BRONZE SWING CHECK VALVE
INSTALLATION
OPERATION
MAINTENANCE
GUIDE

61Y & 61YLF SERIES

MODELS:
161S/161SLF
161T/161TLF
162T/162LF
163T/163TLF
163S/163SLF
164T
168T
169T

DOCUMENT NO.: ES-1498
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ISSUED BY: Bill Hooks DATE: 08/7/13

APPROVED BY: _____ DATE: _____

INTRODUCTION

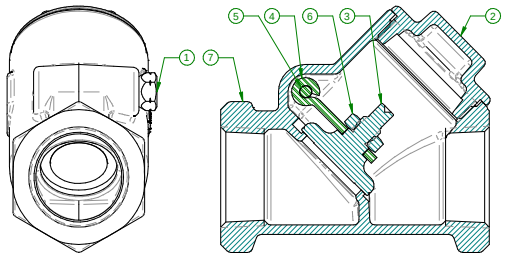
The Apollo Bronze Swing Check valves covered in these guidelines are Class 125, Class 150 & Class 300 bronze, metal seat and soft seat valve types. Check Valves are used in piping systems where flow in one direction is desired. Arrow on side of valve indicates flow direction. If backflow occurs in the system the swing check disc will close onto sealing surface of body not allowing the flow to reverse.

SERIES	MODEL	DESCRIPTION
61Y-09x-01	161S	Class 125 Bronze Disc, Solder end connection, Y-pattern
61Y-19x-01	161T	Class 125 Bronze Disc, NPT end connection, Y-pattern
61Y-20x-V1	162T	Class 125 Viton Disc, NPT end connection, Y-pattern
61Y-20x-T1	163T	Class 125 PTFE Disc, NPT end connection, Y-pattern
61Y-10x-T1	163S	Class 125 PTFE Disc, Solder end connection, Y-pattern
61Y-21x-01	164T	Class 150 Bronze Disc, NPT end connection, Y-pattern
61Y-75x-01	168T	Class 300 Bronze Disc, NPT end connection, Y-pattern
61Y-75x-T1	169T	Class 300 PTFE Disc, NPT end connection, Y-pattern
61YLF-09x-01	161S-LF	Class 125 Lead Free Bronze Disc, Solder end connection, Y-pattern
61YLF-19x-01	161T-LF	Class 125 Lead Free Bronze Body & Disc, NPT end connection, Y-pattern
61YLF-20x-V1	162T-LF	Class 125 Lead Free Bronze Body, Viton Disc, NPT end connection, Y-pattern
61YLF-20x-T1	163T-LF	Class 125 Lead Free Bronze Body, PTFE Disc, NPT end connection, Y-pattern
61YLF-10x-T1	163S-LF	Class 125 Lead Free Bronze Body,PTFE Disc, Solder end connection, Y-pattern

Table 2 Pressure Ratings

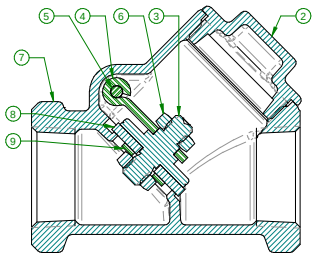
Class 125	
Saturated Steam	125 psi (8.6 Bar) to 353°F (178°C)
Cold Water	200 psi (13.8 Bar) at 100°F
Class 150	
Saturated Steam	150 psi (10.3 Bar) to 366°F (185°C)
Cold Water	300psi (20.7 Bar) at 100°F
Class 300	
Saturated Steam	3000 psi (20.7 Bar) to 423°F (217°C)
Cold Water	1000psi (68.9 Bar) at 100°F

These ratings are the maximum allowable, non-shock pressures at the temperatures shown and allowable pressures may be interpolated between temperatures shown. Use of a pressure rating at a material temperature other than the temperature of the contained fluid is the responsibility of the user, and subject to the requirements of applicable codes. The safe pressure-temperature rating of a solder joint valve is dependent on the composition of the solder used. All valves are 100% pneumatically shell and seat tested at a pressure of 80 psi in accordance with MSS-SP-80 Manufacturers Standardization Society requirements.



ITEM	DESCRIPTION	MATERIAL		QTY
		Class 125 & 150	Class 300	
1	PLUG	ASTM B16	ASTM B16	1
2	CAP	ASTM B62	ASTM B61	1
3	DISC	ASTM B62	ASTM B61	1
4	HANGER	304 SS	304 SS	1
5	PIN, HANGER	304 SS	304 SS	1
6	NUT	ASTM B16	ASTM B16	1
7	BODY	ASTM B62	ASTM B61	1

Type 3 Swing Check Valve



ITEM	DESCRIPTION	MATERIAL		QTY
		Class 125 & 150	Class 300	
1	PLUG	ASTM B16	ASTM B16	1
2	CAP	ASTM B62	ASTM B61	1
3	DISC	ASTM B62	ASTM B61	1
4	HANGER	304 SS	304 SS	1
5	PIN, HANGER	304 SS	304 SS	1
6	NUT	ASTM B16	ASTM B16	2
7	BODY	ASTM B62	ASTM B61	1
8	SEAT	PTFE	PTFE	1
9	WASHER	ASTM B16	ASTM B16	1

Type 4 Swing Check Valve

INSTALLATION

Inspection
Threads of mating pipe must be clean and machined to appropriate ANSI/ASME specifications.
Ends of mating copper tubing or pipe must be square and free of burrs. Use emery cloth to clean and remove grease and/or oxidation before soldering. Inspect sealing surfaces of valve for cleanliness prior to installing.

Mounting
Swing check valves can be mounted in either vertical or horizontal position with upward flow or in any intermediate position. Flow must be by direction of arrow in body.
It is not recommended that swing check valve be mounted in close proximity to reciprocating pumps or compressors due constant pressure fluctuations which shortens the life of the valve.

NPT connection
It is recommended that the valve is mounted in the closed position. Gently thread valve to mating pipe by hand until resistance is felt. Using a wrench tighten the valve using the hex flats at the joint being tightened. Do not tighten through the valve body using hex flats on opposite end of joint being tightened.

Solder connection
It is recommended that the valve be in the open position. Care must be taken to apply the proper amount of solder so that it does not flow into valve seat area. During soldering, the mid-portion of the valve body should not exceed 300°F. This can be monitored using Tempilstik® or an infra-red temperature sensor. Depending on the fuel selected and the orientation of the installation it may be necessary to wrap the valve body with wet rags or employ other heat absorbing techniques. The flame must be directed away from the valve body, concentrated on the solder cup. The cup should be heated evenly. Once one of the joints is complete, the valve should be allowed to cool until "cool to the touch" before beginning the second joint.

Fuel	Flame temp w/Oxygen
Propane	5122°F (2828°C)
Propylene	5245°F (2896°C)
MAPP Gas	5389°F (2976°C)
Acetylene	5720°F (3160°C)

WARNING: *Excessive heat input will damage the body seal resulting in leaks at the valve body joint.*

Press connection
Valve can be in either closed or open position. Piping must be properly supported so that valve fits squarely before pressing. Do not solder any joint within 12” of press connection.
Compatible piping: Copper water tube per ASTM B88, Types K, L, & M.
(Not for use with steam service)

Push connection
Valve can be in either closed or open position.
Compatible piping: Copper water tube per ASTM B88, Types K, L, & M, both hard drawn
(Not for use with steam service)

OPERATION

Swing check valve functions by allowing flow forces to move the disc from the closed position to the fully open position in a sweeping arc motion against a hinge-stop inside the valve body. Due to the weight and center-of-gravity location of the disc and swing arm assembly, the valve will return to the closed position should flow become interrupted or reversed.
Swing check valve produces the lowest pressure drop when compared with other check valves of the same size. They feature a simple design that is easy to maintain. Swing check valves with metal seated

disc have a maximum permissible leakage rate per MSS SP-80 of 40ml of water per hour per inch of pipe size. Soft-seated/resilient disc have bubble-tight seal during reverse flow.

MAINTENANCE

If the cap/hinge leaks, isolate and depressurize the unit. Check for damage or wear. If damage is due to scratches or nicks, repair damage area by resurfacing to maintain flatness and seal.
Seat leakage can be resolved by:
Flushing seat area with high rate of flow through the valve. In some cases, foreign materials or debris causes the disc to completely close allowing leak across the check. If seat leakage persists, dismantle valve and verify cause.
Scratches or dents on seat and disc can be corrected by lapping disc while it is in the body. Apply lapping compound on the disc and seat, and apply mild amount of pressure to lap both surfaces.
If lapping cannot resolve seat leakage, replace disc.
In Viton or PTFE disc, it is recommended to replace it.

AMENDMENT REGISTER

DATE	REV	SECTION	PAGE	DESCRIPTION
08/7/13	A	All	All	Released new engineering standard
08/20/13	B	Introduction	1 - 2	Added Models 163S & 163LF