105	.25

SPECTRA TITE™ SEAL ENHANCERS*

FOR ULTRA HIGH INTEGRITY GAS SERVICE



Seal Enhancers for CGA 326, 346 and 350

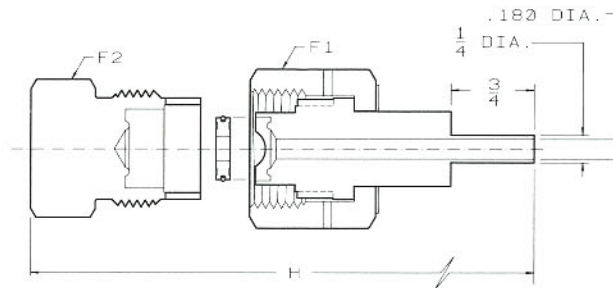
Material	Part Number	A	B	C	D
Nickel 200	50-326-NI	.54	.45	.22	.43
Nickel 200	50-346-NI	.62	.54	.29	.50
Nickel 200	50-350-NI	.62	.54	.29	.50

*Reference CGA V-1 paragraph 2.1.2 for approval information.

**COMPLETE UHP CGA
PIGTAIL CONNECTIONS**

FOR ULTRA HIGH INTEGRITY GAS SERVICE

*Includes: Nut, Automatic Tube Weld Nipple, Gasket
and Blank Plug.*

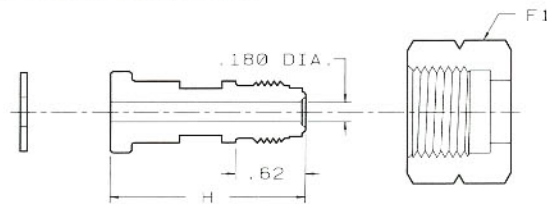


CGA Number	Part Number	H Overall Length	F1 Hex Flat	F2 Hex Flat	Internal Surface Finish*	SpectraTite™ Gasket Material
632	58-632-4TW2	3.40	1-1/4	1-1/8	9 Ra EP	Nickel
634	58-634-4TW2	3.40	1-1/4	1-1/8	9 Ra EP	Nickel
636	58-636-4TW2	3.40	1-1/4	1-1/8	9 Ra EP	Nickel
638	58-638-4TW2	3.40	1-1/4	1-1/8	9 Ra EP	Nickel
640	58-640-4TW2	3.40	1-1/4	1-1/8	9 Ra EP	Nickel
642	58-642-4TW2	3.40	1-1/4	1-1/8	9 Ra EP	Nickel
712	58-712-4TW2	3.40	1-3/8	1-1/4	9 Ra EP	Nickel
714	58-714-4TW2	3.40	1-3/8	1-1/4	9 Ra EP	Nickel
716	58-716-4TW2	3.40	1-3/8	1-1/4	9 Ra EP	Nickel
718	58-718-4TW2	3.40	1-3/8	1-1/4	9 Ra EP	Nickel
720	58-720-4TW2	3.40	1-3/8	1-1/4	9 Ra EP	Nickel
722	58-722-4TW2	3.40	1-3/8	1-1/4	9 Ra EP	Nickel
724	58-724-4TW2	3.40	1-3/8	1-1/4	9 Ra EP	Nickel
726	58-726-4TW2	3.40	1-3/8	1-1/4	9 Ra EP	Nickel
728	58-728-4TW2	3.40	1-3/8	1-1/4	9 Ra EP	Nickel

*5 Ra Available on request.

UHP CGA Connections are "OMEGA" cleaned, inspected and packaged in a monitored and validated Federal Standard 209D clean room. Each wetted surface component is double-bagged with a nylon inner bag and a polyethylene outer bag. Inner bag is purged with filtered nitrogen. Both bags are heat sealed.

CGA INLET CONNECTION COMPONENTS



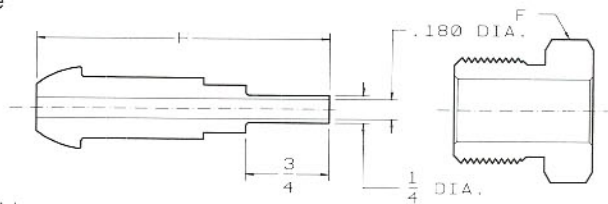
CGA 330 x 1/4" VacuSeal® Male

CGA Number	End Connection	H Overall Length	Internal Surface Finish	Nipple Part Number	Nut Part Number	F1 Hex Flat	PTFE Washer Number	Kel-F® Washer Number
170	1/4" Auto Tube Weld	1-1/4	9 Ra	56-170-4TW2-20B	55-170-3	11/16	50-170-T	-
			9 Ra EP	56-170-4TW2-P				
	1/8" NPT Male	1-1/4		56-170-2M2-20B				
180	1/4" Auto Tube Weld	1-1/4	9 Ra	56-180-4TW2-20B	55-180-3	3/4	50-180-T	-
			9 Ra EP	56-180-4TW2-P				
	1/8" NPT Male	1-3/4		56-180-2M2-28B				
290	1/4" Auto Tube Weld	2-5/8	9 Ra	56-290-4TW2-42B	55-290-3	1	-	-
			9 Ra EP	56-290-4TW2-P				
	1/4" NPT Male	2-1/4		56-290-2M2-36				
296*	1/4" Auto Tube Weld	2-5/8	9 Ra	56-296-4TW2-42B	55-296-3	7/8	-	-
			9 Ra EP	56-296-4TW2-P				
	1/4 VacuSeal® Male	2-3/4	9 Ra	56-296-4VM2-44				
			9 Ra EP	56-296-4VM2-P				
	1/4" NPT Male	3-1/2		56-296-4M2-56				
320	1/4" Auto Tube Weld	1-3/4	9 Ra	56-32-4TW2-28B	55-320-3	1-1/8	50-320-T	50-320-K
			9 Ra EP	56-32-4TW2-P				
	1/4 VacuSeal® Male	2-3/4	9 Ra	56-32-4VM2-28				
			9 Ra EP	56-32-4VM2-P				
	1/4" NPT Male	3-1/2		56-32-4M2-40				
326	1/4" Auto Tube Weld	2-1/4	9 Ra	56-326-4TW2-36B	55-326-3	1-1/8	-	See Seal Enhancers page 7
			9 Ra EP	56-326-4TW2-P				
	1/4 VacuSeal® Male	2-1/4	9 Ra	56-326-4VM2-36				
			9 Ra EP	56-326-4VM2-P				
	1/4" NPT Male	3		56-326-4M2-48				
330	1/4" Auto Tube Weld	1-3/4	9 Ra	56-32-4TW2-28B	55-330-3	1-1/8	50-320-T	50-320-K
			9 Ra EP	56-32-4TW2-P				
	1/4 VacuSeal® Male	1-3/4	9 Ra	56-32-4VM2-28				
			9 Ra EP	56-32-4VM2-P				
	1/4" NPT Male	2-1/2		56-32-4M2-40				
346	1/4" Auto Tube Weld	2-5/16	9 Ra	56-346-4TW2-37B	55-346-3	1-1/8	-	See Seal Enhancers page 7
			9 Ra EP	56-346-4TW2-P				
	1/4 VacuSeal® Male	2-1/4	9 Ra	56-346-4VM2-36				
			9 Ra EP	56-346-4VM2-P				
	1/4" NPT Male	3		56-346-4M2-48				
350	1/4" Auto Tube Weld	2-5/16	9 Ra	56-350-4TW2-37B	55-350-3	1-1/8	-	See Seal Enhancers page 7
			9 Ra EP	56-350-4TW2-P				
	1/4 VacuSeal® Male	2-1/4	9 Ra	56-350-4VM2-36				
			9 Ra EP	56-350-4VM2-P				
	1/4" NPT Male	3		56-350-4M2-48				

Electropolished I.D. components designated by the "-P" suffix are "OMEGA" D. I. cleaned and packaged in a certified clean room. Non-electropolished components are ultrasonically D.I. cleaned and poly-bagged.

CGA INLET CONNECTION COMPONENTS

Continued from previous page



*

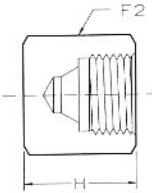
CGA 580 x 1/4 Auto Tube Weld

CGA Number	End Connection	H Overall Length	Internal Surface Finish	Nipple Part Number	Nut Part Number	F1 Hex Flat	PTFE Washer Number	Kel-F® Washer Number
510*	1/4" Auto Tube Weld	9 Ra 2-5/8	9 Ra EP	56-50-4TW2-42B 56-50-4TW2-P	55-510-3	1-1/8	-	-
	1/4 VacuSeal® Male	2-3/4	9 Ra 9 Ra EP	56-50-4VM2-44 56-50-4VM2-P				
	1/4" NPT Male	3-1/2		56-50-4M2-56				
540	1/4" Auto Tube Weld	2-1/4	9 Ra 9 Ra EP	56-54-4TW2-36B 56-54-4TW2-P	55-540-3	1-1/8	-	-
	1/4 VacuSeal® Male	2-1/4	9 Ra 9 Ra EP	56-54-4VM2-36 56-54-4VM2-P				
	1/4" NPT Male	3		56-54-4M2-48				
580*	1/4" Auto Tube Weld	2-5/8	9 Ra 9 Ra EP	56-50-4TW2-42B 56-50-4TW2-P	55-580-3	1-1/8	-	-
	1/4 VacuSeal® Male	2-3/4	9 Ra 9 Ra EP	56-50-4VM2-44 56-50-4VM2-P				
	1/4" NPT Male	3-1/2		56-50-4M2-56				
590*	1/4" Auto Tube Weld	2-5/8	9 Ra 9 Ra EP	56-50-4TW2-42B 56-50-4TW2-P	55-590-3	1-1/8	-	-
	1/4 VacuSeal® Male	2-3/4	9 Ra 9 Ra EP	56-50-4VM2-44 56-50-4VM2-P				
	1/4" NPT Male	3-1/2		56-50-4M2-56				
660	1/4" Auto Tube Weld	2-3/16	9 Ra 9 Ra EP	56-60-4TW2-35B 56-60-4TW2-P	55-660-3	1-1/4	50-60-T	50-60-K
	1/4 VacuSeal® Male	1-7/8	9 Ra 9 Ra EP	56-60-4VM2-30 56-60-4VM2-P				
	1/4" NPT Male	2-5/8		56-60-4M2-42				
670	1/4" Auto Tube Weld	2-3/16	9 Ra 9 Ra EP	56-60-4TW2-35B 56-60-4TW2-P	55-670-3	1-1/4	50-60-T	50-60-K
	1/4 VacuSeal® Male	1-7/8	9 Ra 9 Ra EP	56-60-4VM2-30 56-60-4VM2-P				
	1/4" NPT Male	2-5/8		56-60-4M2-42				
678	1/4" Auto Tube Weld	2-1/2	9 Ra 9 Ra EP	56-678-4TW2-40B 56-678-4TW2-P	55-678-3	1-1/4	50-66-T	50-66-K
	1/4 VacuSeal® Male	2	9 Ra 9 Ra EP	56-678-4VM2-32 56-678-4VM2-P				
	1/4" NPT Male	2-3/8		56-678-4M2-38				
679	1/4" Auto Tube Weld	2-1/2	9 Ra 9 Ra EP	56-679-4TW2-40B 56-679-4TW2-P	55-679-3	1-1/4	50-110-T	-
	1/4 VacuSeal® Male	2	9 Ra 9 Ra EP	56-679-4VM2-32 56-679-4VM2-P				
	1/4" NPT Male	3		56-679-4M2-40				

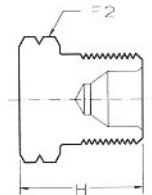
CGA Inlet Components and Outlet Adaptors are also available in brass, brass chrome plated and monel.

CGA OUTLET ADAPTORS, BLANK CAPS AND PLUGS

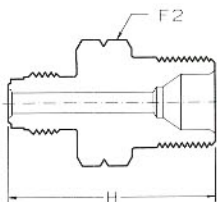
Blank Cap CGA 580



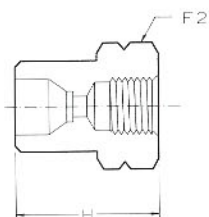
Blank Plug CGA 350



VacuSeal® Male CGA 350



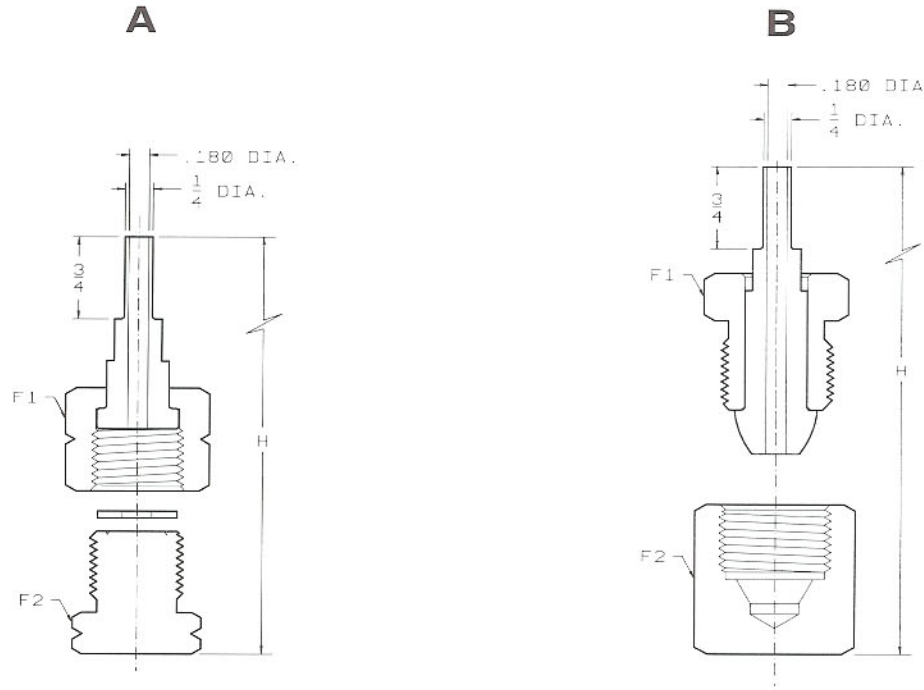
NPT Female CGA 350



CGA Number	End Connection	Part Number	H Overall Length	F2 Hex Flat
296	Blank Cap	57-296FXX-3	1.37	
	1/4 VacuSeal® Male	57-296F4VM-2	2.00	1-1/8
	1/4" NPT Female	57-296F4F-2	2.00	
320	Blank Plug	57-320MXX-3	1.12	
	1/4 VacuSeal® Male	57-320M4VM-2	1.74	1
	1/4" NPT Female	57-320M4F-2	1.12	
326	Blank Plug	57-326MXX-3	1.12	
	1/4 VacuSeal® Male	57-326M4VM-2	1.74	1
	1/4" NPT Female	57-326M4F-2	1.31	
330	Blank Plug	57-330MXX-3	1.12	
	1/4 VacuSeal® Male	57-330M4VM-2	1.74	1
	1/4" NPT Female	57-330M4F-2	1.31	
346	Blank Plug	57-346MXX-3	1.12	
	1/4 VacuSeal® Male	57-346M4VM-2	1.88	1
	1/4" NPT Female	57-346M4F-2	1.31	
350	Blank Plug	57-350MXX-3	1.12	
	1/4 VacuSeal® Male	57-350M4VM-2	1.88	1
	1/4" NPT Female	57-350M4F-2	1.31	
510	Blank Cap	57-510FXX-3	1.37	
	1/4 VacuSeal® Male	57-510F4VM-2	2.00	1-1/4
	1/4" NPT Female	57-510F4F-2	2.00	
540	Blank Plug	57-540MXX-3	1.12	
	1/4 VacuSeal® Male	57-540M4VM-2	1.87	1
	1/4" NPT Female	57-540M4F-2	1.25	
580	Blank Cap	57-580FXX-3	1.37	
	1/4 VacuSeal® Male	57-580F4VM-2	2.00	1-1/4
	1/4" NPT Female	57-580F4F-2	2.00	
590	Blank Cap	57-590FXX-3	1.37	
	1/4 VacuSeal® Male	57-590F4VM-2	2.00	1-1/4
	1/4" NPT Female	57-590F4F-2	2.00	
660	Blank Plug	57-660MXX-3	0.88	
	1/4 VacuSeal® Male	57-660M4VM-2	1.50	1-1/8
	1/4" NPT Female	57-660M4F-2	1.25	
670	Blank Plug	57-670MXX-3	0.88	
	1/4 VacuSeal® Male	57-670M4VM-2	1.50	1-1/8
	1/4" NPT Female	57-670M4F-2	1.25	
678	Blank Plug	57-678MXX-3	1.00	
	1/4 VacuSeal® Male	57-678M4VM-2	1.50	1-1/8
	1/4" NPT Female	57-678M4F-2	1.38	
679	Blank Plug	57-679MXX-3	0.88	
	1/4 VacuSeal® Male	57-679M4VM-2	1.75	1-1/8
	1/4" NPT Female	57-679M4F-2	1.25	

**COMPLETE CGA
PIGTAIL CONNECTIONS**

*Includes: Nut, Automatic Tube Weld
Nipple, Washer and Blank Plug or Cap.*

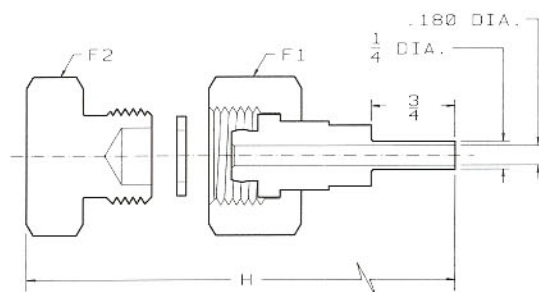


CGA Number	Drawing	Part Number	H Overall Length	F1 Hex Flat	F2 Hex Flat	Internal Surface Finish	Washer Material
296	B	58-296-4TW2-P	3.03	7/8	1-1/8	9Ra EP	-
320	A	58-320-4TW2-P	2.96	1-1/8	1	9Ra EP	Kel-F®
326	A	58-326-4TW2-P	3.01	1-1/8	1	9Ra EP	NI Seal Enhancer
330	A	58-330-4TW2-P	2.96	1-1/8	1	9Ra EP	Kel-F®
346	A	58-346-4TW2-P	2.97	1-1/8	1	9Ra EP	NI Seal Enhancer
350	A	58-350-4TW2-P	2.96	1-1/8	1	9Ra EP	NI Seal Enhancer
510	B	58-510-4TW2-P	3.03	1-1/8	1-1/4	9Ra EP	-
540	A	58-540-4TW2-P	2.96	1-1/8	1	9Ra EP	-
555	A	58-555-4TW2-P	2.96	1-1/8	1	9Ra EP	-
580	B	58-580-4TW2-P	3.03	1-1/8	1-1/4	9Ra EP	-
590	B	58-590-4TW2-P	3.03	1-1/8	1-1/4	9Ra EP	-
660	A	58-660-4TW2-P	2.96	1-1/4	1-1/8	9Ra EP	Kel-F®
670	A	58-670-4TW2-P	2.96	1-1/4	1-1/8	9Ra EP	Kel-F®
678	A	58-678-4TW2-P	3.08	1-1/4	1-1/8	9Ra EP	Kel-F®
679	A	58-679-4TW2-P	2.96	1-1/4	1-1/8	9Ra EP	Kel-F®

UHP CGA Connections are "OMEGA" cleaned, inspected and packaged in a monitored and validated Federal Standard 209D clean room. Each wetted surface component is double-bagged with a nylon inner bag and a polyethylene outer bag. Inner bag is purged with filtered nitrogen. Both bags are heat sealed.

COMPLETE DIN PIGTAIL CONNECTIONS

Includes: Nut, Automatic Tube Weld Nipple,
Washer and Blank Plug.



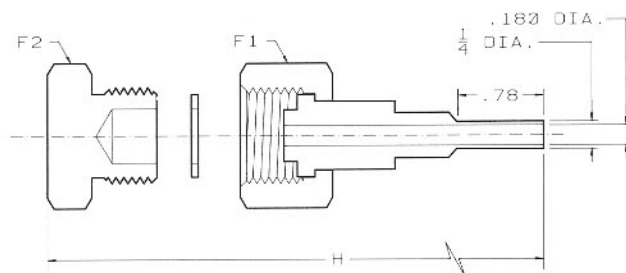
DIN 6

DIN Number	Part Number	H Overall Length	F1 Hex Flat	F2 Hex Flat	Internal Surface Finish	Washer Material
1	58-DIN1-4TW2-P	2.96	1-1/4	1-1/4	9 Ra EP	PTFE
5	58-DIN5-4TW2-P	3.09	1-1/4	1-1/4	9 Ra EP	PTFE
6	58-DIN6-4TW2-P	2.96	1-1/4	1-1/4	9 Ra EP	PTFE
8	58-DIN8-4TW2-P	3.09	1-1/4	1-1/4	9 Ra EP	PTFE
11	58-DIN11-4TW2-P	2.88	7/8	11/16	9 Ra EP	PTFE
14	58-DIN14-4TW2 -P	2.88	1-1/16	7/8	9 Ra EP	PTFE

UHP DIN Connections are "OMEGA" cleaned, inspected and packaged in a monitored and validated Federal Standard 209D clean room. Each wetted surface component is double-bagged with a nylon inner bag and a polyethylene outer bag. Inner bag is purged with filtered nitrogen. Both bags are heat sealed.

COMPLETE JIS PIGTAIL CONNECTIONS

Includes: Nut, Automatic Tube Weld Nipple,
Washer and Blank Plug.



JIS 22R

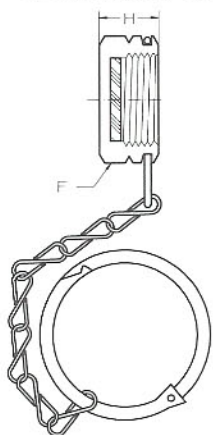
JIS Number	Part Number	H Overall Length	F1 Hex Flat	F2 Hex Flat	Internal Surface Finish	Washer Material
22R	58-JIS22R-4TW2	3.25	1.14	1.14	9 Ra EP	Kel-F®
22L	58-JIS22L-4TW2	3.25	1.14	1.14	9 Ra EP	Kel-F®
26R	58-JIS26R-4TW2	3.14	1-1/4	1-1/4	9 Ra EP	Kel-F®
26L	58-JIS26L-4TW2	3.14	1-1/4	1-1/4	9 Ra EP	Kel-F®

UHP JIS Connections are "OMEGA" cleaned, inspected and packaged in a monitored and validated Federal Standard 209D clean room. Each wetted surface component is double-bagged with a nylon inner bag and a polyethylene outer bag. Inner bag is purged with filtered nitrogen. Both bags are heat sealed.

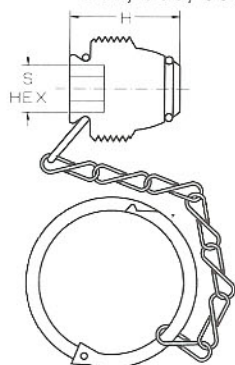
CYLINDER VALVE OUTLET CAPS AND PLUGS

Includes: Ring and chain.

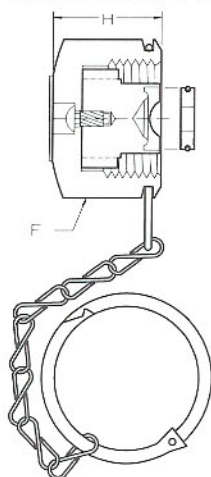
CGA Cap
320-350 and 660-705



CGA Plug
510, 580, 590



UHP CGA Cap
632-642 and 712-728



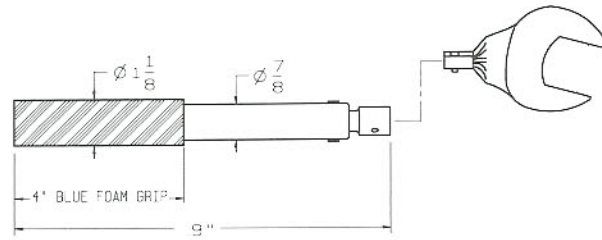
CGA Number	Part Number	Material	F Hex Flat	S Hex Flat	H Length	Gas-Tight*
320	53-30C-3PR	Stainless Steel with Polyethylene disc	1	-	.54	No
326	53-30C-3PR	Stainless Steel with Polyethylene disc	1	-	.54	No
330	53-33C-3PR	Stainless Steel with Polyethylene disc	1	-	.54	No
346	53-30C-3PR	Stainless Steel with Polyethylene disc	1	-	.54	No
350	53-350GTC-3R	Stainless Steel	1-1/8	-	.82	Yes
510	53-510P-3TR	Stainless Steel with Teflon [®] O-Ring	-	3/8	1.00	Yes
580	53-580P-3TR	Stainless Steel with Teflon [®] O-Ring	-	3/8	1.00	Yes
590	53-590P-3TR	Stainless Steel with Teflon [®] O-Ring	-	3/8	1.00	Yes
632	53-63GTC-2NR	Stainless Steel with Nickel gasket	1-1/4	-	.98	Yes
634	53-63GTC-2NR	Stainless Steel with Nickel gasket	1-1/4	-	.98	Yes
636	53-63GTC-2NR	Stainless Steel with Nickel gasket	1-1/4	-	.98	Yes
638	53-63GTC-2NR	Stainless Steel with Nickel gasket	1-1/4	-	.98	Yes
640	53-63GTC-2NR	Stainless Steel with Nickel gasket	1-1/4	-	.98	Yes
642	53-63GTC-2NR	Stainless Steel with Nickel gasket	1-1/4	-	.98	Yes
660	53-660C-3PR	Stainless Steel with Polyethylene disc	1-1/4	-	.54	No
670	53-67C-3PR	Stainless Steel with Polyethylene disc	1-1/4	-	.54	No
677	53-67C-3PR	Stainless Steel with Polyethylene disc	1-1/4	-	.54	No
678	53-67C-3PR	Stainless Steel with Polyethylene disc	1-1/4	-	.54	No
679	53-67C-3PR	Stainless Steel with Polyethylene disc	1-1/4	-	.54	No
705	53-705C-3PR	Stainless Steel with Polyethylene disc	1-3/8	-	.54	No
712	53-71GTC-2NR	Stainless Steel with Nickel gasket	1-3/8	-	.98	Yes
714	53-71GTC-2NR	Stainless Steel with Nickel gasket	1-3/8	-	.98	Yes
716	53-71GTC-2NR	Stainless Steel with Nickel gasket	1-3/8	-	.98	Yes
718	53-71GTC-2NR	Stainless Steel with Nickel gasket	1-3/8	-	.98	Yes
720	53-71GTC-2NR	Stainless Steel with Nickel gasket	1-3/8	-	.98	Yes
722	53-71GTC-2NR	Stainless Steel with Nickel gasket	1-3/8	-	.98	Yes
724	53-71GTC-2NR	Stainless Steel with Nickel gasket	1-3/8	-	.98	Yes
726	53-71GTC-2NR	Stainless Steel with Nickel gasket	1-3/8	-	.98	Yes
728	53-71GTC-2NR	Stainless Steel with Nickel gasket	1-3/8	-	.98	Yes

Cylinder Valve Outlet Caps and Plugs are also available in brass and brass chrome plated.

**Components not rated Gas-Tight are intended only to keep valve outlets clean and provide protection to threads. They must not be relied on to contain pressure if valve leaks or is inadvertently opened.*

TORQUE WRENCHES

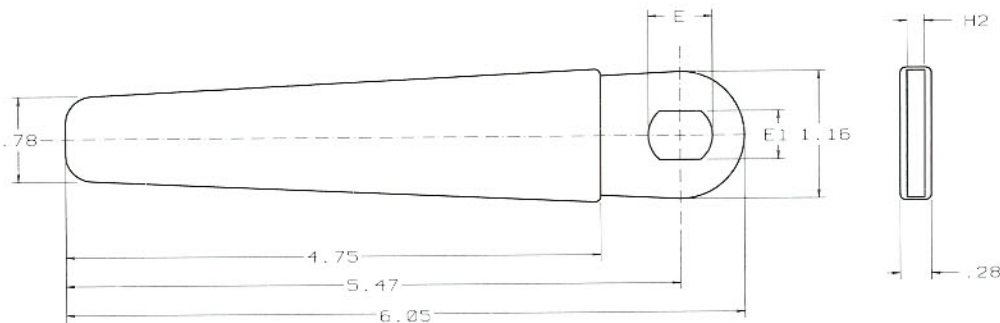
FOR ULTRA HIGH INTEGRITY GAS SERVICE CGA CONNECTIONS



Part Number	Factory Set Torque	For Use With	CGA 632-642 Hex Flat	CGA 712-728 Hex Flat	CGA 326,346, 350 Hex Flat
77-DISS-TW	35 ft-lbs	Nickel Gasket	1-1/4	1-3/8	-
77-DISS-TW-K	12 ft-lbs	Kel-F® Gasket	1-1/4	1-3/8	-
77-350-TW	40 ft-lbs	Nickel Seal Enhancers	-	-	1-1/8

Torque wrenches are specifically designed for use with the Compressed Gas Association's 632-642, 712-728 and CGA 326,346 and 350 series of connections. Torque is factory set to the CGA recommendations. Calibration service is also available and is recommended every six months or 4,000 cycles, whichever comes first.

PIGTAIL HANDLES



Part Number	E	E1 Flat Size
77-PH7	9/16	7/16
77-PH9	11/16	9/16
77-PH10	3/4	5/8

PIGTAIL ASSEMBLIES

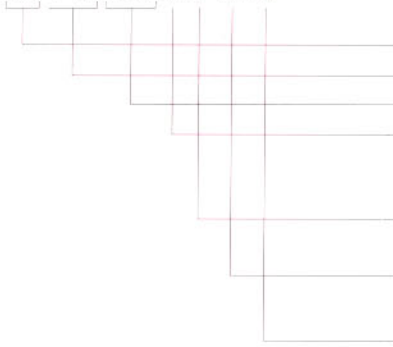
Pigtail assemblies are available in the standard configurations outlined below.

- All assemblies are fabricated with 1/4 x .035 Electropolished (EP) tubing.
- All welds are automatic tube weld.
- All assemblies are 100% tested, Electropolished (EP), "OMEGA" D.I. cleaned and clean room packaged.

STANDARD CONFIGURATIONS

CYLINDER CONNECTION x CYLINDER CONNECTION

PART NUMBER EXAMPLE
65-718 580 2 F M H



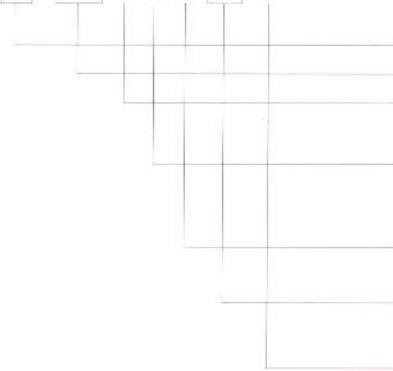
ORDERING INFORMATION

SERIES 65, PIGTAILS

CONNECTION 1	Specify CGA, DIN or JIS connection number	
CONNECTION 2	Specify CGA, DIN or JIS connection number	
MATERIAL	2	316L stainless steel (VAR/VIMVAR)
	5	Monel
	16	Hastelloy [®] C-22 [™]
CONNECTION 1 TYPE	F	Female
	M	Male
CONNECTION 2 TYPE	F	Female
	M	Male
HANDLE REQUIREMENTS	H	With handle
	BLANK	Less handle

CYLINDER CONNECTION x VacuSeal[®] FACE SEAL

PART NUMBER EXAMPLE
65 - 350 4 2 F VF H

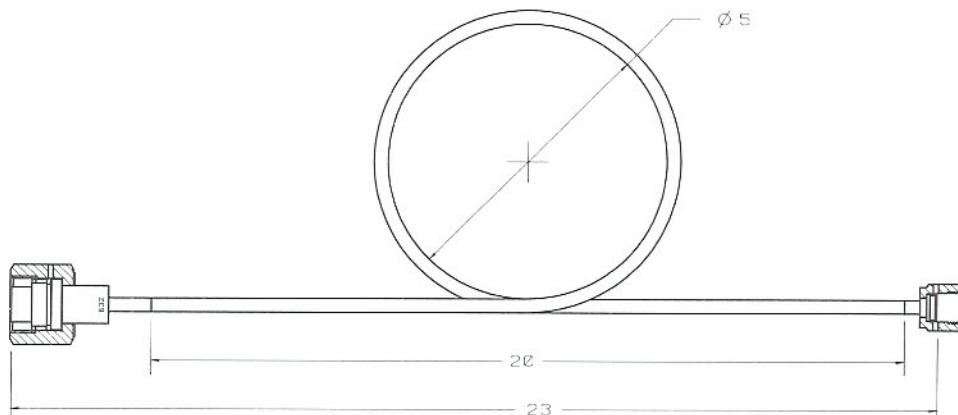


ORDERING INFORMATION

SERIES 65, PIGTAILS

CONNECTION 1	Specify CGA, DIN or JIS connection number	
VacuSeal [®] SIZE	4	1/4
	8	1/2
	16	Hastelloy [®] C-22 [™]
MATERIAL	2	316L stainless steel (VAR/VIMVAR)
	5	Monel
	16	Hastelloy [®] C-22 [™]
CONNECTION TYPE	F	Female
	M	Male
VacuSeal [®] TYPE	VF	Female
	VM	Male
HANDLE REQUIREMENTS	H	With handle
	BLANK	Less handle

CGA 632 Female x VacuSeal[®] Female



APPENDIX

GAS CONNECTION ASSIGNMENT TABLE SOURCES

The Gas Connection Assignment table is presented for information purposes only and informs the reader of outlet specifications that are enumerated in other selected international standards.

A list of these standards is included below. Every effort has been made to include the most recent copy of each standard, as of March 1994. The reader is encouraged to determine if a subsequent issue of a particular standard has been issued since the publication of this document.

The user is further cautioned that:

- The pressure ranges in each of the listed standards for the connections listed are not necessarily equivalent.
- The connections listed for a particular gas in these different standards are not identical nor are they interchangeable.
- These tables are not part of the standard, but as stated above, are provided for information purposes only.

STANDARDS

- Compressed Gas Association Publication V-1 (1994 Edition)
- Deutscher Institute für Normung 477 Part 1 (May 1990 Edition)
- Japanese Industrial Standard B8244 (Translated) (1989 Edition)
- Japanese Industrial Standard B8246 (Translated) (1989 Edition)
- International Organization for Standardization ISO/DIS 407 (1983 Edition)
- Deutscher Institute für Normung 477 Part 8 (1990 Edition)
- For Canada Only

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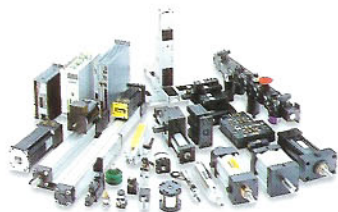
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