LESSO® America



PVC Schedule 80 Fittings Technical Manual

LESSO AMERICA, INC.









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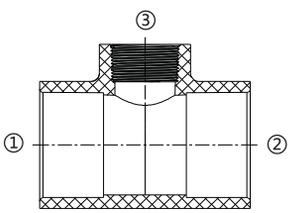
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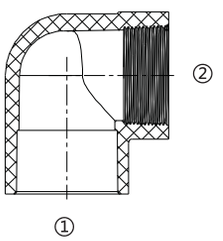
Each product column header label identifies the following product particulars:
Part Number: the number used to order the part.
Size: nominal diameter of pipe with which the fitting is to be used.
NOTE: Fittings may be same size (only one size designation) or reducing (multiple sizes designated).
Standard Pack (Std Pk) the quantity of parts packaged in an individual box or bag.
Master Carton (Mstr Ctn) the total quantity of parts contained in individual boxes or bags which are packaged together.

Methods Of Designating Inlets Of Fittings

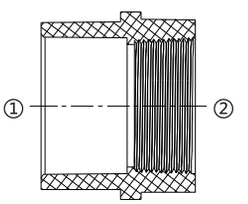
PVC SCHEDULE 80 FITTINGS



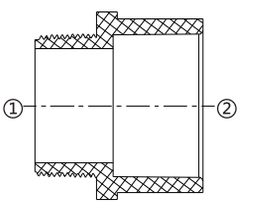
TEE



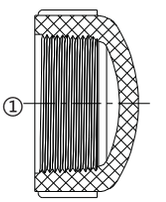
90° Ell



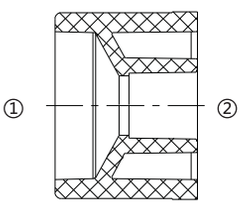
Female Adapter



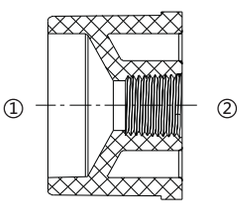
Male Adapter



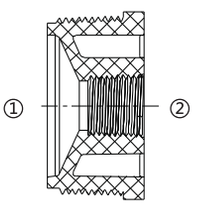
Cap



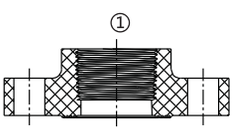
Reducing Bushing Flush Style



Reducing Bushing Flush Style



Reducing T.T. Bushing Flush Style



Floor Flange

Introduction

The booklet presents technical informations referential to design, storage and installation of LESSO America PVC fittings.

The booklet just set out a referential advice or method of installation based on LESSO America's experiences and other publications such as Handbook of PVC Pipe Design and Construction (Issued by Uni–bell PVC Pipe Association).

Readers must decided by yourself whether any advice or recommended method or data should be taken or not. It is not our intention that the guide should assume the responsibility unless the engineer so directs the installer.

No representations, guarantees of warranties of any kind are made as to its accuracy, suitability for particular applications or results to be obtained therefrom. For verification of technical or additional information not contained herein, please contact LESSO America customer service departments.

Note: LESSO America PVC fittings are not for distribution or transportation of compressed air or gas, as well as not for test.

Referential Standards (Schedule 80)

NSF/NASI 61 Drinking Water System Components-Health Effects

NSF/NASI 14 Plastics Piping System Components and Related Materials

ASTM D 1784 Standard Specification for Rigid Poly (Viny Chloride) (PVC) Compounds and Chlorinated Poly (Viny Chloride) (CPVC) Compounds

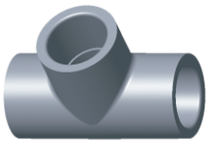
ASTM D 2467 Standard Specification for Rigid Poly (Viny Chloride) (PVC) Plastic Pipe Fittings, Schedule 80

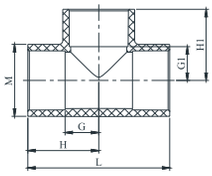
ASTM F 1970 Standard Specification for Special Engineered Fittings, Appurtenances or Valves for use in Poly (Viny Chloride) (PVC) or Chlorinated Poly (Viny Chloride) (CPVC) Systems

CSA B137.3 Rigid Polyvinylchloride (PVC) Pipe and Fittings for Pressure Applications.

PVC Schedule 80 Fittings

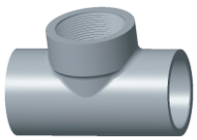
Tee
(SOC × SOC× SOC)

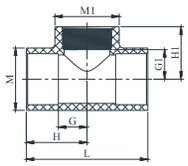




Part Number	Size(in)	G	G1	H	H1	L	M	Weight (Lbs)
801-002	1/4	3/8	3/8	1	1	2	13/16	0.0419
801-005	1/2	9/16	9/16	1-7/16	1-7/16	2-7/8	1-1/4	0.1279
801-007	3/4	21/32	21/32	1-21/32	1-21/32	3-5/16	1-15/32	0.1808
801-010	1	3/16	13/16	1-15/16	1-15/16	3-27/32	1-25/32	0.2976
801-012	1-1/4	31/32	31/32	2-1/4	2-1/4	4-15/32	2-5/32	0.4409
801-015	1-1/2	1-3/32	1-3/32	2-15/32	2-15/32	4-31/32	2-3/8	0.5335
801-020	2	1-11/32	1-11/32	2-27/32	2-27/32	5-23/32	2-7/8	0.8047
801-025	2-1/2	1-21/32	1-21/32	3-13/32	3-13/32	6-13/16	3-15/32	1.3741
801-030	3	1-31/32	1-31/32	3-27/32	3-27/32	7-23/32	4-5/32	2.0128
801-040	4	2-1/2	2-1/2	4-3/4	4-3/4	9-17/32	5-1/4	3.5078
801-060	6	3-21/32	3-21/32	6-21/32	6-21/32	13-5/16	7-19/32	9.4114
801-080	8	4-11/16	4-11/16	8-11/16	8-11/16	17-13/32	9-23/32	19.1916

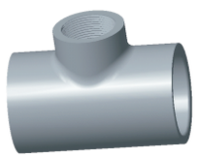
Tee
(SOC × SOC × FIPT)

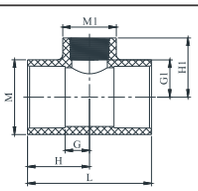




Part Number	Size(in)	G	G1	H	H1	L	M	M1	Weight (Lbs)
802-005	1/2	17/32	9/16	1-13/32	1-5/16	2-27/32	1-9/32	1-9/32	0.1411
802-007	3/4	5/8	21/32	1-5/8	1-15/32	3-9/32	1-1/2	1-1/2	0.1940
802-010	1	25/32	13/16	1-29/32	1-13/16	3-13/16	1-3/4	1-13/16	0.2901
802-015	1-1/2	31/32	1-1/4	2-3/8	2-9/32	4-23/32	2-3/8	2-1/2	0.5545
802-020	2	1-11/32	1-3/8	2-27/32	2-7/16	5-21/32	2-29/32	3	0.8519

Reducing Tee
(SOC × SOC × FIPT)



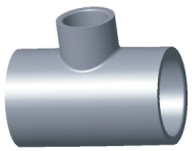


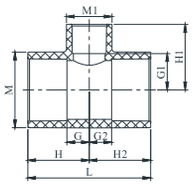
Part Number	Size(in)	G	G1	H	H1	L	M	M1	Weight (Lbs)
802-251	2×2×1-1/2	1-9/32	1-1/2	2-25/32	2-17/32	5-19/32	2-29/32	2-1/2	0.8228
802-291	2-1/2×2-1/2×1-1/2	1-5/32	1-23/32	2-29/32	2-3/4	5-25/32	3-15/32	2-1/2	1.0816

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PVC Schedule 80 Fittings

Reducing Tee
(SOC × SOC × SOC)



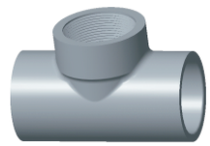


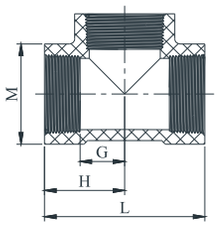
Part Number	Size(in)	G	G1	G2	H	H1	H2	L	M	M1	Weight (Lbs)
801-101	3/4×3/4×1/2	9/16	11/16	9/16	1-9/16	1-9/16	1-9/16	3-1/8	1-15/32	1-1/4	0.1631
801-130	1×1×1/2	9/16	13/16	9/16	1-11/16	1-23/32	1-11/16	3-11/32	1-3/4	1-3/16	0.2138
801-131	1×1×3/4	21/32	13/16	21/32	1-25/32	1-13/16	1-25/32	3-19/32	1-3/4	1-7/16	0.2385
801-168	1-1/4×1-1/4×1	25/32	31/32	25/32	2-1/32	2-3/32	2-1/32	4-3/32	2-1/8	1-3/4	0.3556
801-210	1-1/2×1-1/2×3/4	21/32	1-1/32	21/32	2-1/16	2-1/32	2-1/16	4-3/32	2-3/8	1-7/16	0.3940
801-211	1-1/2×1-1/2×1	25/32	1-5/32	25/32	2-5/32	2-9/32	2-5/32	4-11/32	2-3/8	1-3/4	0.4436
801-247	2×2×1/2	19/32	1-3/8	19/32	2-3/32	2-1/4	2-3/32	4-7/32	2-29/32	1-3/16	0.5357
801-248	2×2×3/4	11/16	1-3/8	11/16	2-3/16	2-3/8	2-3/16	4-3/8	2-29/32	1-7/16	0.5668
801-249	2×2×1	7/8	1-13/32	7/8	2-3/8	2-17/32	2-3/8	4-23/32	2-29/32	1-3/4	0.6323
801-250	2×2×1-1/4	31/32	1-11/32	31/32	2-15/32	2-19/32	2-15/32	4-31/32	2-29/32	2-1/8	0.6731
801-251	2×2×1-1/2	1-5/32	1-11/32	1-5/32	2-21/32	2-3/4	2-21/32	5-5/16	2-29/32	2-3/8	0.7646
801-290	2-1/2×2-1/2×1-1/4	1-1/32	1-21/32	1-1/32	2-25/32	2-29/32	2-25/32	5-9/16	3-15/32	2-1/8	0.9811
801-291	2-1/2×2-1/2×1-1/2	1-7/32	1-25/32	1-7/32	2-31/32	3-5/32	2-31/32	5-15/16	3-15/32	2-3/8	1.0895
801-292	2-1/2×2-1/2×2	1-7/16	1-3/4	1-7/16	3-3/16	3-1/4	3-3/16	6-3/8	3-15/32	2-29/32	1.2150
801-337	3×3×1-1/2	1-5/32	2-1/16	1-5/32	3-1/32	3-7/16	3-1/32	6-1/16	4-5/32	2-3/8	1.4021
801-338	3×3×2	1-15/32	1-31/32	1-15/32	3-11/32	3-15/32	3-11/32	6-11/16	4-5/32	2-29/32	1.5741
801-420	4×4×2	1-13/32	2-17/32	1-13/32	3-21/32	4-1/32	3-21/32	7-11/32	5-1/4	2-29/32	2.3693
801-422	4×4×3	2-5/32	2-23/32	2-5/32	4-13/32	4-19/32	4-13/32	8-13/16	5-1/4	4-5/32	3.0748
801-530	6×6×3	2-1/16	3-5/8	2-1/16	5-1/16	5-1/2	5-1/16	10-1/8	7-19/32	4-5/16	6.4296
801-532	6×6×4	2-5/8	3-19/32	2-5/8	5-5/8	5-27/32	5-5/8	11-7/32	7-19/32	5-1/4	
801-585	8×8×6	3-7/8	4-27/32	3-7/8	7-7/8	7-27/32	7-7/8	15-3/4	9-23/32	7-19/32	

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PVC Schedule 80 Fittings

Tee (FIPT× FIPT× FIPT)

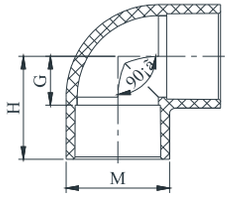




Part Number	Size(in)	G	H	L	M	Weight (Lbs)
805-002	1/4	13/32	31/32	1-31/32	27/32	0.0498
805-003	3/8	15/32	1-1/16	2-1/8	1	0.0670
805-005	1/2	1/2	1-1/4	2-1/2	1-9/32	0.1235
805-007	3/4	5/8	1-13/32	2-27/32	1-1/2	0.1764
805-010	1	3/4	1-3/4	3-15/32	1-13/16	0.2976
805-012	1-1/4	15/16	1-31/32	3-29/32	2-7/32	0.4489
805-015	1-1/2	1-3/32	2-1/8	4-1/4	2-1/2	0.5891
805-020	2	1-11/32	2-13/32	4-13/16	3	0.8314
805-025	2-1/2	1-11/16	3-5/32	6-5/16	3-19/32	1.5686
805-030	3	2-1/16	3-5/8	7-1/4	4-5/16	2.3713
805-040	4	2-19/32	4-1/4	8-1/2	5-7/16	

90°Ell (SOC × SOC)





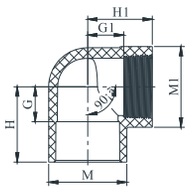
Part Number	Size(in)	G	H	M	Weight (Lbs)
806-002	1/4	3/8	1	13/16	0.0311
806-003	3/8	13/32	1-5/32	1	0.0487
806-005	1/2	9/16	1-7/16	1-3/16	0.0926
806-007	3/4	21/32	1-21/32	1-7/16	0.1279
806-010	1	13/16	1-15/16	1-3/4	0.2050
806-012	1-1/4	31/32	2-1/4	2-1/8	0.3307
806-015	1-1/2	1-3/32	2-15/32	2-3/8	0.3858
806-020	2	1-11/32	2-27/32	2-7/8	0.5975
806-025	2-1/2	1-21/32	3-13/32	3-15/32	1.0604
806-030	3	1-31/32	3-27/32	4-5/32	1.5234
806-040	4	2-1/2	4-3/4	5-1/4	2.7351
806-060	6	3-21/32	6-21/32	7-19/32	7.1961
806-080	8	4-11/16	8-11/16	9-23/32	14.0060

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PVC Schedule 80 Fittings

90°Ell (SOC × FIPT)

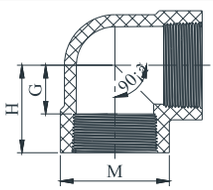




Part Number	Size(in)	G	G1	H	H1	M	M1	Weight (Lbs)
807-005	1/2	1/2	19/32	1-3/8	1-5/16	1-3/16	1-9/32	0.0926
807-007	3/4	21/32	21/32	1-21/32	1-15/32	1-7/16	1-1/2	0.1389
807-010	1	11/16	7/8	1-13/16	1-27/32	1-3/4	1-13/16	0.2359
807-012	1-1/4	15/16	1	2-3/16	2-1/32	2-1/8	2-7/32	0.3605
807-015	1-1/2	1-1/32	1-5/32	2-13/32	2-5/32	2-3/8	2-1/2	0.4694
807-020	2	1-9/32	1-11/32	2-25/32	2-13/32	2-29/32	3	0.6680

90°Ell (FIPT × FIPT)

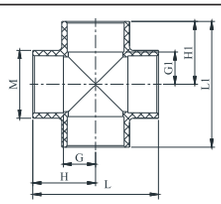




Part Number	Size(in)	G	H	M	Weight (Lbs)
808-002	1/4	11/32	15/16	27/32	0.0346
808-003	3/8	7/16	1-1/32	1	0.0487
808-005	1/2	1/2	1-1/4	1-9/32	0.0948
808-007	3/4	5/8	1-13/32	1-1/2	0.1279
808-010	1	3/4	1-23/32	1-13/16	0.2205
808-012	1-1/4	15/16	1-31/32	2-7/32	0.3329
808-015	1-1/2	1-3/32	2-1/8	2-1/2	0.4605
808-020	2	1-11/32	2-13/32	3	0.6687
808-025	2-1/2	1-11/16	3-5/32	3-19/32	1.2293
808-030	3	2-1/16	3-5/8	4-5/16	1.8761
808-040	4	2-19/32	4-1/4	5-7/16	3.1513

Cross (SOC × SOC × SOC × SOC)





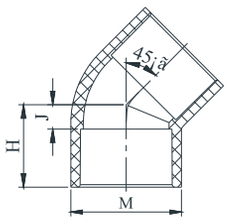
Part Number	Size(in)	G	G1	H	H1	L	L1	M	Weight (Lbs)
820-030	3	1-31/32	1-31/32	3-27/32	3-27/32	7-23/32	7-23/32	4-5/32	
820-040	4	2-5/8	2-5/8	4-7/8	4-7/8	9-23/32	9-23/32	5-1/4	

NOTE: DO NOT USE OR TEST THE PRODUCTS IN THIS CATALOG WITH COMPRESSED AIR OR OTHER GASES. FAILURE TO FOLLOW THIS WARNING CAN RESULT IN PERSONAL INJURY OR DAMAGE TO PROPERTY.

PVC Schedule 80 Fittings

45°Ell (FIPT × FIPT)

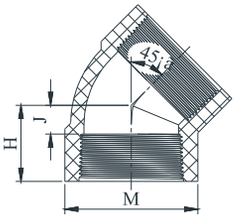




Part Number	Size(in)	J	H	M	Weight (Lbs)
817-002	1/4	5/32	25/32	27/32	0.0265
817-003	3/8	3/16	15/16	1	0.0399
817-005	1/2	1/4	1-1/8	1-3/16	0.0683
817-007	3/4	5/16	1-5/16	1-7/16	0.1036
817-010	1	3/8	1-1/2	1-3/4	0.1742
817-012	1-1/4	7/16	1-11/16	2-3/32	0.2293
817-015	1-1/2	15/32	1-27/32	2-11/32	0.3042
817-020	2	5/8	2-1/8	2-7/8	0.4740
817-025	2-1/2	11/16	2-7/16	3-15/32	0.7895
817-030	3	25/32	2-21/32	4-5/32	1.1213
817-040	4	1-1/16	3-5/16	5-1/4	1.9992
817-060	6	1-3/4	4-3/4	7-19/32	5.4701

45°Ell (FIPT × FIPT)





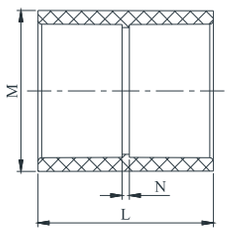
Part Number	Size(in)	J	H	M	Weight (Lbs)
819-005	1/2	1/4	1	1-9/32	0.0794
819-007	3/4	9/32	1-3/32	1-1/2	0.1102
819-010	1	11/32	1-11/32	1-13/16	0.1896
819-012	1-1/4	3/8	1-13/32	2-7/32	0.2637
819-015	1-1/2	9/16	1-9/16	2-1/2	0.3578
819-020	2	21/32	1-23/32	3	0.4996
819-025	2-1/2	29/32	2-3/8	3-19/32	0.9872
819-030	3	15/16	2-17/32	4-5/16	1.4143
819-040	4	1-3/16	2-27/32	5-7/16	2.2889

NOTE: DO NOT USE OR TEST THE PRODUCTS IN THIS CATALOG WITH COMPRESSED AIR OR OTHER GASES. FAILURE TO FOLLOW THIS WARNING CAN RESULT IN PERSONAL INJURY OR DAMAGE TO PROPERTY.

PVC Schedule 80 Fittings

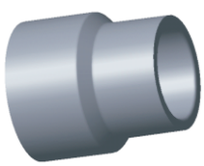
Coupling (SOC × SOC)

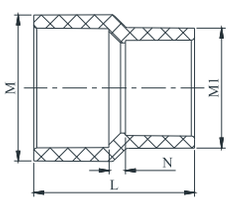




Part Number	Size(in)	N	L	M	Weight (Lbs)
829-002	1/4	3/32	1-11/32	27/32	0.0225
829-005	1/2	1/8	1-7/8	1-3/16	0.0573
829-007	3/4	1/8	2-1/8	1-7/16	0.0816
829-010	1	1/8	2-3/8	1-3/4	0.1279
829-012	1-1/4	1/8	2-5/8	2-1/8	0.1852
829-015	1-1/2	1/8	2-7/8	2-11/32	0.2161
829-020	2	1/8	3-1/8	2-27/32	0.3175
829-025	2-1/2	7/32	3-23/32	3-15/32	0.5867
829-030	3	7/32	3-31/32	4-5/32	0.8047
829-040	4	7/32	4-23/32	5-1/4	1.3719
829-060	6	5/16	6-5/16	7-19/32	3.3817
829-080	8	9/32	8-9/32	9-23/32	6.7671
829-100	10	9/32	10-9/32	12-1/16	
829-120	12	13/32	12-13/32	14-1/4	

Reducing Coupling (SOC × SOC)





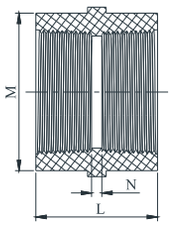
Part Number	Size(in)	N	L	M	M1	Weight (Lbs)
829-101	3/4×1/2	1/8	2	1-7/16	1-3/16	0.0705
829-130	1×1/2	7/32	2-7/32	1-3/4	1-3/16	0.1058
829-131	1×3/4	1/8	2-1/4	1-3/4	1-7/16	0.1102
829-166	1-1/4×1/2	15/32	2-19/32	2-1/8	1-3/16	0.1543
829-167	1-1/4×3/4	3/8	2-5/8	2-1/8	1-7/16	0.1609
829-168	1-1/4×1	3/16	2-9/16	2-1/8	1-3/4	0.1698
829-210	1-1/2×3/4	1/2	2-7/8	2-3/8	1-7/16	0.2121
829-211	1-1/2×1	3/8	2-7/8	2-3/8	1-3/4	0.2205
829-212	1-1/2×1-1/4	3/16	2-13/16	2-3/8	2-1/8	0.2324
829-251	2×1-1/2	11/32	3-7/32	2-29/32	2-3/8	0.3441
829-338	3×2	21/32	4-1/32	4-5/32	2-29/32	0.7372
829-422	4×3	21/32	4-13/16	5-1/4	4-5/32	1.3012
829-532	6×4	1-3/8	6-5/8	7-19/32	5-1/4	3.2441
829-585	8×6	1-9/16	8-7/32	9-23/32	7-19/32	

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PVC Schedule 80 Fittings

Coupling (FIPT × FIPT)

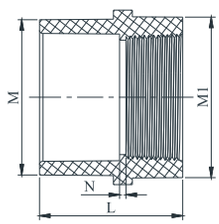




Part Number	Size(in)	N	L	M	Weight (Lbs)
830-002	1/4	3/32	1-1/4	27/32	0.0249
830-005	1/2	3/32	1-19/32	1-9/32	0.0661
830-007	3/4	3/32	1-23/32	1-1/2	0.0860
830-010	1	1/8	2-3/32	1-13/16	0.1565
830-012	1-1/4	5/32	2-7/32	2-7/32	0.2116
830-015	1-1/2	3/16	2-1/4	2-1/2	0.2690
830-020	2	3/16	2-5/16	3	0.3704
830-025	2-1/2	3/16	3-1/8	3-19/32	0.6947
830-030	3	3/16	3-11/32	4-5/16	1.0097
830-040	4	3/16	3-1/2	5-7/16	1.5397

Female Adapter (SOC × FIPT)

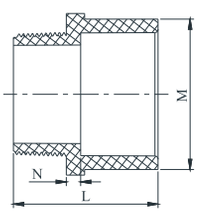




Part Number	Size(in)	N	L	M	M1	Weight (Lbs)
835-002	1/4	3/32	1-9/32	27/32	27/32	0.0240
835-005	1/2	1/8	1-3/4	1-3/16	1-9/32	0.0661
835-007	3/4	1/8	1-15/16	1-7/16	1-1/2	0.0882
835-010	1	1/8	2-1/4	1-3/4	1-13/16	0.1433
835-012	1-1/4	1/8	2-13/32	2-1/8	2-7/32	0.2050
835-015	1-1/2	1/8	2-17/32	2-3/8	2-1/2	0.2734
835-020	2	1/8	2-11/16	2-29/32	3	0.3594
835-025	2-1/2	5/32	3-3/8	3-15/32	3-19/32	0.6396
835-030	3	3/16	3-21/32	4-5/32	4-5/16	0.9301
835-040	4	3/16	4-3/32	5-1/4	5-7/16	1.4712

Male Adapter (MIPT × SOC)





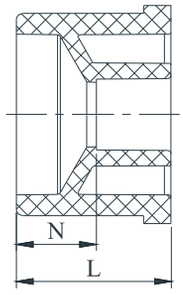
Part Number	Size(in)	N	L	M	Weight (Lbs)
836-005	1/2	3/16	1-23/32	1-3/16	0.0450
836-007	3/4	7/32	1-7/8	1-7/16	0.0639
836-010	1	7/32	2-1/8	1-3/4	0.1014
836-012	1-1/4	7/32	2-1/4	2-1/8	0.1455
836-015	1-1/2	1/4	2-5/8	2-3/8	0.2019
836-020	2	9/32	2-13/16	2-29/32	0.2959
836-025	2-1/2	5/16	3-15/32	3-15/32	0.4993
836-030	3	11/32	3-23/32	4-5/32	0.7161
836-040	4	3/8	4-7/32	5-1/4	1.1799

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PVC Schedule 80 Fittings

Reducing Bushing Flush Style (SPIG × SOC)



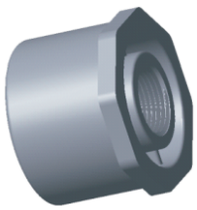


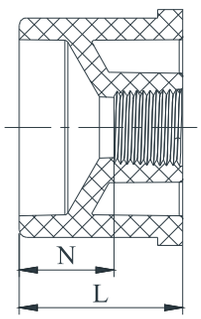
Part Number	Size(in)	L	N	Weight (Lbs)
837-052	3/8×1/4	15/16	5/16	0.0086
837-072	1/2×1/4	1-1/16	7/16	0.0214
837-073	1/2×3/8	1	1/4	0.0126
837-101	3/4×1/2	1-7/32	11/32	0.0220
837-130	1×1/2	1-3/8	1/2	0.0639
837-131	1×3/4	1-3/8	3/8	0.0485
837-166	1-1/4×1/2	1-15/32	19/32	0.1299
837-167	1-1/4×3/4	1-15/32	15/32	0.1058
837-168	1-1/4×1	1-9/16	13/32	0.0728
837-209	1-1/2×1/2	1-11/16	13/16	0.1455
837-210	1-1/2×3/4	1-11/16	11/16	0.1861
837-211	1-1/2×1	1-11/16	9/16	0.1433
837-212	1-1/2×1-1/4	1-5/8	3/8	0.0683
837-247	2×1/2	1-13/16	15/16	0.2138
837-248	2×3/4	1-13/16	13/16	0.2205
837-249	2×1	1-13/16	11/16	0.2209
837-250	2×1-1/4	1-13/16	9/16	0.2205
837-251	2×1-1/2	1-25/32	13/32	0.1609
837-289	2-1/2×1	2-1/32	29/32	0.3538
837-290	2-1/2×1-1/4	2-1/32	25/32	0.3417
837-291	2-1/2×1-1/2	2-1/32	21/32	0.3942
837-292	2-1/2×2	2-1/32	17/32	0.2341
837-335	3×1	2-3/16	1-1/16	0.5606
837-337	3×1-1/2	2-3/16	13/16	0.5842
837-338	3×2	2-3/16	11/16	0.6316
837-339	3×2-1/2	2-3/16	7/16	0.3984
837-420	4×2	2-19/32	1-3/32	0.9568
837-421	4×2-1/2	2-19/32	27/32	1.0044
837-422	4×3	2-19/32	23/32	0.9180
837-528	6×2	3-15/32	1-31/32	
837-530	6×3	3-15/32	1-19/32	2.5001
837-532	6×4	3-15/32	1-7/32	2.5342
837-585	8×6	4-15/32	1-15/32	
837-626	10×6	5-1/2	2-1/2	9.0502
837-628	10×8	5-11/32	1-11/32	

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PVC Schedule 80 Fittings

Reducing Bushing Flush Style (SPIG × FIPT)

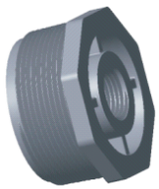


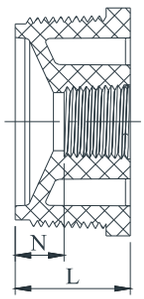


Part Number	Size(in)	L	N	Weight (Lbs)
838-052	3/8×1/4	15/16	11/32	0.0105
838-072	1/2×1/4	1-1/16	15/32	0.0229
838-101	3/4×1/2	1-7/32	15/32	0.0287
838-130	1×1/2	1-3/8	5/8	0.0639
838-131	1×3/4	1-3/8	9/16	0.0507
838-166	1-1/4×1/2	1-17/32	25/32	0.0886
838-167	1-1/4×3/4	1-9/16	3/4	0.1058
838-168	1-1/4×1	1-9/16	9/16	0.0860
838-209	1-1/2×1/2	1-21/32	29/32	0.1521
838-210	1-1/2×3/4	1-21/32	27/32	0.1356
838-211	1-1/2×1	1-21/32	21/32	0.1433
838-212	1-1/2×1-1/4	1-21/32	5/8	0.0959
838-247	2×1/2	1-25/32	1-1/32	0.2183
838-248	2×3/4	1-25/32	31/32	0.2183
838-249	2×1	1-25/32	25/32	0.2229
838-250	2×1-1/4	1-23/32	11/16	0.2313
838-251	2×1-1/2	1-25/32	3/4	0.1808
838-292	2-1/2×2	2-1/32	31/32	0.2798
838-338	3×2	2-3/16	1-1/8	0.4802
838-339	3×2-1/2	2-3/16	3/4	0.4588
838-420	4×2	2-19/32	1-17/32	0.9901
838-422	4×3	2-9/16	1	0.9839
838-532	6×4	3-13/32	1-3/4	2.4972

PVC Schedule 80 Fittings

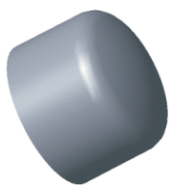
Reducing T.T. Bushing Flush Style (MIPT × FIPT)

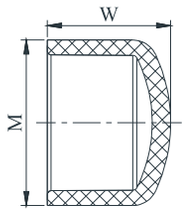




Part Number	Size(in)	L	N	Weight (Lbs)
839-072	1/2×1/4	29/32	5/16	0.0154
839-073	1/2×3/8	29/32	5/16	0.0132
839-098	3/4×1/4	29/32	5/16	0.0287
839-099	3/4×3/8	29/32	5/16	0.0243
839-101	3/4×1/2	29/32	5/32	0.0220
839-129	1×3/8	1-1/32	7/16	0.0540
839-130	1×1/2	1-1/16	5/16	0.0441
839-131	1×3/4	1-1/16	1/4	0.0331
839-166	1-1/4×1/2	1-1/16	5/16	0.0816
839-167	1-1/4×3/4	1-1/16	1/4	0.0661
839-168	1-1/4×1	1-1/16	3/32	0.0529
839-210	1-1/2×3/4	1-3/16	3/8	0.0933
839-211	1-1/2×1	1-3/16	3/16	0.0891
839-212	1-1/2×1-1/4	1-7/32	3/16	0.0558
839-247	2×1/2	1-5/16	9/16	0.1671
839-292	2-1/2×2	1-11/16	5/8	0.1995

Cap (SOC)





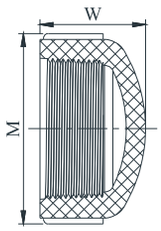
Part Number	Size(in)	W	M	Weight (Lbs)
847-002	1/4	7/8	27/32	0.0148
847-003	3/8	1-1/32	1	0.0225
847-005	1/2	1-7/32	1-7/32	0.0353
847-007	3/4	1-13/32	1-7/16	0.0551
847-010	1	1-21/32	1-25/32	0.0926
847-012	1-1/4	1-27/32	2-5/32	0.1411
847-015	1-1/2	1-7/8	2-3/8	0.1852
847-020	2	2-5/32	2-29/32	0.2848
847-025	2-1/2	2-7/16	3-15/32	0.4502
847-030	3	2-11/16	4-5/32	0.6581
847-040	4	3-5/32	5-1/4	1.1354
847-060	6	4-11/32	7-19/32	2.9419
847-080	8	5-1/2	9-23/32	5.7078

NOTE: DO NOT USE OR TEST THE PRODUCTS IN THIS CATALOG WITH COMPRESSED AIR OR OTHER GASES. FAILURE TO FOLLOW THIS WARNING CAN RESULT IN PERSONAL INJURY OR DAMAGE TO PROPERTY.

PVC Schedule 80 Fittings

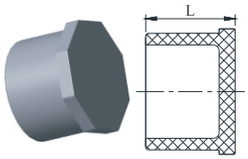
Cap (FIPT)





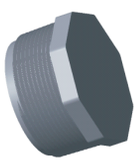
Part Number	Size(in)	W	M	Weight (Lbs)
848-002	1/4	27/32	31/32	0.0174
848-003	3/8	7/8	1-1/8	0.0227
848-005	1/2	1-3/32	1-13/32	0.0463
848-007	3/4	1-7/32	1-5/8	0.0617
848-010	1	1-15/32	1-15/16	0.1080
848-012	1-1/4	1-9/16	2-12/32	0.1653
848-015	1-1/2	1-9/16	2-21/32	0.2070
848-020	2	1-25/32	3-3/16	0.2921
848-025	2-1/2	2-1/4	3-13/16	0.5304
848-030	3	2-3/8	4-5/8	0.7802
848-040	4	2-27/32	5-3/4	1.3808

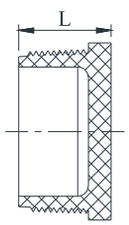
Plug (SPIG)



Part Number	Size(in)	L	Weight (Lbs)
849-010	1	1-3/8	0.0626
849-020	2	1-13/16	0.2130

Plug (MIPT)



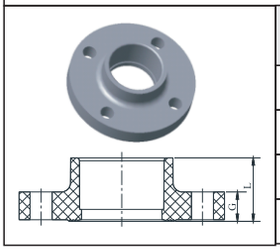


Part Number	Size(in)	L	Weight (Lbs)
850-002	1/4	21/32	0.0064
850-003	3/8	25/32	0.0108
850-005	1/2	7/8	0.0154
850-007	3/4	7/8	0.0265
850-010	1	1-1/32	0.0463
850-012	1-1/4	1-3/32	0.0683
850-015	1-1/2	1-5/16	0.1023
850-020	2	1-11/32	0.1534
850-025	2-1/2	1-13/16	0.2857
850-030	3	1-29/32	0.4209
850-040	4	2	0.6753

NOTE: DO NOT USE OR TEST THE PRODUCTS IN THIS CATALOG WITH COMPRESSED AIR OR OTHER GASES. FAILURE TO FOLLOW THIS WARNING CAN RESULT IN PERSONAL INJURY OR DAMAGE TO PROPERTY.

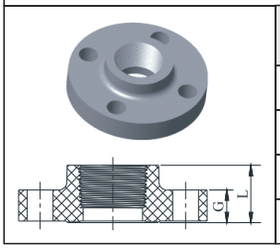
PVC Schedule 80 Fittings

Flange One Piece (SOC)



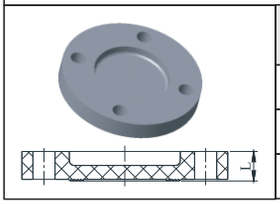
Part Number	Size(in)	G	L	Weight (Lbs)
851-025	2-1/2	1	2-5/32	1.5025
851-030	3	1-1/32	2-3/8	1.7575

Floor Flange (FIPT)



Part Number	Size(in)	G	L	Weight (Lbs)
852-005	1/2	19/32	1-1/16	0.2359
852-007	3/4	21/32	1-3/16	0.3241
852-010	1	25/32	1-5/16	0.4652
852-012	1-1/4	25/32	1-3/8	0.5071

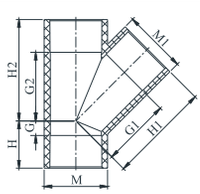
Blind Flange



Part Number	Size(in)	L	Weight (Lbs)
853-025	2-1/2	1	1.3455
853-030	3	1	1.5662

Wye (SOC × SOC × SOC)

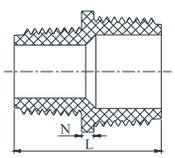




Part Number	Size(in)	G	G1	G2	H	H1	H2	M	M1	Weight (Lbs)
875-020	2	21/32	3-5/32	3-5/32	2-5/32	4-21/32	4-21/32	2-29/32	2-29/32	1.0754
875-040	4	1-1/16	5-25/32	5-25/32	3-5/16	8-1/32	8-1/32	5-1/4	5-1/4	4.6723
875-060	6	1-9/32	8-15/32	8-15/32	4-9/32	11-15/32	11-15/32	7-19/32	7-19/32	13.2589

Reducing (MIPT × MIPT)



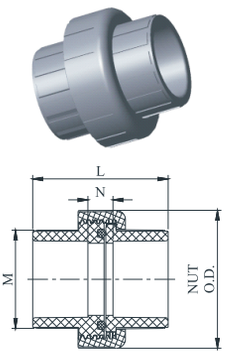


Part Number	Size(in)	N	L	Weight (Lbs)
882-101	3/4×1/2	1/8	1-13/32	0.0251

NOTE: DO NOT USE OR TEST THE PRODUCTS IN THIS CATALOG WITH COMPRESSED AIR OR OTHER GASES. FAILURE TO FOLLOW THIS WARNING CAN RESULT IN PERSONAL INJURY OR DAMAGE TO PROPERTY.

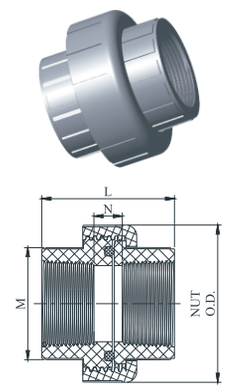
PVC Schedule 80 Fittings

Union w/O-ring Seal (SOC×SOC)



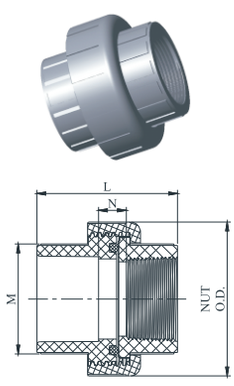
Part Number	Size(in)	N	L	M	NUT O.D.	Weight (Lbs)
897-002	9/32	9/32	1-17/32	7/8	1-9/16	0.0697
897-005	5/16	5/16	2-1/16	1-1/4	1-15/16	0.1358
897-007	13/32	13/32	2-13/32	1-15/32	2-3/16	0.1812
897-010	7/16	7/16	2-11/16	1-13/16	2-19/32	0.2703
897-012	15/32	15/32	2-31/32	2-3/16	3	0.3911
897-015	5/8	5/8	3-3/8	2-7/16	3-7/16	0.5461
897-020	11/16	11/16	3-11/16	2-31/32	4-1/16	0.7994
897-030	23/32	23/32	4-15/32	4-1/4	5-1/2	1.7342

Union w/O-ring Seal (FIPT×FIPT)



Part Number	Size(in)	N	L	M	NUT O.D.	Weight (Lbs)
898-005	½	3/8	1-27/32	1-1/4	1-15/16	0.1616
898-007	3/4	13/32	2-13/32	1-15/32	2-3/16	0.1993
898-010	1	13/32	2-5/8	1-13/16	2-19/32	0.3031
898-012	1-1/4	15/32	2-17/32	2-3/16	3	0.4026
898-015	1-1/2	5/8	2-29/32	2-7/16	3-7/16	0.5578

Union w/O-ring Seal (SOC × FIPT)



Part Number	Size(in)	N	L	M	NUT O.D.	Weight (Lbs)
899-005	½	5/16	1-15/16	1-1/4	1-15/16	0.1391
899-007	3/4	13/32	2-13/32	1-15/32	2-3/16	0.1898
899-010	1	13/32	2-21/32	1-13/16	2-19/32	0.2899
899-012	1-1/4	15/32	2-3/4	2-3/16	3	0.4010
899-015	1-1/2	5/8	3-5/32	2-7/16	3-7/16	0.5564
899-020	2	25/32	3-15/32	2-31/32	4-1/16	0.8223

Materials

LESSO PVC fittings are made from PVC compounds which conforms ASTM D1784, Classification 12454 B, early designated Type I, Grade 1. PVC is popular thermoplastic piping materials and has been used successfully for over 45 years in many industrial applications such as sanitary sewers and water transmission and distribution, also including sewer forcemains, reclaimed water, storm sewer, land and highway drainage, etc.

MSDS

SECTION I PRODUCT AND COMPANY INDENTIFICATION

Manufacturer: LESSO America Inc.
Address: 1010 Railroad Street, Corona, CA, 92882
Phone: (888)988-8839 or (951)547-6888
Fax: (951)547-6886
Trade Name: PVC, Polyvinyl Chloride **Chemical Name:** PVC/Acrylic Copolymer

SECTION II HAZARDOUS INGREDIENTS

Ingredient	CAS Reg. No.	Max. Percent	15 mg/m^3(total)*	ACGIH
Limestone	1317-65-3	17.5%	5 mg/m^3(respirable)*	10 mg/m^{3*}
Crystalline Silica	14808-60-7	0.4%	10 $mg/m^3 \div (2+\%SiO_2)$ -as respirable dust 30 $mg/m^3 \div (2+\%SiO_2)$ -as total dust	0.05 mg/m
Calcium Stearate	1592-23-0	1.1%	NE	(respirable)
Titanium Dioxide	13463-67-7	7.8%	15 mg/m^3	10 mg/m^3

Ingredients are considered hazardous under OSHA Hazard Communication Criteria, but are generally bound in the polymer matrix of the profile. Some release of ingredients may occur when subjected to processes such as sawing, sanding, or abrading. Release of silica particles by physical methods such as sawing during installations would not be expected to present significant exposures compared to established exposure limits, as airborne concentrations of total product dust would have to exceed 10 m^3g/m to exceed the TLV for crystalline silica. This also presumes all of the silica dust particles would be in the respirable dust size range.

* Exposure limits for calcium carbonate, the main constituent of limestone.

SECTION III HAZARDS IDENTIFICATION

Emergency Overview: None identified for product as purchased in plastic profiles in various colors.

Symptoms of Overexposure: None identified for product as purchased. Processing such as sawing, sanding, and abrasive applications that could release dust, or heating the product, could result in dust, vapor, or gas emissions that may cause eye, skin, or respiratory tract irritation.

Potential Health Effects: Dust from product may contain crystalline silica, a cause of silicosis and a substance identified as an occupational carcinogen; and linked to other health effects. Heating of the product could result in release of methacrylate monomer, which may also cause health effects such as skin sensitization in susceptible individuals, and with methyl sufficient exposure may affect kidneys, central nervous system, and liver. (See Section XI for additional health information).

Potential Environmental Effects: None identified. Material is not a RCRA Hazardous Waste.

MSDS

SECTION IV FIRST AID MEASURES

Eyes: Flush eyes with water for at least 15 minutes while lifting upper and lower eyelids. Seek medical attention if irritation or discomfort persists.

Skin Contact: Remove dust with soap and water. Obtain medical attention if irritation persists or allergic skin reaction occurs.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration or oxygen by trained personnel. Obtain immediate medical attention.

Ingestion: Treat supportatively and obtain medical attention as needed in the unlikely event ingestion is accomplished.

Medical Conditions Aggravated by Exposure:
Breathing process emissions may aggravate existing lung disease.

SECTION V FIRE FIGHTING INFORMATION

Flammable Properties: Flashpoint: Not Applicable

Flammable Limits: Not Applicable

Flammability: Product is a combustible plastic

Auto Ignition Temperature: 840°F

Fire Fighting Guidelines:

Extinguishing Media: Water, Foam, or Dry Chemical ABC Extinguisher

Special Fire Fighting Procedures:
Firefighters should wear pressure demand self-contained breathing devices due to potentially hazardous thermal decomposition products.

Unusual Fire and Explosion Hazards:
In fire conditions may produce irritating or toxic vapors including hydrochloric acid, carbon monoxide, carbon dioxide, methyl methacrylate monomer, aldehydes, ammonia, hydrogen cyanide, hydrocarbons and other potential toxics dependent on specific conditions.

SECTION VI ACCIDENTAL RELEASE MEASURES

Spill and Clean up Procedure:
Not applicable to profile product. Dispose of waste in accordance with all federal, state/provincial, and local regulations.

MSDS

SECTION VII HANDLING AND STORAGE

No specific safety precautions are necessary for the storage of materials. Keep product clear of walkways and floors to prevent tripping hazards.

Other Protective Measurers:
Should dusting occur from material handling or processing, dust accumulation and potential sources of ignition such as static discharge should be addressed by the user, to prevent fire or explosion from suspended, finely divided particles.

SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Effective local exhaust ventilation should be provided to capture dust generated during processes such as sanding or cutting, and to remove gas or vapor emissions from the work area should polymer breakdown begin from elevated temperatures.

Respiratory Protection: Respiratory Protection:Select respirators based on potential exposures if engineering controls are not sufficient to maintain airborne concentrations below applicable exposure limits. Utilize only NIOSH approved respirators, selected and used in accordance with the OSHA Respiratory Protection Standard (29 CFR 1910.134).

Eye/Skin Protection: When cutting, sanding, or processing with dust generation, wear safety glasses with side shields or goggles. General purpose work gloves are acceptable. Select personal protective equipment (PPE) based on adherence to PPE Hazard Assessment Certification as required by 29 CFR 1910.132 (d)(2).

SECTION IX PHYSICAL AND CHEMICAL DATA

Appearance: Solid plastic profiles in various colors Melting Point: Not Determined

Odor: No Specific Odor
Water Solubility: Not Applicable
Percent Volatile: Not Determined
Specific Gravity: .50 -80 g/cm^3
Vapor Density: Not Determined

SECTION X STABILITY AND REACTIVITY

Stability: Stable under normal conditions. Decomposition products under high heat or fire conditions may include hydrochloric acid, carbon monoxide, carbon dioxide, methyl methacrylate monomer, aldehydes, ammonia, hydrogen cyanide, hydrocarbons and other potential toxics dependent on specific conditions.

Conditions to Avoid: Temperatures above 350 degrees F.
Materials to Avoid: Oxidizers
Hazaardous Polymerization: Will not occur.

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MSDS

SECTION XI TOXICOLOGICAL INFORMATION

No product specific toxicological or environmental data available. Individual hazardous component information is provided as follows:

Crystalline Silica: Overexposure to respirable crystalline silic a can cause silicosis, a fibrosis (scarring) of the lung, and possibly other lung disease. Carcinogen Status: Yes - IARC Group 1, NTP known human carcinogen, ACGIH suspected human carcinogen, State of California as a substance (airborn e particles of respirable size) known to cause cancer. Some studies have shown increased risk of autoimmune system, kidney, and liver disease in silica-exposed workers.

Titanium Dioxide: May cause skin or respiratory irritation in some individuals; and may cause exacerbation of symptoms due to its irritant properties in persons with impaired pulmonary function, especially those with obstructive airway disease. Carcinogen Status: No.

Limestone: Composition is mainly calcium carbonate, a substance with ACGIH-TLV? and OSHA PEL exposure limits that are the same as for particulates without inherent toxicity concerns (i.e.- particulates not otherwise regulated, or specified). May cause eye, nose, throat, respiratory irritation; and may aggravate pre-existing respiratory conditions. Skin contact may aggravate existing dermatitis. Carcinogen Status: No.

Calcium Stearate: Individuals with hypercalcemia may be more susceptible to effects from excessive exposure to calcium compounds such as calcium carbonate and stearate. Carcinogen Status: No.

SECTION XII: ECOLOGICAL INFORMATION

None identified for this polymer product. Product is expected to decompose very slowly in the natural environment.

SECTION XIII: DISPOSAL CONSIDERATIONS

Dispose or recycle this material in accordance with applicable federal, state/provincial, and local regulations. (See Section II for hazardous components). Identified components of product are not known to be hazardous waste in this profileing. Product has not been subjected to the RCRA EP Toxicity test.

SECTION XIV: TRANSPORTATION INFORMATION

This product is not a hazardous material for purposes of transportation under the U.S. Department of Transportation Table of Hazardous Materials, 49 CFR 172.101.

SECTION XV: REGULATORY INFORMATION

SARA Title III Information: SEC 311/312: An article as shipped and stored.

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Product Physical Characters

PVC COMPOUND CHARACTERS

Property	Requirement	Test Method
Impact Resistance (izod)	34.7 J/m	ASTM D1784
Tensile Strength	41.4 Mpa	
Module of Elasticity in Tensile	2758 Mpa	
Deflection Temperature Under Load , Min ,	70 ℃	

PVC SCH40 FITTING PHYSICAL CHARACTERS (ASTM D2467)

Property	Requirement	Test Method
Burst Pressure	the Minimum Allowable	ASTM D 1599

PVC DWV FITTING PHYSICAL CHARACTERS (ASTM D2665)

Property	Requirement	Test Method
Flattening Strength	the Minimum Allowable	ASTM D 2412
Impact Resistance	15ft-lbf (20 J)	ASTM D 2444

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Product Chemical Resistance Information

LESSO PVC fittings resist attack from a large amount of typical chemical. However, care must be taken to avoid contact with chemicals that are harmful to PVC, which will weaken or damage the system. Please consult with LESSO before using these PVC product with any questionable materials that are not listed in table

Chemical	73°F (23°c)	140°F (60°c)	Chemical	73°F (23°c)	140°F (60°c)
Acetaldehyde	N	N	Alcohol, methyl (methanol)	R	R
Acetaldehyde, aq 40%	C	N	Alcohol, propyl (1-propanol)	R	R
Acetic Acid, 25%	R	R	Alcohol, propargyl	R	R
Acetic Acid, 60%	R	N	Allyl Chloride	N	N
Acetic Acid, 85%	R	N	Aluminum Fluoride	R	N
Acetic Acid, glacial	R	N	Alums (except Aluminum Fluoride)	R	R
Acetic Acid, vapor	R	R	Ammonia, gas	R	R
Acetic Anhydride	N	N	Ammonia, liquid	N	N
Acetone	N	N	Ammonium Dichromate	R	N
Acetylene	N	N	Ammonium Salts (except Ammonium Dichromate)	R	R
Acetyl Chloride	N	N	Ammonium Fluoride, 10%	R	R
Acetylnitrile	N	N	Ammonium Fluoride, 25%	R	C
Acrylonitrile	N	N	Amyl Acetate	N	N
Acrylic Acid	N	N	Amyl Chloride	N	N
Adipic Acid	R	R	Aniline	N	N
Alcohol, allyl	R	C	Aniline Chlorohydrate	N	N
Alcohol, amyl	N	N	Aniline Hydrochloride	N	N
Alcohol, benzyl	N	N	Anthraquinone	R	R
Alcohol, butyl (n-butanol)	R	R	Anthraquinone Sulfonic Acid	R	R
Alcohol, diacetone	N	N	Antimony Trichloride	R	R
Alcohol, ethyl (ethanol)	R	R	Aqua Regia	C	N
Alcohol, hexyl (hexanol)	R	R	Arsenic Acid, 80%	R	R
Alcohol, isopropyl (2-propanol)	R	R	Aryl-sulfonic Acid	R	R

Chemical	73°F (23°c)	140°F (60°c)	Chemical	73°F (23°c)	140°F (60°c)
Barium Nitrate	R	N	Butyl Phenol	R	N
Barium Salts (except Barium Nitrate)	R	R	Butylene, Liquid	R	R
Beer	R	R	Butynediol	R	N
Beer Sugar Liquor	R	R	Butyric Acid	R	N
Benzaldehyde, 10%	R	N	Cadmium Cyanide	R	R
Benzene (benzol)	N	N	Calcium Bisulfide	N	N
Benzene Sulfonic Acid, 10%	R	R	Calcium Salts (except Calcium Bisulfide)	R	R
Benzene Sulfonic Acid, >10%	N	N	Calcium Hypochlorite, 30%	R	R
Benzoic Acid	R	R	Calcium Hydroxide	R	R
Black Liquor-paper	R	R	Calcium Nitrate	R	R
Bleach, 12% Active Chlorine	R	R	Calcium Oxide	R	R
Bleach, 5% Active Chlorine	R	R	Calcium Sulfate	R	R
Borax	R	R	Camphor	R	N
Boric Acid	R	R	Cane Sugar Liquors	R	R
Brine	R	R	Carbon Dioxide	R	R
Bromic Acid	R	R	Carbon Dioxide, aq	R	R
Bromine, Aq	R	R	Carbon Disulfide	N	N
Bromine, Liquid	N	N	Cardon Monoxide	R	R
Bromine, Gas, 25%	R	R	Carbitol	R	N
Bromobenzene	N	N	Carbon Tetrachloride	R	N
Bromotoluene	N	N	Carbonic Acid	R	R
Butadiene	R	R	Castor Oil	R	R
Butane	R	R	Caustic Potash (potassium Hydroxide), 50%	R	R
Butyl Acetate	N	N	Caustic Soda (sodium Hydroxide), <40%	R	R
Butyl Stearate	R	N	Cellosolve	R	N

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Chemical	73°F (23°c)	140°F (60°c)	Chemical	73°F (23°c)	140°F (60°c)
Cellosolve acetate	R	N	Corn syrup	R	R
Chloral hydrate	R	R	Cottonseed oil	R	R
Chloramine，dilute	R	N	Creosote	N	N
Chloric acid，20%	R	R	Cresol, 90%	N	N
Chlorine，gas，dry	C	N	Cresylic acid, 50%	R	R
Chlorine，gas，wet	N	N	Croton aldehyde	N	N
Chlorine，liquid	N	N	Crude oil, sour	R	R
Chlorine water	R	R	Cupric salts, aq	R	R
Chloroacetic acid，50%	R	R	Cyclohexane	N	N
Chloroacetyl chloride	R	N	Cyclohexanol	N	N
Chlorobenzene	N	N	Cyclohexanone	N	N
Chlorobenzyl chloride	N	N	Detergents, aq	R	R
Chloroform	N	N	Dextrin	R	R
Chloropicrin	N	N	Dextrose	R	R
Chlorosulfonic acid	R	N	Dibutoxyethyl phthalate	N	N
Chromic acid，10%	R	R	Dibutyl phthalate	N	N
Chromic acid，30%	R	R	Dibutyl sebacate	R	N
Chromic acid，40%	R	C	Dichlorobenzene	N	N
Chromic acid，50%	N	N	Dichloroethylene	N	N
Chromium potassium sulfate	R	N	Diesel fuels	R	R
Citric acid	R	R	Diethylamine	N	N
Coconut oil	R	R	Diethyl ether	R	N
Coffee	R	R	Diglycolic acid	R	R
Coke oven gas	R	R	Dimethyl formamide	N	N
Copper acetate	R	N	Dimethylamine	R	R
Copper salts, aq	R	R	Disodium phosphate	R	R
Corn oil	R	R	Dioxane-1,4	N	N

Chemical	73°F (23°c)	140°F (60°c)	Chemical	73°F (23°c)	140°F (60°c)
Ether	N	N	Glycerine (glycerol)	R	R
Ethyl ether	N	N	Glycolic acid	R	R
Ethyl halides	N	N	Grape sugar	R	R
Ethylene glycol	R	R	Green liquor, paper	R	R
Ethylene halides	N	N	Heptane	R	R
Ethylene oxide	N	N	Hexane	R	N
Fatty acids	R	R	Hexanol	R	R
Ferric salts	R	R	Hydraulic oil	R	N
Fish oil	R	R	Hydrazine	N	N
Fluorine, dry gas	R	N	Hydrobromic acid,20%	R	R
Fluorine, wet gas	R	N	Hydrochloric acid	R	R
Fluoroboric acid	R	R	Hydrocyanic acid	R	R
Fluorosilicic acid, 50%	R	R	Hydrofluoric acid,30%	R	N
Formaldehyde	R	R	Hydrofluoric acid,50%	R	N
Formic acid	R	N	Hydrofluoric acid,100%	N	N
Freon-F11, F12, F130, F14	R	R	Hydrofluorosilicic acid	R	R
Freon-F21, F22	N	N	Hydrogen	R	R
Fructose	R	R	Hydrogen cyanide	R	R
Furfural	N	N	Hydrogen fluoride	N	N
Gallic acid	R	R	Hydrogen peroxide.50%	R	R
Gas, coal, manufactured	N	N	Hydrogen peroxide,90%	R	R
Gas, natural, methane	R	R	Hydrogen phosphide	R	R
Gasoline	R	R	Hydrogen sulfide,aq	R	R
Gelatin	R	R	Hydrogen sulfide,dry	R	R
Glucose	R	R	Hydroquinone	R	R
Glue, animal	R	R	Hydroxylamine sulfate	R	R

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Chemical	73°F (23°c)	140°F (60°c)	Chemical	73°F (23°c)	140°F (60°c)
Hypochlorous acid	R	R	Mercury	R	R
Iodine,aq,10%	N	N	Methane	R	R
Jet fuels,JP-4 and JP-5	R	R	Methoxyethyl oleate	R	N
Kerosene	R	R	Methyl acetate	N	N
Ketchup	R	N	Methyl amine	N	N
Ketones	N	N	Methyl bromide	N	N
Kraft paper liquor	R	R	Methyl cellosolve	N	N
Lactic acid,25%	R	R	Methyl chloride	N	N
Lactic acid,80%	R	N	Methyl chloroform	N	N
Lard oil	R	R	Methyl ethyl ketone	N	N
Lauric acid	R	R	Methyl isobutyl carbinol	N	N
Lauryl acetate	R	R	Methyl isobutyl ketone	N	N
Lauryl chloride	R	R	Methyl isopropyl ketone	N	N
Lead salts	R	R	Methyl methacrylate	R	N
Lime sulfur	R	N	Methyl sulfate	R	N
Linoleic acid	R	R	Methyl sulfauric acid	R	R
Linoleic oil	R	R	Methylene bromide	N	N
Linseed oil	R	R	Methylene chloride	N	N
Liqueurs	R	R	Methylene iodide	N	N
Lithium salts	R	R	Milk	R	R
Lubricating oils	R	R	Mineral oil	R	R
Magnesium salts	R	R	Molasses	R	R
Maleic acid	R	R	Monochloroacetic acid	R	R
Malic acid	R	R	Monochlorobenzene	N	N
Manganese sulfate	R	R	Monoethanolamine	N	N
Mercuric salts	R	R	Motor oil	R	R

Chemical	73°F (23°c)	140°F (60°c)	Chemical	73°F (23°c)	140°F (60°c)
Naphtha	R	R	Paraffin	R	R
Naphthalene	N	N	Pentane	C	C
Natural gas	R	R	Peracetic acid,40%	R	N
Nickel acetate	R	N	Perchloric acid,15%	R	N
Nickel salts	R	R	Perchloric acid,70%	R	N
Nicotine	R	R	Perchloroethylene	C	C
Nicotinic acid	R	R	Perphosphate	R	N
Nitric acid,0 to 40%	R	R	Phenol	R	N
Nitric acid,50%	R	C	Phenylhydrazine	N	N
Nitric acid,70%	R	N	Phosphoric acid	R	R
Nitric acid,100%	N	N	Phosphoric anhydride	R	N
Nitrobenzene	N	N	Phosphorus,red	R	N
Nitroglycerine	N	N	Phosphorus,yellow	R	N
Nitroglycol	N	N	Phosphorus pentoxide	R	N
Nitrous acid,10%	R	R	Phosphorus trichloride	N	N
Nitrous oxide,gas	R	N	Photographic chemicals,aq	R	R
Oleic acid	R	R	Phthalic acid	C	C
Oleum	N	N	Picric acid	N	N
Olive oil	R	R	Plating solutions,metal	R	R
Oxalic acid	R	R	Potash	R	R
Oxygen,gas	R	R	Potassium amyl xanthate	R	N
Ozone,gas	R	R	Potassium iodide	R	N
Palmitic acid,10%	R	R	Potassium salts (except potassium iodide)	R	R
Palmitic acid,70%	R	N	Potassium permanganate	R	R

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Chemical	73°F (23°c)	140°F (60°c)	Chemical	73°F (23°c)	140°F (60°c)
Potassium permanganate,25%	R	N	Sulfamic acid	N	N
Propane	R	R	Sulfate&sulfire liquors	R	R
Propylene dichloride	N	N	Sulfur	R	R
Propylene oxide	N	N	Sulfur dioxide,dry	R	R
Pyridine	N	N	Sulfur dioxide,wet	R	N
Pyrogallic acid	R	N	Sulfur trioxide,gas,dry	R	R
Rayon coagulating bath	R	R	Sulfur trioxide,wet	R	N
Salicylic acid	R	R	Sulfuric acid,up to 80%	R	R
Salicylaldehyde	N	N	Sulfuric acid,90 to 93%	R	N
Selenic acid,aq.	R	R	Sulfuric acid,94 to 100%	N	N
Silicic acid	R	R	Sulfurous acid	R	R
Silicone oil	R	N	Tall oil	R	R
Silver salts	R	R	Tannic acid	R	R
Soaps	R	R	Tanning liquors	R	R
Sodium chlorate	R	N	Tar	N	N
Sodium chlorite	N	N	Tartaric acid	R	R
Sodium hypochlorite	R	N	Terpineol	C	C
Sodium salts,aq (except sodium chlorate, sodium chlorite,and sodium hypochlorite)	R	R	Tetrachloroethane	C	C
Stannic chloride	R	R	Tetraehyl lead	R	N
Stannous chloride	R	R	Tetrahydrofuran	N	N
Starch	R	R	Tetralin	N	N
Stearic acid	R	R	Tetrasodium	R	R
Stoddard solvent	N	N	Thionyl chloride	N	N
Succinic acid	R	R	Thread cutting oils	R	N
Sugars,aq	R	R	Titanium tetrachloride	C	N

Chemical	73°F (23°c)	140°F (60°c)	Chemical	73°F (23°c)	140°F (60°c)
Tetralin	N	N	Urea	R	R
Tetrasodium	R	R	Urine	R	R
Thionyl chloride	N	N	Vaseline	N	N
Thread cutting oils	R	N	Vegetable oils	R	R
Titanium tetrachloride	C	N	Vinegar	R	R
Toluene	N	N	Vinyl acetate	N	N
Tomato juice	R	R	Water,deionized	R	R
Transformer oil	R	R	Water,distilled	R	R
Tributyl citrate	R	N	Water,salt	R	R
Tributyl phosphate	N	N	Whiskey	R	R
Trichloroaacetic acid	R	R	White liquor	R	R
Trichloroehylene	N	N	Wines	R	R
Triethanolamine	R	N	Xylene	N	N
Triethylamine	R	R	Zinc salts	R	R
Trimethyl propane	R	N			
Trisodium phosphate	R	R			
Turpentine	R	R			

*R=generally resistant;C=less resistant than R but still suitable for some conditions; N=not resistant

This table is meant to aid the designer in decisions as to transporting/conveyance of undiluted chemicals. Chemical resistance data are provided as a guide only. Information is based primarily on immersion of unstressed strips in chemicals and to a lesser degree on field experience.

Designing, Operating and Maintaining Piping Systems Using PVC Fittings Ron Bliesner, February 3, 1987

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Handling and Storage

HANDLING

PVC fittings has excellent impact resistance under normal condition, but there is a slightly reduction on impact resistance when the ambient temperature fall below freezing. Attention must be paid to local insulating techniques and codes that require a particular method.

fittings must not fall or be thrown off the truck or into the trench, which perhaps leads to damage such as rupture, scatches, splits. Any damaged fittings must be discarded.

STORAGE

LESSO recommends that PVC fittings should be store in their original carton avoiding dirt or other potential damage and the carton have better be placed indoors. If storing outdoors, these products must be covered with a opaque materials such as canvas. At the same time, if package of fittings are covered, keep the air circulated against heat buildup in hot summer weather. Care should be taken that package of PVC fittings should be away from heat sources or moisture attack. If PVC fittings are subject to direct sunlight after installation, protection should be adopt with chemically compatible paint, uch as water based Latex.

Solvent cement has a definite shelf life. Each can or carton is clearly marked with a date of manufacture. Stock should be rotated that the oldest material must be used firstly. Do not allow solvent cement to be stored near the source of ignition, heat, sparks or open flame due to its flammability.

Solvent Cement Joint Procedure

1. PREPARATION
Prepare the necessary tools. Expose the pipe and fittings to the open air on the construction site for at least one hour. Take protective measurements on the connecting parts if the environments is extremely hot or extremely cold.

2. CUT THE PIPE
Use saw and miter box, wheel cutter or pipe cutter to cut the PVC pipe. These tools can make sure the cut is square. Protect pipe and fittings from serrated holding devices and abrasion.

3. REMOVE THE BURRS AND CHAMFER THE EDGES
Chamfer the cut ends to 10° to 15° and remove all the burrs from inside and outside of the pipe with a knife-edge, file, or deburring tool.

4. CLEAN THE PIPE AND FITTINGS
Wipe the joining surfaces by using clean, dry cloth or pager towel. Make sure all joining surfaces are free from dirt, dust, water and oil.

5. CHECK THE CLEANNESS OF THE JOINING SURFACES
Check the cleanness of the joining surfaces. Then mark the pipe end with a socket depth line.

6. USE THE APPROPRIATE APPLICATOR SIZE FOR THE JOINT
Use an applicator with at least ½ the size of pipe. Keep applicator in can when not in use.

7. APPLY SOLVENT CEMENT
Apply a moderate even coating of cement in the fittings socket completely covering the pipe joining surfaces only. Heavy or excessive applications of cement may become an obstruction inside of the piping. Quickly apply a heavy even coat of cement to the outside of the pipe. Make sure that the coated distance on the pipe is equal to the depth of the fittings socket.
Note: Don't let cement puddle inside fittings or run down inside the pipe.

Acceptable Solvent Cement Type

Pipe and Fitting System	Diameter (in.)	Solvent Cement Standard	Cement Color (common usage, check local code)	Description	Primer (common usage, check loacl code)
PVC DWV or SCH.40 Pressure	1/2—4	ASTM D 2564	Clear	Regular or Medium-Bodied	Required ASTM F 656
PVC DWV or SCH.40 Pressure	6—16	ASTM D 2564	Clear or Grey	Medium or Heavy-Bodied	Required ASTM F 656
SCH.80 Pressure	1/4—2	ASTM D 2564	Grey	Medium or Heavy-Bodied	Required ASTM F 656
SCH.80 Pressure	2 1/2—16	ASTM D 2564	Grey	Medium or Heavy-Bodied	IPS P-70 or Oatey Industrial Grade

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Solvent Cement Joint Procedure

Estimates for usage of solvent cements special for PVC fittings are given in the list below. The column is just for reference. Actual usage in the field could vary due to wide ranges of installation conditions. You may follow accurate dosage according to solvent cement suppliers.

Nominal Pipe Size	Pint	Quart	Gallon
1/2"	130	260	1040
3/4"	80	160	640
1"	70	140	560
1-1/4"	50	100	400
1-1/2"	35	70	280
2"	20	40	160
3"	15	30	120
4"	10	20	80
6"	N/R	8	32

8. ASSEMBLE IMMEDIATELY

Make the joint as quickly as possible after application of the cement and before the cement dries. While cement is still wet, insert the pipe into the fitting socket and twist 1/4 turn. Make sure that the pipe is inserted to the full depth of the socket and hold it for at least 30 seconds to avoid push-out.

9. REMOVE EXCESS CEMENT

Remove excess solvent cement from the exterior of the joint with a clean, dry cloth. Otherwise, the excessive solvent cement could permanently distort or weaken pipe.

10. DO NOT DISTURB DURING INITIAL SET PERIOD.

Do not attempt to disturb the pipe-fittings joint until after the cement has set; damage to joint and loss of fit may result. Should the cement dry partially before joint is made up, reapply cement before assembling.

Notes:

1. In case of conflicting solvent cementing instructions, the instruction of the cement manufacturer should be followed.
2. Some cements are not "one-step" and require prime before applied. The performance of applying prime is similar to procedure of applying cement. Please refers to the instructions from prime suppliers for detail.

Solvent Cement Joint Procedure

RECOMMENDED INITIAL SET TIME

Nominal Pipe Size	600-1000F/160-380C	400-600/50-16oC	00-400F/-180-50C
1/2" — 1-1/4"	15min	1hr	3hrs
1-1/2" — 2"	30min	2hrs	6hrs
3" — 6"	1hr	4hrs	12hrs

Note: Initial set schedule is the necessary time to allow before the joint can be carefully handled.
In damp or humid weather allow 50% more set time.

RECOMMENDED JOINT CURING TIME

Relative humidity 60% or less	Pipe size 1/2" to 1-1/4" (20 to 40mm)		Pipe size 1-1/2" to 2" (50 to 63mm)		Pipe size 3" to 6" (75 to 150mm)	
Temperature range during assembly and cure periods	Up to 160psi/ 11bar	160 to 370psi/ 11 to26 bar	Up to 160psi/ 11bar	160 to 370psi/ 11 to26 bar	Up to 160psi/ 11bar	160 to 370psi/ 11 to26 bar
600-1000F/ 160-380C	1hr	6hrs	2hrs	12hrs	6hrs	24hrs
400-600/ 50-16oC	2hrs	12hrs	4hrs	24hrs	12hrs	48hrs
00-400F/ -180-50C	8hrs	48hrs	16hrs	96hrs	48hrs	8days

Note: Joint cure schedule is the necessary time to allow before pressurizing system.
In damp or humid weather allow 50% more cure time.

The above data are based on laboratory tests and are intended as guidelines. For more specific information, contact should be made with cement manufacturer.

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Special Consideration in Installation

TEMPERATURE CORRECTION FACTORS

Corrections must be made to derate all PVC fittings when operating temperatures are expected to exceed 73 degrees Fahrenheit. The working pressure is directly affected by temperature changes. The drop in pressure capacity can be calculated using table 3. Multiply the maximum working pressure by the temperature correction factor for a known temperature.

The chart below is to be used to determine recommended pressures. If you have any questions regarding your system, contact your architect or designer for proper system operations.

TEMPERATURE CORRECTION FACTORS:

Maximum Operation Temperature 0f(0c)	Derate Factor for Actual Working Pressure
73(23)	1
80(27)	0.88
90(32)	0.75
100(38)	0.62
110(43)	0.50
120(49)	0.40
130(54)	0.30
140(60)	0.22

Note: Maximum service temperature for PVC pipe is 140^0F.

EXAMPLE

The nominal operation pressure for 2" SCH40 fittings is 280 psi in 73^0F, if the ambient temperature for practical installation of PVC piping system is 110^0F, then the maximum operation pressure is original value multiplied by correction factors, i.e, the value is equal to 280×0.5=140psi.

PRESSURE SURGES

Definition:

Few piping systems are operated under "static" conditions for long periods of time. Hydraulic transient conditions or "surges" occur in every irrigation system. A pressure surge or "water hammer" is created any time the flowrate changes in a piping system. This may be caused by valve operation, pumps starting or stopping, line breaks or rapid escape of entrapped air.

Prevention Tips:

To limit the magnitude and frequency of pressure surges, system operators should use the following guidelines:

1. Operate the system to maintain pump flowrate as uniformly as possible. This will not only reduce hydraulic transient problems but will increase the life of the pumping unit.
2. Attempt to balance system flows so the sprinkler set changes are systematic within system subunits. Avoid changing from one main area of the system and back again in the operating program. Maintain sub-unit flows uniformly, if possible.
3. Run fewer sets for longer times. Hydraulically, it is easier on the system to run a given set as long as possible, provided runoff does not occur, or the moisture holding capacity of the soil is not exceeded. This will allow for fewer sets and, thereby, fewer opportunities for surges to occur.
4. Avoid operating too many sprinklers in one area of the system and elevating the operating velocities. Use the design guidelines to govern the number of sprinklers that may operate simultaneously on a given pipe segment or loop.

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Limited Warranty

Except as otherwise mandated by law, LESSO America warrants to Buyer only that the Products directly manufactured by LESSO America will be free from defects in material and workmanship for a period of three years from the date of installation. Buyer agreesthat this warranty shall be effective so long as the Products are used solely for the normal purposes for which they are intended and in conformity with industry established engineering, installation, operating, and maintenance specifications, recommendations and instructions. Violation thereof shall void this warranty and relieve LESSO America from any obligation under this warranty.

LESSO America may modify at any time design of products or materials used therein or discontinue their manufacture without any liability.

LESSO America shall not assume responsibility, and expressly disclaims any liability, due to Buyer's, any installer's or end user's failure to comply with such specifications, recommendations and instructions, including, but not limited to, damage due to improper control of system hydraulics, improper winterization procedures, improper voltage supply, contact with incompatible materials or chemicals,excavation/digging, excessive weight, temperature shocking, U.V.degradation, vibration and vandalism. LESSO America shall not be liable for damages due to any acts of nature including, but not limited to, lightning,earthquakes, ground movement, frost heave, floods, or any other event of force majeure.

Buyer shall notify LESSO America of any alleged defects within 48 hours of discovery of any alleged defect and within three years' warranty period. LESSO America is not liable for any warranty claim if such notice is not provided. After the examination of the returned products, if the goods are determined to be defective in materials or workmanship directly provided by LESSO America, LESSO America will, at its sole option, may either repair or replace the defective Products, or reimburse Buyer for the cost of such Products. This shall be Buyer's only remedy. All costs of shipping such questionable Products and any replacements thereof to and from LESSO America's facility shall be borne by Buyer.

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