S-200R1

Nordstrom® Sealant & Sealant Equipment

NORDSTROM
VALVES, INC.

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About This Catalog

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Other Valve and Valve Related Publications

Nordstrom EmissionSeal Plug Valves
Nordstrom Integral Locking System Valves
Nordstrom Iron Plug Valves
Nordstrom Multiport Valves
Nordstrom Polyvalve® Polyethylene Valves
Nordstrom Steel Plug Valves
Nordstrom Valves For Water and Wastewater Service
The Nordstrom Edge

Nordstrom Sealants

Nordstrom sealants are products of years of research and development. Time tested by actual use in millions of lubricated plug valves, Nordstrom sealants have proven to be among the best and most reliable on the market.

Nordstrom sealants are available in stick, bulk, cartridge and Gun Pak™ form. Not all sealants are made in all forms. The tables on pages 4 and 5 show the forms in which each individual sealant is supplied.

Stick sealants are identified by letters "A", "B", "C", "D", "G", "J" and "K". Sticks are placed in boxes of 24 each, except for size "J" which is packed 6 to a box, and size "K" which is packed 12 to a box.

The charts shown on pages 6 and 7 list Nordstrom sealants for the most common service conditions. For special requirements, please consult your Nordstrom representative or distributor. Nordstrom Valves, Inc. will be glad to make sealant recommendations for special service conditions.

Functions of Sealant

1. Renewable Seat

There is no need to disassemble the valve or remove it from the line.

The sealant, really a structural part of the valve, provides a flexible and renewable seat, eliminating the necessity of forced fit contacts to effect a seal. For this purpose, the sealant not only must have proper plasticity, but also resistance to line fluids such as solvents and chemicals. A film of sealant forms a seal around each body port even under pressure.

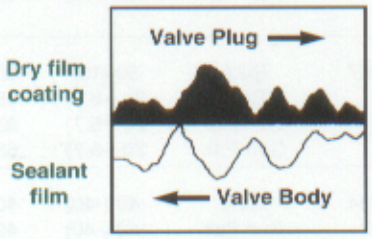
2. Drop-Tight Seal

To secure an absolutely tight seal, the film of sealant works hand in hand with the permanent dry film coating on the plug to form a seal between the plug and body. This seal is formed by sealant transmitted in a system of grooves around each port. With proper selection of Nordstrom sealant for your particular service, this tight seal can be retained over a wide range of temperatures and pressures.

3. Plug Jacking

The fundamental operating principle of the traditional lubricated plug valve design lies in the application of Pascal's Law. The law states that a unit of pressure applied to the liquid contained in a sealed vessel is transmitted to every part of the liquid with undiminished force, thus multiplying the force many times, depending on the area of the interior vessel. The sealant, under pressure developed by turning the sealant fitting or by mechanical injection, supplies the hydraulic means for lifting the plug from its tapered seat when and if that force is needed to free the plug.

Dry Film Plug Coating and Sealant Prevent Metal-to-Metal Contact by Filming Over Bearing Irregularities.



No matter how fine a metal surface may be ground, the metal is a series of tiny peaks and valleys. So, when one metal surface rubs against another, friction is set up and adhesion, shearing or plowing may result.

Dry film plug coating and a protective film of sealant over the bearing area prevents this metal-to-metal rubbing.

Assembly Sealant

Nordstrom lubricated plug valves, as received by the purchaser (unless otherwise specified) are filled with what is termed "assembly" sealant. The assembly sealant is suitable for certain types of services but is not intended to handle all line fluids and operating conditions that may be encountered in actual service. It is essential, therefore, that before being installed all valves be serviced with the sealant recommended for the valve service conditions. This may be determined by reference to pages 4 through 7.

Where so specified on the order, standard price sealants (suitable for actual operating conditions) will be injected into valves without disassembly at no additional charge. In such cases, either the sealant formula number or full details of the line fluid to be handled and the temperature must be specified.

Disassembly, cleaning out and complete injection of valves with proper sealant is sometimes necessary for satisfactory use of special price sealants such as Silicone and Fluorocarbon formulas, for hazardous applications such as nitrating acids, or for other special applications such as food and pharmaceutical materials.

Characteristics of Nordstrom Sealants

Sealant Number	Grades Available	Temperature Range From	Temperature Range To	Color	Principal Services	Unsuitable for
147	Stick Bulk Gun Pak	20 (-6.7) -50 (-46) -50 (-46)	125 (51.6) 80 (26.7) 80 (26.7)	White	Acids (including nitrating), alcohols, alkalies, aqueous solutions, glycerine, dyes (alcohol soluble), and water. Food and pharmaceutical applications as determined suitable by the user.	Hydrocarbon solvents
167	Stick Bulk SS Bulk Gun Pak	50 (10) 20 (-6.7) 20 (-6.7) 20 (-6.7)	650 (343) 650 (343) 650 (343) 650 (343)	Gray	Air and gas dryer service, high temperature hot water, hot oil, steam and hot oil/steam combinations on burner front application. Limit oxidizing services to 500°F.	Liquid light hydrocarbons aromatic solvents, nitrating acids.
234	Tube Gun Pak Bulk	-40 (-40) -40 (-40) -40 (-40)	400 (204) 400 (204) 400 (204)	White	A silicone sealant for hot air, hot water, steam, high vacuum, acetic acid, acetic anhydride, ethyl alcohol below 250°F, natural gas compressor discharge, food and pharmaceutical applications as determined by the user.	Gasoline and light liquid hydrocarbons, strong mineral acids, aromatic and chlorinated solvents.
281	Bulk	-80 (-62)	400 (204)	White	A fluorosilicone sealant for low temperature liquid hydrocarbons, gaseous hydrocarbons, strong acids and alkalies.	Ketones *CAUTION: Not recommended for use in services above 400°F. Toxic vapors may be evolved at temperatures above500°F.*
357	Stick Bulk Gun Pak	0 (-17.8) 0 (-17.8) 0 (-17.8)	200 (93) 175 (79.4) 175 (79.4)	Light Brown	Gasoline, kerosene, mineral oils, naphtha, and oil soluble dyes.	Water and aqueous solutions, steam, alcohols, nitrating acids.
386	Stick Bulk Gun Pak	-20 (-29) -40 (-40) -40 (-40)	250 (121) 250 (121) 250 (121)	Cream	General gas and water sealant. Suitable for dry or wet gas, water works, and sewage services as determined suitable by the user.	Organic solvents, strong chemicals.
421	Stick Bulk Gun Pak	10 (-12.2) 0 (-173) 0 (-173)	350 (177) 300 (149) 300 (149)	Cream	Acids, alkalies, alcohols, amines, asphalt, aqueous solutions, fats, glycerine, glycols, soap, water and steam. Food and pharmaceutical applications as determined by the user.	Hydrocarbon solvents
555	Stick Bulk SS Bulk Gun Pak	-10 (-23) -20 (-29) -10 (-23) -20 (-29)	500 (260) 500 (260) 500 (260) 500 (260)	Brown	General purpose sealant for aliphatic hydrocarbon liquids and gases including gasoline, kerosene, fuel and lubricating oils, crude distillates, sweet or sour natural and manufactured gas with water or organic condensates, LPG systems, dilute acids and alkalies, glycols, textile plants, aqueous solutions, and water.	Aromatic solvents, strong chemicals, hot air.
555WG	Stick (J and K) Bulk Gun Pak	-20 (-29) -40 (-40) -40 (-40)	300 (149) 300 (149) 300 (149)	Brown	Same as 555 but use only for extreme and prolonged winter cold conditions.	Aromatic solvents, strong chemicals, hot air.
654	Stick Bulk Gun Pak	50 (10) 0 (-17.8) 0 (-17.8)	500 (260) 500 (260) 500 (260)	Brown	Solvent treating of lubricating oils, hot hydrocarbon vapors and gases, general hot oil service, asphalt.	Liquid light hydrocarbons, aromatic solvents, strong acids and chemicals.

Numbers not in parenthesis are °F.
Numbers in parenthesis are °C.

Sealant Number	Grades Available	Temperature Range From	Temperature Range To	Color	Principal Services	Unsuitable for
660	1 Lb. 5 Lb. 10 Lb.	20 (-6.7)	400 (204)	White	A fluorocarbon sealant of outstanding chemical stability. Useful for strong acids, alkalies, and oxidizing agents for which the resistance of these halogenated materials is known. Note: Compatibility to specific environment or test (e.g., impact insensitivity, nonflammability, etc.), should be determined by user. Satisfies requirements of MIL-T-5542B "Thread Compound, Antisieze and Sealing, Oxygen Systems."	Organic solvents, molten sodium, liquid fluorine, liquid chlorine trifluoride. Avoid use with light metals (e.g., aluminum, magnesium) especially under conditions of rubbing. ***Caution:*** *Like many other commonly used natural and synthetic materials, thermal breakdown products may be harmful. Avoid inhalation and provide ventilation for work areas where these materials are subjected to temperatures in excess of 572°F. Avoid contamination of smoking tobacco, cigarettes, etc.*
755	Stick Bulk Gun Pak	30 (-1.1) 20 (-6.7) 20 (-6.7)	300 (149) 300 (149) 300 (149)	Pink	Benzene, butane, solvent naphthas, toluene, gasoline containing benzene or large amounts of aromatic hydrocarbons, carbon bisulfide, carbon tetrachloride, animal and vegetable oils.	Strong acids, nitrating acids, alcohols, water, aqueous solutions.
833	Bulk Gun Pak	-40 (-40) -40 (-40)	160 (71) 160 (71)	Clear Yellow	Aviation gasoline, jet fuel, hydrocarbon and aromatic solvents.	Aqueous solutions, mineral acids, nitrating acids, water.
852	Bulk	-150 (-101)	-50 (-46)	Nearly Colorless	Gas or oil lines at extremely low temperatures, lube oil de-waxing.	Water, nitrating acids, alcohols, aqueous solutions.
862	Bulk Gun Pak Stick	-85 (-65) -85 (-65) -85 (-65)	250 (121) 250 (121) 250 (121)	Light Brown	Natural gas transmission lines under variable extreme climactic temperatures. Air and inert gases at sub-zero temperatures.	Liquid hydrocarbon solvents, strong chemicals.
921	Stick Bulk Gun Pak	30 (-1.1) 0 (-17.8) 0 (-17.8)	650 (343) 650 (343) 650 (343)	White	Acids, alkalies, alcohols, amines, asphalt, aqueous solutions, fats, glycerine, glycols, soap, water, steam. Food and pharmaceutical applications as determined suitable by the user. Suitable for hot hydrocarbon gases and vapors, high temperature cracking and reforming to 1000°F in conjunction with hard faced valves. Recommendations will be supplied on request.	Liquid light hydrocarbons, aromatic solvents, nitrating acids.
950	Stick Bulk SS Bulk Gun Pak 8 Oz. 1 Lb. 1 Qt.	10 (-12.2) -10 (-23) -10 (-23) -10 (-23)	350 (177) 350 (177) 350 (177) 350 (177)	Cream	Excellent dual resistance to petroleum products and water. Particularly recommended for regular, premium and high octane gasoline, kerosene, aviation and jet fuels, fuel blending ingredients, such as alkylate and platformate, fuel and lubricating oils, mixtures of these products and water in all proportions. Usable to 400°F in non-oxidizing atmospheres. Approved under specification MIL-G-6032D "Grease Plug Valve, Gasoline and Oil Resistant"	Strong acids and alkalies.
960	Bulk Gun Pak	-50 (-46) -50(-46)	300(149) 300(149)	Cream	Aliphatic liquids and gases including gasolines, kerosene, fuel and lubricating oils, hydrocarbon solvents and natural gas, neutral brines and salt solutions.	Strong acids and alkalies aromatic and chlorinated solvents.
1033	Stick (J and K) Bulk Gun Pak	-20(-29) -40(-40) -40(-40)	500(260) 500(260) 500(260)	Green	General purpose sealant for liquid and gaseous aliphatic hydrocarbon service suitable for gasoline, kerosene, fuel oils, crude distillates, aviation and jet fuel, natural gas.	Aromatic solvents, strong acids and alkalies, steam.

The sealants listed above are adequate to take care of most service conditions and are available from regular stock. When special conditions arise, consult your Nordstrom Customer Service Representative.
NOTE: All sealants, except 234, are available in cartridge form. Use bulk grade temperature ranges for cartridge sealant.

Nordstrom Sealant Selection Chart

Due to varying service conditions, the recommendations in this chart are to be used as a guide in selecting the proper sealant. The specific properties of the sealants suggested should be checked with the more complete descriptions given on the preceding pages with particular regard to temperatures and services.

Valve application / **sealant number**

A

Acetaldehyde / **755**
Acetate solvents / **755**
Acetic anhydride / **147, 421**
Acetone / **421, 234**
Acetylene gas / **147, 421**
Acids, general / **421, 147**
Acrylonitriles / **755**
Air / **234, 950, 1033**
Air dryers / **167, 234, 1033**
Alcohols / **234, 421**
Alkalies / **147, 421**
Alkyd resins / **755, 921**
Aluminum salt solutions / **421, 147**
Ammonia, gas or liquid / **147, 421**
Ammonium salt solutions / **421, 147**
Amyl chloride / **755**
Aniline / **755**
Aniline dyes
  Hydrocarbon solvents / **755**
  Aqueous solvents / **421, 147**
Anodizing solutions / **147, 421**
Anthracene oil / **654, 167**
Arsenic trichloride / **421, 147**
Asphalt / **654, 950, 1033**
Asphalt emulsions / **421, 147**
Asphalt paints / **755**

B

Barium salt solutions / **421, 147**
Beet sugar liquors / **147, 234**
Benzaldehyde
  Pure / **755**
  Tincture / **147**
Benzene (benzol) / **755**
Benzine / **950, 960, 1033**
Bituminous paints / **755**
Black liquor (paper industry) / **147, 421**
Blast furnace gas / **386, 654**
Blood plasma / **234**
Boiler water / **421, 167**
Borax / **421, 960**
Bromine / **On application**
Bulk stations / **950, 555**
Bunker oils (fuel oils) / **950, 555, 1033**
Butadiene / **950, 555, 1033**
Butane / **950, 555, 1033**

C

Calcium hydroxide / **147, 421**
Calcium salt solutions / **421, 147**
Cane sugar liquors / **147, 234**
Carbon dioxide / **421, 960**
Carbon disulfide / **755**
Carbon disulfide / **755**
Carbon monoxide / **234, 960**
Carbonated beverages / **755**
Castor oil / **755, 234**
Caustic potash / **147, 421**
Caustic soda / **147, 421**
Cellosolve solvents / **755**
Cellulose nitrate / **147, 755**
Chlorinated paraffin / **755**
Chlorinated solvents / **755**
Chlorine / **On application**
Chrome plating solutions / **147, 421**
Coal Gas / **386, 421**
Coal tar / **755, 555, 1033**

Valve application / **sealant number**

Coal tar solvents / **755**
Cocoanut oil / **755, 234**
Coke oven gas / **386, 654**
Compressor discharge
  (350°F. & up) / **167, 654**
Compressor manifolds / **950, 167**
Copper plating solution / **147, 421**
Copper sulfate / **421, 147**
Corn oil / **755, 234**
Corn syrup / **234**
Cottonseed oil / **755, 234**
Creosote / **654, 555, 1033**
Cresylic acid (cresol) / **421**
Crude oil / **950, 555, 1033**
Cumene / **755**
Curb cocks / *
Cutting oils, water emulsions / **555**
Cyanide solutions / **421, 147**

D

Dextrose / **147, 234**
Diesel fuel / **950, 555, 1033**
Diethanolamine / **421, 147**
Diethylene glycol / **167, 421**
Distillate, mineral oil / **950, 555, 1033**
Dowtherm / **755, 167**
Drilling mud / **555**
Drinking water / **421**
Dryer service / **167**

E

Electrolytic cell liquor / **234, 421**
Epsom salts / **421, 147**
Ethane / **555, 1033**
Ethanolamines / **421, 147**
Ether, ethyl / **755, 555, 1033**
Ether, petroleum / **950, 555, 1033**
Ethyl benzene / **755**
Ethyl chloride / **755**
Ethyl silicate / **386, 555**
Ethylene / **555**
Ethylene glycol / **167, 421**
Ethylene oxide / **755**

F

Fatty acids / **234**
Ferric salts / **421, 147**
Ferrous salts / **421, 147**
Filling stations / **950, 555, 1033**
Fish oil / **755, 234**
Fluorine / **On application**
Food products / **147, 234**
Formaldehyde / **147, 421**
Freon / **755, 833**
Fruit juices / **147, 234**
Fuel oil / **950, 555**
Fuming sulfuric acid / **660, 147**
Furfural / **234, 167**

G

Gas dryers / **167, 234**
Gas, manufactured / **555, 960, 1033**
Gas, natural / *
Gases, fuel / *
Gas odorizers / **755**
Gasoline / **950, 555, 1033**
Glacial acetic acid / **147, 234**
Glucose / **147, 234**

Valve application / **sealant number**

Glycerine (glycerol) / **147, 234**
Grease / **755**
Green liquor / **147, 421**
Green soap / **421, 147**

H
Helium / **147, 234**
Heptane / **950, 555, 1033**
Hexane / **950, 555, 1033**
Hot oil lines / **654, 167**
Hot water / **234, 167**
Hydrogen / **421, 147**
Hydrogen peroxide / **On application**
Hydrogen sulfide
- Mixtures / **950, 555**
- Pure / **147, 421**

I
Isobutane / **950, 555**
Isobutylene
- Liquid / **950, 555**
- Vapor / *

Iso-octane / **950, 555, 1033**

J
Jet fuel / **833, 950, 1033**

K
Kerosene / **950, 555, 1033**
Ketones (except acetone) / **755**

L
Lacquer solvents / **755**
Latex / **421, 147**
Lead arsenate, slurry / **421, 147**
Lead, molten / **921**
Light naphthas/ **950, 555, 1033**
Light oil, coal tar / **755**
Linseed oil / **234**
Liquefied petroleum gas (LPG) / **950, 555**
Lubricating oil / **654**

M
Magnesium salts / **234, 147**
Magnesium hydroxide / **147, 234**
Maleic acid (anhydride) / **147, 234**
Manganous sulfate / **234, 147**
Mash, distillery / **147, 234**
Mercuric chloride / **234, 147**
Mercury / **555**
Meter set-ups / *
Methane / *
Milk / **147, 234**
Milk of lime / **147, 421**
Mineral oil / **654, 555, 1033**
Mineral spirits / **950, 1033**
Mixed acids / **147**
Molasses / **147, 234**
Monochloracetic acid / **147, 234**
Monoethanolamine / **147, 421**
Mud lines / **950, 555**

N
Naphtha / **950, 555, 1033**
Naphthalene / **755, 167**
Naphthenic acid / **147, 234**
Natural gas / *
Nickel plating solutions / **147, 421**

Valve application / **sealant number**

Nitrating acid / **147**
Nitrobenzene / **755**
Nitrogen / **386, 421**
Nitrogen solutions / **147, 234**
Nitromethane / **755**

O
Octane / **950, 555, 1033**
Oil, petroleum / **950, 555, 1033**
Oil tar / **755, 167**
Oil-water mixtures / **950, 555**
Oleic acid / **234**
Oleum / **147, 660**
Olive oil / **755, 234**

P
Paint thinner / **755**
Palm oil / **755, 234**
Palmitic acid / **234, 921**
Paraffin / **755, 555, 1033**
Peanut oil / **147, 234**
Pentane / **950, 555**
Petrolatum / **950, 555, 1033**
Petroleum ether / **950, 555, 1033**
Petroleum oil / **950, 555, 1033**
Phenol / **421**
Phosphorus oxychloride / **On application**
Phosphorus trichloride / **On application**
Phthalic acid (anhydride) / **147, 167**
Picric acid / **146, 234**
Pine resin / **755, 167**
Pitch / **755, 167**
Polyethylene / **On application**
Polyisobutylene / **755, 555**
Potassium hydroxide / **147, 234**
Potassium salts / **234, 147**
Producer gas / **386, 167**
Propane / **950, 555**
Propylene
- Liquid / **950, 555**
- Vapor / *

Propylene oxide / **755**
Pyridine / **755**

Q
Quench oil / **755, 555, 1033**

R
Residuum lines / **654**
Road tar / **755, 555, 1033**
Roofing pitch / **755, 555, 1033**
Rosin
- Pure / **921**
- Solution / **421, 147**

Rubber, latex emulsions / **421, 147**
Rubber solvent / **755**

S
Salt solution / **421, 960**
Sea water / **386, 960**
Separators, oilfield / **950, 555**
Sewage / **386, 421**
Shellac / **421, 147**
Silicone fluids / **755**
Soap solutions / **421, 147**
Sodium (molten) / **234, 921**
Sodium hydroxide / **147, 421**

Valve application / **sealant number**

Sodium salt solutions / **421, 960**
Solder, molten / **234, 921**
Soluble oil / **234, 654**
Soy bean oil / **755, 234**
Stannic chloride / **421, 147**
Starch solutions / **421, 147**
Steam / **234, 167**
Stearic acid / **755, 234**
Stoddard solvent / **950, 555, 1033**
Strontium salt solutions / **421, 147**
Styrene / **755**
Sugar solutions / **147, 234**
Sulfate liquor / **147, 421**
Sulfite liquor / **147, 421**
Sulfonated oils / **755, 555, 1033**
Sulfur (molten) / **234, 167**
Sulfur chloride / **234**
Sulfur dioxide / **421, 147**
Sulfur monochloride / **234**
Sulfur trioxide / **147, 421**
Synthetic tannins / **421, 147**

T
Tall oil / **234, 167**
Tallow / **234, 167**
Tannic acid / **421, 167**
Tanning liquors / **421, 167**
Tar / **755, 654, 1033**
Tartaric acid / **421, 167**
Tempering oil / **755, 555, 1033**
Tetraethyl lead / **755**
Tincture of iodine / **147**
Titanium tetrachloride / **On application**
Toluene / **755**
Triethanolamine / **147, 421**
Tri-sodium phosphate / **421, 147**
Turpentine / **755**

U
Ucon fluids / **234, 167**

V
Vacuum lines / **234**
Varnish / **234, 147**
Vegetable oils / **147, 234**
Vegetable tannins / **421, 147**
Vinegar / **147**
Vinyl chloride / **755**
Vinylidene chloride / **755**

W
Water / **167, 421**
Water gas
- Dry / **386, 555**
- Wet / **950, 555**

Wax emulsions / **421, 147**
Waxes / **755**
Whiskey / **147, 234**
White liquor (paper industry) / **147, 421**
White water (paper industry) / **147, 421**
Wine / **147, 234**

X
Xylene (xylol) / **755**

Z
Zinc salts / **421, 147**

* Below 0°F 960, 1033; above 0°F 555, 1033

Valve Sealant Grades and Packaging

Bulk Sealant

Nordstrom Bulk Sealants are normally used in the 400-D Hand Gun and Hypregun sealant injectors. The 5-quart can is specifically designed for use in the Hypregun and must always be used with the can shield installed. Gun Pak, sealant packaged in a sealed soft plastic tube, is inserted in the 400-D Hand Gun with the sealed end inserted first.

Super Soft bulk sealant (SS) is available in 950, 555 and 167 formulations. Super Soft bulk sealant has an improved "pumpability" characteristic.

Bulk sealants, except Sealant 234, are also available in cardboard cartridges designed to fit the 401-D and 401-DE Hand Guns (now discontinued).

Bulk Sealant Packaging

Size	Single Quantity	Box
Plastic Tube*	5.3 oz.	2 Tubes
Gun Pak	Box	6 Gun Paks
5-Qt.	Can	**
5-Gal.	Pail	N/A
55-Gal.	Drum	N/A

Other packaging sizes available on request.

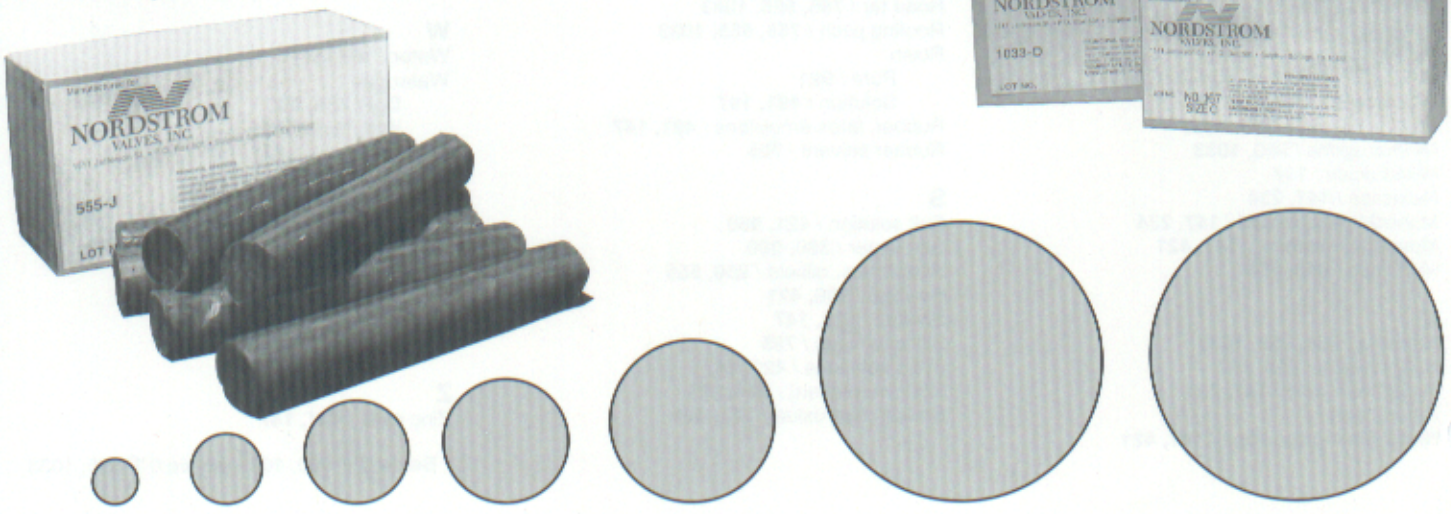
* Plastic Tubes are standard packaging only for Sealant 234.

** 5-Qt. cans are available 2 cans per case or 1 can per case – please specify.

Stick

Nordstrom Stick Sealants are high viscosity sealants that are used with combination button head fittings and in the 400-A and 400-D Hand Guns. The sealant is a consistency that maintains its extruded shape and diameter. Contact your Customer Service Representative for the proper stick size for your valve.

Stick Size	Diameter in.	Diameter mm	Length in.	Length mm
A	.25	6.35	.88	22.23
B	.38	10.32	1.38	34.93
C	.55	13.89	2.00	50.80
D	.66	16.67	2.44	73.02
G	.86	21.83	3.38	85.73
J	1.47	37.31	8.75	104.78
K	1.53	38.39	10.00	254.00



Valve Conditioner and VPX™ Valve Purge

An economical alternative to removing a valve from a piping system for disassembly and cleaning is Nordstrom Valve Conditioner and Nordstrom VPX Valve Purge.

Valve Conditioner

Valve Conditioner is a combination penetrant and lubricant. Valve Conditioner is designed to improve the operation of hard to operate valves by softening hardened sealant residues and introducing special friction reducing agents to provide lubricity. Valve Conditioner is compatible with all Nordstrom sealants and will not harm rubber seals or gaskets.

VPX Valve Purge

VPX Valve Purge is a powerful valve cleaning formulation designed to soften severely hardened or polymerized sealant residues in lubricated valves. Once softened, the residues can then be purged from the system by injecting new sealant. VPX is a non-hazardous formulation designed to offer the maximum in cleaning and solvency.

Use in 400-D Hand Gun

Valve Conditioner and VPX Valve Purge, packaged in Gun Pak form, can be used in the 400-D Hand Gun.

Use in Hypregun Sealant Injector

Conditioner and VPX are packaged in 5-Qt. cans for use in the Nordstrom Hypregun.

VPX Post-Usage Precautions

After use, it is advisable to clean the Valve Purge out of the Gun by pumping sealant through the Gun and hose. VPX may soften or swell rubber or polymeric seals, and gaskets.

Nordstrom Hypreseal Valve Stem Packing

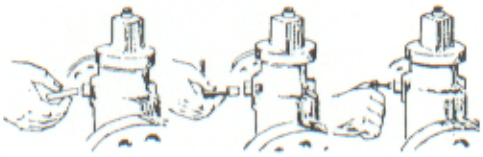
Stem Packing

CAUTION: Stem packing is for packing the stem only. Stem packing is not a valve sealant.

Hypreseal Stem Packing 909 is a non-asbestos, plastic composition containing a graphitic filler. It is used to seal the stems of Hypreseal valves and is injected through the packing injection fittings on Hypreseal valve bodies.

Repacking a Hypreseal Valve Stem

1. Remove the packing injector screw and insert new Stem Packing 909 into the fitting.
2. Replace the packing injector screw.
3. Inject packing around the stem by tightening the packing injector screw.



Packaging

Stem Packing is available in various diameters:

Size	in.	mm
AA	.25	6.35
BB	.41	10.32
CC	.55	13.59
DD	.66	16.67

Stem Packing is packaged with 3 pieces; each piece is 8" long.

NOTES:

(1) Very high temperatures will cause the gradual dissipation of the plastic base of Stem Packing 909. Injection of additional packing will be necessary until the graphitic filler forms a seal.

(2) Very low temperatures will cause Stem Packing 909 to harden, thus increasing the valve operating torque.

Ordering Information

Orders for Nordstrom Valve Sealant should always include a complete specification so that the proper sealant is supplied. The following information is essential.

To Order Stick Sealant,
give the quantity, packaging, formula number and stick size.

Examples: 10 Boxes of 555–J
150 Boxes of 950–B

Stick Sealant Packaging:

Size	Sticks Per Box	Boxes Per Case
A	24	N/A
B	24	150
C	24	120
D	24	50
G	24	24
J	6	10
K	12	N/A

To Order Gun Pak Sealant,
give the quantity, packaging, formula number and "GP" for size.

Examples: 1 Box 1033–GP
10 Boxes 555–GP

Gun Pak Sealant Packaging:

Package Form	Gun Paks Per Box	Boxes Per Case
GP	6	10

To Order Cartridge Sealant,
give the quantity, packaging, formula number and "CT" for package form.

Example: 1 Box 960–CT

Cartridge Sealant Packaging:

Package Form	Cartridges Per Box	Boxes Per Case
CT	4	N/A

To Order Bulk Sealant,
give the quantity, packaging (tube, box, can, pail, or drum), formula number and size. Regular bulk consistency will be supplied unless SS Bulk is specified.

Examples: 5 Cans 555–5-Qt.
1 Drum 1033–55-Gal.

Bulk Sealant Packaging:

Size	Single Quantity	Box
Plastic Tube*	5.3 oz.	2 Tubes
5-Qt.**	Can	N/A
5-Gal.	Pail	N/A
30-Gal.	Drum	N/A
55-Gal.	Drum	N/A

Other package sizes are available on request.

* Plastic Tubes are only available for Sealant 234.

** 5-Qt. cans are available 4 cans per case, 2 cans per case, or 1 can per case – please specify.

To Order VPX Valve Purge,
give the quantity and package information. Valve purge is available in Gun Pak, 5-Qt. cans and cartridges.

Examples: VPX* – 5-Qt.
VPX – GP

VPX Valve Purge Packaging:

Package Form	Units Per Box	Boxes Per Case
Cartridge	4	N/A
Gun Pak	6	10
5-QT Can**	N/A	N/A

* Designation for valve purge is VPX.

** 5-Qt. cans are available 2 cans per case or 1 can per case – please specify.

To Order Hypreseal Valve Stem Packing, give the quantity, packaging, formulation and size.

Example: 2 Packages 909-BB

Stem Packing Packaging:

Size	Inches Per Box	Boxes Per Case
AA	24	N/A
BB	24	N/A
CC	24	N/A
DD	24	N/A

Hypreseal stem packing is packaged with 3 eight inch pieces per container.

Nordstrom 400-A Hand Gun

400-A Hand Gun Features:

- More rugged than conventional hand guns
- Screw prime lever construction
- Uses J stick, K stick or Gun Pak sealant (K stick preferred)

The Nordstrom 400-A Hand Gun is an accurately machined sealant injector with a polished hardened steel piston which is closely fitted to a high pressure barrel. The powerful spring loaded primer piston provides 30 or more strokes without re-priming. The 400-A Hand Gun has a check valve and bleeder relief valve.

The Gun is easy to handle, can be carried by the shoulder strap, and has positive action.

NOTE: The use of Gun Pak sealant in the 400-A Hand Gun requires a special washer. Consult your Nordstrom distributor for more information.

Button Head Coupler

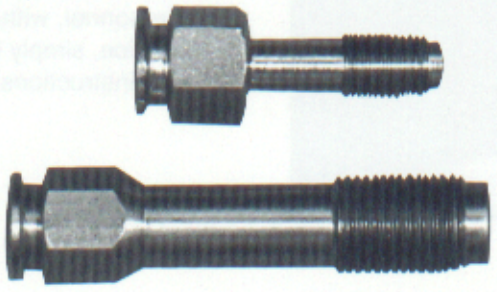
Nordstrom 400 Giant Button Head Coupler

This coupler is standard equipment on the Nordstrom Hypregun, 400-A Sealant Hand Gun, and 400-D Sealant Hand Gun. It is designed to shut off when removed from the valve sealant fitting and prevents further extrusion of sealant caused by pressure in the Gun or pump hose.

Sealant Fittings

Combination Button Head Fitting/Sealant Screw

The Nordstrom Sealant Fitting is adaptable to manual or mechanical application of sealant. Sizes are available to fit any Nordstrom or Super Nordstrom valve with the sealant fitting located in the valve stem. Each fitting is equipped with a spring-loaded check valve. Standard on all current design Nordstrom valves, this fitting is also a available as a separate unit to replace the sealant screw found on older design Nordstrom valves.



Button Head Fitting

The Dynamic Balance® and EmissionSeal™ Valve button head fittings are adaptable for mechanical injection of valve sealant.

Nordstrom 400-D Hand Gun

Outstanding features:

- Large fluid capacity provides for long periods of operation before recharging is necessary
- Quick, simple fluid recharging
- No air entrapment problem
- Tamper-proof relief valve operates efficiently at any temperature
- Long-life, tight-sealing nylon piston cups
- Handles all types of valve sealant regardless of viscosity
- Minimum pumping effort required
- Simple repair and part replacement
- Built-in safety features

The Nordstrom 400-D Hand Gun is rated at 8,000 psi (552 bar) and includes many features for meeting the exacting demands of replacing sealant in Nordstrom valves.

One of the most outstanding of these features is the 400-D gun's large fluid capacity which permits long periods of operation between recharging, insuring dependable performance under all conditions.

Recharging the fluid involves only a few quick, easy steps. It only requires filling the fluid bag, followed by replacing the seal screw and cap. The Gun is then ready for continued operation.

Changing to another type of sealant when the Gun is partly filled is quickly and easily accomplished by replacing a partly used Gun Pak with a new one.

In the 400-D Hand Gun, any air entrapment is eliminated simply by adding fluid when recharging, which automatically purges the system of air. The Gun operates effectively in all positions.

The floating piston in the Gun is solid. There is no cap screw to cause fluid leakage and eventual operation failure.

By using the special-formula hydraulic fluid in the pumping mechanism, the Gun pumps smoothly and with minimal effort. Its powerful hydraulic floating piston principle forces sealant out of the gun regardless of viscosity.

This Gun is equipped with a Nordstrom 400 Giant Button Head Coupler for connection to the button head sealant fitting. This coupler has a design feature which locks it to the fitting when the Gun is under positive pressure. The coupler cannot be connected to, or separated from, the sealant fitting with the Gun under pressure.

Due to the "built-in" safety features, the Nordstrom 400-D Hand Gun provides maximum safety to both the user and the Gun itself. The hydraulic system of the Gun is equipped with a relief valve to protect the operator if he continues to pump after the Gun is depleted of sealant. *(CAUTION: The resistance on the handle increases when the Gun is depleted of sealant. The pumping should be discontinued and the Gun reloaded with Nordstrom sealant).* This internal relief valve is tamper-proof. The relief valve is relatively unaffected by temperature change and relieves at approximately the same pressure at temperatures between 0°F (-18°C) and 80°F (27°C) assuring maximum pump output through this variation.

A Nordstrom pressure gauge indicates the point at which sufficient sealant pressure has been developed within the valve.

In designing the 400-D Hand Gun, engineers concentrated on simplifying maintenance and repair procedures. In most case, the Gun can be easily maintained and repaired by valve service personnel, without requiring factory service, simply by following the detailed instructions with this catalog.

400-D Hand Gun Operation

CAUTION: The Nordstrom 400-D Hand Gun is high-pressure equipment. The operating instructions must be followed very closely.

In the operation of the Nordstrom 400-D Hand Gun, hydraulic fluid is pumped from a reservoir to the space behind the free moving piston. This same fluid drives the piston through the sealant barrel, forcing valve sealant out of the barrel through the high-pressure hose and the Nordstrom 400 Giant Button Head Coupler, into the giant button head fitting on the valve.

The button head fitting is standard on all Nordstrom plug valves and is suitable for use with the Nordstrom 400-D Hand Gun. The Nordstrom fitting is also available as a separate unit to replace the sealant screw on older Nordstrom valves.

The Nordstrom 400-D Hand Gun should never be carried by the handle unless the carrying strap is attached. The pumping piston can be damaged if the strap is not used.

Injecting Sealant

CAUTION: The Nordstrom Giant Button Head Coupler should not be installed to a valve or removed from a valve when the Gun is under pressure. Relieve pressure in the Hand Gun by opening the bypass valve.

1. Fit the 400-D Hand Gun button head coupler over the valve fitting. Start the coupler onto the fitting, lifting up gently on the back end of the coupler, until the fitting head stops.

2. Inject sealant by pumping the handle. On properly operating valves, continue pumping as long as the needle of the pressure gauge climbs steadily. Stop pumping when the pressure gauge reading no longer rises, but begins to drop and the pumping effort decreases. At this point, the valve has been sufficiently filled. The valve should then be cycled to check ease of operation. Additional sealant can be injected if needed.

NOTE: If the needle of the Hand Gun gauge falls to line pressure after each stroke, the Hand Gun check valve is not holding internal pressure. Contact your Nordstrom Customer Service Representative for maintenance information.

Charging the 400-D Hand Gun

The numbers in parentheses on this page refer to 400-D Hand Gun parts as illustrated in this catalog.

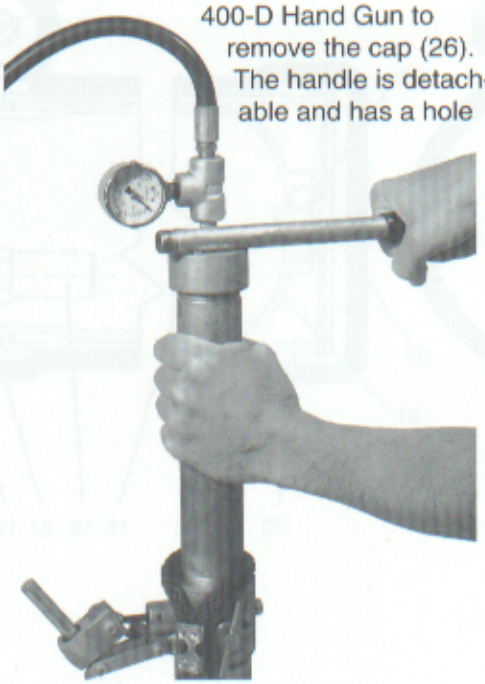
When all valve sealant has been pumped out of the Hand Gun, a sharp increase in resistance to operation of the pump handle will be noted and the pressure gauge will drop rapidly.

The Gun must then be reloaded before further pumping. Do not continue pumping as damage to the Hand Gun may result.

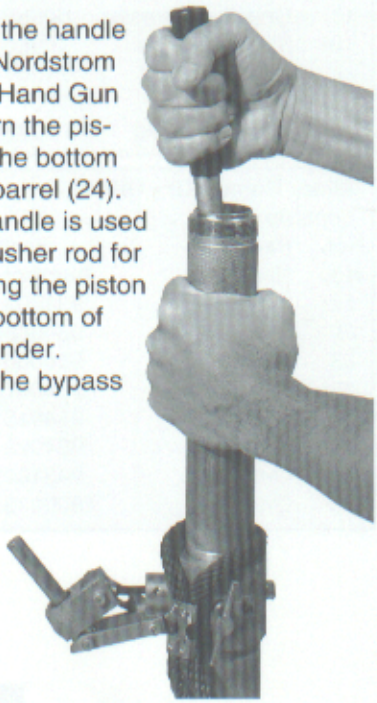
NOTE: Caution should be observed to avoid forcing empty Gun Pak bags into the nipple.

Relieve pressure in the Hand Gun by opening the bypass valve (12). It should not be tightened against the stop (14) or jammed into its seat. It is not necessary to open the valve more than one full turn; it only needs to be "cracked".

1. Use the handle of the Nordstrom 400-D Hand Gun to remove the cap (26). The handle is detachable and has a hole drilled near one end. By removing the handle and placing the hole over the protruding pin on the sealant barrel cap, the cap may be readily removed and re-assembled.



2. Use the handle of the Nordstrom 400-D Hand Gun to return the piston to the bottom of the barrel (24). This handle is used as a pusher rod for returning the piston to the bottom of the cylinder. Close the bypass valve.



3. Insert the appropriate J-Stick or Gun Pak sealant in the barrel. Replace the cap (26) and hose assembly and tighten the cap with the pump handle.

Nordstrom 400-D Hand Gun Parts

Major Repair Kit - 1900028
consists of:

Ref. No.	Part Name	Part Number	No. Reqd.
7	Hydraulic pump	60040	1
12	Bypass valve	60048	1
11	Check valve assy.	60059	1
18	Fluid bag assy.	70960	1
-	Hydraulic fluid	71251	1
20	Nylon cup	1900011	2
	Minor repair kit	1900027	1

Minor Repair Kit - 1900027
consists of:

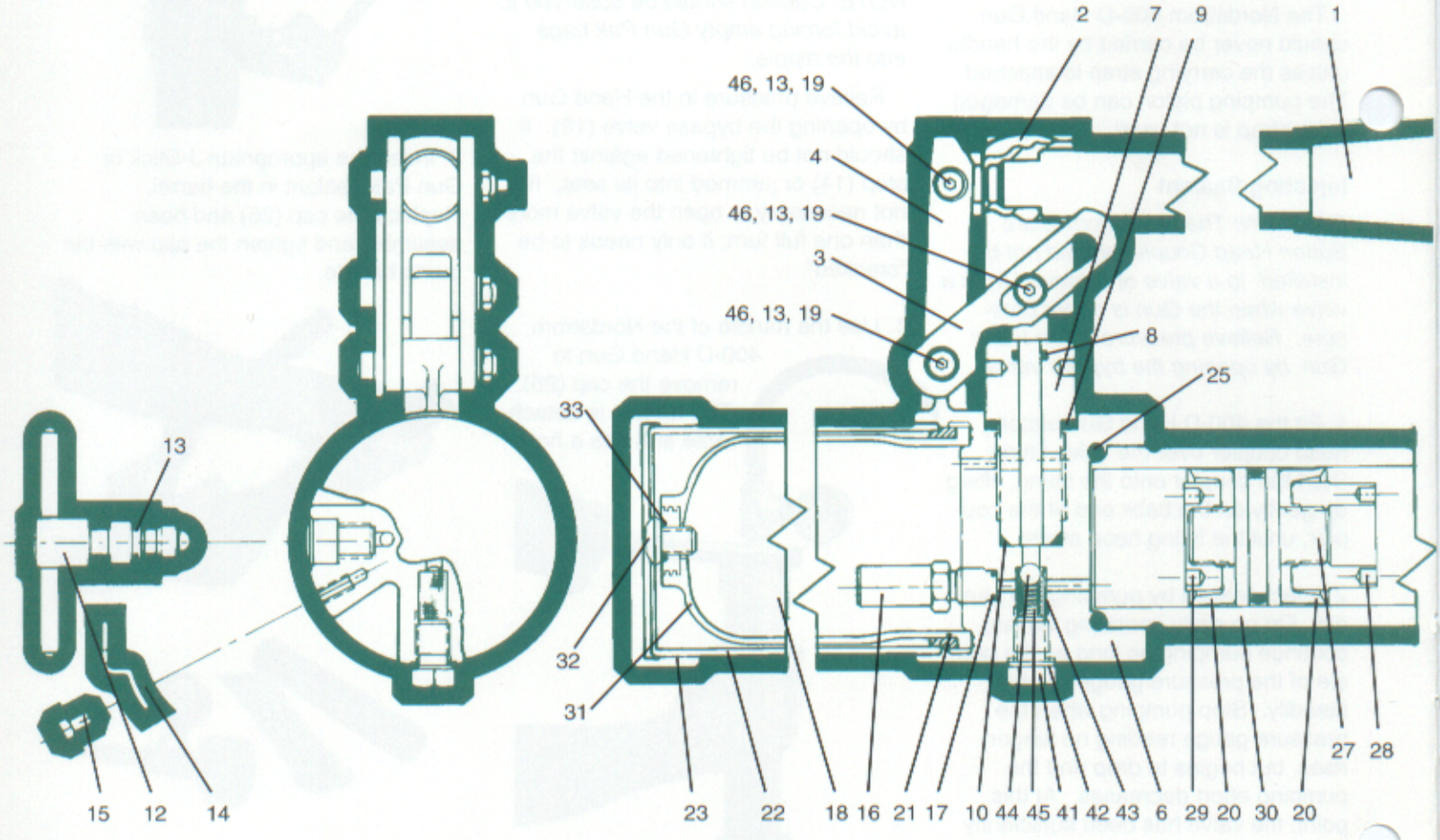
Ref. No.	Part Name	Part Number	No. Reqd.
17	O-ring	934003	1
8	O-ring	934005	1
33	O-ring	934006	1
13	O-ring	934007	1
9	O-ring	934015	1
25	O-ring	934029	2
10	O-ring	943102	1
30	O-ring	1900013	1

***Check Valve Assembly - 60059**
consists of:

Ref. No.	Part Name	Part Number	No. Reqd.
41	Screw	60045	1
42	Washer	60046	1
43	Screen	60083	1
45	Spring	905151	1
44	Ball	930206	1

****Linkage Assembly - 60058**
consists of:

Ref. No.	Part Name	Part Number	No. Reqd.
4	Link	60039	2
13	Washer	906085	3
46	Screw	908683	3
19	Lock nut	914980	3
3	Stop link	1900065	1



+Floating Piston Assembly - 1900009

consists of:

Ref. No.	Part Name	Part Number	No. Reqd.
27	Piston body	1900012	1
28	Nut, sealant side	1900010	1
29	Nut, oil side	1900014	1
20	Nylon cup	1900011	2
30	O-ring	1900013	1

++Fluid Bag Assembly - 70960

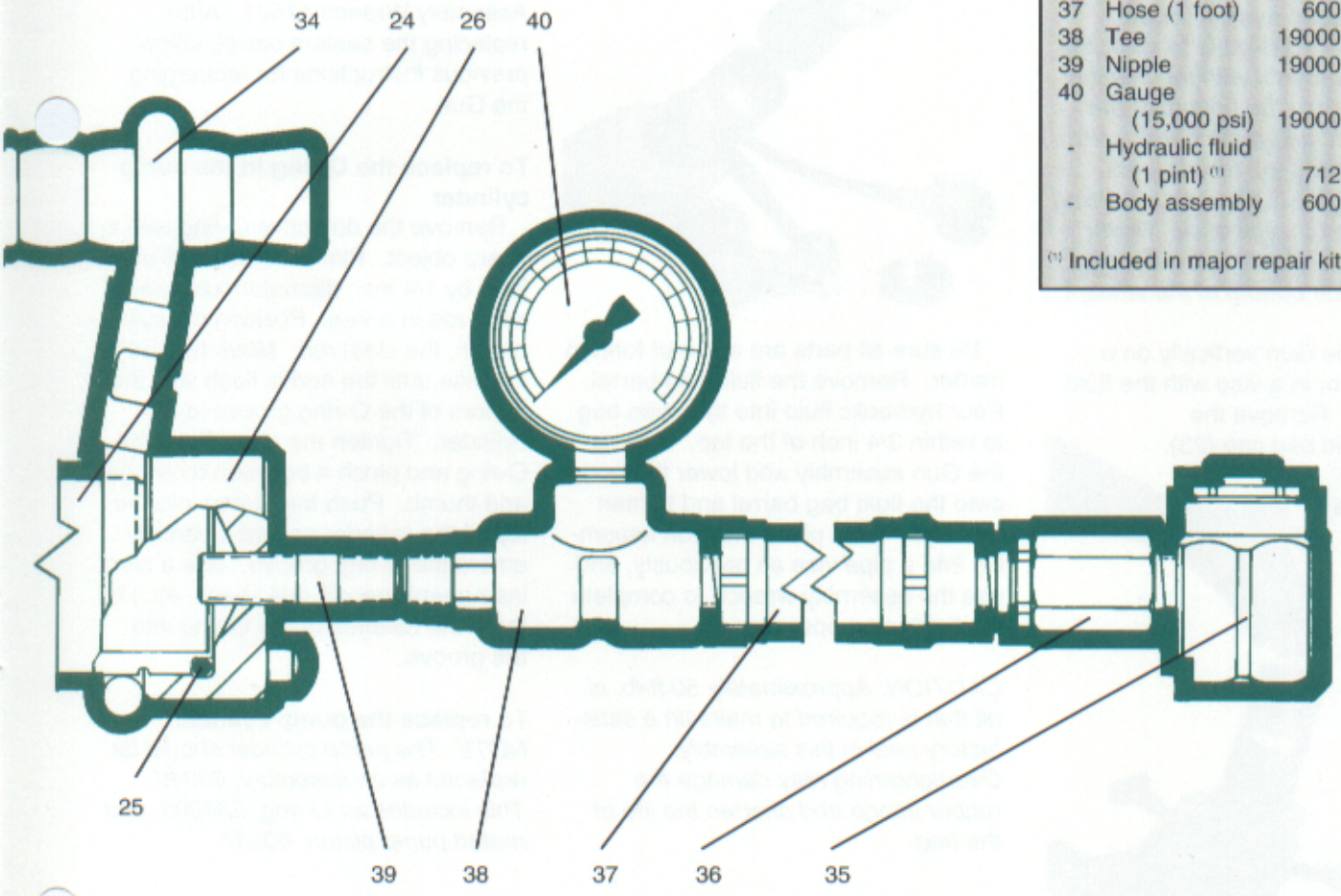
consists of:

Ref. No.	Part Name	Part Number	No. Reqd.
31	Fluid bag	60056	1
32	Screw	908705	1
33	O-ring	934006	1

Miscellaneous Repair Parts

Ref. No.	Part Name	Part Number	No. Reqd.
1	Handle with grip	60033	1
2	Fulcrum	60036	1
6	Body	60051	1
7	Hydraulic pump cylinder [1]	60040	1
12	Bypass valve [1]	60048	1
14	Bypass stop	60047	1
15	Bypass stop screw	908685	1
16	Internal relief valve	1900149	1
18	Fluid bag assy. [1]	70960	1
21	Sealing ring	60060	1
22	Fluid bag barrel	60054	1
23	Fluid bag barrel cap	60055	1
24	Sealant barrel	60028	1
26	Sealant barrel cap	60026	1
34	Carrying strap	60070	1
35	Giant button head coupler	64584	1
36	Straight swivel	927437	1
37	Hose (1 foot)	60075	1
38	Tee	1900074	1
39	Nipple	1900073	1
40	Gauge (15,000 psi)	1900052	1
-	Hydraulic fluid (1 pint) [1]	71251	1
-	Body assembly	60065	1

[1] Included in major repair kit



400-D Hand Gun Maintenance

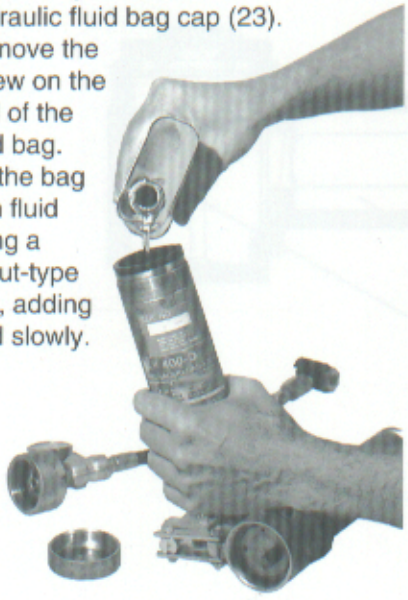
CAUTION: Use only Nordstrom hydraulic fluid. Nordstrom hydraulic fluid is prepared for use in this Gun. Other fluids are likely to be incompatible with this hydraulic oil and their use is not recommended. The fluid is furnished in a spout-type one-pint can.

If the instructions are carefully followed and the fluid is added at regular intervals, the 400-D Hand Gun will operate indefinitely without further maintenance. Set up a maintenance program with frequency determined by the number of hours the Gun is used. One ounce of fluid should be all that is required to fill the bag. If more than this amount is required, the Gun should be serviced more often. *The numbers in parentheses refer to Hand Gun Parts as illustrated in this catalog.*

To recharge the Gun with fluid or purge hydraulic system of air

CAUTION: It is desirable to allow the Gun to sit overnight with the floating piston pushed to the bottom of the sealant barrel before recharging with oil. This permits the fluid bag to regain its original shape, thus holding the maximum charge of oil. Never recharge with oil unless the floating piston is at the bottom of the sealant barrel.

Position the Gun vertically on a work bench or in a vise with the fluid bag end up. Remove the hydraulic fluid bag cap (23). Remove the screw on the end of the fluid bag. Fill the bag with fluid using a spout-type can, adding fluid slowly.



Allow the Gun to stand 15 minutes to permit the air suspended in the oil to escape. Then add fluid until the bag is full. Replace the cap screw, being careful not to entrap any air. Then replace the barrel cap (23).

To re-equip the 400-D Hand Gun with a new fluid bag

Open the bypass valve and push the floating piston to the bottom of the sealant barrel. This makes the system entirely free of fluid. Place the fluid bag barrel portion of the Gun in a pipe vise. Use Gun Assembly Wrench 47521 to remove the fluid barrel. Remove the old fluid bag and take off the sealing ring.

Be sure all parts are clean of foreign matter. Remove the fluid bag barrel. Pour hydraulic fluid into the open bag to within 3/4 inch of the top. Pick up the Gun assembly and lower the body onto the fluid bag barrel and tighten by hand. Then place the Gun assembly into a pipe vise as previously, and use the assembly wrench to complete the tightening operation.

CAUTION: Approximately 50 ft-lb. is all that is required to maintain a satisfactory seal in this assembly. Overtightening may damage the rubber flange and shorten the life of the bag.

After re-equipping the Gun with a new bag, follow previous instructions for recharging the Gun with fluid.

To replace the sealant barrel

Open the bypass valve and push the floating piston to the bottom of the sealant barrel. Close the bypass valve.

Place the Gun in a pipe vise. With Gun Assembly Wrench 47521, remove the body from the barrel. Push out the floating piston from the old barrel and insert it into a new barrel in the same position using Floating Piston Guide 47520. Be sure all parts are clean of foreign matter. Insert a new O-ring (25) into the Gun body. Screw the barrel on again with the knurled end of the barrel farthest from the body. Insert the barrel into a pipe vise and tighten the assembly, using full torque effort with Gun Assembly Wrench 47521. After replacing the sealant barrel, follow previous instructions for recharging the Gun.

To replace the O-ring in the pump cylinder

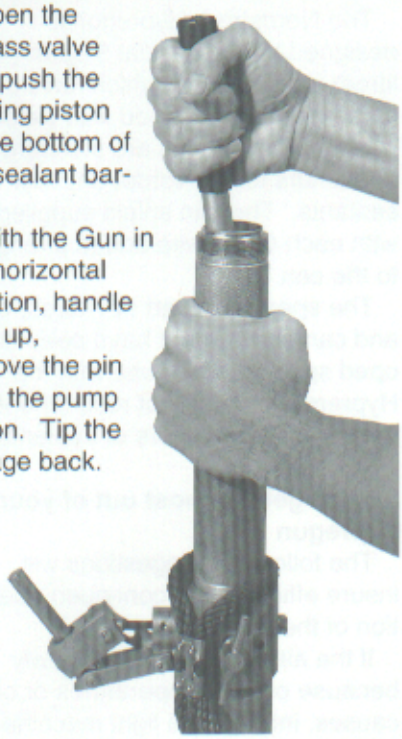
Remove the defective O-ring with a sharp object. Place a piece of 6 inch long by 1/4 inch diameter cold rolled steel rod in a vise. Position the cylinder on the steel rod. Move the rod in the vise until the end is flush with the bottom of the O-ring groove in the cylinder. Tighten the vise. Take the O-ring and pinch it between forefinger and thumb. Push the O-ring into the top of the cylinder so that it partially enters the O-ring groove. Use a blunt instrument (pencil, drill shank, etc.) to force the balance of the O-ring into the groove.

To replace the pump cylinder

NOTE: The pump cylinder should be replaced as an assembly, 60040. This includes an O-ring, 934005, and mated pump piston, 60041.

Open the bypass valve and push the floating piston to the bottom of the sealant barrel.

With the Gun in the horizontal position, handle side up, remove the pin from the pump piston. Tip the linkage back.



Unscrew the cylinder with Spanner Wrench 47518.

The cylinder cavity will probably fill with hydraulic fluid. Do not disturb this condition. Remove the O-ring (10) from the cylinder cavity in the body and insert a new O-ring. Position the new O-ring (9) on the new cylinder. Insert the cylinder and tighten with Spanner Wrench 47518. Reconnect the pump linkage. After replacing the pump cylinder, follow the previous instructions for recharging the Gun.

To repair the check valve

Symptoms of check valve failure are easily recognizable. When the pump handle develops a spring-like action where, under pressure, the pumping handle will spring back each time it is pushed down, the check valve is not seating properly. This is usually due to a foreign particle on the valve seat. Repair the check valve as follows:

Open the bypass valve and push the floating piston to the bottom of the sealant barrel. Close the bypass valve. Place the Gun on a work bench. Loosen the check valve screw with a wrench. Remove the screw and hold the Gun with the check valve down so that the spring and ball fall out. Remove the cylindrical screen from the cavity using a pointed instrument. Clean the check valve seat and cavity thoroughly with a cotton swab. Unless the swabbing is thorough, the check valve may still be defective. Extra care will guarantee an effective repair. *Do not blow with an air hose!* Replace the check valve assembly.

Position the Gun on the bench with the check valve cavity upright. Insert the cylinder screen. Insert the 1/4 inch ball. With the ball in position on the seat, place a short length of 1/4 inch diameter brass or cold rolled rod on the ball and seat the ball with a sharp blow from a hammer. Insert the spring. Install the washer on the cap screw. Tighten the cap screw with a wrench. Do not overtighten the screw. After replacing the check valve, follow the previous instructions for recharging the Gun.

To replace the bypass valve

Open the bypass valve and push the floating piston to the bottom of the sealant barrel. Remove the valve stop and unscrew the bypass valve. Lubricate the new bypass valve at the O-ring with a small amount of valve sealant and insert it into the body and screw it in carefully. To avoid damage to the O-ring, screw the valve until the O-ring engages the body and then screw in 1/2 turn and unscrew 1/4 turn until the valve is seated. Repeat until the O-ring slides in. If the O-ring shears, it must be replaced. If the bypass cavity contains fluid, the fluid will create a back pressure, causing the O-ring to shear. After the valve is replaced, follow the previous instructions for recharging the Gun.

To replace or repair the floating piston

With the bypass valve open, pull the piston out of the cylinder using Piston Pulling Tool 47517. Replace the defective parts such as the O-rings and cups. If the cups are replaced, tighten the piston nuts using two Spanner Wrenches 47519. Replace the piston in the cylinder using Piston Guide Tool 47520. With the Piston Guide in position, insert the newly assembled piston into the guide and force it down into the Gun cylinder, keeping the bypass valve open. With the new piston inside of the cylinder, place the Gun vertically in a vise. Remove the fluid bag barrel cap and the fluid bag cap screw. This will permit the escape of entrapped air. Using the pump handle, force the piston to the bottom of the sealant barrel. Complete the repair by following the previous instructions for recharging the Gun.

To change from one type of sealant to another

Remove the cap and hose assembly. Force the Piston Pulling Tool 47517 into the center of the sealant in the barrel and push until the tool is in contact with the floating piston. Screw the pulling tool into the piston, open the bypass valve, and pull the piston out until it is flush with the end of the cylinder. Remove the piston puller. Scrape the existing sealant from the end of the piston. Using the pump handle, force the piston to the bottom of the sealant barrel and recharge the Gun with the new type of sealant.

Repair service

Minor repairs can be performed by the customer, following the previous procedures. When a complete overhaul is required, the Gun should be sent to a repair center. Repair center overhaul service includes replacement of the O-rings and all defective parts. Contact Nordstrom Valves, Inc. for your nearest sealant equipment repair center.

Nordstrom Hypregun Sealant Injector

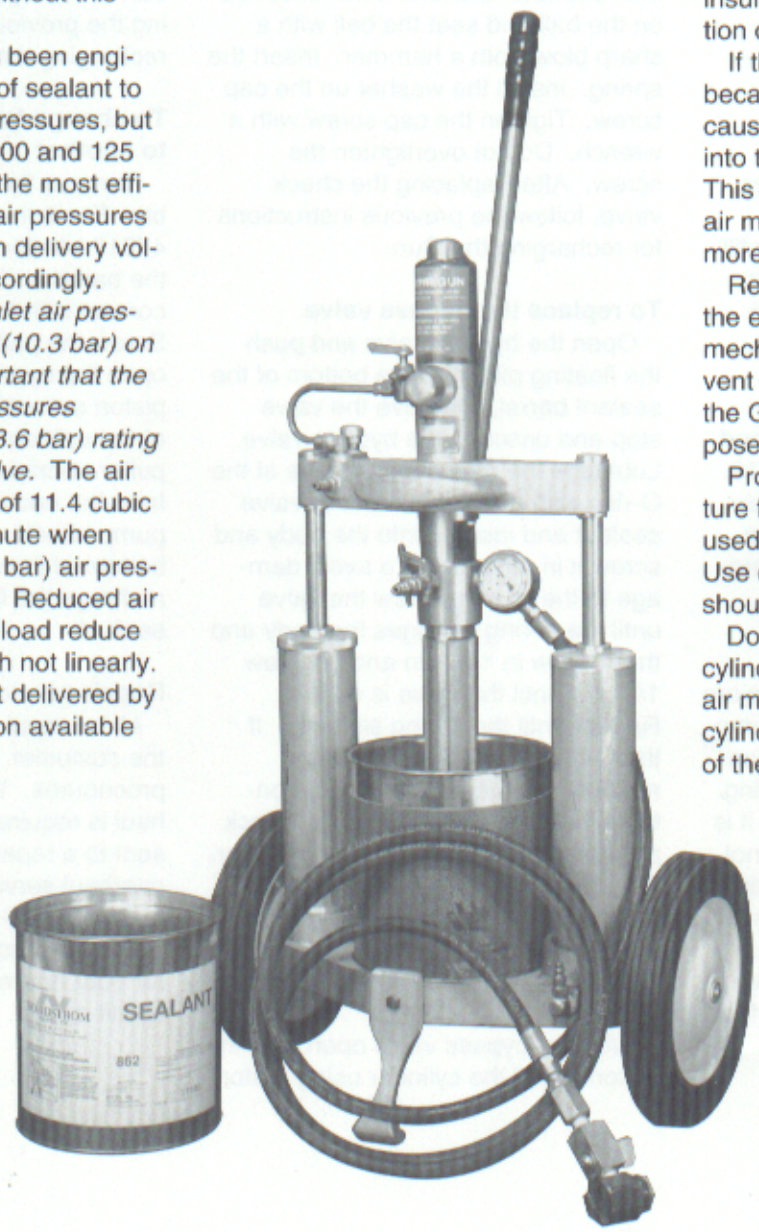
The Nordstrom Hypregun was especially designed to meet field and plant maintenance needs of valve users. It is ideal for large scale valve servicing in refineries, compressor stations, gasoline plants, cycling plants, pipelines and manifold installations.

The Nordstrom Hypregun is a compact, highly efficient, air operated sealant gun with a 100:1 pressure ratio and double-acting piston. Continued positive pressure applied to the side cylinders assures intimate contact between the follower plate and sealant. This positive pressure makes it possible to pump sealants at much lower temperatures with the Hypregun than is possible with dispensing equipment without this feature.

The follower plate has been engineered to promote flow of sealant to the foot valve at all air pressures, but air pressures between 100 and 125 psi (6.9 to 8.6 bar) give the most efficient operation. Lower air pressures can be used but the Gun delivery volume will be reduced accordingly. *Though the maximum inlet air pressure is listed as 150 psi (10.3 bar) on the Hypregun, it is important that the Gun not be used on pressures exceeding the 125 psi (8.6 bar) rating of the pressure relief valve.* The air motor uses a maximum of 11.4 cubic feet of air or gas per minute when operated at 125 psi (8.6 bar) air pressure and with zero load. Reduced air pressure and increased load reduce air consumption although not linearly.

The amount of sealant delivered by the Hypregun depends on available air pressure to the Gun, type of sealant and temperature at which it is dispensed. The chart on page 23 graphically shows the ranges of sealant delivery under varying conditions of temperature, air pressure and pressure class of valves.

A moisture trap (not supplied by Nordstrom) for use on air sources containing appreciable amounts of water is quite advantageous for low temperature applications. This moisture, if allowed to reach the air pump, can condense and freeze, causing the motor to stall. Air line filters for removing moisture from the air supply are available from several manufacturers.



The Nordstrom Hypregun is designed to use special 5-quart (4.7 litres) sealant cans, which have been materially strengthened with welded seams. These cans are standard containers for all Nordstrom bulk sealants. The can shield supplied with each Gun gives added strength to the can.

The special 5-quart (4.7 litres) can and can shield band have been developed specifically for use with the Hypregun. We do not recommend using other containers or sealants.

How to get the most out of your Hypregun

The following suggestions will insure efficient and continued operation of the Gun.

If the air motor operates slowly because of low temperatures or other causes, introduce a light machine oil into the motor through the air supply. This will in many cases free a stalled air motor and permit it to operate more efficiently.

Remove any service sealant from the exposed portion of the pumping mechanism to reduce drag and prevent sealant from entering portions of the Gun not designed for this purpose.

Provide a means of removing moisture from the air supply to the Gun if used at sub-freezing temperatures. Use of air filters previously described should accomplish this.

Do not damage the thin walled cylinder surrounding the piston of the air motor. Any imperfection in this cylinder will reduce the effectiveness of the Gun and shorten its life.

Nordstrom Hypregun Sealant Injector Operation

The numbers in parentheses refer to Hypregun parts as illustrated on pages 20 and 21 of this catalog.

1. Attach Hypregun handle (71).

2. The air hose nipple (7) should be screwed into the pump body as shown in Section A-A.

3. The air coupler (17) will be found attached to the nipple (7) as shown in Section A-A. The air hose connector should be connected to the air supply hose.

4. Fasten the can shield (72) in place around the 5-quart (4.7 litres) sealant can below the reinforcing rib and with can seam covered by the retainer.

5. Slightly mound the sealant in the container so that the concave shaped follower plate (34, Fig. 1) can be brought down on the sealant with a minimum of entrapped air.

6. Raise the pump mechanism and sealant follower plate before inserting the sealant container into the Gun. By connecting the air supply hose to the air supply nipple (57, Fig. 2) in the base of the pump and opening the needle valve (8, Section A-A) the follower plate will rise sufficiently to clear the top of the sealant container.

7. Place the can with the shield in the operating position in the Hypregun.

8. Be sure the valve screw (63, Fig. 1) in the pump body is closed. Connect the air supply hose to the nipple (7, Section A-A). The needle valve should be opened slowly causing the air pressure to force the follower plate (34, Fig. 1) down to the sealant container. Care should be exercised that the sealant container is directly under the follower plate as the two are brought into contact. Once the follower plate has entered the top of the sealant container, open the needle valve 2-1/2 turns.

CAUTION - Keep fingers clear as the follower plate descends to the sealant container.

9. As shown, in Section B-B the vent valve (64) is opened fully, while the valve screw (63, Fig. 1) is opened two turns.

10. With the air motor throttle valve closed (3, Fig. 1), allow column between sealant container and vent valve (64, Section B-B) to fill with sealant with the pressure of the follower plate alone. After a steady flow of sealant is obtained at vent valve, start air motor and pump sealant through the vent valve until there are no air bubbles. If line pressure available is not sufficient to push sealant through the vent valve by follower plate pressure alone, open the air motor throttle valve before sealant comes out the vent valve.

11. After venting of the air is complete, close the valve screw (63, Fig. 1) and the vent valve (64, Section B-B) and read the pressure gauge (65, Fig. 1). If the pressure gauge does not read several thousand pounds sealant pressure, the air vent valve (64) and the valve screw (63) should be opened again to allow further venting. Repeat this operation as required. Occasionally, the Hypregun may become airbound during operation. If this occurs, repeat procedure for air venting outlined above.

12. With the relief valve (78, Section B-B) in the closed position, the button head coupler (69, Section B-B) should be slipped over the button head fitting on the valve to be injected. Open the relief valve (a small wrench may be required). Adjust air throttle valve (3, Fig. 1) to the air motor and observe sealant pressure on the gauge (65, Fig. 1) to insure proper sealant flow and pressure for plug valves.

13. After the valve is injected, close the relief valve (78, Section B-B). Remove button head coupler (69, Section B-B) from the fitting on the valve. This may be done without turning off air to the motor. By using the relief valve the user can attach the coupler or remove it from the fitting with the Gun retaining positive pressure.

14. When all sealant has been pumped out of the sealant container, shut off the air motor at the throttle valve (3, Fig. 1) and transfer the air supply hose to the air supply nipple (57, Fig. 2) on the base of the Gun. By opening the needle valve (8, Section A-A), the Gun mechanism is raised, lifting the sealant container off the Gun base. Close the needle valve.

15. To take the sealant container from the follower ring, simply unclip the can shield, then remove the container.

16. In changing from one service sealant to another, it is advisable to purge the Hypregun sealant system. To do this, pump new sealant through the hose with the coupler removed until the old sealant is completely replaced.

17. The pop-off safety valve (4, Section A-A) is adjusted at the factory to 125 psi (8.6 bar) cylinder pressure. Using the Gun at higher pressure can result in damage to the Gun.

18. The air motor is rated at 125 psi (8.6 bar). Do not use the Hypregun on air pressures above this figure. Lower air pressures are recommended where delivery capacity will be adequate. Do not leave air pressure on the Hypregun indefinitely when not in use.

Nordstrom Hypregun Sealant Injector Parts

Figure 1

Ref. No..	Part Name	Part No.	No. Reqd.
1	Air motor	1900038	1
2	Retainer	40864	1
3	Throttle valve	927325	1
5	Air tube	60022	1
11	O-ring [2]	934014	6
12	Yoke	40866	1
13	Hex head cap screw	910007	2
15	Lock washer	932525	2
16	Yoke retaining screw	40867	2
18	Base	60001	1
19	Cylinder	40869	2
20	Cylinder head	40870	2
21	Cylinder gasket [2]	40871	2
22	Piston rod	40872	2
23	Piston retaining screw	40873	2
24	O-ring [2]	934008	2
25	Piston retaining washer	40874	2
26	Piston packing [2]	40875	2
27	Retaining ring [2]	927338	4
28	O-ring [2]	934309	2
29	O-ring [2]	934015	2
34	Follower	40880	1
35	O-ring [2]	934068	1
36	Down tube assembly	60019	
53	Coupling	1900046	1
60	Yoke retaining washer	40890	2
62	Piston retaining washer for O-ring	41121	2
63	Valve screw [2]	1900051	1
65	Pressure gauge	1900052	1
72	Can shield	60003	1
73	Nameplate	60004	1
75	Axle [5]	1900018	2
79	Wheel [5]	60011	2
80	1/2" medium steel lock washer [5]	932529	2
81	3/8" - 16 x 1/2" set screw [3]	1900034	2

Repair Kits
(See Price Schedule for component parts.)

[1] Major Repair Kit - 1900060
[2] Minor Repair Kit - 1900059 (included in minor repair kit)
[3] Down Tube Kit - 1900015 (included in major repair kit)
[4] Kick Stand Kit - 1900162
[5] Wheel Kit - 1900161 (Single wheel only)
[6] Button Head Coupler Repair Kit - 47524 (included in major repair kit - components not listed in illustrations)

Piston packing 40891 (for use in Cadmium Plated Hypregun Bodies, serial number 4999 and lower) is included with Down Tube Kit.

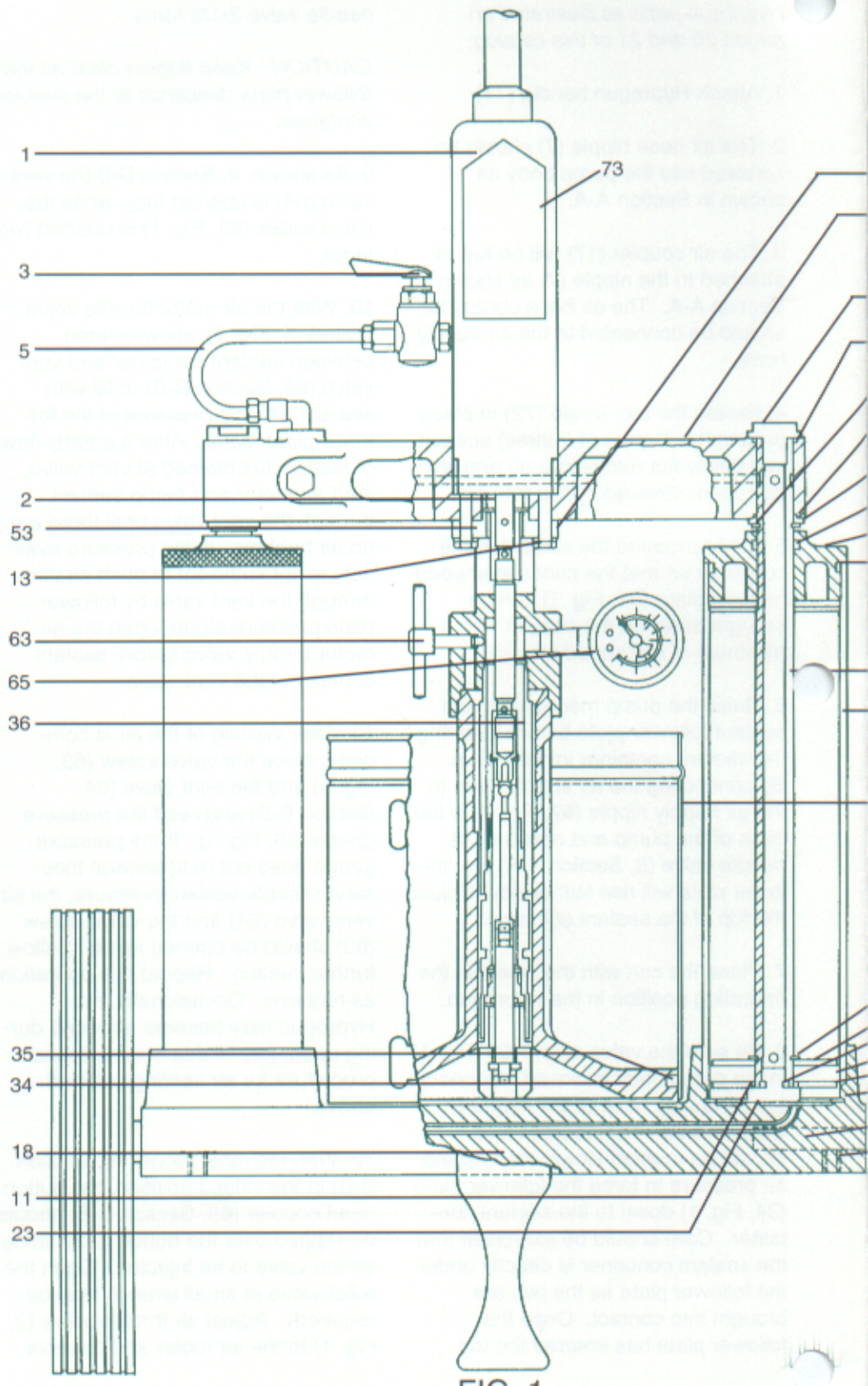


FIG. 1

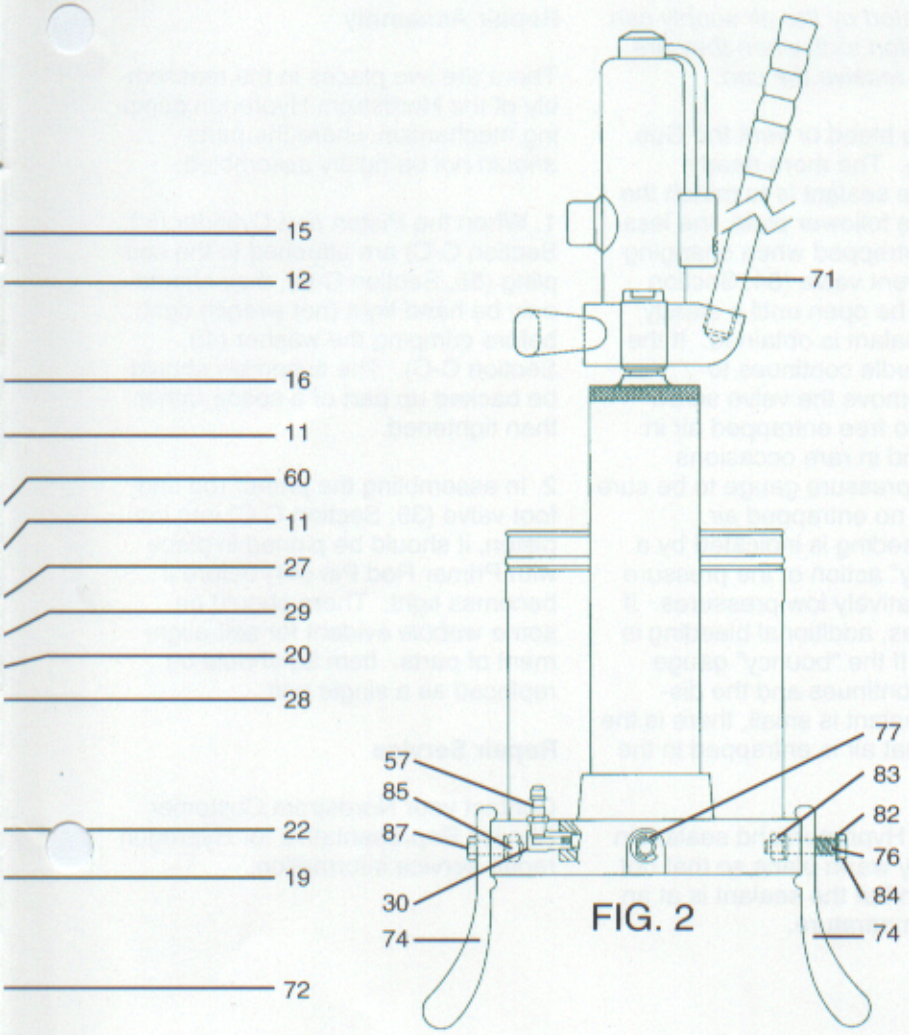


FIG. 2

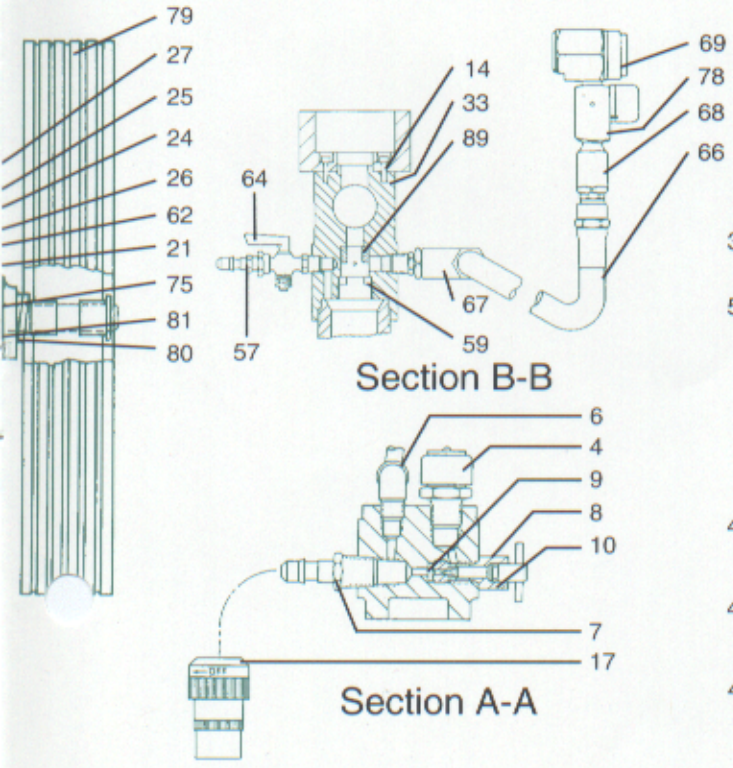


Figure 2

Ref. No..	Part Name	Part No.	No. Reqd.
30	Restrictor ell assembly	40876	1
57	Nipple	927309	2
71	Handle	1900069	1
74	Kickstand [6]	60005	2
76	Spring [4]	60008	1
77	Retaining ring [3]	904672	2
82	5/16" steel washer [4]	932652	1
83	3/8" medium steel lock washer [4]	932527	2
84	3/8" x 2" steel hex head cap screw [4]	902278	1
85	3/8" - 16 steel nut [3]	900085	1
87	5/16" - 18 x 1-1/4" steel hex head cap screw [4]	909208	1

Section A-A

Ref. No..	Part Name	Part No.	No. Reqd.
4	Relief valve	1900008	1
6	Male connector	927417	1
7	Nipple	927310	1
8	Ram needle valve [1][2]	1900039	1
9	O-ring [1][2]	934003	1
10	Fiber gasket [1][2]	927330	1
17	Air coupler	927308	1

Section B-B

Ref. No..	Part Name	Part No.	No. Reqd.
14	Socket hd. cap screw	939005	4
33	Pump body w/packing	1900019	1
57	Nipple	927309	2
59	Gasket [1][3]	1900050	1
64	Relief valve	927348	1
66	Hose	1900053	1
67	Swivel - L type	927343	1
68	Swivel - straight type	927437	1
69	Button head coupler	64584	1
78	Shutoff & relief valve	60010	1
89	Piston packing [1][2][3]	1900064	1

Section C-C

Ref. No..	Part Name	Part No.	No. Reqd.
37	Roll pin [3]	927336	3
38	Air motor piston rod	1900020	1
39	Primer rod & foot valve assembly [1][2]	1900029	1
40	Tube extension	40879	1
41	Foot valve stop washer [1][3]	40886	1
42	Steel ball [1][3]	1900040	1
43	Hex nut [1][3]	1900041	1
44	Primer rod pin [1][3]	40888	1
45	Cotter pin [1][3]	931000	1
46	Steel washer [1][3]	1900042	1
47	Valve seat [1][3]	1900030	1
48	Gasket [1][3]	1900043	1
49	Lock washer [1][3]	1900044	1
50	Extension	60020	1
51	Primer body	1900045	1
52	Piston & cylinder [1][3]	60021	
54	Spring [1][3]	1900047	1
55	Coupling	41135	1
56	Piston plug [1][3]	1900048	1
58	Gasket [1][3]	1900049	2

Nordstrom Hypregun Sealant Injector Maintenance

1. Handle the Nordstrom Hypregun with care. Prevent any bending or denting of the pistons or operating parts.

2. Use a clean, dry air source. If air is wet, use a filter on the air line to take out water. Install an oiler in the air supply line using light oil in summer, methanol in winter.

3. *Though the maximum inlet air pressure is listed as 150 psi (10.3 bar) on the Hypregun, do not use over 125 psi (8.6 bar) air pressure.* The gun works best between 100 psi (6.9 bar) and 125 psi (8.6 bar).

4. Always use the can shield and 5-quart (4.7 litres) cans that are crimped and welded. The welded seam in the can should be placed opposite the opening of the band. If the open part of the band is over the seam in the can, the can seam can separate from pressure created by the piston.

5. *CAUTION - When inserting a new 5-quart (4.7 litres) can of sealant, be extremely careful. See step 7 on page 19 for detailed instructions. The force generated by the air supply can bend the piston rods when they are extended to receive the can.*

6. Be sure to bleed or vent the Gun before using. The more nearly mounded the sealant is to match the interior of the follower plate, the less air will be entrapped when changing cans. The vent valve (64, Section B-B) should be open until a steady stream of sealant is obtained. If the pressure needle continues to "bounce", remove the valve screw (63, Fig. 1) to free entrapped air in that area, and in rare occasions remove the pressure gauge to be sure that there is no entrapped air. Improper bleeding is indicated by a very "bouncy" action of the pressure gauge at relatively low pressures. If this continues, additional bleeding is necessary. If the "bouncy" gauge conditions continues and the discharge of sealant is small, there is the possibility that air is entrapped in the hose itself.

7. Store the Hypregun and sealant in a reasonably warm place so that not only the Gun but the sealant is at an operable temperature.

Repair Assembly

There are two places in the reassembly of the Nordstrom Hypregun pumping mechanism where the parts *should not* be rigidly assembled:

1. When the Piston and Cylinder (52, Section C-C) are attached to the coupling (55, Section C-C), they should only be hand tight (not wrench tight) before crimping the washer (49, Section C-C). The assembly should be backed up part of a space rather than tightened.

2. In assembling the primer rod and foot valve (39, Section C-C) into the piston, it should be pinned in place with Primer Rod Pin (44) before it becomes tight. There should be some *wobble* evident for self-alignment of parts. Item 39 should be replaced as a single unit.

Repair Service

Contact your Nordstrom Customer Service Representative for Hypregun repair service information.

Sealant Delivery vs. Temperature & Loading Pressure to Gun

Hypregun sealant delivery is affected by the loading pressure, the ambient temperature, and type of sealant. The graph has two bands which represent the variation in sealant delivery that may be expected from the range of Nordstrom sealants. More viscous sealant will fall near the bottom of the band.

This information was developed under the most rigorous conditions. For example, the complete test apparatus was soaked at the test temperature for 16 hours and test results represent only minimum deliveries.

It is possible to pump sealant at ambient temperatures much lower than those represented by the curves by using the practical approach of keeping the Gun and sealant in a warm place and only exposing them to the cold conditions during valve injection.

Typical Curve