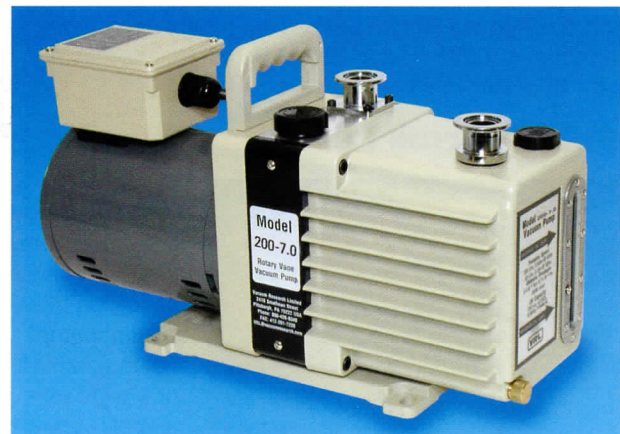


■ Dual Stage, Rotary Vane, Vacuum Pumps



Model 100-3.5



Model 200-7.0

Features overview:

- 6M³, 12M³ and 24M³ Pumping Capacity
- Extremely Quiet Operation
- Virtually Vibration Free
- Compact Design
- Corrosion Resistant
- Anti-suck Back Design
- Multiple Voltage Motors

This line of quality Rotary Vane pumps will meet your demands for high pumping speed combined with high ultimate vacuum. These dual stage rotary vane pumps are reliable, efficient and competitively priced. High quality engineering has resulted in corrosive-resistant pumps with a compact design coupled to quiet and low vibration operation.

These pumps are ideally suited for many applications in labs and small production systems such as analytical instruments, electron microscopes, sputter and deposition systems, freeze drying, vacuum ovens and furnaces, cluster tool load locks and mass spectrometer inlet systems.



Model 400-14

Mode: Product Number	100-3.5: 92080	200-7.0: 92081	400-149: 2080 / 92082-220
Pumping Speed @60Hz	100 ltr/min, 3.5CFM, 6m ³ /hr	200 ltr/min, 7CFM, 12m ³ /hr	400 ltr/min, 14CFM, 24m ³ /hr
Pumping Speed @50Hz	83 ltr/min, 3CFM, 5m ³ /hr	166 ltr/min, 6CFM, 10m ³ /hr	333 ltr/min, 11.6CFM, 20m ³ /hr
Ultimate Pressure	6 x 10 ⁻⁴ mbar, 5 x 10 ⁻⁴ Torr	6 x 10 ⁻⁴ mbar, 5 x 10 ⁻⁴ Torr	1 x 10 ⁻³ mbar, 1 x 10 ⁻³ Torr
Ultimate Pressure w/gas ballast	6 x 10 ⁻² mbar, 5 x 10 ⁻² Torr	6 x 10 ⁻² mbar, 5 x 10 ⁻² Torr	6 x 10 ⁻² mbar, 5 x 10 ⁻² Torr
Intake and Exhaust Connection	NW25 / KF25	NW25 / KF25	NW25 / KF25
Oil Capacity	500cc	600cc	1500cc
Motor CE marked	115/208-230V, 50/60Hz, ½ HP	115/208-230V, 50/60Hz, ½ HP	115/208-230V, 50/60Hz, 1 HP
Weight, net	23kg (51 lbs.)	24kg (53 lbs)	32kg (71 lbs)
Ambient Operating Temperature	7° to 40°C (45° to 104°F)	7° to 40°C (45° to 104°F)	7° to 40°C (45° to 104°F)

92080	Rotary Vane Pump 100-3.5, 6m ³ /hr, 115/208-230volts 50/60Hzeach
92081	Rotary Vane Pump 200-7.0, 12m ³ /hr, 115/208-230volts 50/60Hzeach
92082	Rotary Vane Pump 400-14, 24m ³ /hr, 115volts 60Hzeach
92082-220	Rotary Vane Pump 400-14, 24m ³ /hr, 230/380volts 50/60Hzeach
92080-10	Adapter Cord, IEC/NEMA 5-15P (for Connecting Pumps to Cressington Coaters)each
92080-108	All Metal Connection Kit (for connecting a pump to a 108 Series Cressington Coater) ①each
92080-200	Dual-VacSet (for connecting two 108 Series Cressington Coaters to one #92080 Pump) ①each

VACUUM PUMPS AND SUPPLIES

Dry Scroll Pumps

Dry Scroll Pumps The oil-free technology of dry scroll pumps eliminates the possibility of oil contamination in the vacuum system or in the environment around the rotary pump. No need to check oil, change oil and/or oil mist filters thus decreasing operation costs. Compared to diaphragm pumps, dry scroll pumps provide a vacuum around a magnitude providing much better compatibility with turbo pumps. Both the IDP-3 and SH-110 are affordable, compact high-performance pumps, which are relatively quiet and very suitable for laboratory type applications.

■ IDP-3 Dry Scroll Pump



The IDP-3 Dry Scroll Pump is an innovative, compact, high-performance, oil-free vacuum pump that is suitable for a wide variety of applications. It is one of the smallest scroll

pumps made for general vacuum applications and can be easily integrated in existing systems. With a pumping speed of 60 ltr/min (3.6m³/hr, 2.1 cfm), low base pressure of 250 millitor (3.3 x 10⁻¹ mbar) and a weight of only 21 lbs (9.5kg), it is a high performance pump with impressive specifications. The IDP-3 can be used to back small turbo pumps with drag stages or other vacuum lab equipment. Inlet connection is a standard NW16 KF flange. Ideal to upgrade system with a small oil-filled rotary pump to dry pumping systems (such as the Cressington 208HR). Available in 115 and 230 VAC versions.

92085 IDP-3 Dry Scroll Pump 60ltr/min,
3.6m³/hr, 1.8cfm, 115VAC/60Hzeach

92085-220 IDP-3 Dry Scroll Pump 50ltr/min,
3m³/hr, 1.5cfm, 230VAC/50Hzeach

■ SH-110 Dry Scroll Pump



The SH-110 is a dry, hermetic scroll pump that combines a high pumping speed with a low ultimate vacuum in an impressive package. The SH-110 has a universal motor for 100-230 VAC for

easy installation in existing systems. Pumping speed is 110 ltr/min (6.6m³/hr, 4 cfm) with an ultimate pressure of 50 millitor (6.6 x 10⁻² mbar) and can be used to back up turbo pumps compatible with that pumping speed. Inlet connection is standard NW25 KF flange.

92086 SH-110 Dry Scroll Pump 110ltr/min,
6.6 m³/hr, 4 CFM @ botheach

92085-10 IEC/IEC adapter cord , 18"each

Technical Specs	IDP-3	SH-110
Peak pumping speed (60Hz - 50Hz)	60L/m, 3.6m ³ /hr, 2.1 cfm - 50L/m, 3.0m ³ /hr, 1.8 cfm	110L/m, 6.6m ³ /hr, 4 cfm - 90L/m, 5.4m ³ /hr, 3.3 cfm
Ultimate pressure	2.5 x 10 ⁻¹ torr (3.3 x 10 ⁻¹ mbar)	5.0 x 10 ⁻² torr (6.6 x 10 ⁻² mbar)
Maximum outlet pressure	1.4 atmosphere (6.5 psig)	1.5 atmosphere (7.5 psig)
Inlet connection	NW16 KF flange	NW25 KF flange
Exhaust connection	¼ in. female nat'l pipe thread	¼ in. female nat'l pipe thread
Exhaust connection adapter	NW16 KF adapter provided	NW16 KF adapter provided
Gas ballast connection	⅝ in. female nat'l pipe thread	⅝ in. female nat'l pipe thread
Ambient operation temperature	5 to 45°C (41 to 113°F)	5 to 45°C (41 to 113°F)
Storage temperature	-20 to 60°C (-4 to 140°F)	-20 to 60°C (-4 to 140°F)
Motor rating	0.16 horsepower (0.12 kW)	0.25 horsepower (0.19 kW)
Supply power	1 phase, 50-60 Hz, 100-115 or 200-240 VAC	1 phase, 50-60 Hz, 100-115/200-230 VAC
Motor thermal protection	Automatic	Automatic
Rotation speed	3200 RPM at 60 Hz / 2600 RPM at 50 Hz	1725 RPM at 60 Hz / 1425 RPM at 50 Hz
Cooling	Air-cooled	Air-cooled
Weight	9.5 kg (21 lbs)	19.5 kg (43 lbs)
Size	384 x 140 x 181mm (LxWxH) 15.12" x 5.51 x 7.13"	384 x 258 x 258mm (LxWxH) 15.12" x 10.16 x 10.16"
Shipping weight	10.5 kg (23 lbs)	19.5 kg (43 lbs)
Restrictions	No corrosive, explosive, or particulate-forming gases	
Leak rate (exhaust sealed)	<1 x 10 ⁻⁶ std-cc/sec helium	<1 x 10 ⁻⁷ std-cc/sec helium
Compliances	CE, CSA, CSA/CUS, Semi S2-703, and RoHS	CE, CSA, and Semi S2-2000

■ P-100 Pirani Gauge with integral sensor and display



This compact vacuum measuring instrument offers the precision and high resolution of digital electronics with display and measuring device, all in one small box. This extremely rugged Pirani Vacuum Gauge is constructed with a solid, noble, inert metal that maintains its calibration over long periods. The vacuum gauge does not contain gold and is compatible with mechanical, oil and mercury pumps. Operates at relatively low operating temperature and includes temperature compensation network to enhance stability.

The vacuum connection on the P-100 Compact Integral Sensor Pirani Gauge is 1/8" NPT male thread and a selection of NW/KF adapters is available for easy connection to existing vacuum system. Due to its small size, it can be easily integrated in custom vacuum systems. The P-100 Pirani Vacuum Gauge can be easily transported and is ideal for service and maintenance applications to check performance of vacuum pumps, backing lines, airlocks and vacuum chambers.

92095-10 P-100 Pirani Gauge with integral sensor and display, 1/8" NPT threadeach

92464-16 NW/KF 16 Vacuum adapter connection with 1/8" NPT threadeach

92464-25 NW/KF 25 Vacuum adapter connection with 1/8" NPT threadeach

92464-40 NW/KF 40 Vacuum adapter connection with 1/8" NPT threadeach

92464-50 NW/KF 50 Vacuum adapter connection with 1/8" NPT threadeach

Specifications of the P-100 Pirani Gauge	
Pressure range	1 x 10 ⁻³ to 1,500 mbar
Calibration	Air or Nitrogen
Response time	0.3 sec time constant
Temperature effects	< .45% between 0 to 50°C (32 to 120°F)
Adjustments	Zero and span
Analog Output	0 to 1.5 Volts into a 2000 Ohm load or higher
Maximum positive pressure	3.5 bar (50 PSIG)
Vacuum connection	1/8" NPT male thread
Display	4 digit LCD, 10mm high
Power supply	External adapter, 90-240V, 50/60Hz
Dimensions	63 x 63 x 32mm (2.5 x 2.5 x 1.25")
Weight	170 grams (6 ounces)

■ Foreline Traps

Highly recommended to prevent oil backstreaming from rotary vane pumps. Keeps your vacuum system clean in applications where pumps are running constantly such as mass spectrometer, electron microscope, and vacuum drying systems. Protect vacuum gauges when mounted in front of the gauges. Includes a 150ml Activated Alumina charge (renew the charge every 3 months with Prod. No. 92090-50). These compact, reliable and efficient foreline traps offer maximum mounting flexibility and have the following features:



Orientation in any direction - spring-loaded sorbent basket

Positive creep-proof design with O-ring seal

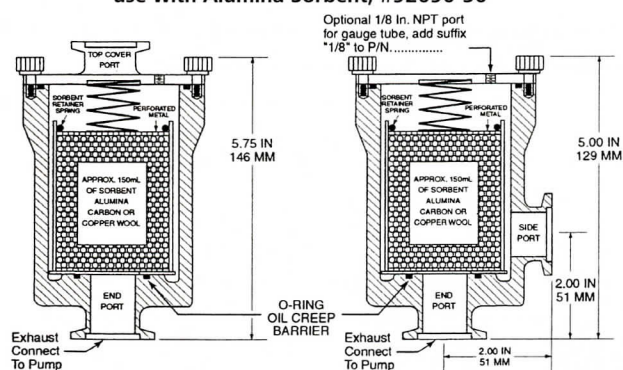
Suitable for pumps up to 34m³/hr, 20cfm, 550 ltr/min

Leak tested to better than 2 x 10⁻⁹ scc/sec

- Orientation in any direction - spring-loaded sorbent basket
 - Positive creep-proof design with O-ring seal
 - Suitable for pumps up to 34m³/hr, 20cfm, 550 ltr/min
 - Leak tested to better than 2 x 10⁻⁹ scc/sec
- scc/sec = standard cubic centimeters/sec. (gas leak rate)*

- Available in both Right Angle and Inline design
- Available with both NW16 and NW25 flanges
- No tools needed for easy sorbent replacement
- Aluminum body and sorbent basket, 316 stainless steel spring

use with Alumina Sorbent, #92090-50



92090-10 Inline Style Foreline Trap NW16each

92090-20 Inline Style Foreline Trap NW25each


92090-30 Right Angle Foreline Trap NW16each

92090-40 Right Angle Foreline Trap NW25each

■ PELCO® Activated Alumina Sorbent for Foreline Trap



The activated alumina sorbent is used in foreline traps to prevent backstreaming from rotary pumps or to shield vacuum gauges from contamination. PELCO® Activated Alumina sorbent can be used in foreline traps from VRL, BOC-Edwards, Alcatel/Adixen, Varian, Leybold, Sargent-Welch, Ulvac and other brands. The small pores (2-50nm) and the non uniform pore distribution in the

PELCO® Activated Alumina Sorbent provide the large surface area of 350 m²/gram. With this large internal surface area, the activated alumina sorbent attracts and holds gas molecules to which it is exposed. PELCO® Activated Alumina Sorbent is activated at 350°C (662°F) to less than 1% water and it is capable of holding 43% water (by weight) or in the foreline trap application, oil. The relatively uniform 1/4" diameter size makes it ideally suited for charging perforated mesh canisters as used in foreline traps. Also recommended for drying gases and refrigerants and for applications where extremely low dew points are desirable. Packed in a 450ml metal can with sealed lid. 

92090-50 PELCO® Activated Alumina Sorbent, 450mleach

■ Exhaust Filter for 7010 and GD6 Rotary Pumps (mist eliminators)



Filter for removing oil mist from vacuum pump exhaust in Prod. No. 7010, 7010-220, 91010 and 91010-230 Rotary Pumps or any other rotary vane pump with NW/KF 16 output flange. Creates a cleaner work environment for operators and surrounding equipment. Connection: 1/4" NPT thread.

9609 Exhaust Filter, for #7010 or 7010-220 Rotary Pumpeach

NW Flange Adapter to 1/4" Female NPT - Stainless Steel

92465-16 NW 16 Adapter to 1/4" Female NPT, 304 Stainless Steel, A=16mm, B=19mm . .each

■ Exhaust Filters for Vacuum Rotary Vane Pumps



Filters for removing oil mist from exhaust in the VRL and Edwards rotary vane pumps. Permits discharge into clean work areas. Return collected oil to sump or discard. Rugged construction, simple installation. For non-hazardous, non-corrosive applications.

92060 Exhaust Filter, Max Flow Rate 3CFM, 1/2" NPT (e.g., Edwards E2M2 or RV5 (#92033/92033-220), including adapter. 1/2" female NPT to 3/4" BSPT with 1/4" NPT plugeach

92061 Exhaust Filter, Max Flow Rate 3CFM (e.g., VRL 100-3.5 #92080; Edwards E2M2 or RV5 #92033/92033-220), without adapter, 1/2" NPT thread each



92466-25 Exhaust Filter Adapter

92466-25 Exhaust Filter Adapter, NW25 to 1/2" NPT, stainless, for VRL 100-3.5 #92080each

■ Two-Stage Vacuum Pump Exhaust Filter Kit



For rotary vacuum pumps it is recommended that they should be vented outside the room or to a laboratory exhaust hood to prevent indoor air contamination. This two-stage vacuum pump exhaust filter kit enables venting rotary vacuum pumps in rooms where an outside line is either not practical or possible. The two stage filter contains a replaceable oil mist eliminator element to trap vacuum oil and a replaceable activated charcoal element for the lighter hydrocarbon fractions.

Features:

- Provides a safe lab environment
- Purifies vacuum exhaust gases
- Separate, replaceable elements for oil mist and lighter fractions
- Only 6-1/4" tall with standard KF25 connection
- Low cost solution




It is recommended that both filters are replaced on a regular basis. For application such as electron microscopes and mass spectrometers, the oil mist filters need to be replaced every 4-6 months and the final activated charcoal filter once a month. Rated for vacuum pumps up to 10 CFM (5 ltr/sec or 16m³/hr)

92068 Two-stage Vacuum Pump Exhaust Filter Kit, KF25each

92068-20 Replacement Activated Charcoal Filter Element for 92068each

92066-10 Replacement Oil Mist Eliminator Cartridge for 92068each

 = MSDS on web page

■ Compact Oil Mist Eliminator



Compact Oil Mist Eliminator with KF25 connections and 1/8" drain plug. Max flow rate 10 CFM (5 ltr/sec or 16m³/hr) (suitable for #92081, 92082, 92035 and 92035-220). Baked enamel steel housing, ø89 x 127mm H (ø3.5" x 5" H). Use replacement filter #92066-10.

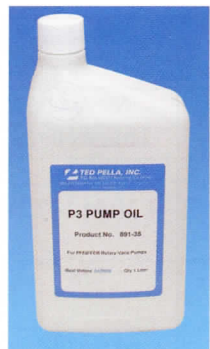
92066 Compact Oil Mist Eliminator, including cartridge, KF25each



92066-10 Replacement Filter Cartridge for #92066 Oil Mist Eliminatoreach

Vacuum Pump Oils

■ Pfeiffer P3 Oil



Clear, monograde oil that has the correct viscosity for Pfeiffer Rotary pumps, excellent sealing and lubrication properties, low vapor pressure and reduced back streaming.

Used also for Prod. No. 7010 and 7010-220 Rotary Pumps. **M** **T**

891-38 Pfeiffer P3 Oil, 1 litereach

891-25 Pfeiffer P3 Oil, 20 liters . .each

■ Ultragrade 19 Oil



Mineral oil derivative ideally suited for mechanical rotary vacuum pumps. Light end fractions are removed through molecular distillation resulting in lower vapor pressures and reduced backstreaming compared to undistilled refinery products. Offers reduced maintenance costs, longer fluid life and cooler running. Suitable for single and dual rotary vane pumps from VRL, BOC-Edwards, Alcatel, Adixen, Varian, Leybold, Sargent-Welch, ULVAC and other brands. **M**

891-35 Ultragrade 19 rotary pump oil, 1 litereach

891-36 Ultragrade 19 rotary pump oil, 4 literseach

■ Krytox® 1525 Vacuum Pumping Fluid



Krytox® Perfluorinated Polyether (PFPE) inert vacuum pump fluid for corrosive and oxygen applications. Chemically inert pumping fluid with excellent lubrication properties. Used in chemical resistant pumps as used in plasma cleaning systems. **T**

891-42 Krytox® 1525 Vacuum Pumping Fluid, 2kg . .each

■ Santovac® 5 Diffusion Pump Oil

Santovac® 5 Polyphenyl Ether Vacuum Pump Fluid excellent for TEM, SEM



Operates efficiently, economically and safely in diffusion pumps in properly designed systems to produce ultra-high vacuums in the 10⁻¹⁰ torr range. A wide liquid range, low vapor pressure and balance of properties make it an ideal working fluid in diffusion pumps.

Extremely low vapor pressure results in low ultimate pressures. The vapor pressure of Santovac® 5 at 25°C is 4 x 10⁻¹⁰ as determined by extrapolation from higher temperature data. Together with low backstreaming characteristics, 10⁻¹⁰ torr vacuums can be obtained in well designed systems without the use of nitrogen traps.

Low backstreaming. Santovac® 5 pump fluid can be used for electronic component manufacture, laboratory, analytical, instrument and research applications.

Santovac® 5 offers unusually high thermal and oxidation stability, with isoteniscope tests showing thermal stability at 465°C (870°F). May discolor with use but this does not affect its operation. Oxidation and corrosion tests, and field experience have shown that Santovac® 5 has little tendency to increase in viscosity during use. **M** **T**

891-50 Santovac 5, 100mleach

891-51 Santovac 5, 500mleach

■ Lion S Diffusion Pump oil



Lion S diffusion pump oil is a high quality alkyl naphthalene based diffusion pump oil, especially developed for applications such as electron microscopes, mass spectrometers and small vacuum systems. Recommended for TEMs and SEMs made by Hitachi, JEOL and ISI/ABT/Topcon equipped with a diffusion pump. No need for lower grade substitutes, this is the original LION S diffusion pump oil, manufactured by the Lion Corporation, Japan. It has been and is still used

in diffusion pumps used in instruments manufactured in Japan. Lion S diffusion oil has a high resistance against oxidation and works well with small and medium size diffusion pumps. **M** **T**

891-55 Lion S, 100mleach

891-56 Lion S, 1000mleach

VACUUM PUMPS AND SUPPLIES

Vacuum Greases

Vacuum Greases

■ Apiezon® Greases



No silicones. Excellent general purpose vacuum grease. Fully soluble in hydrocarbon and chlorinated solvents. Not for use above 30°C

Apiezon L Grease Ultra high vacuum grease, silicone and halogen free **M T**

Apiezon M Grease High vacuum grease, silicone and halogen free **M T**

Apiezon N Grease Cryogenic high vacuum grease, silicone and halogen free **M T**

Apiezon T Grease Medium temperature vacuum grease, silicone free **M T**

Apiezon H Grease High temperature vacuum grease, silicone free **M T**

Apiezon AP100 Ultra high vacuum lubricating grease, silicone free **M T**

Apiezon AP101 Anti seize vacuum grease, silicone free **M T**

891-2 Apiezon® Type L, 25g tubeeach

891-104 Apiezon® Type L, 50g tubeeach

891-1 Apiezon® Type M, 25g tubeeach

891-12 Apiezon® Type M, 100g tubeeach

891-101 Apiezon® Type M, Bulk 4 kgeach

891-4 Apiezon® Type N, 25g tubeeach

891-120 Apiezon® Type T, 25g tubeeach

891-3 Apiezon® Type H, 25g tubeeach

891-152 Apiezon® AP100, 50g tubeeach

891-160 Apiezon® AP101, 50g tubeeach

891-162 Apiezon® AP101, Bulk 4 kgeach

M = MSDS on web page; **T** = Tech Note on web page

Typical Properties	AP101	AP100	H Grease	L Grease	M Grease	N Grease	T Grease
Main Areas of Application	General Purpose	Lubricating	High Temperature	High Vacuum	General Vacuum	Cryogenic	Medium Temperature
Typical Working Temperature Range, °C	-40 to 180	10 to 30	-10 to 240	10 to 30	10 to 30	-269 to 30	10 to 120
Melting Point-ASTM.D 566, °C	>200	47	>250	47	44	43	125
Vapor Pressure, Torr @20°C	<1.0 x 10 ⁻⁵	<7.0 x 10 ⁻¹¹	<1.7 x 10 ⁻⁹	<7.0 x 10 ⁻¹¹	<1.7 x 10 ⁻⁹	<6.0 x 10 ⁻¹⁰	<4.6 x 10 ⁻⁹
Relative Density @20°C	0.981	1.042	0.918	0.896	0.894	0.911	0.912
Resistant to Radiation	N/R	N/R	N/R	N/R	N/R	N/R	N/R
Lubricity 4 Ball Test ASTM.D 2763 (IP239), kg	450	450	250	150	140	150	250
Outgassing Characteristics-ASTM.E 595-90 TML/ CVCM	N/A N/A	<1% <0.1%	<1% <0.1%	<1% <0.1%	N/A N/A	<1% <0.1%	N/A N/A
Coefficient of expansion per °C over 20-30°C	0.00066	N/A	0.00077	0.00076	0.00075	0.00072	0.00073
Thermal conductivity @20 °C, w/m °C	N/A	N/A	0.216	0.202	0.192	0.230	0.176
Electrical strength, V/mil (0."001)	N/A	N/A	800	730	850	820	T730

Vacuum Greases *continued*

■ Braycote® Micronic 803 and 803 Vacuum Grease

ultra-high vacuum applications



Braycote Micronic 803 is filtered for ultimate cleanliness. It will provide the kind of purity required

for use with vacuum systems employing LaB6 filaments.

It is stable under high vacuum and has a temperature range of -63°C to 232°C (below 80°F to >499°F). 803 Micronic was developed for applications involving long-term exposure where high temperature or hard vacuum is expected. It is acceptable for clean room applications.

Standard Braycote 803 has nearly the same specifications and does withstand high temperatures and is used for hard vacuum. Both types exhibit excellent shelf life because of their inertness. They are white colored and odorless. Lubricity for both types is retained under these adverse conditions. **M**

891-18 Braycote® 803 Vacuum Grease, 56geach

891-19 Braycote® Micronic 803 Vacuum Grease, 56geach

891-17 Braycote® Micronic 803 Vacuum Grease, 1 lb.each

■ Dow Corning®



A silicone lubricant for glass stopcocks, joints and glass-rubber connections. Stable from -40°C to +260°C. **Not for use in electron microscopes.** **M** **T**

891-7 Dow Corning Vacuum Grease, 150g tubeeach

■ PELCO Bell Jar Kleen™



PELCO Bell Jar Kleen™ is a non-scratching polishing and cleaning compound specially formulated for glass and porcelain surfaces. Ideally suited for cleaning glass bell jars used on vacuum evaporators, vacuum chambers from sputter and carbon coaters and glass windows in large coating systems. Can be used on vacuum chambers made from Corning, Schott or Pyrex glass. **M**

896 PELCO Bell Jar Kleen, 14 oz.each

M = MSDS on web page; **T** = Tech Note on web page

High Vacuum Leak Sealants

■ Celvaseal™ Vacuum Leak Sealant



Celvaseal™ leak sealant is a compound specially engineered for sealing leaks in high vacuum systems. It can repair leaks as large as 2 microliters/second, even with the system under vacuum. Larger leaks can be repaired when the vacuum system is at atmosphere.

It is available in two forms: Spray (ozone safe) and fluid in a brush-on bottle. It has a low vapor pressure which make is suitable

for use in ultra high vacuum systems and withstands repeated temperature cycling from -200°C to 400°C. (-328°F to 752°F) Steady weight loss of 1.6×10^{-8} gr/cm²/hr, which is lower than most epoxy based systems. Can be used at temperatures up to 300°C (572°F) continuously, and up to 400°C (752°F) for short periods. It has good adhesion to cryogenic temperatures and excellent electrical resistivity. Can be stored longer than 1 yr at 25°C (77°F). Density is 1.14 gr/cm³ and viscosity is 250-1000 cPs. **M**

T

Typical applications for Celvaseal™ include:

- Glass to metal seals, such as sensor pin feedthroughs
- Glass-Kovar joints
- UHV systems with small leaks on metal gaskets or high penetration welds
- Small leaks in glass vacuum systems
- Temporary repairs of small cracks in exposed gaskets
- Sealing hairline cracks in welds and brazed joints
- Thread sealant of fine pipe threads for mounting sensors and components to vacuum systems

Average curing temperature time:

- 400°C (752°F) 20-30 minutes
- 250°C (482°F) 60-70 minutes
- 230°C (446°F) 75-90 minutes
- Room temperature - Days

891-62 Celvaseal™ Aerosol Spray Can, 6 ozeach

891-63 Celvaseal™ Brush-on bottle, 2 ozeach

■ Hysol® Vacuum Sealant Kit



Hysol® Low Vapor-pressure Epoxy Resin Sealant seals small leaks on any type of vacuum system or component quickly and conveniently. It is a two component system resin, free of any solvents. It can be used at pressures of 10^{-9} or below and at temperatures be-

tween -45°C (-49°F) and +120°C (248°F) (baking temperature). It bonds well with many materials such as metals, ceramics and glass. Equivalent to Torr Seal® resin sealant.

Kit contains tube of resin, tube of hardener, 10 mixing cups and 10 wooden stirring sticks. **M** **T**

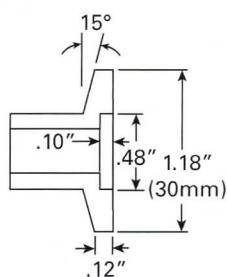
891-60 Hysol® Vacuum Sealant Kit

(79.3g resin / 34g hardener)each

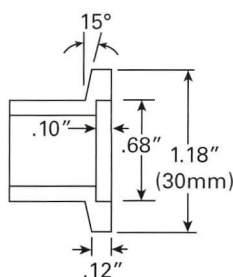
VACUUM PUMPS AND SUPPLIES

Vacuum Connection Parts

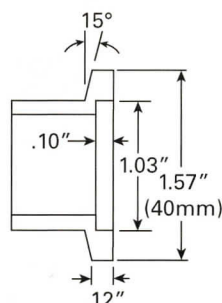
PELCO® NW/KF Style Vacuum Connection Parts, Fittings, Valves and Hoses



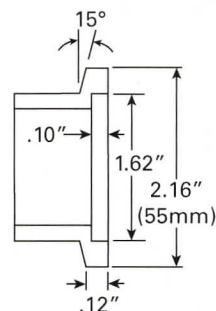
NW 10



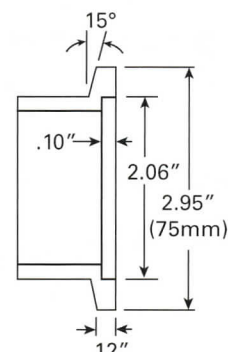
NW 16



NW 25



NW 40



NW 50

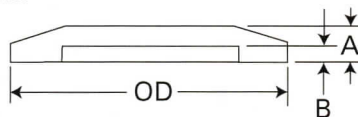
The NW style vacuum connections are the industry standard for vacuum components in the low and medium vacuum range and can be found on a variety of laboratory, production and test equipment. Many pumps and vacuum gauges use the standard NW flanges for easy integration. Test systems can be readily and quickly built utilizing the large selection of NW type components and can be easily modified for new tasks and applications. The PELCO® NW/KF style vacuum components are available in the standard NW16 to NW50, with some components available in the smaller NW10. Most standard components are made from a high quality grade 304 stainless steel. Stainless steel is a cleaner, stronger and more durable alternative to aluminum. For specific applications, some vacuum components are also available in aluminum. The competitively priced PELCO® ball valves offer an easy and quick way to open/close vacuum lines. The 3-way ball valves allow for quick selection of vacuum lines.

Blank Caps



Used to blank off vacuum ports not being used. Can also be used for troubleshooting by blanking off sections to determine possible leaks.

NOTE: Dimension A=5mm; B=2.5mm on all Blank Caps



NW Blank Caps in 304 Stainless Steel

- 92200-10** NW 10 Blank Cap, 304 Stainless Steel, OD=30mmeach
- 92200-16** NW 16 Blank Cap, 304 Stainless Steel, OD=30mmeach
- 92200-25** NW 25 Blank Cap, 304 Stainless Steel, OD=40mmeach
- 92200-40** NW 40 Blank Cap, 304 Stainless Steel, OD=55mmeach
- 92200-50** NW 50 Blank Cap, 304 Stainless Steel, OD=75mmeach

NW Blank Caps in Aluminum

- 92202-10** NW 10 Blank Cap, 304 Aluminum, OD=30mmeach
- 92202-16** NW 16 Blank Cap, 304 Aluminum, OD=30mmeach
- 92202-25** NW 25 Blank Cap, 304 Aluminum, OD=40mmeach
- 92202-40** NW 40 Blank Cap, 304 Aluminum, OD=55mmeach
- 92202-50** NW 50 Blank Cap, 304 Aluminum, OD=75mmeach

Plastic Protection Caps



Use these plastic protection caps to protect the NW/KF flanges from scratches and dust.

- 92250-16** NW 16 Plastic Protection Capspkg/10
- 92250-25** NW 25 Plastic Protection Capspkg/10
- 92250-40** NW 40 Plastic Protection Capspkg/10
- 92250-50** NW 50 Plastic Protection Capspkg/10

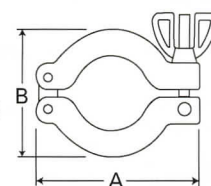
NW Wing Nut Clamps, Cast Aluminum



Cost efficient aluminum die cast clamp to connect standard NW components. NW 16 clamps can be used on NW 10 flanges. This is the most popular wing nut clamp.



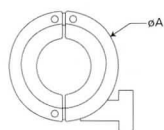
NOTE: Thickness = 16.5mm on all Cast Aluminum Wing Nut Clamps



- 92210-16** NW 16 Wing Nut Clamp, Cast Aluminum, A= 62mm, B= 42.5mmeach
- 92210-25** NW 25 Wing Nut Clamp, Cast Aluminum, A= 72.6mm, B= 55mmeach
- 92210-40** NW 40 Wing Nut Clamp, Cast Aluminum, A= 89.5mm, B= 69.5mmeach
- 92210-50** NW 50 Wing Nut Clamp, Cast Aluminum, A= 122mm, B= 94mmeach

continued on next page

NW Wing Bolt Clamps, Precision CNC Machined Aluminum



These clamps are precision machined from a solid bar of aluminum with stainless pins and stud. More compact and stronger than cast aluminum. NW 16 clamps can be used on NW 10 flanges.

- 92211-16** NW 16 Wing Nut Clamp, Machined Aluminum, A= 49mmeach
- 92211-25** NW 25 Wing Nut Clamp, Machined Aluminum, A= 62.5mmeach
- 92211-40** NW 40 Wing Nut Clamp, Machined Aluminum, A= 75mmeach
- 92211-50** NW 50 Wing Nut Clamp, Machined Aluminum, A= 100mmeach

NW Wing Nut Clamps, Forged 304 Stainless Steel

Forged 304 stainless steel clamps are suitable for cleanroom environments. NW 16 clamps can be used on NW 10 flanges.



- 92209-16** NW 16 Wing Nut Clamp, Forged 304 Stainless Steel, A= 58mm, B= 34mmeach
- 92209-25** NW 25 Wing Nut Clamp, Forged 304 Stainless Steel, A= 79mm, B= 53.5mmeach
- 92209-40** NW 40 Wing Nut Clamp, Forged 304 Stainless Steel, A= 93mm, B= 66mmeach
- 92209-50** NW 16 Wing Nut Clamp, Forged 304 Stainless Steel, A= 110mm, B= 80mmeach

NW Centering Rings, 304 Stainless Steel with Viton® O-Ring



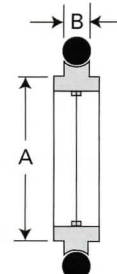
Used to center and seal NW flanges with O-ring. Viton service temperature is 200°C Max.

NOTE: Diameter B= 5.3mm on all O-Rings

- 92220-10** NW 10 Centering Ring, 304 SS with Viton O-Ring, A=10mmeach

- 92220-16** NW 16 Centering Ring, 304 SS with Viton O-Ring, A=16mmeach
- 92220-25** NW 25 Centering Ring, 304 SS with Viton O-Ring, A=25mmeach
- 92220-40** NW 40 Centering Ring, 304 SS with Viton O-Ring, A=40mmeach
- 92220-50** NW 50 Centering Ring, 304 SS with Viton O-Ring, A=50mmeach

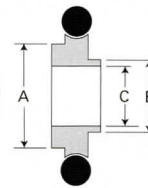
NW Centering Rings, 304 Stainless Steel with 60 Mesh SS Screen and Viton® O-Ring



Used on pumps and other applications where components need to be shielded from small particles entering. **NOTE: Diameter B= 5.3mm on all O-Rings**

- 92222-16M** NW 16 Centering Ring with Viton O-Ring and 60 mesh SS Screen, 304 SS, A= 16mmeach
- 92222-25M** NW-25 Centering Ring with Viton O-Ring and 60 mesh SS Screen, 304 SS, A= 25mmeach
- 92222-40M** NW-40 Centering Ring with Viton O-Ring and 60 mesh SS Screen, 304 SS, A= 40mmeach
- 92222-50M** NW 50 Centering Ring with Viton O-Ring and 60 mesh SS Screen, 304 SS, A=50mmeach

NW Adaptive Centering Rings, 304 Stainless Steel with Viton O-Ring



These adapter rings are used when less common (older) NW 10, NW 20 and NW 32 flanges need to be con-

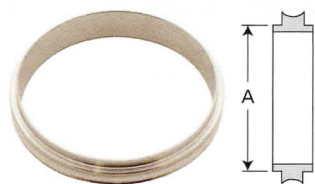
nected to the standard NW parts.

NOTE: Diameter of all O-Rings is 5.3mm

- 92225-1016** NW 10-16 Adaptive Centering Ring with Viton O-ring, 304 SS A= 17mm, B= 12mm, C= 10each
- 92225-2025** NW 20-25 Adaptive Centering Ring with Viton O-ring, 304 SS A= 26mm, B= 22mm, C= 20each
- 92225-3240** NW 32-40 Adaptive Centering Ring with Viton O-ring, 304 SS A= 41mm, B= 34mm, C= 32each

VACUUM PUMPS AND SUPPLIES

Vacuum Connection Parts



■ NW Centering Rings, 304 Stainless Steel without O-ring

Made for standard 5.3mm diameter O-rings.

- 92223-16** NW 16 Centering Ring, 304 St. St. without O-ring, A=16mmeach
- 92223-25** NW 25 Centering Ring, 304 St. St. without O-ring, A=26mmeach
- 92223-40** NW 40 Centering Ring, 304 St. St. without O-ring, A=40mmeach
- 92223-50** NW 50 Centering Ring, 304 St. St. without O-ring, A=50mmeach

■ O-Rings for NW Centering Rings in Viton®, Silicone and Buna-N



Depending on pressure on the O-ring, environment and service temperature, O-rings need to be renewed to ensure leak-free seals. Use the O-rings to service the NW connections on your vacuum systems. O-rings are sold in packages of 10.

Viton® is used for high vacuum applications, max. temperature is 200°C

Silicone is used for chemical applications, max. temperature is 200°C

Buna-N is used for non-critical and low vacuum applications, max. temperature is 100°C

Note: Cross Section Diameter, A= 5.3mm on all O-rings Viton®

- 92227-16V** Viton® O-Ring for NW 16, B=18.54 . . .pkg/10
- 92227-25V** Viton® O-Ring for NW 25, B=27.94 . . .pkg/10
- 92227-40V** Viton® O-Ring for NW 40, B=42.64 . . .pkg/10
- 92227-50V** Viton® O-Ring for NW 50, B=53.34 . . .pkg/10

Silicone

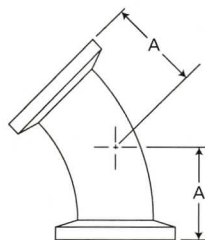
- 92228-16S** Silicone O-Ring for NW 16, B=18.54 . . .pkg/10
- 92228-25S** Silicone O-Ring for NW 25, B=27.94 . . .pkg/10
- 92228-40S** Silicone O-Ring for NW 40, B=42.64 . . .pkg/10
- 92228-50S** Silicone O-Ring for NW 50, B=53.34 . . .pkg/10

Buna-N

- 92229-16B** Buna-N O-Ring for NW 16, B=18.54 . . .pkg/10
- 92229-25B** Buna-N O-Ring for NW 25, B=27.94 . . .pkg/10
- 92229-40B** Buna-N O-Ring for NW 40, B=42.64 . . .pkg/10
- 92229-50B** Buna-N O-Ring for NW 50, B=53.34 . . .pkg/10

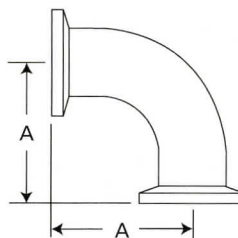
NW / KF Elbows, Tees, Crosses and Straight Tube Vacuum Connectors

■ NW 45° Elbows, 304 Stainless Steel



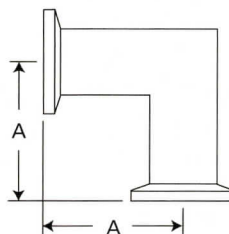
- 92301-16** NW 16 45° Elbow, 304 St. St., A=23mm each
- 92301-25** NW 25 45° Elbow, 304 St. St., A=28.5mm each
- 92301-40** NW 40 45° Elbow, 304 St. St., A=42.7mm each
- 92301-50** NW 50 45° Elbow, 304 St. St., A=50.5mm each

■ NW 90° Elbows, 304 Stainless Steel



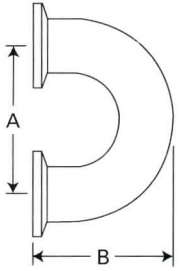
- 92300-16** NW 16 90° Elbow, 304 St. St., A=40.5mm each
- 92300-25** NW 25 90° Elbow, 304 St. St., A=42mm each
- 92300-40** NW 40 90° Elbow, 304 St. St., A=61.5mm each
- 92300-50** NW 50 90° Elbow, 304 St. St., A=80mm each

■ NW 90° Mitered Elbows, 304 Stainless Steel



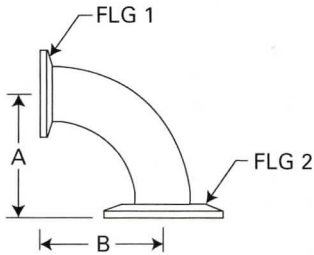
- 92302-16** NW 16 90° Mitered Elbow, 304 St. St., A=40mmeach
- 92302-25** NW 25 90° Mitered Elbow, 304 St. St., A=50mmeach
- 92302-40** NW 40 90° Mitered Elbow, 304 St. St., A=65mmeach
- 92302-50** NW 50 90° Mitered Elbow, 304 St. St., A=80mmeach

■ NW 180° Return Elbows, 304 Stainless Steel



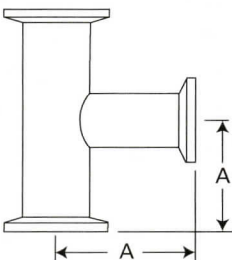
- 92305-16** NW 16 90° Return Elbow, 304 St. St., A=57mm, B=42.5mmeach
92305-25 NW 25 90° Return Elbow, 304 St. St., A=76mm, B=55mmeach
92305-40 NW 40 90° Return Elbow, 304 St. St., A=114mm, B=80.5mmeach
92305-50 NW 50 90° Return Elbow, 304 St. St., A=152mm, B=106mmeach

■ NW 90° Reducing/Adaptive Elbows, 304 Stainless Steel



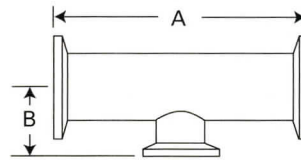
- 92306-2516** NW 25-16 90° Reducing Elbow, 304 St. St., A=40mm, B=40.4mmeach
92306-4016 NW 40-16 90° Reducing Elbow, 304 St. St., A=40mm, B=40.4mmeach
92306-4025 NW 40-25 90° Reducing Elbow, 304 St. St., A=40mm, B=40.4mmeach
92306-5016 NW 50-16 90° Reducing Elbow, 304 St. St., A=50mm, B=50.5mmeach
92306-5025 NW 50-25 90° Reducing Elbow, 304 St. St., A=50mm, B=50.5mmeach
92306-5040 NW 50-16 90° Reducing Elbow, 304 St. St., A=65mm, B=65.5mmeach

■ NW 90° Equal Tees, 304 Stainless Steel



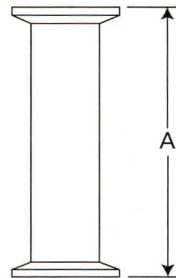
- 92320-16** NW 16 Equal Tee, 304 St. St., A=40mm . .each
92320-25 NW 25 Equal Tee, 304 St. St., A=51mm . .each
92320-40 NW 40 Equal Tee, 304 St. St., A=61mm . .each
92320-50 NW 50 Equal Tee, 304 St. St., A=80mm . .each

■ NW Reducing Tees, 304 Stainless Steel



- 92322-2516** NW 25-16 Reducing Tee, 304 St. St., A=100mm, B=43mmeach
92322-4016 NW 40-16 Reducing Tee, 304 St. St., A=130mm, B=49.5mmeach
92322-4025 NW 40-25 Reducing Tee, 304 St. St., A=130mm, B=56.5mmeach
92322-5016 NW 50-16 Reducing Tee, 304 St. St., A=140mm, B=56mmeach
92322-5025 NW 50-25 Reducing Tee, 304 St. St., A=140mm, B=62.7mmeach
92322-5040 NW 50-40 Reducing Tee, 304 St. St., A=140mm, B=71.5mmeach

■ NW Straight Tubes, 304 Stainless Steel

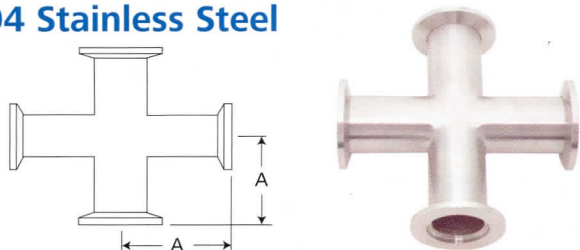


- 92324-16** NW 16 Straight Tube, 304 Stainless Steel, A=80mmeach
92324-25 NW 25 Straight Tube, 304 Stainless Steel, A=100mmeach
92324-40 NW 40 Straight Tube, 304 Stainless Steel, A=130mmeach
92324-50 NW 50 Straight Tube, 304 Stainless Steel, A=140mmeach

VACUUM PUMPS AND SUPPLIES

Vacuum Connection Parts

■ NW Equal 4-Way Crosses, 304 Stainless Steel



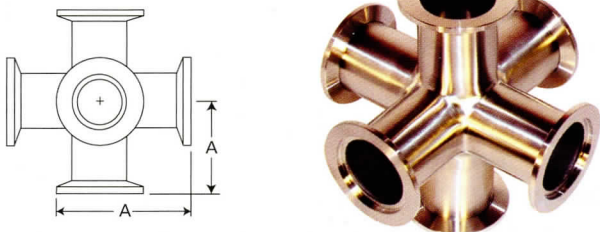
- 92334-16** NW 16 Equal Cross, 304 St. St.,
A=40mmeach
- 92334-25** NW 25 Equal Cross, 304 St. St.,
A=52mmeach
- 92334-40** NW 40 Equal Cross, 304 St. St.,
A=61.5mmeach
- 92334-50** NW 50 Equal Cross, 304 St. St.,
A=80mmeach

■ NW Equal 5-Way Crosses, 304 Stainless Steel



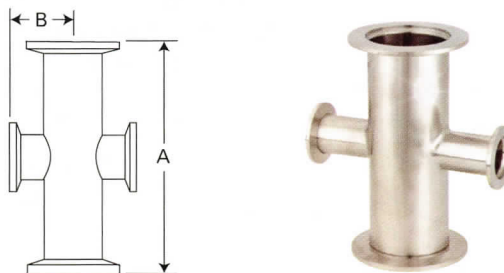
- 92335-16** NW 16 Equal 5-Way Cross,
304 Stainless Steel, A=40mmeach
- 92335-25** NW 25 Equal 5-Way Cross,
304 Stainless Steel, A=52mmeach
- 92335-40** NW 40 Equal 5-Way Cross,
304 Stainless Steel, A=61.5mmeach
- 92335-50** NW 50 Equal 5-Way Cross,
304 Stainless Steel, A=80mmeach

■ NW Equal 6-Way Crosses, 304 Stainless Steel



- 92336-16** NW 16 Equal 6-Way Cross,
304 Stainless Steel, A=40mmeach
- 92336-25** NW 25 Equal 6-Way Cross,
304 Stainless Steel, A=52mmeach
- 92336-40** NW 40 Equal 6-Way Cross,
304 Stainless Steel, A=61.5mmeach
- 92336-50** NW 50 Equal 6-Way Cross,
304 Stainless Steel, A=80mmeach

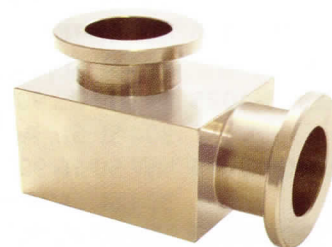
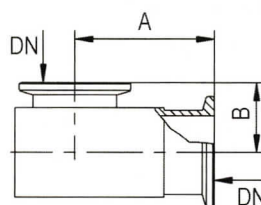
■ NW Reducing 4-Way Crosses, 304 Stainless Steel



- 92332-2516** NW 25-16 Reducing 4-Way Cross,
304 Stainless Steel, A=100mm,
B=43mmeach
- 92332-4016** NW 40-16 Reducing 4-Way Cross,
304 Stainless Steel, A=130mm,
B=49.5mmeach
- 92332-4025** NW 40-25 Reducing 4-Way Cross,
304 Stainless Steel, A=130mm,
B=56.5mmeach
- 92332-5016** NW 50-16 Reducing 4-Way Cross,
304 Stainless Steel, A=140mm,
B=56mmeach
- 92332-5025** NW 50-25 Reducing 4-Way Cross,
304 Stainless Steel, A=140mm,
B=62.7mmeach
- 92332-5040** NW 50-40 Reducing 4-Way Cross,
304 Stainless Steel, A=140mm,
B=71.5mmeach

■ Compact NW / KF Vacuum Elbows

Aluminum / Nickel Plated



These Compact NW / KF Elbows are extremely useful where space is limited for vacuum assemblies such as inside boxes or when multiple vacuum lines run together. Made out of vacuum grade aluminum, nickel plated to prevent corrosion.

- 92390-16** NW 16, 90° Compact Elbow,
Al/Ni, A=40mm, B=22mmeach
- 92390-25** NW 25, 90° Compact Elbow,
Al/Ni, A=50mm, B=25mmeach
- 92390-40** NW 40, 90° Compact Elbow,
Al/Ni, A=60mm, B=35mmeach
- 92390-50** NW 50, 90° Compact Elbow,
Al/Ni, A=80mm, B=48mmeach

■ PELCO® NW Ball Valves

PELCO® ball valves offer an elegant, easy and quick way to close/open vacuum lines. They have a relatively high conductance. The 3-way ball valves enable the connection of two systems to one pump. They can be used up to a vacuum level of 1×10^{-6} . Primarily used in backing lines on rotary or scroll pumps. Excellent valve to connect two systems on one pump.

NW 2-Way Ball Valves, Brass - Nickel Plated

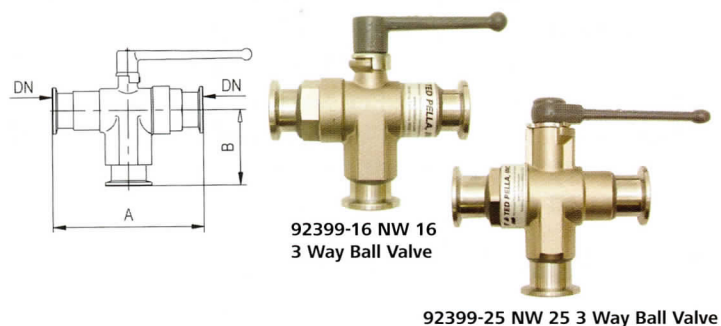


92398-16 NW 16 2-Way Ball Valve, Brass - Nickel Plated, A=100mmeach

92398-25 NW 25 2-Way Ball Valve, Brass - Nickel Plated, A=130mmeach

92398-40 NW 40 2-Way Ball Valve, Brass - Nickel Plated, A=160mmeach

NW 3-Way Ball Valves, Brass - Nickel Plated



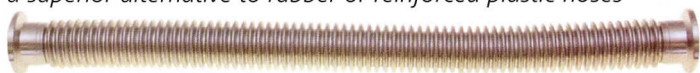
92399-16 NW 16 3-Way Ball Valve, Brass - Nickel Plated, A=96mm, B=46mmeach

92399-25 NW 25 3-Way Ball Valve, Brass - Nickel Plated, A=125mm, B=65mmeach

PELCO® Hoses, Bellows, 304 Stainless Steel

■ NW Flexible Metal Hoses, 304 Stainless Steel

a superior alternative to rubber or reinforced plastic hoses



These durable, thin walled, flexible stainless steel hoses do not alter or crack like rubber or plastic hoses. They do not collapse under vacuum, have less connection parts and therefore introduce less possible leaks in a vacuum system. They can be cleaned with solvents. NW Flexible Metal Hoses, 304 Stainless Steel, .007".

(0.178mm) wall thickness, available in 10" - 40" lengths.

- NW 16: 5/8" internal hose diameter
- NW 25: 1" internal hose diameter
- NW 40: 1-1/2" internal hose diameter
- NW 50: 2" internal hose diameter

NW 16 Flexible Hoses

92340-1610 NW 16 10" Flexible Metal Hose, 304 Stainless Steeleach

92340-1612 NW 16 12" Flexible Metal Hose, 304 Stainless Steeleach

92340-1620 NW 16 20" Flexible Metal Hose, 304 Stainless Steeleach

92340-1630 NW 16 30" Flexible Metal Hose, 304 Stainless Steeleach

92340-1636 NW 16 36" Flexible Metal Hose, 304 Stainless Steeleach

92340-1640 NW 16 40" Flexible Metal Hose, 304 Stainless Steeleach

NW 25 Flexible Hoses

92341-2510 NW 25 10" Flexible Metal Hose, 304 Stainless Steeleach

92341-2512 NW 25 12" Flexible Metal Hose, 304 Stainless Steeleach

92341-2520 NW 25 20" Flexible Metal Hose, 304 Stainless Steeleach

92341-2530 NW 25 30" Flexible Metal Hose, 304 Stainless Steeleach

92341-2536 NW 25 36" Flexible Metal Hose, 304 Stainless Steeleach

92341-2540 NW 25 40" Flexible Metal Hose, 304 Stainless Steeleach

NW 40 Flexible Hoses

92342-4010 NW 40 10" Flexible Metal Hose, 304 Stainless Steeleach

92342-4012 NW 40 12" Flexible Metal Hose, 304 Stainless Steeleach

92342-4020 NW 40 20" Flexible Metal Hose, 304 Stainless Steeleach

92342-4030 NW 40 30" Flexible Metal Hose, 304 Stainless Steeleach

92342-4040 NW 40 40" Flexible Metal Hose, 304 Stainless Steeleach

NW 50 Flexible Hoses

92343-5010 NW 50 10" Flexible Metal Hose, 304 Stainless Steeleach

92343-5020 NW 50 20" Flexible Metal Hose, 304 Stainless Steeleach

continued on next page

continued on next column

VACUUM PUMPS AND SUPPLIES

NW Flexible Metal Hoses; Compressed Bellows; Reducing; Flanges with PVC Hose; Hose

■ NW Flexible Metal Hoses, 304 Stainless Steel *continued*

NW 50 Flexible Hoses *continued*

- 92343-5030** NW 50 30" Flexible Metal Hose,
304 Stainless Steeleach
- 92343-5040** NW 50 40" Flexible Metal Hose,
304 Stainless Steeleach

■ NW Compressed Metal Bellows, 304 Stainless Steel



Same wall thickness and ID as above

- 92346-1604** NW 16 4" Compressed Metal Bellows,
304 Stainless Steeleach
- 92346-2504** NW 25 4" Compressed Metal Bellows,
304 Stainless Steeleach
- 92346-4004** NW 40 4" Compressed Metal Bellows,
304 Stainless Steeleach
- 92346-5004** NW 50 4" Compressed Metal Bellows,
304 Stainless Steeleach

■ NW Reducing, Flexible Metal Hoses, 304 Stainless Steel



Efficient way to connect different
NW sizes, save on adapters and
reduce number of vacuum compo-
nents. Same wall thickness as
above.

NW 50 to NW 40 use 1-1/2" Internal Hose Diameter

- 92350-5410** NW 50 to 40 10" Reducing, Flexible
Metal Hose, 304 Stainless Steeleach
- 92350-5420** NW 50 to 40 20" Reducing, Flexible
Metal Hose, 304 Stainless Steeleach

NW 50 to NW 25 use 1" Internal Hose Diameter

- 92351-5210** NW 50 to 25 10" Reducing, Flexible
Metal Hose, 304 Stainless Steeleach
- 92351-5220** NW 50 to 25 20" Reducing, Flexible
Metal Hose, 304 Stainless Steeleach

NW 50 to NW 16 use 5/8" Internal Hose Diameter

- 92352-5110** NW 50 to 16 10" Reducing, Flexible
Metal Hose, 304 Stainless Steeleach
- 92352-5120** NW 50 to 16 20" Reducing, Flexible
Metal Hose, 304 Stainless Steeleach

NW 40 to NW 25 use 1" Internal Hose Diameter

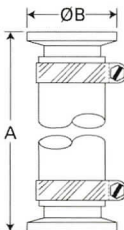
- 92354-4210** NW 40 to 25 10" Reducing, Flexible
Metal Hose, 304 Stainless Steeleach

- 92354-4220** NW 40 to 25 20" Reducing, Flexible
Metal Hose, 304 Stainless Steeleach

NW 40 to NW 16 use 5/8" Internal Hose Diameter

- 92355-4110** NW 40 to 16 10" Reducing, Flexible
Metal Hose, 304 Stainless Steeleach
- 92355-4120** NW 40 to 16 20" Reducing, Flexible
Metal Hose, 304 Stainless Steeleach
- 92356-2110** NW/KF 25 to 16 10" Reducing, Flexible
Metal Hose, 304 SSeach
- 92356-2120** NW/KF 25 to 16 20" Reducing, Flexible
Metal Hose, 304 SSeach

■ Hose Flanges with Wire Reinforced PVC Vacuum Hose

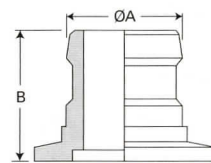


low cost alternative for flexible vacuum hoses

- Wire reinforced PVC
- Includes 304 SS flanges on each end
- Includes hose clamps
- Helium leak tested

- 92422-1620** NW 16 with PVC Hose, A=20", B=3/4" . . each
- 92422-1640** NW 16 with PVC Hose, A=40", B=3/4" . . each
- 92422-2520** NW 25 with PVC Hose, A=20", B=1" . . each
- 92422-2540** NW 25 with PVC Hose, A=40", B=1" . . each
- 92422-4020** NW 40 with PVC Hose, A=20", B=1-1/2" each
- 92422-4040** NW 40 with PVC Hose, A=40", B=1-1/2" each
- 92422-5020** NW 50 with PVC Hose, A=20", B=2" . . each
- 92422-5040** NW 50 with PVC Hose, A=40", B=2" . . each

■ NW Hose Adapter, Aluminum



92410-2500
NW 25 - 3/4" or 7/8"



92410-2550
NW 25 - 1/2"

- 92410-1650** NW 16 - 1/2" or 5/8" Hose Adapter,
Aluminum, A=16mm, B=42mmeach
- 92410-1675** NW 16 - 5/8" or 3/4" Hose Adapter,
Aluminum, A=19mm, B=42mmeach
- 92410-2550** NW 25 - 1/2" or 5/8" Hose Adapter,
Aluminum, A=19mm, B=42mmeach
- 92410-2575** NW 25 - 5/8" or 3/4" Hose Adapter,
Aluminum, A=19mm, B=42mmeach
- 92410-2500** NW 25 - 3/4" or 7/8" Hose Adapter,
Aluminum, A=22mm, B=44mmeach
- 92410-40** NW 40 - 1-1/2" or 1-5/8" Hose Adapter,
Aluminum, A=41.5mm, B=55mmeach
- 92410-50** NW 50 - 1-1/2" or 1-5/8" Hose Adapter,
Aluminum, A=41.5mm, B=55mmeach

■ NW Hose Adapter, 304 Stainless Steel

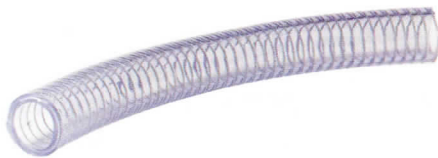
Machined from solid bar, no welds.



- 92420-16** NW 16 - 3/4" Hose Adapter, 304 St. St.,
A=18.3mm, B=32mm, C=20mmeach
- 92420-25** NW 25 - 1" Hose Adapter, 304 St. St.,
A=25.4mm, B=38mm, C=26mmeach
- 92420-40** NW 40 - 1-1/2" Hose Adapter, 304 St. St.,
A=38.1mm, B=50mm, C=38mmeach
- 92420-50** NW 50 - 2" Hose Adapter, 304 St. St.,
A=50.8mm, B=55mm, C=40mmeach

■ Wire Reinforced Thick Wall PVC Vacuum Hose

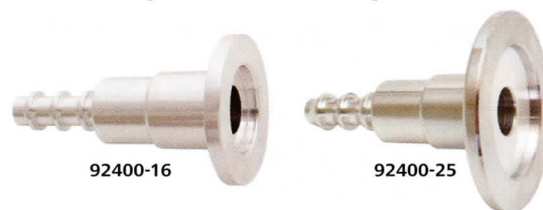
Use with hose adapters and hose clamps to make custom vacuum hoses. Can be ordered per ft. with minimum length of 3 ft. and maximum length of 50 ft.



Permits full vacuum capabilities (29.9 in.- 760mm/Hg) for all sizes without hose collapse. Constructed of corrosion-resistant PVC, can be used to transport various chemicals in areas with tight turns and sharp bends. Its bend radius is approximately four times the I.D. Can be used at temperatures from +10° to +140°F (-12° to +60°C)

- 92424-25** 1/4" ID; .447" OD, Wire Reinforced
PVC Hoseper ft.
- 92424-38** 3/8" ID; .600" OD, Wire Reinforced
PVC Hoseper ft.
- 92424-50** 1/2" ID; .736" OD, Wire Reinforced
PVC Hoseper ft.
- 92424-75** 3/4" ID; 1.028" OD, Wire Reinforced
PVC Hoseper ft.
- 92424-100** 1" ID; 1.290" OD, Wire Reinforced
PVC Hoseper ft.
- 92424-150** 1-1/2" ID; 1.854" OD, Wire Reinforced
PVC Hoseper ft.
- 92424-200** 2" ID; 2.394" OD, Wire Reinforced
PVC Hoseper ft.

■ NW Multiple Hose Adapter, Aluminum



3 step aluminum adapters for 1/4", 1/2" and 5/8" hoses

- 92400-16** NW 16 Multiple Hose Adapter,
5mm ID, Aluminumeach
- 92400-25** NW 25 Multiple Hose Adapter,
5mm ID, Aluminumeach
- 92400-40** NW 40 Multiple Hose Adapter,
5mm ID, Aluminumeach
- 92400-50** NW 50 Multiple Hose Adapter,
5mm ID, Aluminumeach

■ Hose Clamps for Vacuum Hose, Stainless Steel



These clamps are compatible with the wire reinforced, thick wall PVC vacuum hose we offer. They are quick, economical and reusable. Bands are 0.023" thick x 5/16" wide (1/4") and 1/2" wide (all other sizes) with temperature range of -50° to +250° F. Not recommended for use with silicone hose. Clamps tighten with a wrench, slotted screwdriver or hex nutdriver. Made from type 301 Stainless Steel with type 410 Stainless Steel screw.

- 92426-25** 1/4" Vacuum Hose Clamp, St. St.pkg/2
- 92426-38** 3/8" Vacuum Hose Clamp, St. St.pkg/2
- 92426-50** 1/2" Vacuum Hose Clamp, St. St.pkg/2
- 92426-75** 3/4" Vacuum Hose Clamp, St. St.pkg/2
- 92426-100** 1" Vacuum Hose Clamp, St. St.pkg/2
- 92426-150** 1-1/2" Vacuum Hose Clamp, St. St.pkg/2
- 92426-200** 2" Vacuum Hose Clamp, St. St.pkg/2

VACUUM PUMPS AND SUPPLIES

Vacuum Hose; NW Conical Reducers; NW Stub Flanges; NW Bored Adapter Flanges

■ 1/2" and 3/4" ID Vacuum Hose



Heavy wall, versatile and resilient natural, pure gum rubber tubes. These cost effective vacuum hoses have a good oxidation resistance, are vibration resistant and have excellent rebound characteristics. Durometer 45 ±5. Meets or exceeds

standard ZZ-T831C, minimum tensile strength 3000PSI.

1/2" ID (12.7mm)

894-5 1/2" ID, Rubber Vacuum Hoseper foot

3/4" ID (19mm)

894-7 3/4" ID, Rubber Vacuum Hoseper foot

■ 1/4" ID Silicone Vacuum Hose



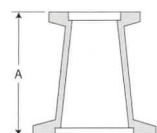
Thick walled silicone vacuum hose with 1/4" (6.35mm) inside diameter and 1/2" (12.7mm) outside diameter. Sturdy, yet flexible material with wall thickness of 1/8" (3.2mm), will not collapse under vacuum. Can be used with NW Multiple Hose Adapter to KF-16. Sold in lengths of 3 and 9 ft.

92490-253 1/4" ID, Silicone Vacuum Hose 3 feet (2.7m)

92490-256 1/4" ID, Silicone Vacuum Hose 9 feet (8.3m)

NW Conical Reducers, Stub Flanges and Bored Adapter Flanges for High Vacuum Connection

■ NW Compact Conical Reducers, 304 Stainless Steel



NOTE: Dimension A=40mm on all Compact Conical Reducers

92450-2516 NW 25 to 16 Compact Conical Reducer, 304 Stainless Steeleach

92450-4016 NW 40 to 16 Compact Conical Reducer, 304 Stainless Steeleach

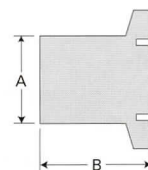
92450-4025 NW 40 to 25 Compact Conical Reducer, 304 Stainless Steeleach

92450-5016 NW 50 to 16 Compact Conical Reducer, 304 Stainless Steeleach

92450-5025 NW 50 to 25 Compact Conical Reducer, 304 Stainless Steeleach

92450-5040 NW 50 to 40 Compact Conical Reducer, 304 Stainless Steeleach

■ NW Stub Flanges in 304 Stainless Steel and Aluminum, Unbored



Used to blank off ports not being used. Can be used to modify for specific applications. The stub offers extra material to modify and connect non-standard vacuum connections.

Unbored NW Stub Flanges in 304 Stainless Steel

92470-16 NW 16 Stub Flange, 304 Stainless Steel, A=19mm, B=19mmeach

92470-25 NW 25 Stub Flange, 304 Stainless Steel, A=25mm, B=19mmeach

92470-40 NW 40 Stub Flange, 304 Stainless Steel, A=38mm, B=25mmeach

92470-50 NW 16 Stub Flange, 304 Stainless Steel, A=50mm, B=25mmeach

Unbored NW Stub Flanges in Aluminum

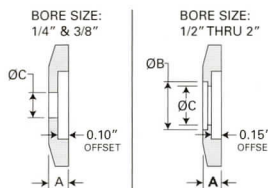
92472-16 NW 16 Stub Flange, Aluminum, A=19mm, B=19mmeach

92472-25 NW 25 Stub Flange, Aluminum, A=25mm, B=19mmeach

92472-40 NW 40 Stub Flange, Aluminum, A=38mm, B=25mmeach

92472-50 NW 16 Stub Flange, Aluminum, A=50mm, B=25mmeach

■ NW Bored Adapter Flanges, Weldable



The adapter flanges allow for the connection of a variety of non-standard fittings on the NW/KF fittings or allow for custom made adapters to be incorporated in the NW/KF system.

Bored Adapter Flanges in 304 Stainless Steel

NOTE: Dimension A=5mm on all Adapter Flanges

NW 16

92460-16 NW 16, 1/4" Bored Flange, 304 Stainless Steel, C=6.6mmeach

92460-38 NW 16, 3/8" Bored Flange, 304 Stainless Steel, C=9.6mmeach

continued on next page

■ NW Bored Adapter Flanges, Weldable

continued

Bored Adapter Flanges in 304 Stainless Steel

NOTE: Dimension A=5mm on all Adapter Flanges

NW 16

92460-50 NW 16, 1/2" Bored Flange, 304 Stainless Steel, B=13mm, C=11.4mmeach

92460-75 NW 16, 3/4" Bored Flange, 304 Stainless Steel, B=19.3mm, C=17.3mmeach

NW 25

92461-16 NW 25, 1/4" Bored Flange, 304 Stainless Steel, C=6.6mmeach

92461-38 NW 25, 3/8" Bored Flange, 304 Stainless Steel, C=9.6mmeach

92461-50 NW 25, 1/2" Bored Flange, 304 Stainless Steel, B=13mm, C=11.4mmeach

92461-75 NW 25, 3/4" Bored Flange, 304 Stainless Steel, B=19.3mm, C=17.3mmeach

92461-100 NW 25, 1" Bored Flange, 304 Stainless Steel, B=25.7mm, C=23.8mmeach

NW 40

92462-16 NW 40, 1/4" Bored Flange, 304 Stainless Steel, C=6.6mmeach

92462-38 NW 40, 3/8" Bored Flange, 304 Stainless Steel, C=9.6mmeach

92462-50 NW 40, 1/2" Bored Flange, 304 Stainless Steel, B=13mm, C=11.4mmeach

92462-75 NW 40, 3/4" Bored Flange, 304 Stainless Steel, B=19.3mm, C=17.3mmeach

92462-100 NW 40, 1" Bored Flange, 304 Stainless Steel, B=25.7mm, C=23.8mmeach

92462-150 NW 40, 1-1/2" Bored Flange, 304 Stainless Steel, B=38.4mm, C=36.6mmeach

NW 50

92463-16 NW 50, 1/4" Bored Flange, 304 Stainless Steel, C=6.6mmeach

92463-38 NW 50, 3/8" Bored Flange, 304 Stainless Steel, C=9.6mmeach

92463-50 NW 50, 1/2" Bored Flange, 304 Stainless Steel, B=13mm, C=11.4mmeach

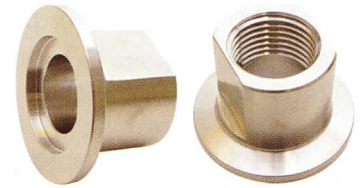
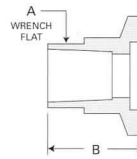
92463-75 NW 50, 3/4" Bored Flange, 304 Stainless Steel, B=19.3mm, C=17.3mmeach

92463-100 NW 50, 1" Bored Flange, 304 Stainless Steel, B=25.7mm, C=23.8mmeach

92463-150 NW 50, 1-1/2" Bored Flange, 304 Stainless Steel, B=38.4mm, C=36.6mmeach

92463-200 NW 50, 2" Bored Flange, 304 Stainless Steel, B=51mm, C=49.3mmeach

■ NW / KF Flange Adapters to Female NPT Thread



Used to connect pipes, systems and thermocouples (1/8") with NPT thread to NW flange system. Commonly used to connect filters with adaptors on the exhaust port of rotary vane pumps.

NW Flange Adapters to 1/8" Female NPT - Stainless Steel

92464-16 NW 16 Adaptor to 1/8" Female NPT, 304 Stainless Steel, A=16mm, B=19mmeach

92464-25 NW 25 Adaptor to 1/8" Female NPT, 304 Stainless Steel, A=23mm, B=19mmeach

92464-40 NW 40 Adaptor to 1/8" Female NPT, 304 Stainless Steel, A=32mm, B=25mmeach

92464-50 NW 50 Adaptor to 1/8" Female NPT, 304 Stainless Steel, A=45mm, B=25mmeach

NW Flange Adapters to 1/4" Female NPT - Stainless Steel

92465-16 NW 16 Adaptor to 1/4" Female NPT, 304 Stainless Steel, A=16mm, B=19mmeach

92465-25 NW 25 Adaptor to 1/4" Female NPT, 304 Stainless Steel, A=23mm, B=19mmeach

92465-40 NW 40 Adaptor to 1/4" Female NPT, 304 Stainless Steel, A=32mm, B=25mmeach

92465-50 NW 50 Adaptor to 1/4" Female NPT, 304 Stainless Steel, A=45mm, B=25mmeach

NW Flange Adapters to 1/2" Female NPT - Stainless Steel

92466-25 NW 25 Adaptor to 1/2" Female NPT, 304 Stainless Steel, A=23mm, B=19mmeach

92466-40 NW 40 Adaptor to 1/2" Female NPT, 304 Stainless Steel, A=32mm, B=25mmeach

92466-50 NW/KF 50 Adaptor to 1/2" Female NPT, 304 Stainless Steel, A=45mm, B=25mmeach

NW Flange Adapters to 3/4" Female NPT - Stainless Steel

92467-40 NW 40 Adaptor to 3/4" Female NPT, 304 Stainless Steel, A=32mm, B=25mmeach

92467-50 NW 50 Adaptor to 3/4" Female NPT, 304 Stainless Steel, A=45mm, B=25mmeach

NW Flange Adapters to 1/8" Female NPT - Aluminum

92468-16 NW 16 Adaptor to 1/8" Female NPT, 304 Aluminum, A=16mm, B=19mmeach

92468-25 NW 25 Adaptor to 1/8" Female NPT, 304 Aluminum, A=23mm, B=19mmeach

92468-40 NW 40 Adaptor to 1/8" Female NPT, 304 Aluminum, A=32mm, B=25mmeach

92468-50 NW 50 Adaptor to 1/8" Female NPT, 304 Aluminum, A=45mm, B=25mmeach

VACUUM PUMPS AND SUPPLIES

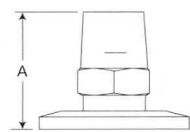
NW / KF Flange Adapters to Female NPT; NF /KF Flange Adapters to Male NPT

■ NW / KF Flange Adapters to Female NPT Thread *continued*

NW Flange Adapters to 1/4" Female NPT - Aluminum

- 92469-16** NW 16 Adaptor to 1/4" Female NPT, 304 Aluminum, A=16mm, B=19mmeach
- 92469-25** NW 25 Adaptor to 1/4" Female NPT, 304 Aluminum, A=23mm, B=19mmeach
- 92469-40** NW 40 Adaptor to 1/4" Female NPT, 304 Aluminum, A=32mm, B=25mmeach
- 92469-50** NW 50 Adaptor to 1/4" Female NPT, 304 Aluminum, A=45mm, B=25mmeach

■ NW / KF Flange Adapters to Male NPT Thread



Used to connect pipes and systems with NPT thread to NW flange system. Stainless steel adaptors are welded and helium leak tested. Aluminum adaptors are made from one piece (more cost effective alternative).

NW Flange Adapters to 1/8" Male NPT - Stainless Steel

- 92474-16** NW 16 Adaptor to 1/8" Male NPT, 304 Stainless Steel, A=40mmeach
- 92474-25** NW 25 Adaptor to 1/8" Male NPT, 304 Stainless Steel, A=40mmeach
- 92474-40** NW 40 Adaptor to 1/8" Male NPT, 304 Stainless Steel, A=40mmeach
- 92474-50** NW 50 Adaptor to 1/8" Male NPT, 304 Stainless Steel, A=40mmeach

NW Flange Adapters to 1/4" Male NPT - Stainless Steel

- 92475-16** NW 16 Adaptor to 1/4" Male NPT, 304 Stainless Steel, A=50mmeach
- 92475-25** NW 25 Adaptor to 1/4" Male NPT, 304 Stainless Steel, A=50mmeach
- 92475-40** NW 40 Adaptor to 1/4" Male NPT, 304 Stainless Steel, A=50mmeach
- 92475-50** NW 50 Adaptor to 1/4" Male NPT, 304 Stainless Steel, A=50mmeach

NW Flange Adapters to 1/2" Male NPT - Stainless Steel

- 92476-25** NW 25 Adaptor to 1/2" Male NPT, 304 Stainless Steel, A=75mmeach
- 92476-40** NW 40 Adaptor to 1/2" Male NPT, 304 Stainless Steel, A=75mmeach
- 92476-50** NW 50 Adaptor to 1/2" Male NPT, 304 Stainless Steel, A=75mmeach

NW Flange Adapters to 3/4" Male NPT - Stainless Steel

- 92477-40** NW 40 Adaptor to 3/4" Male NPT, 304 Stainless Steel, A=75mmeach

- 92477-50** NW 50 Adaptor to 3/4" Male NPT, 304 Stainless Steel, A=75mmeach

NW Flange Adapters to 1" Male NPT - Stainless Steel

- 92478-5000** NW 50 Adaptor to 1" Male NPT, 304 Stainless Steel, A=75mmeach

NW Flange Adapters to 1-1/4" Male NPT - Stainless Steel

- 92478-5025** NW 50 Adaptor to 1-1/4" Male NPT, 304 Stainless Steel, A=80mmeach

NW Flange Adapters to 1-1/2" Male NPT - Stainless Steel

- 92478-5050** NW 50 Adaptor to 1-1/2" Male NPT, 304 Stainless Steel, A=80mmeach

NW Flange Adapters to 1/8" Male NPT - Aluminum

- 92484-16** NW 16 Adaptor to 1/8" Male NPT, Aluminum, A=40mmeach
- 92484-25** NW 25 Adaptor to 1/8" Male NPT, Aluminum, A=40mmeach
- 92484-40** NW 40 Adaptor to 1/8" Male NPT, Aluminum, A=40mmeach
- 92484-50** NW 50 Adaptor to 1/8" Male NPT, Aluminum, A=40mmeach

NW Flange Adapters to 1/4" Male NPT - Aluminum

- 92485-16** NW 16 Adaptor to 1/4" Male NPT, Aluminum A=50mmeach
- 92485-25** NW 25 Adaptor to 1/4" Male NPT, Aluminum, A=50mmeach
- 92485-40** NW 40 Adaptor to 1/4" Male NPT, Aluminum, A=50mmeach
- 92485-50** NW 50 Adaptor to 1/4" Male NPT, Aluminum, A=50mmeach

NW Flange Adapters to 1/2" Male NPT - Aluminum

- 92486-25** NW 25 Adaptor to 1/2" Male NPT, Aluminum, A=75mmeach
- 92486-40** NW 40 Adaptor to 1/2" Male NPT, Aluminum, A=75mmeach
- 92486-50** NW 50 Adaptor to 1/2" Male NPT, Aluminum, A=75mmeach

NW Flange Adapters to 3/4" Male NPT - Aluminum

- 92487-40** NW 40 Adaptor to 3/4" Male NPT, Aluminum, A=75mmeach
- 92487-50** NW 50 Adaptor to 3/4" Male NPT, Aluminum, A=75mmeach

NW Flange Adapters to 1" Male NPT - Aluminum

- 92488-5000** NW 50 Adaptor to 1" Male NPT, Aluminum, A=75mmeach

NW Flange Adapters to 1-1/4" Male NPT - Aluminum

- 92488-5025** NW 50 Adaptor to 1-1/4" Male NPT, Aluminum, A=80mmeach

NW Flange Adapters to 1-1/2" Male NPT - Aluminum

- 92488-5050** NW 50 Adaptor to 1-1/2" Male NPT, Aluminum, A=80mmeach

NW Flange Adapters to 2" Male NPT - Aluminum

- 92488-5100** NW 50 Adaptor to 2" Male NPT, Aluminum, A=80mmeach