

## Chapter 16 VALVES

### MANUFACTURER/DISTRIBUTOR:

**WOLSELEY Inc.**

4200, Hickmore

St-Laurent, QC, H4T 1K2

Phone: (514) 344-9378

Fax : (514) 344-9341

- 16.1 **BUTTERFLY VALVE MAS L-D-4-A-E-LH 3" @ 6"**
- 16.2 **PVC CHECK VALVE IPEX 052289 & 052291**
- 16.3 **PVC CHECK VALVE SXE IPEX IPE052018**
- 16.4 **PVC BALL VALVE IPEX 353000 SERIE**
- 16.5 **BALL VALVE NPT STAINLESS STEEL G-2**
- 16.6 **BALL VALVE NPT MAS B3**
- 16.7 **NPT CHECK VALVE BRASS - Kitz#22**
- 16.8 **BALL VALVE CPVC**
- 16.9 **BALL VALVE JENKINS 4092J**

# VKD Series Ball Valves

SV-1 @ SV-2

## Submittal Data Sheet



Job or Customer: \_\_\_\_\_

Engineer: \_\_\_\_\_

Contractor: \_\_\_\_\_

Submitted by: \_\_\_\_\_

Date

Approved by: \_\_\_\_\_

Date

Order No: \_\_\_\_\_

Specification: \_\_\_\_\_

### SHOP DRAWING

Date

This review is solely for the verification of general design quality and does not alleviate the responsibility of the contractor for insuring that all specification, space and installation requirements are met.

Reviewed By: \_\_\_\_\_ M.M. \_\_\_\_\_ Reviewed ☒

Reviewed as noted ☐

Date: 29 June 2016 Resubmit ☐

CHIARELLI ENGINEERING LTD.

## introduction

### < STANDARDS >



ASTM D1784  
ASTM D2466  
ASTM D2467  
ASTM D2464  
ASTM F1498  
ASTM F439  
ASTM F437



ANSI B1.20.1  
ANSI B16.5

### Valve Availability

Body Material: PVC, CPVC, PP

Size Range: 3/8" through 4"

Pressure: 232 psi, 150 psi (PP)

Seats: Teflon® (PTFE)

Seals: EPDM or FPM

End Connections: Socket (IPS), Threaded (FPT), Socket (Metric)

### SHOP DRAWING

Reviewed by: Samuel Charbonneau  
Date: 27 June 2016

Reviewed ☒

Reviewed as noted ☐

Resubmit ☐

Out for Approval

SIFEC NORTH INC.

# VKD Series Ball Valves

## Valve Selection

Valve Size (inches)	Body Material	O-ring Material	IPEX Part Number IPS Socket	Pressure Rating at 73°F
3/8	PVC	EPDM	253067	232 psi
		FPM	253068	
	CPVC	EPDM	253069	
		FPM	253070	
1/2	PVC	EPDM	053461	
		FPM	053467	
	CPVC	EPDM	053473	
		FPM	253008	
3/4	PVC	EPDM	053462	
		FPM	053468	
	CPVC	EPDM	053474	
		FPM	253009	
1	PVC	EPDM	053463	
		FPM	053469	
	CPVC	EPDM	053475	
		FPM	253010	
1-1/4	PVC	EPDM	053464	
		FPM	053470	
	CPVC	EPDM	053476	
		FPM	253011	
1-1/2	PVC	EPDM	053465	
		FPM	053471	
	CPVC	EPDM	053477	
		FPM	253012	
2	PVC	EPDM	053466	
		FPM	053472	
	CPVC	EPDM	053478	
		FPM	253013	
2-1/2	PVC	EPDM	053539	
		Viton®	053542	
	CPVC	EPDM	053545	
		Viton®	053548	
3	PVC	EPDM	053540	
		Viton®	053543	
	CPVC	EPDM	053546	
		Viton®	053549	
4	PVC	EPDM	053541	
		Viton®	053544	
	CPVC	EPDM	053547	
		Viton®	053550	

### Body Material:

- ☒ PVC
- ☐ CPVC
- ☐ PP

### Size:

- ☐ 3/8"      ☐ 1/2"
- ☐ 3/4"      ☐ 1"
- ☐ 1-1/4"      ☐ 1-1/2"
- ☒ 2"      ☐ 3"
- ☐ 4"

### Seals:

- ☒ EPDM
- ☐ FPM

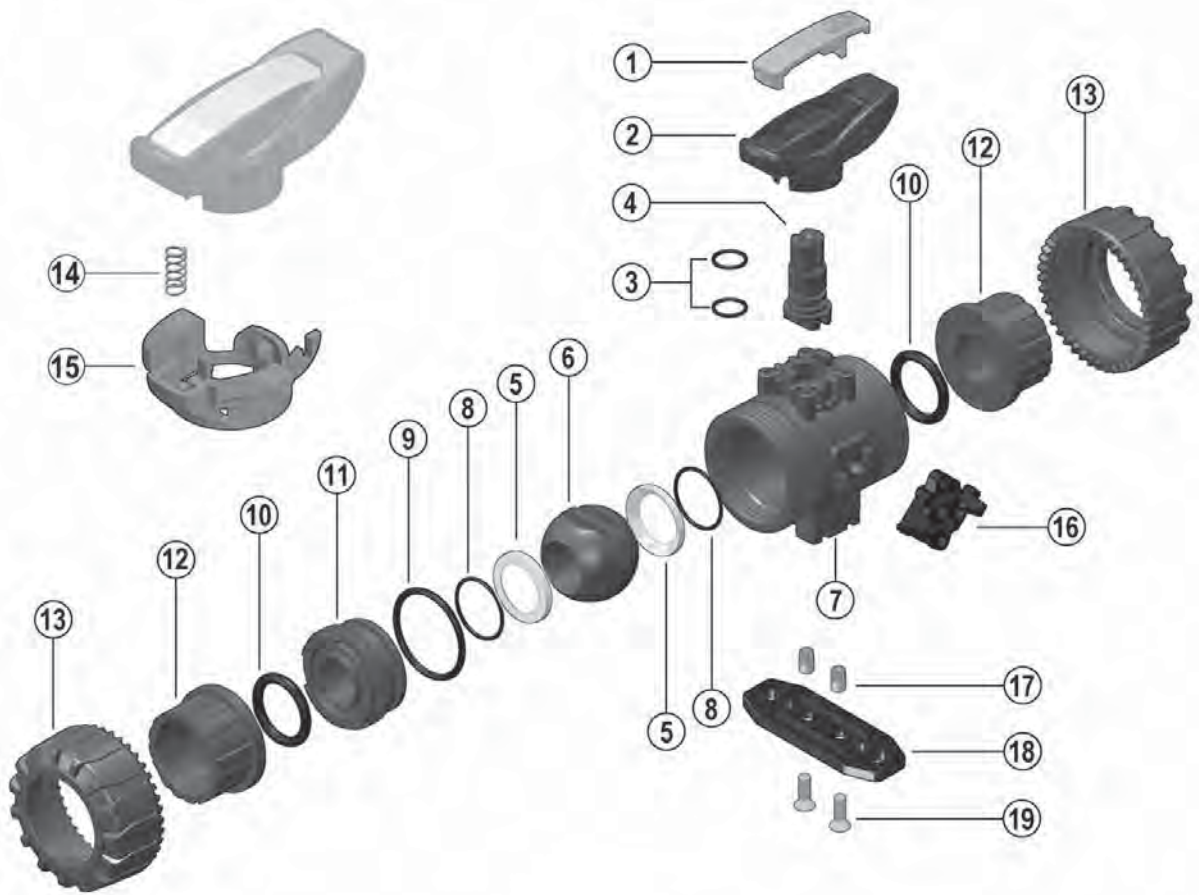
### IPEX Part Number:

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# VKD Series Ball Valves

## Components

sizes 1/2" to 2"



#	Component	Material	Qty
1	insert	PVC / CPVC / PP	1
2	handle	PVC / CPVC / PP	1
3	stem o-ring	EPDM / Viton®	2
4	stem	PVC / CPVC / PP	1
5	ball seat	PTFE	2
6	ball	PVC / CPVC / PP	1
7	body	PVC / CPVC / PP	1
8	ball seat o-ring	EPDM / Viton®	2
9	body o-ring	EPDM / Viton®	1
10	socket o-ring	EPDM / Viton®	2

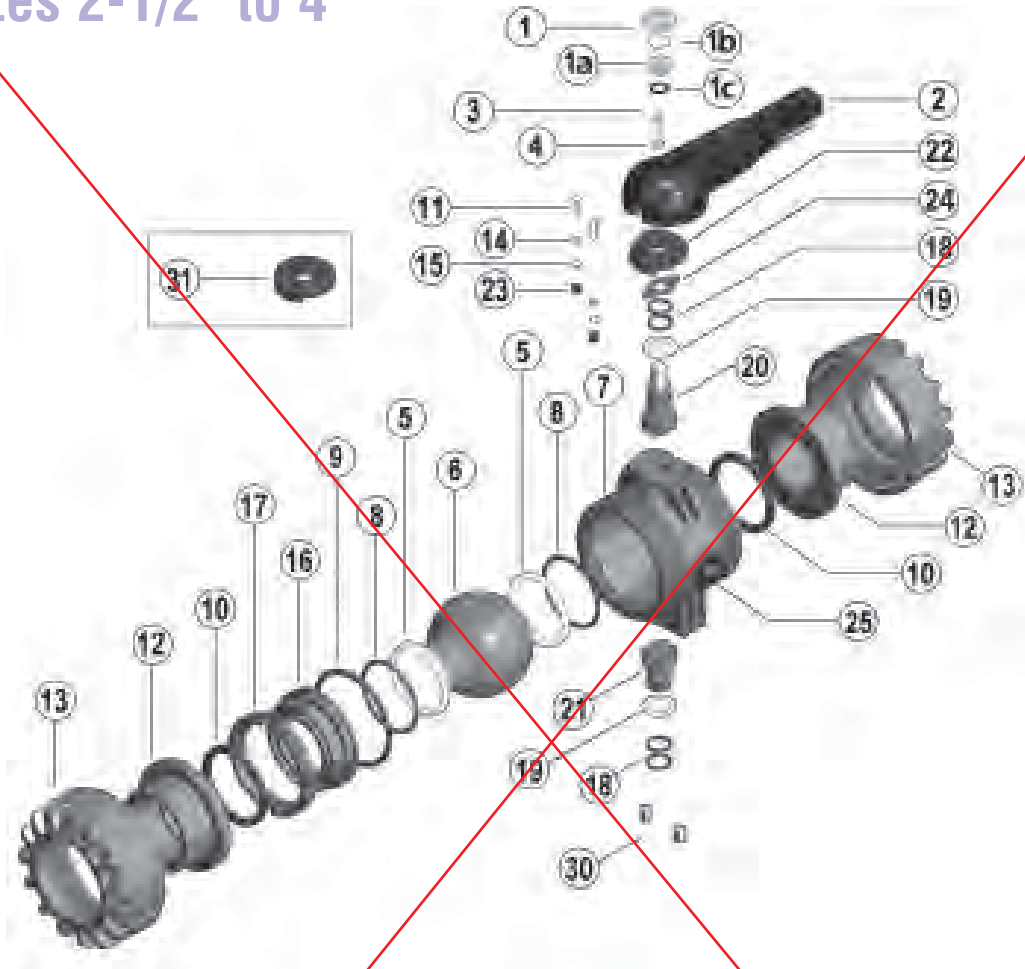
#	Component	Material	Qty
11	carrier with stop ring	PVC / CPVC / PP	1
12	end connector	PVC / CPVC / PP	2
13	union nut	PVC / CPVC / PP	2
14*	spring	SS	1
15*	handle lock	GRPP	1
16	DUAL BLOCK®	POM	1
17*	bracket bushing	SS / brass	2
18*	mounting plate	GRPP	1
19*	screw	SS	2

\* Optional Accessories

# VKD Series Ball Valves

## Components

sizes 2-1/2" to 4"



#	Component	Material	Qty
1 a,b,c	transparent service plug	PE	1
2	handle	PVC	1
3	bolt	SS	1
4	washer	SS	1
5	ball seat	PTFE	2
6	ball	PVC / CPVC	1
7	body	PVC / CPVC	1
8	ball seat o-ring	EPDM / Viton®	2
9	body o-ring	EPDM / Viton®	1
10	socket seal	EPDM / Viton®	2
11	bolt	SS	2
12	end connector	PVC / CPVC	2
13	union nut	PVC / CPVC	2
14	washer	SS	2
15	nut	SS	2
16	carrier	PVC / CPVC	1

#	Component	Material	Qty
17	stop ring	PVC / CPVC	1
18	stem o-ring	EPDM / Viton®	4
19	bushing	PTFE	2
20	upper stem	PVC / CPVC & SS	1
21	lower stem	PVC / CPVC	1
22	pad	GRPP	1
23	protective cap	PE	2
24	spring	SS	2
25	nut block	GRPP	2
26	cover	PP	1
27	nut block button	GRPP	1
28	protective cap	PE	1
29	screw	nylon	2
30	bracket bushing	brass	2
31	actuation pad	GRPP	1

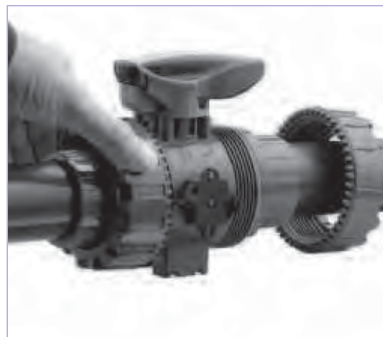


# VKD Series Ball Valves

## Installation Procedures



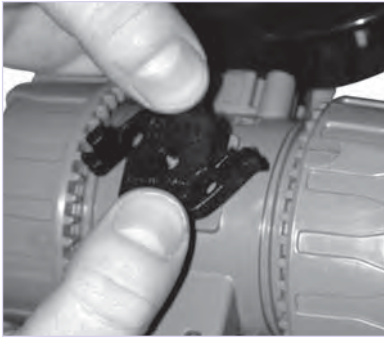
1. Remove the union nuts (part #13 on previous pages) and slide them onto the pipe.
2. Please refer to the appropriate connection style sub-section:
  - a. For socket style, solvent cement or fuse the end connectors (12) onto the pipe ends. For correct solvent cementing procedure, please refer to the section entitled, "Joining Methods – Solvent Cementing" in the IPEX Industrial Technical Manual Series, "Volume I: Vinyl Process Piping Systems". **Be sure to allow sufficient cure time before continuing with the valve installation.**
  - b. For threaded style, thread the end connectors (12) onto the pipe ends. For correct joining procedure, please refer to the section entitled, "Joining Methods – Threading" in the IPEX Industrial Technical Manual Series, "Volume I: Vinyl Process Piping Systems".
3. Open and close the valve to ensure that the carrier (11 or 16) is at the desired adjustment. If adjustment is required, ensure that the valve is in the closed position then remove the insert tool (1) from the handle (2). For sizes 2-1/2" to 4", use the tool that accompanies the valve. Line up the moldings on the tool with the slots in the carrier. Tighten or loosen to the desired position then replace the tool on the handle.
4. Ensure that the valve is in the closed position, and that the socket o-rings (10) are properly fitted in their grooves. If anchoring is required, insert the bracket bushings (17) into the bottom of the valve (sizes 1/2" to 2" only). Carefully place the valve in the system between the two end connections and fix if necessary.
5. Tighten the union nut on the side opposite to that which is marked "ADJUST". Hand tightening is typically sufficient to maintain a seal for the maximum working pressure. **Over-tightening may damage the threads on the valve body and/or the union nut, and may even cause the union nut to crack.**



# VKD Series Ball Valves

## Installation Procedures

Size 1/2" - 2"



6. Tighten the union nut on the side marked "ADJUST". Tightening the union nuts in this order results in the best possible valve performance due to optimum positioning and sealing of the ball and seat support system.
7. Open and close the valve to again ensure that the cycling performance is adequate. If adjustment is required, place the valve in the closed position, loosen the union nuts, remove the valve from the system, and then continue from Step 3.
8. Engage the Dual Block® system by affixing the molded piece (16, sizes 1/2" to 2") to the side of the valve body or by turning the red knob (27, sizes 2-1/2" to 4") to the locked position. This feature will prevent back-off of the union nuts during operation.

Size 2-1/2" – 4"



FREE



LOCK





# VKD Series Ball Valves

## Testing and Operating

### Size 2-1/2"

#### FREE

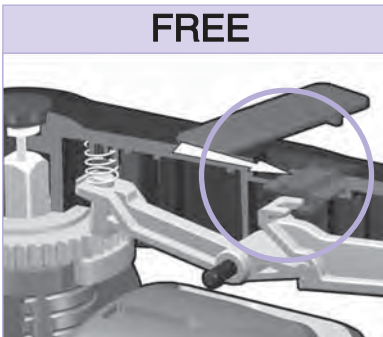


#### LOCK

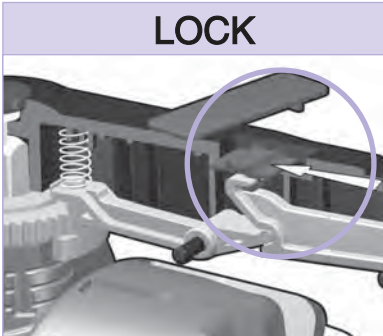


### Sizes 3" & 4"

#### FREE



#### LOCK



The purpose of system testing is to assess the quality of all joints and fittings to ensure that they will withstand the design working pressure, plus a safety margin, without loss of pressure or fluid. Typically, the system will be tested and assessed in sub-sections as this allows for improved isolation and remediation of potential problems. With this in mind, the testing of a specific installed valve is achieved while carrying out a test of the overall system.

An onsite pressure test procedure is outlined in the IPEX Industrial Technical Manual Series, *"Volume I: Vinyl Process Piping Systems"* under the section entitled, *"Testing"*. The use of this procedure should be sufficient to assess the quality of a valve installation. **In any test or operating condition, it is important to never exceed the pressure rating of the lowest rated appurtenance in the system.**

#### Important points:

- Never test thermoplastic piping systems with compressed air or other gases including air-over-water boosters.
- When testing, do not exceed the rated maximum operating pressure of the valve.
- Avoid the rapid closure of valves to eliminate the possibility of water hammer which may cause damage to the pipeline or the valve.

**For safety reasons, please contact IPEX customer service and technical support when using volatile liquids such as hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) and sodium hypochlorite (NaClO). These liquids may vaporize causing a potentially dangerous pressure increase in the dead space between the ball and the valve body. Special VKD ball valves are available for these types of critical applications.**

**Note:** The VKD handle incorporates a locking mechanism that prevents unintentional rotation. When engaged, the spring-loaded handle release is locked and the valve cannot be cycled. A padlock can be installed through this portion of the handle as an additional safety precaution.

Please contact IPEX customer service and technical support with regard to any concern not addressed in this data sheet or the technical manual.



### About the IPEX Group of Companies

As leading suppliers of thermoplastic piping systems, the IPEX Group of Companies provides our customers with some of the world's largest and most comprehensive product lines. All IPEX products are backed by more than 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, we have established a reputation for product innovation, quality, end-user focus and performance.

Markets served by IPEX group products are:

- Electrical systems
- Telecommunications and utility piping systems
- PVC, CPVC, PP, ABS, PEX, FR-PVDF and PE pipe and fittings (1/4" to 48")
- Industrial process piping systems
- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- PE Electrofusion systems for gas and water
- Industrial, plumbing and electrical cements
- Irrigation systems

Products manufactured by IPEX Inc. and distributed in the United States by IPEX USA LLC.

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A policy of ongoing product improvement is maintained. This may result in modifications of features and/or specifications without notice.

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## VKD SERIES BALL VALVE - TRUE UNION, PNEUMATIC - DOUBLE ACTING



End Connection	Size inches	EPDM Product Code	Viton® Product Code
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## PVC w PTFE Seats

S/T	1/2	253296	253305
S/T	3/4	253297	253306
S/T	1	253298	253307
S/T	1-1/4	253299	253308
S/T	1-1/2	253300	253309
S/T	2	253301	253310
Socket	2-1/2	253302	253311
Socket	3	253303	253312
Socket	4	253304	253313

## Pneumatic - Spring Return, Normally Open

## PVC w PTFE Seats

S/T	1/2	253368	253377
S/T	3/4	253369	253378
S/T	1	253370	253379
S/T	1-1/4	253371	253380
S/T	1-1/2	253372	253381
S/T	2	253373	253382
Socket	2-1/2	253374	253383
Socket	3	253375	253384
Socket	4	253376	253385

## Pneumatic - Spring Return, Normally Closed

## PVC w PTFE Seats

S/T	1/2	253332	253341
S/T	3/4	253333	253342
S/T	1	253334	253343
S/T	1-1/4	253335	253344
S/T	1-1/2	253336	253345
S/T	2	253337	253346
Socket	2-1/2	253338	253347
Socket	3	253339	253348
Socket	4	253340	253349

End Connection	Size inches	EPDM Product Code	Viton® Product Code
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## Corzan® CPVC w PTFE Seats

S/T	1/2	253314	253323
S/T	3/4	253315	253324
S/T	1	253316	253325
S/T	1-1/4	253317	253326
S/T	1-1/2	253318	253327
S/T	2	253319	253328
Socket	2-1/2	253320	253329
Socket	3	253321	253330
Socket	4	253322	253331

## Pneumatic - Spring Return, Normally Open

## Corzan® CPVC w PTFE Seats

S/T	1/2	253386	253395
S/T	3/4	253387	253396
S/T	1	253388	253397
S/T	1-1/4	253389	253398
S/T	1-1/2	253390	253399
S/T	2	253391	253400
Socket	2-1/2	253392	253401
Socket	3	253393	253402
Socket	4	253394	253403

## Pneumatic - Spring Return, Normally Closed

## Corzan® CPVC w PTFE Seats

S/T	1/2	253350	253359
S/T	3/4	253351	253360
S/T	1	253352	253361
S/T	1-1/4	253353	253362
S/T	1-1/2	253354	253363
S/T	2	253355	253364
Socket	2-1/2	253356	253365
Socket	3	253357	253366
Socket	4	253358	253367

## SHOP DRAWING

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Reviewed By: \_\_\_\_\_ M.M. Reviewed ☒  
 Reviewed as noted ☐  
 Date: 29 June 2016 Resubmit ☐

## Corzan® CPVC w PTFE Seats

S/T	1/2	
S/T	3/4	
S/T	1	
S/T	1-1/4	
S/T	1-1/2	
S/T	2	
Socket	2-1/2	
Socket	3	
Socket	4	

## CHIARELLI ENGINEERING LTD.

For pneumatic actuation, you must order three separate components.

Contact IPEX Sales for assistance.

## VKD SERIES BALL VALVE - ELECTRIC - DOUBLE ACTING, 110 VAC



End Connection	Size inches
----------------	-------------

## PVC w PTFE Seats

S/T	1/2
S/T	3/4
S/T	1
S/T	1-1/4
S/T	1-1/2
S/T	2
Socket	2-1/2
Socket	3
Socket	4

End Connection	Size inches
----------------	-------------

## Corzan® CPVC w PTFE Seats

S/T	1/2
S/T	3/4
S/T	1
S/T	1-1/4
S/T	1-1/2
S/T	2
Socket	2-1/2
Socket	3
Socket	4



## SC SERIES SWING CHECK VALVES

The SC combines superior flow rate with maximum versatility. With stainless wetted parts and hardware, top entry design, and extremely low back pressure requirements, these flanged valves are the perfect choice for back-flow prevention in large diameter lines, both vertical and horizontal. The SC is available in PVC with either EPDM or Viton® seals.

Pressure: up to 100 psi at 73°F depending on the size  
 Sizes: 3" – 8"



End Connection	Size inches	EPDM Product	Viton® Product Code
----------------	-------------	--------------	---------------------

### PVC

Flanged	3	052289	053875
Flanged	4	052290	053876
Flanged	6	052291	053877
Flanged	8	052292	053878

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Reviewed By: M.M. Reviewed ☒  
 Reviewed as noted ☐  
 Date: 29 June 2016 Resubmit ☐

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## VA SERIES AIR RELEASE VALVES - SINGLE

The VA is one of only two such plastic valves in the industry, and the only one controlled by media and not pressure. Designed for tanks, slurries, or start-ups, the VA valve will economically and efficiently eliminate air or gas pockets as well as break potentially dangerous vacuums. This no-spill valve is offered in PVC with EPDM seals. Viton® sealing kits are also available.

Pressure: 232 psi  
 Sizes: 3/4", 1-1/4" and 2"



### SHOP DRAWING

Reviewed by: Samuel Charbonneau  
 Date: 27 June 2016

Reviewed ☒  
 Reviewed as noted ☐  
 Resubmit ☐

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SIFEC NORTH INC.

### EPDM Product Code

053559  
 053560  
 053561

(& threaded) end

Size inches	Product Code
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### Viton® O-ring Set

3/4	153845
1-1/4	153846
2	153847

# 5044 ALF



Reviewed by: Samuel Charbonneau

Date: 27 June 2016

Reviewed

Reviewed as noted

Resubmit

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Reviewed By: M.M. Reviewed

		Reviewed as noted
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Date: 29 June 2016 Result: mit

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## HANDLE MARKING

NOMINAL SIZE	d	d2	H	D1	L	S1
1/4	0.39	NPT1/4	1.46	2.76	1.65	0.79
3/8	0.39	NPT3/8	1.46	2.76	1.65	0.87
1/2	0.59	NPT1/2	1.57	3.15	2.08	1.02
3/4	0.79	NPT3/4	1.69	3.15	2.36	1.26
1	0.98	NPT 1	1.97	4.33	2.83	1.54
1.1/4	1.26	NPT1.1/4	2.16	4.33	3.31	1.89
1.1/2	1.57	NPT1.1/2	2.52	5.90	3.62	2.17
2	1.97	NPT 2	2.83	5.90	4.33	2.68

NOTE (1) VALVE SIZE IDENTIFICATION.

(2)  $\text{SnNi}$  PLATING

(3) ZINC DICHROMATE PLATED AND PLASTIC COVERING.

(4) KSB-4XA AND KSB-4XC ARE LEAD FREE BRASS.

TYPE 600 LEAD FREE FORGED BRASS

# BALL VALVES

DATE	APPD	JUN. 20. ' 14	DRAWING	NO	△
APPD	BY	T. KOYANAGI			△
CHKD	BY	K. NAKAI	825-001913		△
DSGND	BY	N. KAMA			△
DRAWD	BY	Y. WATANABE	REV-00	MARK	DATE
					BY



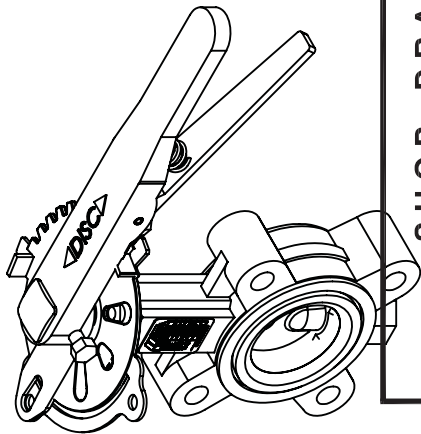
TOYO VALVE CO., LTD.


# TOYO



in/mm									lbs/kgs
Size	L	ϕ D	n x M	h1	h2	A	B	Q	Assembly Weight
2"	1.69	4.75	4 x 5/8-11	2.60	5.12	8.7	1.3	1.13	6.5
	DN50	42.9	UNC	66.0	130	221	33	28.7	3.0
2.5"	1.81	5.50	4 x 5/8-11	3.23	5.55	8.7	1.3	1.79	7.8
	DN65	46.0	UNC	82.0	141	221	33	45.5	3.5
3"	1.81	6.00	4 x 5/8-11	3.54	5.83	8.7	1.3	2.45	8.6
	DN75	46.0	UNC	89.9	148	221	33	62.2	3.9
4"	2.05	7.50	8 x 5/8-11	4.25	6.69	10.2	1.4	3.50	14.8
	DN100	52.1	UNC	108	170	260	36	88.9	6.7
5"	2.20	8.50	8 x 3/4-10	4.84	7.36	10.2	1.4	4.55	19.2
	DN125	55.9	UNC	123	187	260	36	116	8.7
6"	2.20	9.50	8 x 3/4-10	5.43	7.95	10.2	1.4	5.71	22.7
	DN150	55.9	UNC	138	202	260	36	145	10.3
8"	2.36	11.75	8 x 3/4-10	6.69	9.37	14.2	1.7	7.77	36.6
	DN200	59.9	UNC	170	238	360	43	197	16.6
10"	2.68	14.25	12 x 7/8-9	7.87	10.7	14.2	1.7	9.76	57.8
	DN250	68.1	UNC	200	272	360	43	248	26.3
12"	3.07	17.00	12 x 7/8-9	9.29	12.0	14.2	1.7	11.7	79.5
	DN300	78.0	UNC	236	305	360	43	298	36.1

#	MAS Part No.	Description
1	L-D-4-S-E-LH	Butterfly Valve
2	HANDLE XXX-XX	Lever - 10 pos throttle plate
3	MAS ID Plate	Identification tag w/ trim code
4	NSF-372 Tag	CSA/NSF-372 Compliance Tag





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☒ Reviewed  
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☐ Resubmit

Date: 29 June 2016

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Reviewed

Reviewed as noted

Resubmit

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4 CSA/NSF-372 Compliance Tag:

Specifications	
Temp. Rating	-4-275°F (-20-135°C)
Press. Rating	200 PSI
Design to: MSS-SP-67 & API-609	
Markings to: MSS-SP-25	
NSF-372 Compliance: Low Lead Content Only	

Materials		
Valve	Body	Ductile Iron ASTM A536
	Stem	416 SS ASTM A582
	Disc	Stainless Steel ASTM A351 CF8M
	Seat	EPDM
Handle	Painted Malleable Iron w/ ABS Plug	
Throttle plate	Zinc-Plated Steel	

UNLESS OTHERWISE SPECIFIED:		NAME		DATE		 M.A. Stewart & Sons Ltd. 12900 - 87th Avenue Surrey, B.C. V3W 3H9 Toll-Free: (800) 594-8431 Fax: (604) 594-4335 www.mastewart.com	
DIMENSIONS ARE IN INCHES		DRAWN		SE		5/3/13	
TOLERANCES:		CHECKED					
FRACTIONAL ±		REVISIONS:		SE		11/18/13	
ANGULAR: MACH ±				SE		5/13/14	
TWO PLACE DECIMAL ±							
THREE PLACE DECIMAL ±							
INTERPRET GEOMETRIC TOLERANCING PER:		PROJECT:				TITLE:  MAS D Series Lug BFV L-D-4-S-E-LH (2-12")	
MATERIAL						SIZE DWG. NO. REV	
FINISH						<b>B</b> 2-12in L-D-4-S-E-LH 2	
DO NOT SCALE DRAWING						SCALE: 1:2 WEIGHT: SHEET 1 OF 1	

