PVC VALVE REFERENCE MATERIAL

Key to Abbreviations

ABS	Acrylonitrile Butadiene Styrene
CPVC	Chlorinated Poly Vinyl Chloride
CR (Neoprene)	Chloroprene Rubber
EPDM	Ethylene Propylene Rubber
FPM (Viton)	Fluorine Rubber
GF	Glass Fiber
MP	Mineral Powder
NBR	Nitrile Butadiene Rubber
NR	Natural Rubber
NSF	National Sanitation Foundation
PC	Polycarbonate
PE	Polyethylene
PP	Polypropylene
PTFE	Polytetrafluoroethylene
PVC	Poly Vinyl Chloride
PVDF	Poly Vinylidene Fluoride
SBR	Styrene Butadiene Rubber
SUS	Steel Special Use Stainless
UPVC	Unplasticized Poly Vinyl Chloride
VP	Valve Plastic

Chemical Resistance of Material

Chemicals	Concentration (%)	Temperature (oC)	Material						
			PVC	CPVC	PP	PVDF	PTFE	EPDM	FPM
Sodium chloride	Saturated Water Solution	40	◎	◎	◎	◎	◎	◎	◎
		60	◎	◎	◎	◎	◎	◎	◎
		80		◎	◎	◎	◎	◎	◎
Hydrochloric acid	35	40	◎	◎	◎	◎	◎	◎	◎
		60	○	◎	◎	◎	◎	◎	◎
		80		○	○	◎	○	○	○
Caustic soda	50	40	◎	◎	◎	○	◎	◎	×
		60	◎	◎	◎	△	◎	○	
		80		◎	○	×	◎	△	
Chromic acid	20	40	◎	◎	×	◎	◎	○	◎
		60	○	◎		◎	◎	×	○
		80		○		◎	◎		○
Acetic acid	50	40	○	○	○	◎	◎	○	○
		60	△	△	△	◎	◎		○
		80		×		○	◎		△
Soda hypochlorite	13	40	◎	◎	△	◎	◎	×	○
		60	○	○		○	◎		
		80				×	◎		
Nitric acid	50	40	○	○	◎	◎	◎	×	○
		60	○	△	△	◎	◎		△
		80	×	△	×	○	◎		×
Toluene		40	×	×	△	◎	◎	×	
		60			×	○	◎		
		80				△	◎		
Hydrogen sulfide	Aqueous Solution	40	◎	◎	◎	◎	◎	◎	◎
		60	◎	◎	◎	◎	◎	◎	○
		80		◎	◎	◎	◎	◎	
Sulfuric acid	90	40	○	◎	◎	◎	◎	○	◎
		60	○	○	○	◎	◎	△	◎
		80		△	○	◎	◎	×	○

◎ Not affected △ Slightly affected but serviceable
○ Negligibly affected × Not serviceable

Reference Range of Temperature

Material	Abbreviation	General chemical resistance	Max. Service temperature	
			Continuous	Short hours
Rigid Polyvinyl Chloride (Rigid PVC)	PVC	Resistant against most of acids, alkalis and salts of high to low concentration level. However, the material tends to be attacked by some chemicals- such as aromatic hydrocarbon, ketones, esters and chlorinated hydrocarbon.	5°C ~ 50°C	60°C
Heat-resistant Rigid Polyvinyl Chloride (Heat-resistant PVC)	CPVC	Resistance properties are nearly the same as rigid PVC. Having a high heat-resistance, this is serviceable in the temperature range higher than the former's.	0°C ~ 90°C	100°C
Polypropylene	PP	Not stable against strong acids such as concentrated nitric acid and chrome acid mixture, but this is resistant against other acids, alkalis and salts. Resistant against many organic solvents (specifically the solvent with active group), but tends to be attacked by chlorine-containing solvents, aliphatic series and aromatic hydrocarbon.	0°C ~ 90°C	100°C
Vinylidene Fluoride	PVDF	Highly resistant up to a high temperature range against ordinary acids & salts and organic chemicals, but broken down by fuming sulfuric acid and strong basic amines. Also, the use conditions with ketone, amide, ester, organic solvent ad alkali are limited.	-20°C ~ 150°C	150°C
Ethylene Propylene Rubber	EPDM	Provided with an excellent ozone-resistance and chemical-resistance. Comparatively resistant against ketone and ester, but less resistant against aromatic & alphatic families, and gasoline and oil.	-10°C ~ 130°C	150°C
Polytetra-flouroethylene (Trade name, Teflon ®)	PTFE	Resistant against ordinary acid and alkali, and not dissolved nor changed by ordinary solvent medium. Attacked by melted alkali metal and in high temperature, by fluorine and chlorine trifluoride.	-20°C ~ 250°C	300°C
Fluororubber (Trade name, Viton ®)	FPM	Most chemical-resistant among all rubber families. Has a good resistance against strong oxidizing acid such as concentrated sulfuric acid and nitric acid; resistant against aliphatic and aromatic families and oils, but attacked by ketones, ammonia anhydride, concentrated caustic soda, etc.	-5°C ~ 150°C	200°C

VALVE INSTALLATION INFORMATION

RECOMMENDATIONS FOR INSTALLERS AND USERS:

Plastic piping systems should be engineered, installed, operated and maintained in accordance with accepted standards and procedures for plastic piping systems. **PRIOR TO ASSEMBLY**, all piping components should be **PRE-FIT** to assure compatibility of the mating components. **DO NOT** use any components which do not fit or mate up properly; contact the appropriate component manufacturer for assistance.

It is absolutely necessary that all design, installation, operation and maintenance personnel be trained in the proper handling and installation requirements and precautions of plastic piping systems before starting. Incorrect procedures may produce unsound connections. Care must be taken to prevent the solvent cement or primer from coming in contact with internal components, e.g., ball, cup, wedge, teflon seats, etc. Read and follow all safety precautions as recommended by solvent cement and primer manufacturer. Dura Plastic Products, Inc. recommends the use of a quality grade thread sealant. Choice of either teflon tape, paste or other pipe joint compounds is at the discretion of the installer. The manufacturer's literature for these products should be reviewed for proper selection and application procedures. **WARNING: Some pipe joint compounds or Teflon pastes may contain substances that could cause stress cracking to plastics.**

When making up threaded connections to the valve, care must be taken to avoid overtightening threaded connections which may cause damage to both pipe and fittings. Generally, **one to two turns beyond finger tight** is all that is required to make a sound plastic threaded connection. **WARNING: An excessive buildup of Teflon tape can cause an over-stressed condition.**

--NOTE--

When installing a threaded end connector, the use of two strap wrenches is suggested to keep the end connector from backing out of the threads, thus breaking the seal. It is important that the union nuts are not used to put the system together. Pipe must be cut and installed in such a manner as to avoid all stress loads associated with bending, pulling or shifting. The system should be designed and installed so as to not pull on the valve in any direction.

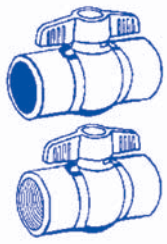
BEFORE THE VALVE IS CYCLED, all dirt, sand, grit or other material should be flushed from the system. This is to prevent scarring of internal components, e.g., ball, cup, wedge, teflon seats, etc.

Dura Plastic Products, Inc. DOES NOT RECOMMEND the use of thermoplastic piping products for systems TO TRANSPORT OR STORE COMPRESSED AIR OR GASES, or the TESTING of thermoplastic piping systems with COMPRESSED AIR OR GASES IN ABOVE AND BELOW GROUND LOCATIONS. The use of our product in exposed, compressed air or gas systems automatically voids our warranty for such products, and its use against our recommendation is entirely the responsibility and liability of the installer. Dura Plastics will not accept responsibility for damage or impairment of its products or other consequential or incidental damages caused by misapplication, incorrect assembly, and/or exposure to harmful substances or conditions.

DO NOT TEST OR USE WITH COMPRESSED AIR OR GAS.

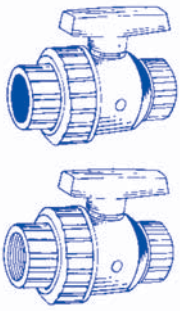
VALVE INSTALLATION INFORMATION
CONTINUED

COMPACT BALL VALVE



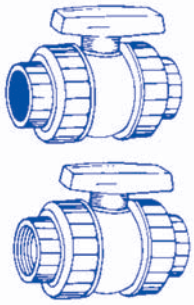
Before installation, make sure the valve is in the “open” position and all cemented or threaded surfaces are clean and dry. Install the valve following established solvent cementing or threading procedures. A suitable support should be placed under the valve body to hold the weight of the valve. When solvent cementing, be sure to adhere to proper cure times, and wipe off any excess cement that might have accumulated at joint bead.

SINGLE UNION BALL VALVE



Before installation, make sure the valve is in the “open” position and all cemented or threaded surfaces are clean and dry. Install the valve following established solvent cementing or threading procedures. A suitable support should be placed under the valve body to hold the weight of the valve. When solvent cementing, be sure to adhere to proper cure times, and wipe off any excess cement that might have accumulated at joint bead. **When the system is being pressure tested, if leaks are found at the valve in an open or closed position, a 1/4 turn on the union nut with a strap wrench can be added to stop the leak.**

TRUE UNION BALL VALVE



Remove the union nuts and end connectors from the valve body. Slide one union nut over the end of the pipe on which the valve is being installed. Solvent cement or thread one end connector to this same pipe. After making sure that the end connector is at a square 90 degree angle to the pipe, open the valve completely and attach the valve body to the end connector via the union nut.
Tighten this union nut **“handtight”** only. A mild soap and water solution, applied on the body threads, is suggested to help this procedure. A suitable support should be placed under the valve body at this time to hold the weight of the valve. Repeat these procedures to attach the opposite side of the valve making sure that the end connector makes contact with the face of the valve body. **When the system is being pressure tested, if leaks are found at the valve in an open or closed position, a 1/4 turn on the union nut with a strap wrench can be added to stop the leak.**

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