

INTRODUCTION

Injection fittings are generally used within dosing systems and are the means of introducing chemicals into main pipeline streams. Prochem manufactures a wide range of both withdrawable and fixed fittings. Fixed injection fittings are installed semi-permanently and can only be removed with the main de-pressurised whereas withdrawable injection fittings (W.I.F) offer much more versatility being capable of withdrawal whilst the main is under pressure to allow for maintenance or cleaning.

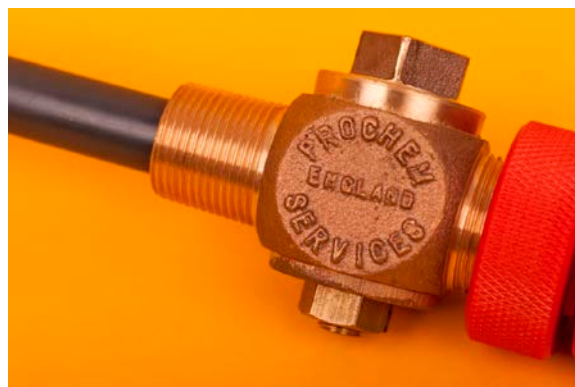


DESIGN

All Prochem W.I.F.'s are designed for maximum ease of use and incorporate anti blow-out stops to prevent inadvertent complete expulsion of the lance during withdrawal. The sealing gland uses a 'live' loaded 'O' ring system to provide both adequate sealing to design pressures and also a good degree of friction control over the lance against line expulsion forces during withdrawal. The lances can incorporate NRV's to prevent backflow and are equipped with a diffuser to accelerate dispersion. Different designs of diffuser are available for handling difficult chemicals which tend to build up on the lance on contact with the main flow. The construction is such that a wide variety of materials can be used and combinations of both plastics and metals are quite usual. More information on these options is given below.

SIZING & MOUNTING

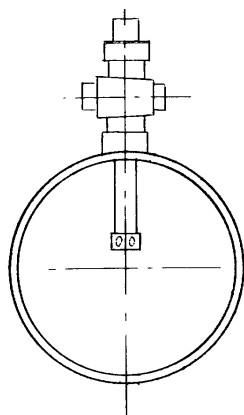
The sizing of the injection fitting is governed by the flow rate of the injected chemical (dosage) as this dictates the lance diameter. The lance diameter then dictates the minimum size of pipeline connection that will accommodate that lance - see below. The sizing is given as the lance diameter followed by the mounting connection. i.e. 1/2" x 1" Type B indicates a 1/2" lance on a type B fitting having a 1" mains tapping. Prochem injection fittings have either screwed or flanged connections and although operating in any position the preferred installation position is vertically down as this is most often more convenient when removing the lance. Dosage connections are normally screwed, flanged, or, for maximum ease of use, quick release hose connectors.



LANCE DIAMETER	<12.7mm	<18.0mm	<22.0mm	<30.0mm	<34.0mm	<49.0mm
MIN. MAIN CONN.	1/2"	3/4"	1"	1 1/4"	1 1/2"	2" - 2 1/2"

TYPES AVAILABLE

Prochem manufactures 5 basic types of injection fitting for specific areas of application. Variations can be readily carried out to customise the units more closely to site or operational requirements.



TYPE 'A'

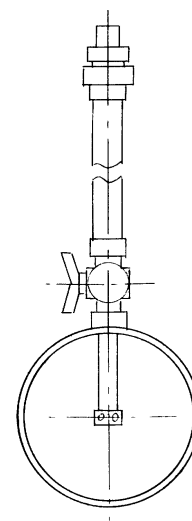
This is the simplest type of W.I.F. which utilises a standard gunmetal or 316 stainless steel 1" BSPM corporation cock as an isolation valve. Used for general dosing duties in water & effluent treatment applications.

- SIZES:** Limited to 1/2" N.B. lance through 1" BSP corporation cock.
INSERTION: Maximum length 150mm past C.C. without support.
PRESSURES: Main line approx. 7 BarG with up to 10 BarG dosage.
FEATURES: Fitted with single 'O' ring gland, diffuser, and anti blow-out stop.
NRV: Either duck-bill or sprung ball type available.
MATERIALS: Plastics and stainless steel.

TYPE 'B'

This is the most frequently used type of W.I.F. in full scale major water treatment plants and chemical process injection duties. It provides centre-line insertion over a wide range of mains sizes and dosage rates and utilises either plastic or metal ball valves for isolation. Once the isolation valve is closed the entire W.I.F. assembly (less valve) can be completely removed for servicing or maintenance.

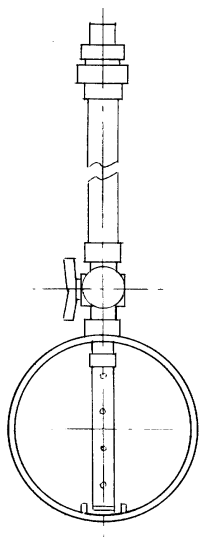
- SIZES:** Lance diameter up to 3" nb with no limit on main line diameter.
INSERTION: Generally fitted to centre line on all mains sizes.
PRESSURES: Main line pressure limited by expulsion forces on lance if restraints not fitted - approx. 5 - 7 BarG. with 10 BarG. dosage.
FEATURES: Fitted with double 'O' ring gland, diffuser, and anti blow out stop.
NRV: Either duck-bill or sprung ball on larger sizes.
MATERIALS: Plastics, stainless steel, and exotic metals.



TYPE 'C'

The type 'C' unit is almost identical to type 'B' except that the lance drillings extend fully across the main thus providing a better dispersion on larger diameter mains. These W.I.F.'s are frequently used upstream of static mixers to provide homogenous dispersions in relatively short main pipe lengths. Type 'C' units are also often used as sampling lances to monitor water quality post treatment.

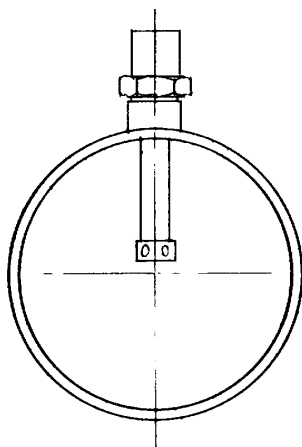
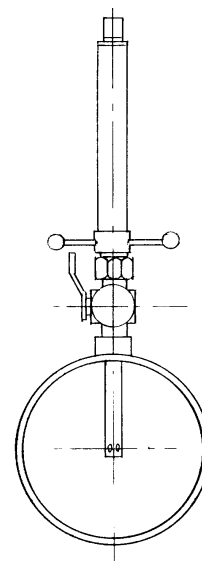
- SIZES:** Lance diameter up to 3" with no limit on main line diameter.
INSERTION: Full width normally with support pocket in main.
PRESSURES: Main line pressure limited by expulsion forces on lance if restraints not fitted - approx. 5 - 7 BarG. with 10 BarG. dosage.
FEATURES: Fitted with double 'O' ring gland and anti blow-out stop.
NRV: Either duck-bill type or sprung ball on larger sizes.
MATERIALS: Plastics, stainless steel, and exotic metals.



TYPE 'D' HP

The type 'D' W.I.F. is used almost exclusively on applications having high mains pressures such as H.P. hypochlorite injection in the water industry or boiler feed water chemical injection in the processing and power industries. The units are of all metal construction and utilize a double start jacking screw to withstand the high expulsion forces present during insertion or withdrawal.

- SIZES:** Lance diameter to 1" O.D. with no limit on mainline diameter.
INSERTION: Generally to centre line on all mains sizes - others available.
PRESSURES: Standard design up to 70 BarG. - others available.
FEATURES: Fitted with double 'O' ring gland, diffuser, and jacking screw.
NRV: Normally either sprung ball or plunger type.
MATERIALS: Stainless steel and exotic metals.



TYPE 'X' (FIXED)

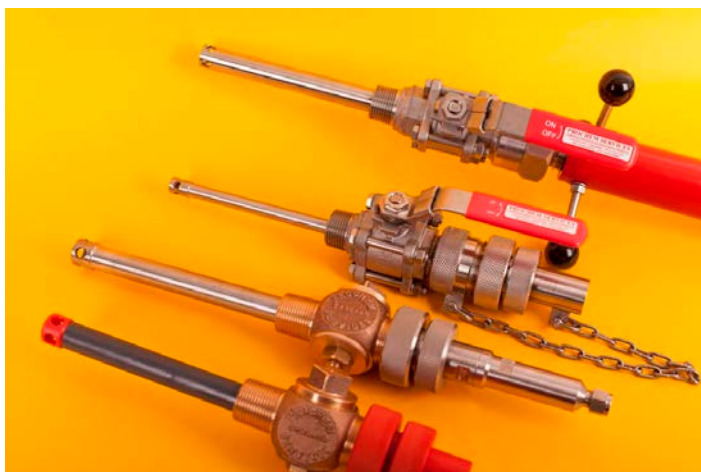
This is the most simple type of injection fitting which is used in basic systems where under-pressure removal is not critical such as cooling tower or A.C. lines. Also used as fixed sampling units when full width design.

- SIZES:** Lance diameter to 3" nb with no limit on main line diameter.
INSERTION: Normally centre line but can be made to suit site needs.
PRESSURES: Up to 16 BarG. plastic and 200 BarG. metal.
FEATURES: Diffuser fitted. (not if full width)
NRV: Either duck-bill or sprung ball/plunger on HP versions.
MATERIALS: Plastics, stainless steel, and exotic metals.

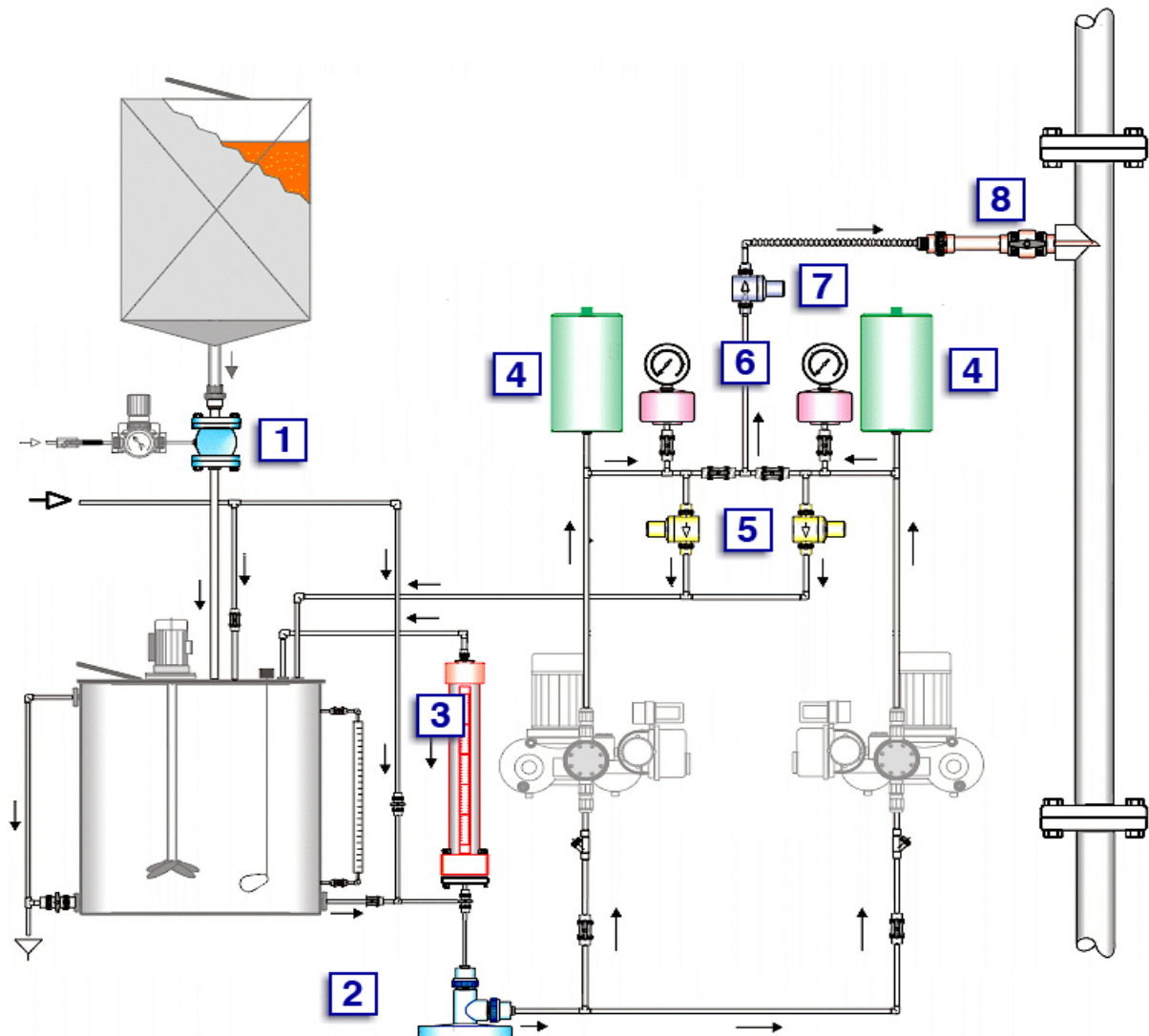
QUOTING INFORMATION.

In order to select and quote for a suitable injection fitting the following information is required:

- 1) Dosage rate, pressure, and composition.
- 2) Main line size, pressure, and preferred tapping size & type (or existing tapping details).
- 3) Type of injection fitting required, insertion distance, if NRV required, and preferred dosage connection.



DOSING SYSTEM SCHEMATIC



- 1) Pinch Valve. 2) Suction Demand Valve. 3) Calipot 4) Pulstion Damper. 5) Pressure Relief Valve
6) Diaphragm Seal. 7) Pressure Loading Valve. 8) **Withdrawable Injection Lance.**