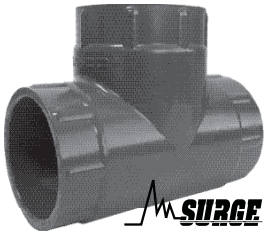
LASCO® Fittings, Inc.

SUBMITTAL SHEET

SURGE GUARD SERIES
10X STRONGER THAN SCHEDULE 80 TEES



LASCO Fittings, Inc., an Aalberts Industries company, specializes in the production and sale of injection molded fittings for Irrigation, Plumbing, Industrial, Pool/Spa and Retail markets. LASCO Fittings, Inc. operates a 26-acre manufacturing facility in Brownsville, TN. With eight Regional Distribution Facilities strategically located within the United States, LASCO provides worldwide distribution and overnight service.

Our Patented LASCO Surge Guard Fittings were designed to be the strongest and most forgiving PVC Golf Course Fittings we have ever made.

Third Party Cyclic Strength Testing Results:
Surge Guard Tees are 10x Stronger than Schedule 80 Tees

Third party testing results have verified:
The LASCO Surge Guard Tees are 10x stronger than Schedule 80 Tees and 59% stronger than the "Tuffest" competitor based on repeat high stress failure testing from:

The Center for Irrigation Technology (CIT) at Fresno State University.
Read the full CIT report on the back.

Product Test	Average Cycle
Schedule 80 Tees	1,912.80
Competitor "Tuffest" Tees	14,234.40
LASCO Surge Guard	22,746.00

2" Sizes

Part No	Description	Size (in)
301-020	Tee	2
7301-J	Tee	63mm
306-020	90° Ell	2
7306-J	90° Ell	63mm
317-020	45° Ell	2
7317-J	45° Ell	63mm

New One Piece Molded Reducing Sizes

Part No	Description	Size (in)
301-249	Tee	2 x 1
301-250	Tee	2 x 1¼
301-251	Tee	2 x 1½
306-249	90° Ell	2 x 1
306-250	90° Ell	2 x 1¼
306-251	90° Ell	2 x 1½

Now Available in 2½" Sizes!

Part No	Description	Size (in)
301-025	Tee	2½
306-025	90° Ell	2½
317-025	45° Ell	2½
365-025	22½° Ell	2½

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AALBERTS INDUSTRIES

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Development of a Protocol to Determine the Cyclic Strength of PVC Pipe Fittings when Stressed to Failure

Major components built into the testing jig (see Figure 1) are described as follows:

1. **Nitrogen tank (yellow) equipped with a pressure regulator.** This arrangement is capable of supplying a controlled supply of gas at pressures to 3000 psi.
2. **Gas over water bladder tank (blue).** With a pressure-controlled gas inlet, the tank is capable of delivering a supply of water to the test jig at a specified pressure in a pulse-free manner. For these tests the water pressure was set at 250-260 psi. The supply pressure gauge is visible near the end of the tank.
3. **Three-way solenoid valve.** On signal from the timer circuit (see Figure 2), the solenoid valve alternately opens, thereby pressurizing the PVC tee, and closes thereby isolating the supply and depressurizing the PVC tee. For these tests, a 34-second cycle was used subjecting the tee to 17 seconds at 250 psi followed by 17 seconds at atmospheric pressure. The timer circuit also has a relay and an electrically-actuated cycle counter. The timer is a model H3C-R as manufactured by Anly Electronics Co, Ltd.
4. **A data logger** is required to record the maximum cycle pressure and document the time when the fitting failed. A model DLI2 by Dwyer Instruments was selected.

Figure 1. Test bench general arrangement

Figure 2. 2-in. Surge Guard PVC tee installed in the test jig with related components

Figure 3. Failure crack in a 2-in. Schedule 80 tee

Figure 2 also shows a Surge Guard PVC tee installed in the test jig. The tee sockets are fitted with schedule 40 2-in. x ½-in. reducer bushings (SP x F). The solvent welding was accomplished using IPS P70 primer and IPS 711 solvent cement. A pressure gauge is fitted into the vertical connection. A ball valve is fitted into the downstream port and is used to vent the air in the system. During the test, the lab room temperature was kept between 60° and 65° F. The failure crack shown in Figure 3 is representative of the location noted in all test work.

Test results are as follows:

	Cycles to failure						
Component Tested	**Test #1**	**Test #2**	**Test #3**	**Test #4**	**Test #5**	**Test #6**	**Average**
Surge Guard tee	22,336	41,453	15,850	18,839	21,347	16,653	22,746

Disclaimer

All tees were provided by Lasco Fittings, Inc. All other materials were purchased and assembled by the Center for Irrigation Technology (CIT), California State University, Fresno personnel. All tests were conducted by CIT, Fresno State personnel. Tests were conducted from January 2012 through June 2012. The cycle time and maximum pressure selected reflect an attempt to develop a protocol useful for comparative purposes. The results of this protocol must not be interpreted as applying to specific field situations.

CIT report dated October 12, 2012