



Engineered to provide
the performance you expect.

KTM™ Virgo™ Series Floating Ball Valves

Isolation valves engineered to provide reliability,
safety and keep your process operating.



You face more than your share of challenges in achieving the most from your processes.

Your job is always a balancing act, making sure your operation is safe, regulatory compliant, realizes maximum uptime, and at the same time keeping a close eye on operational expenses.

In order to succeed in maintaining the balance between all of these elements you must select the proper equipment for your operation. Important questions that you should ask yourself when selecting isolation valves for your process are: With all the product claims on the market, do these valves perform as advertised? Can I purchase and maintain them at a cost that does not break the bank? Does this product help me achieve the results I am looking for in my processes?

“43% of valve failures in oil and gas sector are caused by inadequate design and material deficiencies.”

–TÜV SÜD



“60% of all fugitive emissions come from valve stem packing.”

–US Environmental Protection Agency



“Recent study indicates the most important factor in choosing an on/off valve is having proper industry certifications.”

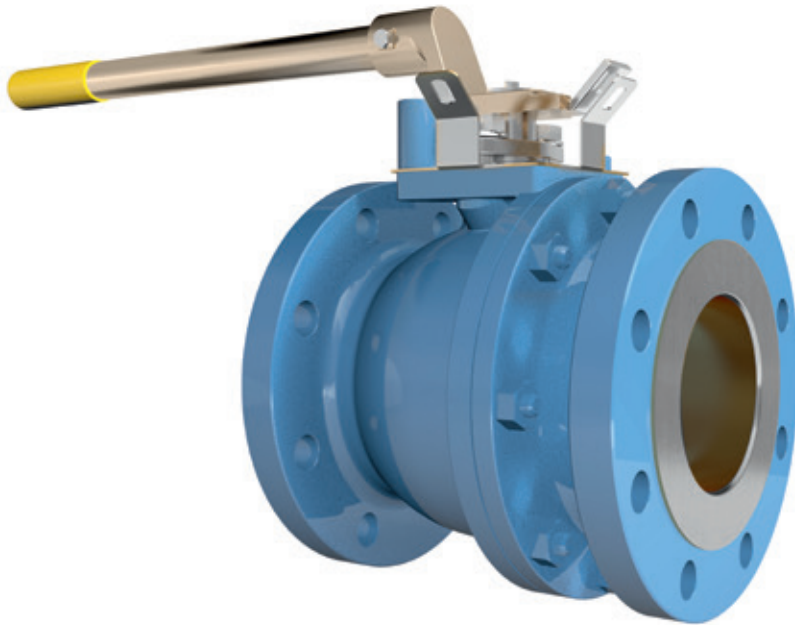
–EPM





What if you could have valves that are cost-competitive, industry certified and engineered to provide the safety and reliability you expect?

KTM Virgo Series floating ball valves deliver reliability to your process.



KTM™

Integrating components to provide the ideal automation system can be a daunting task. At Emerson, we offer a complete range of products, as well as the expertise to design the optimum solution for your process. Emerson can combine the **KTM** Virgo Series Floating Ball Valve with products from Bettis, Asco, Fisher, and Topworks to optimize your valve automation requirements.

Actuation • Control Valves • Isolation Valves

Regulators & Relief Valves • Valve Instrumentation & Accessories



“The failure of even one small isolation valve can result in catastrophic losses including damage to critical plant assets, impact to the environment or the unthinkable loss of life. Demonstrated product reliability must be key in selecting the on-off valves.”
–Reliability Engineer, Major USA Refinery

Meeting industry standards is an important part of producing quality products.

KTM Virgo Series valves are designed and tested to meet the requirements of many important industry standards, such as API 6D and API 608. To support this process, Emerson has in place a robust quality system and meticulous manufacturing practices to continually certify that these standards are met in the making of every product.

Reliable products do not have to cost more.

Reliability should be built into the product, not something you have to pay extra for. **KTM** Virgo Series ball valves are designed and tested to achieve some of the highest performance levels in the industry. Emerson is able to deliver this outstanding performance while providing exceptional value with global manufacturing and quality sourcing.

Protecting the safety of your personnel and your plant is top priority.

Protecting your personnel as well as your plant is critical. **KTM** Virgo Series floating ball valves help you make this possible with features like a blowout-proof stem, API 607/6FA fire safety certification, built in anti-static device, and extra wall thickness for increased corrosion resistance, to name a few.

Products should perform as well in the real world as they do in the lab.

KTM Virgo Series floating ball valves are designed to reduce the impact of fugitive emissions from stem packings. **KTM** Virgo Series valves are offered with different stem seal configurations to best fit your process requirements. **KTM** Virgo Series floating ball valves are able to meet ISO 15848 and withstand the rigors of a process environment.



Designed to dependably isolate all your processes

Process uptime is critical to your plant achieving maximum throughput. Products that require excessive maintenance or cause unscheduled downtime can kill your productivity. Emerson delivers the quality and performance you expect from an industry leading ball valve manufacturer. **KTM Virgo** Series Floating Ball Valves are designed and manufactured to provide dependability while remaining cost-effective. They are offered in a wide range of sizes and materials to cover all your process applications.

What's your challenge?



"Every hour a 120,000 BPD refinery is down cost \$40,000 to \$50,000. That works out to about \$1 million dollars per day." –ARC Advisory Group

What's your opportunity?



KTM Virgo Series floating ball valves meet or surpass critical industry standards and certifications, providing the quality you need to keep your process operating.

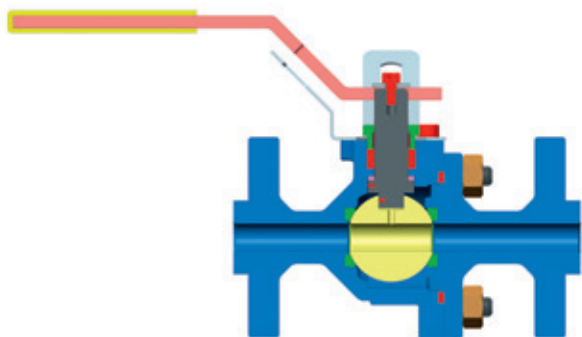
Full ranges of sizes to meet your needs



2 Piece Cast Body
Size – ½" to 10"
Pressure – 150# to 1500#
Bore – Full and Reduced
Actuation – Manual and Automated

KTM Virgo Series floating ball valves are available in a full range of sizes and pressure classes to support your process requirements.

Material options to suit your process



Standard Body / Ball Materials – Carbon / Stainless, Stainless / Stainless, Low Temp Carbon / Stainless

Optional Body and Ball Material including Duplex, Inconel®, Super Duplex

Your process needs are covered with standard material configurations available in short lead times and optional materials configurations available to support demanding process conditions.

Industry leading performance and quality



Design and Manufacturing – API 608, ASME B 16.34, API 6D
Face to Face – ASME B 16.10, API 6D
Flange Dimensions – ASME B 16.5
Pressure Tests – API 598
Leakage Test – API 598 "Zero" Leakage
Fire Safe Test – API 607, API 6FA, BS EN ISO 10497
Quality Certifications – ISO 9001-2008
Fugitive Emissions – ISO 15848 Class B

KTM Virgo Series floating ball valves are designed and tested to meet critical industry standards, helping to ensure performance and quality you expect from your valves.



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Designed to provide process flexibility while maintaining safety

The processes in your facility are potentially harmful and must be contained in order to keep your personnel and your plant safe. However, there are leak potentials throughout your process, including your valves. The right valve can make your job easier by helping to eliminate this potential. **KTM** Virgo Series floating ball valves are designed and tested to meet the stringent ISO 15848 fugitive emissions standard. These valves include multiple stem sealing options to best fit your process and minimize seat leak potential. Multiple material seal options are available to maintain an effective seal regardless of process fluid.

What's your challenge?



"It is estimated that over 70K tons per year of VOCs and 9K tons per year of HAPs are emitted from equipment leaks." –EPA



What's your opportunity?

KTM Virgo Series floating ball valves utilize live loaded, adjustable packing or multi O-ring seals that best fit your process to provide a leak-resistant seal and to minimize fugitive emissions.

Reliability for all your process applications



Refining

- Atmospheric distillation
- Vacuum distillation
- Continuous catalytic reforming
- Fixed bed hydrotreating
- Fixed bed hydrocracking
- Delayed coking
- Visbreaking
- Deasphalting
- Gasification

Chemical and petrochemical

- Ethylene plants
- Ethylene crackers

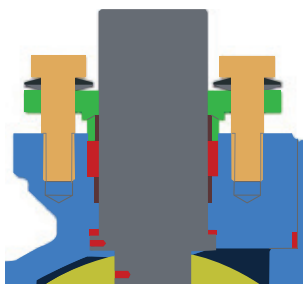
- Propylene plants
- Hydrogen gas service
- Propane gas service
- Brine, CO2 vapor and steam service
- Cryogenic services
- Thermal fluids
- Tail gas
- Hydrocarbon gas service
- Flare inlet and manifold isolation
- PSA and molecular sieves
- Coker plants
- Pump isolation

Other applications

- Power generation
- Storage and distribution
- Tanks and terminals
- Cooling water
- Equipment isolation

Emerson's full range of floating ball valves allows for the optimum valve to be selected to maximize uptime and deliver unsurpassed performance.

Reduce the risk of leaks and fugitive emissions



Live loaded, adjustable packing or multi O-ring seals are available to best fit your process to provide a leak-proof seal and minimize fugitive emissions.



Multiple body seals are available to ensure positive body joint sealing regardless of process.

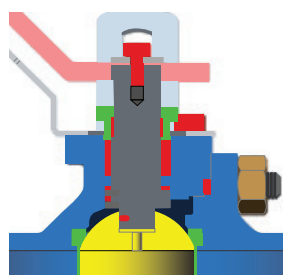


Positive shut off with bi-directional "Zero" leakage

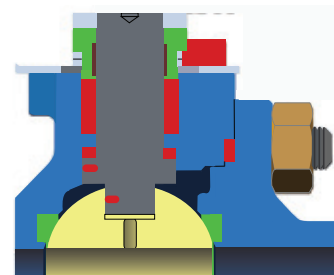
Quality and safety designed in



Extra wall thickness for increased corrosion allowance



Large diameter blowout proof shouldered stem for added protection and reliable automation

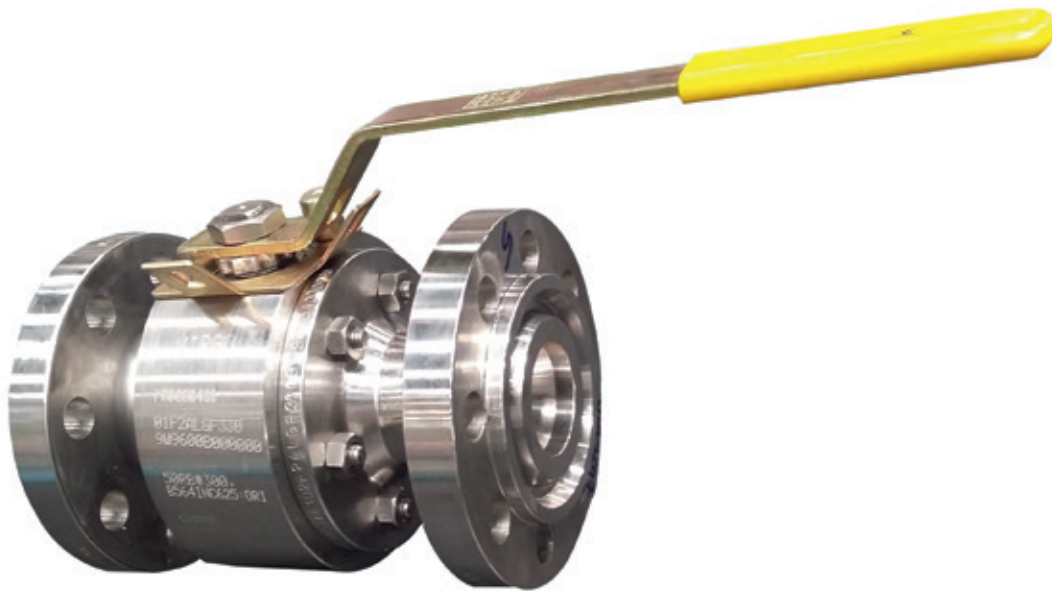


Antistatic devices in the valve stem ensure electrical continuity between ball, stem and body, providing increased safety



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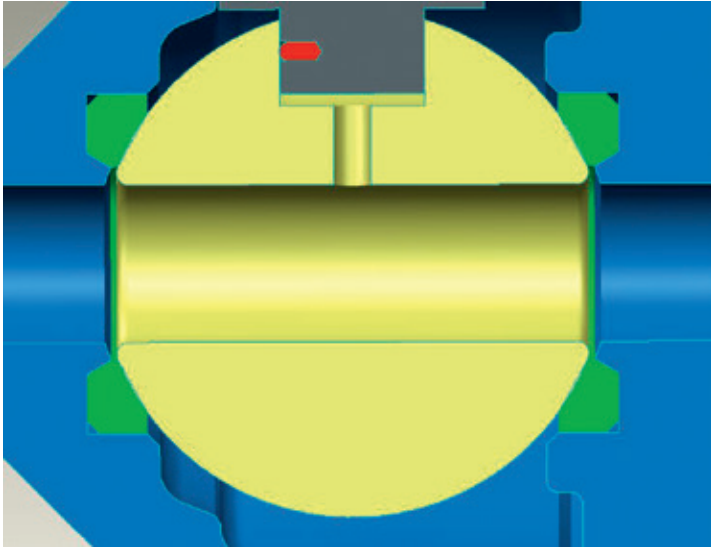
KTM Virgo Series Floating Ball Valves: Designed to exceed your expectations



KTM Virgo Series Floating Ball Valve Overview

KTM Virgo Series floating ball valves are designed using the latest engineering tools including Pro-E / Creo, Computational Fluid Dynamics (CFD), and Finite Element Analysis (FEA) to ensure our products provide the performance you are looking for in your valves. During manufacturing, Emerson utilizes state-of-the-art equipment and techniques to produce **KTM** Virgo Series products cost-effectively, with quality standards that often exceed those of other valve manufactures. Our exceptional design and manufacturing is validated with an industry leading in-house test facility. Not only do we ensure **KTM** Virgo Series products are made using the highest quality specifications, our facility can certify that our products are compliant to the latest standards and regulations.

Engineered seat for positive shutoff



KTM Virgo Series floating ball valves are engineered to provide positive shutoff with “Zero” leakage and reliable sealing. This innovative design helps you increase process uptime while keeping your personnel and plant as safe as possible. This is achieved through a unique seat design that maintains a large contact area between the ball and seat. At the same time, because of its shape, this seat design reduces torque when operating the valve.

KTM Virgo Series seats feature a large cross-section to absorb energy without deformation to increase its dependability and life. To ensure every seat is precisely installed, Emerson utilizes a proprietary seat installation process to maintain consistency valve after valve.

Integrated design features



Integrated Design Features include:

- ISO 5211 mounting pads – Simplifies actuator or gear mounting
- Extra wall thickness on valve bodies – Increased corrosion allowance for added dependability
- NACE MR 01-75 / ISO 15156 compliant
- Built-in anti-static devices – Prevents static buildup and provides added safety
- Some valves feature a built-in locking device, allowing for easy valve lockout

KTM Virgo Series S Floating Ball Valve: Engineered to your process requirements



KTM Virgo Series S Floating Ball Valve: Configurable to your process requirements

Over one million **KTM** Virgo Series ball valves have been supplied for use in many different applications around the globe. This vast amount of industry experience is utilized in the development of new **KTM** Virgo Series floating ball valves. Emerson understands that each process in your facility is unique and in order for a product to perform at its optimum level, it must be designed and configured for that type of process. This can save cost, increase uptime, and reduce maintenance requirements. Emerson has various models of **KTM** Virgo Series valves designed to best fit your process. Beyond size and pressure classes, valves can be ordered with different bores, body materials, ball and stem materials, seat materials, seals, packing materials and operators. If you are looking for a valve that combines reliability and the ability to save money in one package, look no further than Emerson.



KTM Virgo Series Floating Ball Valves

Built to excel in all your applications

KTM Virgo Series Floating Ball Valves are offered in several different series to help you achieve maximum results from your process. Whether you're in the chemical industry, refining, oil & gas, or any other industry Emerson has a valve to fit your applications. Each series is built with an eye on quality every step of the way to provide you the most reliable product in the industry.

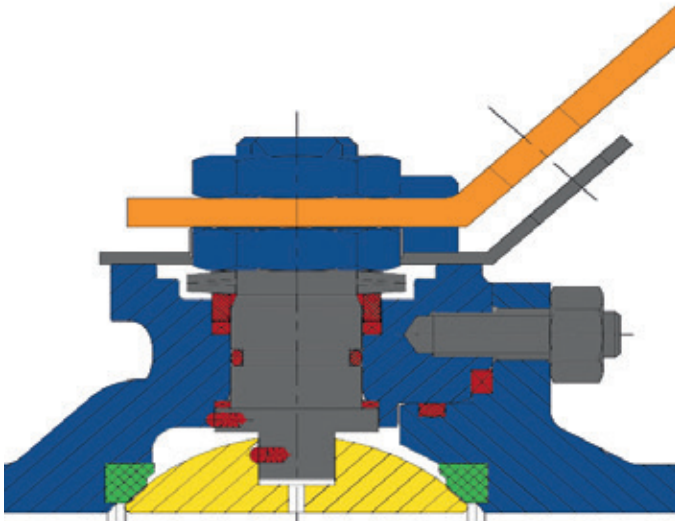
Series SS

Soft Seated Side Entry Floating Ball Valve

KTM Virgo Series SS floating ball valve utilizes a live loaded packing gland design that provides additional protection for your process against leakage, even at very low pressures. A spring disk washer arrangement maintains load on the packing gland to deliver a leak-proof seal and minimize fugitive emissions, even with changes in temperature and process pressure.



- Body Configurations: 2 Piece Cast
- Available Size: ½" to 2½" Full Bore
- Pressure Classes: ASME 150# to 1500#
- Featured Certifications: API 6D, API 607, API 6FA, API 598, BS EN ISO 17292, BS EN ISO 10497, ISO 15848, SIL3 capable
- Body Materials: Carbon Steel, Stainless Steel, Low Temp Carbon Steel, Duplex, Alloys
- Activation Options: Manual, Bare Stem, Gear, Hand Lever, Fully Automated
- Bore: Full, Reduced



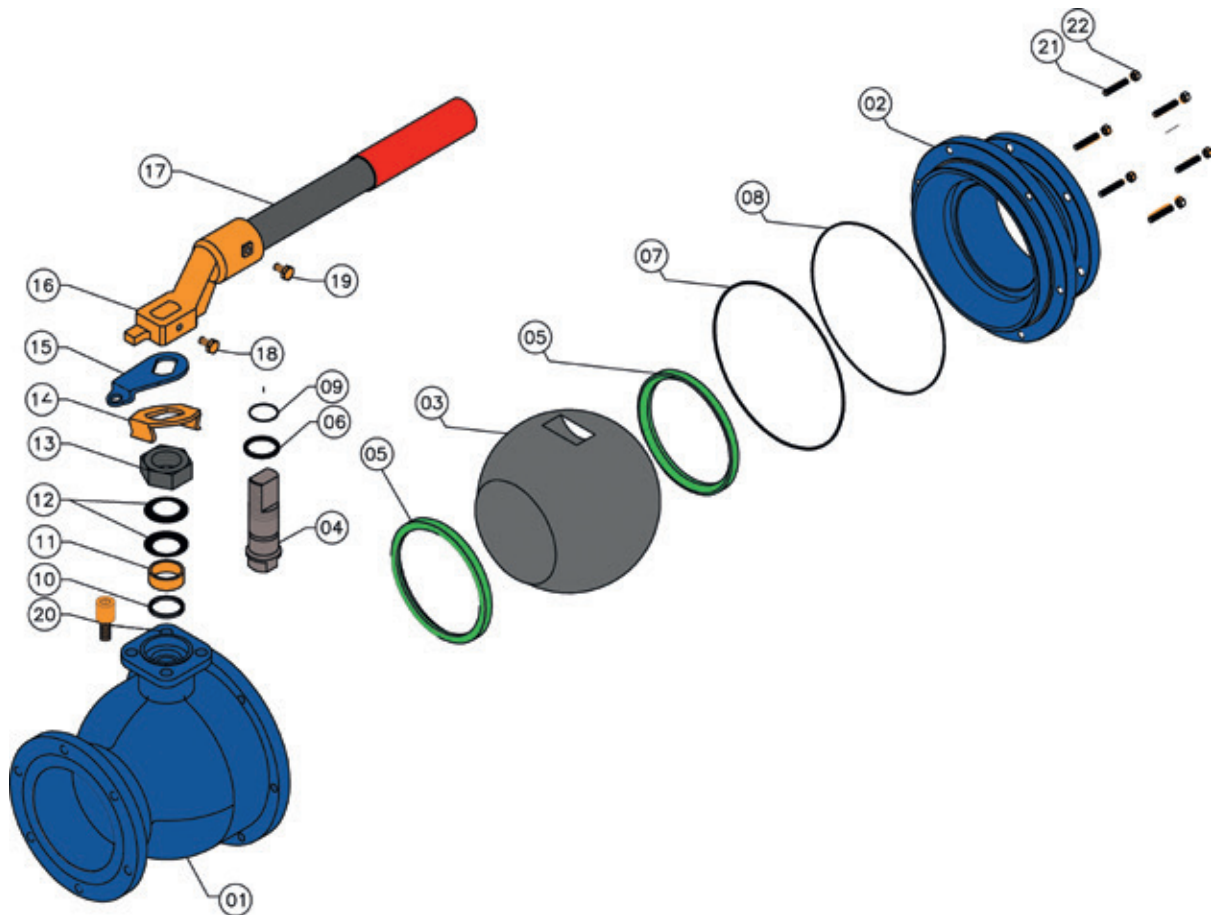
Belleville Spring Stem Seal

KTM Virgo Series SS valve utilizes a triple seal design that includes a combination of O-rings and packing materials to provide a leak-proof seal and to minimize fugitive emissions. Live loaded stem design ensures additional protection against leakage through the stem housing even at very low pressures.

Series SS Size Availability

Class 150		Class 300		Class 600		Class 900/1500	
FB	RB	FB	RB	FB	RB	FB	RB
½"	-	½"	-	½"	-	½"	-
¾"	.75" x .5"	¾"	.75" x .5"	¾"	.75" x .5"	¾"	.75" x .5"
1"	1" x .75"	1"	1" x .75"	1"	1" x .75"	1"	1" x .75"
1.5"	1.5" x 1"	1.5"	1.5" x 1"	1.5"	1.5" x 1"	1.5"	1.5" x 1"
2"	2" x 1.5"	2"	2" x 1.5"	-	2" x 1.5"	-	2" x .5"
2.5"	2.5" x 2"	2.5"	2.5" x 2"	-	-	-	-
-	3" x 2"	-	3" x 2.5"	-	-	-	-

Materials of Construction



Item No.	Part Name	C6G Body-WCB Trim-SS Seat-modified PTFE/ RFTE	66G BODY-CF8M Trim-SS Seat-modified PTFE/ RFTE	26G Body-LCC Trim-SS Seat-modified PTFE/ RFTE
1	Body	ASTM A216 GR. WCB	ASTM A351 GR. CF8M	ASTM A352 GR. LCC
2	Adapter	ASTM A216 GR. WCB	ASTM A351 GR. CF8M	ASTM A352 GR. LCC
3	Ball	ASTM A182 GR.F316	ASTM A182 GR.F316	ASTM A182 GR.F316
4	Stem	ASTM A479 type 316	ASTM A479 type 316	ASTM A479 type 316
5	Seat	Modified PTFE/ RTFE*	Modified PTFE/ RTFE	Modified PTFE/ RTFE
6	Thrust washer	RPTFE	RPTFE	RPTFE
7	O-ring (body seal)	VITON®-B	VITON®-B	VITON®-B
8	Gasket (body seal)	Graphite	Graphite	Graphite
9	O-ring (stem seal)	VITON®-B	VITON®-B	VITON®-B
10	Packing (stem seal)	Graphite	Graphite	Graphite
11	Gland spacer	ASTM A479 type 316	ASTM A479 type 316	ASTM A479 type 316
12	Cup spring	DIN 10089 GR.51CrV4	ASTM A479 type 304/ SS316	ASTM A479 type 304/ SS316
13	Stem nut	ASTM A194 GR. 8M	ASTM A194 GR. 8M	ASTM A194 GR. 8M
14	Stem nut lock plate	ASTM A666 AISI 301	ASTM A666 AISI 301	ASTM A666 AISI 301
15	Lock plate	Carbon steel	Carbon steel	Carbon steel
16	Handle coupler	ASTM A216 GR. WCB	ASTM A216 GR. WCB	ASTM A216 GR. WCB
17	Pipe	Carbon steel	Carbon steel	Carbon steel
18	Grub screw	IS 1367 HTS GR. 12.9	IS 1367 HTS GR. 12.9/ ISO 3506-1 A2-70	IS 1367 HTS GR. 12.9/ ISO 3506-1 A2-70
19	Hex bolt	IS 1367 GR. 8.8	IS 1367 GR. 8.8/ ISO 3506-1 A2-70	IS 1367 GR. 8.8/ ISO 3506-1 A2-70
20	Stop pin	AISI 1040	ASTM A479 type 316	ASTM A479 type 316
21	Stud	ASTM A193 GR. B7M	ASTM A193 GR. B8M	ASTM A320 GR. L7M
22	Nut	ASTM A194 GR. 2HM	ASTM A194 GR. 8M	ASTM A194 GR. 7M

Product Selection Code - Series SS

Series	Configuration	Construction	End Connection	Ratings	Bore	Body	Ball / Stem	Coating (Ball & Seat Rings)	Seat Insert (Ball Seal)	Seals (O-ring *, Lip Seal)	Operator (If Applicable)	Other (If Applicable)
S	S	2	RF RS FF FS RT ZZ	1 2 3 6 9	F R	C L 2 6 5 4 3 D F M N Z	6 2 7 P 5 4 A D F M N Z	N	T G L D P E Z	1 2 3 4 5 6 7 A K E L T Z	A B C G L Z	SE BE SP NF ZZ

Series

S Soft seated Floating Side Entry with live loaded stem sealing - API 6D

Configuration

S Live Loaded Gland Design

Construction

S One Piece Cast

End Connection

RF Flanged Raised Face Serrated
RS Flanged Raised Face Smooth
FF Flanged Flat Face Serrated
FS Flanged Flat Face Smooth
RT Flanged RTJ
ZZ Other than above

Ratings

1 150#
2 1500#
3 300#
6 600#
9 900#

Bore

F Full
R Reduced/ Regular

Body

C WCB
L LCB
7 WCC
2 LCC
6 CF8M or F316
5 CF3M or F316L
4 CF8 or F304

3 CF3 or F304L

D Duplex (4A or F51)

F Super Duplex (6A or F55)

M Inconel® (825 or Cu5MCuC)

N Inconel® (625 or CW6MC)

Z Other than above

Ball / Stem

6 316 / 316

2 316 / 17-4 PH

7 316 / Duplex

P 316 / Inconel®

4 304 / 304

5 316L / 316L

A F6A / 410

D Duplex (4A or F51)

F Super Duplex (6A or F55)

M Inconel® (825 or Cu5MCuC)

N Inconel® (625 or CW6MC)

Z Other than above

Coating (Ball & Seat Rings)

N Not Applicable

***** Also from stem, if in Carbon steel material

Seat Insert (Ball Seal)

T PTFE

G RTFE

L Devlon™

D Delrin

P PEEK

E PCTFE (Kel F)

Z Other than above

Seals (O-ring *, Lip Seal, Gasket)

1 HNBR

2 HNBR 90 Durometer

3 HNBR AED *

4 HNBR Low Temp

5 FKM/ Viton®

6 FKM AED/ Viton® AED

7 FKM Low Temp

A FEPM

K FFKM

E EPDM

L Lip Seals (Material As Specified)

Z Other than above

***** AED Orings mandatory for ASME Class 600 and above

Operator

A Actuator

B Bare Stem

C Gear with Chain Wheel

G Gear with Hand Wheel

L Lever/ Wrench

Z Other than above

Other (If Applicable)

SE Stem Extension

BE Bonnet Extension

SP Short Pattern

ZZ Other than above

EXAMPLE: 02.50 **S** - **S** - **2** - **RF** **3** - **F** - **C** **6** **N** - **G** - **5** - **L** -

24" Soft seated trunnion top entry ball valve, O-ring seal configuration API 6D, 1 piece cast body, RTJ flanged ends, 600# class, Full port, WCB body, A105 ball, seat rings and 4140 stem w/ 1 mil ENP, Devlon seat inserts, HNBR AED O-rings, gear with Handwheel, with sealant injection

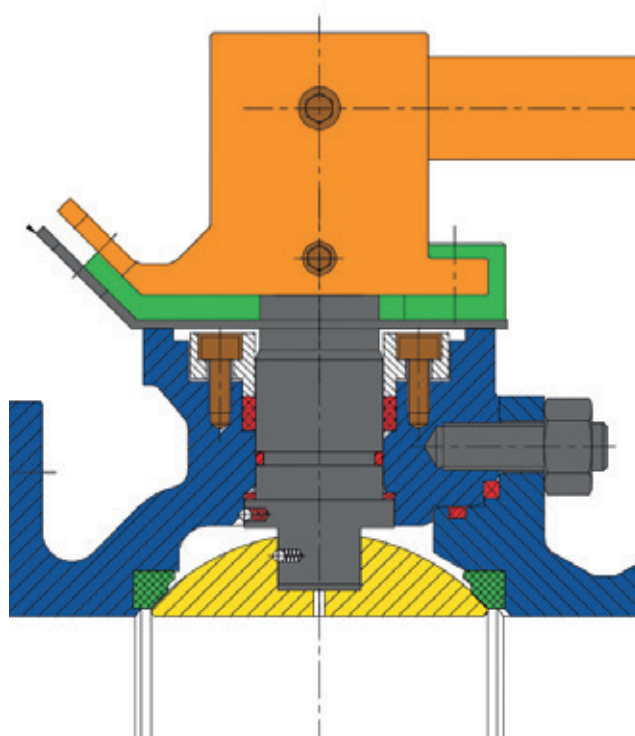
Series SA

Soft Seated Side Entry Floating Ball Valve

Stem leaks and fugitive emissions are some of the industry's leading environmental struggles. To help reduce issues with these, Series SA floating ball valve uses a combination of an adjustable packing gland and double O-ring seals. This valve also features a large assortment of seat materials for optimal performance in a variety of operating conditions.



- Body Configurations: 2 Piece Cast
- Available Size: 2" to 10"
- Pressure Classes: ASME 150# to 600#
- Featured Certifications: API 6D, API 607, API 6FA, API 598, BS EN ISO 17292, BS EN ISO 10497, ISO 15848, SIL3 capable
- Body Materials: Carbon Steel, Stainless Steel, Low Temp Carbon Steel, Duplex, Alloys
- Activation Options: Manual, Bare Stem, Gear, Hand Lever, Fully Automated
- Bore: Full, Reduced

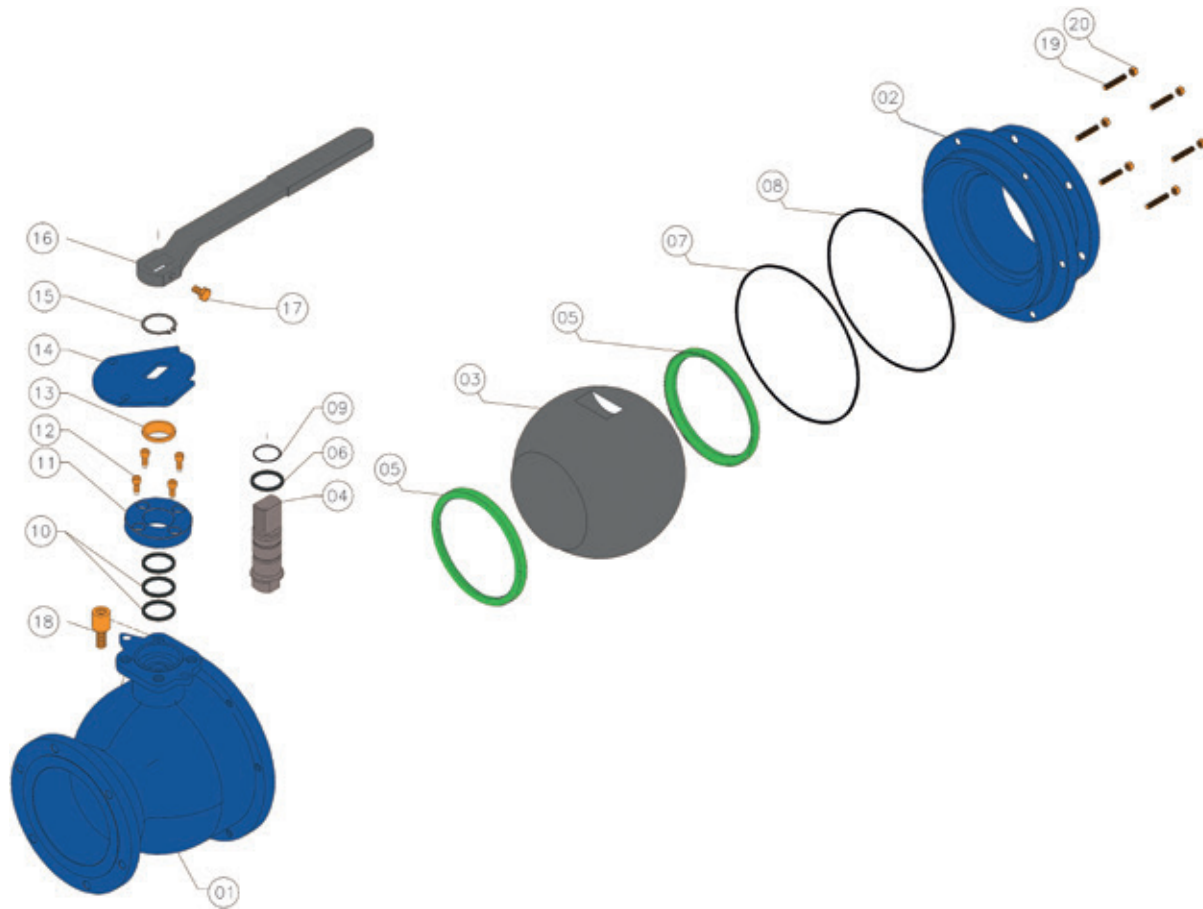


KTM Virgo Series SA floating ball valve is designed to provide optimum sealing through a combination of an adjustable packing gland and O-ring seals to provide the ideal seal and low fugitive emissions. Oversized stem is ideal for automation.

Series SA Size Availability

Class 150		Class 300		Class 600		Class 900/1500	
FB	RB	FB	RB	FB	RB	FB	RB
3"	-	3"	-	2"	-	2"	-
4"	4" x 3"	4"	4" x 3"	3"	3" x 2"	-	-
6"	-	6"	6" x 4"	4"	4" x 3"	-	-
6" SP	6" x 4"	-	-	-	-	-	-
8"	8" x 6"	8"	8" x 6"	-	-	-	-

Materials of Construction



Item No.	Part Name	C8G Body-WCB Trim-SS Seat-modified PTFE/ RFTE	66G BODY-CF8M Trim-SS Seat-modified PTFE/ RFTE	26G Body-LCC Trim-SS Seat-modified PTFE/ RFTE
1	Body	ASTM A216 GR. WCB	ASTM A351 GR. CF8M	ASTM A352 GR. LCC
2	Adapter	ASTM A216 GR. WCB	ASTM A351 GR. CF8M	ASTM A352 GR. LCC
3	Ball	ASTM A182 GR.F316	ASTM A182 GR.F316	ASTM A182 GR.F316
4	Stem	ASTM A479 type 316	ASTM A479 type 316	ASTM A479 type 316
5	Seat	Modified PTFE/ RTFE*	Modified PTFE/ RTFE	Modified PTFE/ RTFE
6	Thrust washer	RPTFE	RPTFE	RPTFE
7	O-ring (body seal)	VITON®-B	VITON®-B	VITON®-B
8	Gasket (body seal)	Graphite	Graphite	Graphite
9	O-ring (stem seal)	VITON®-B	VITON®-B	VITON®-B
10	Packing (stem seal) Packing (stem seal)	Graphite (braided rope) Graphite (die molding ring)	Graphite (braided rope) Graphite (die molding ring)	Graphite (braided rope) Graphite (die molding ring)
11	Gland	ASTM A479 type 316	ASTM A479 type 316	ASTM A479 type 316
12	Gland scap screw	IS 1367 HTS GR. 12.9	ISO 3506-1 A2-70	ISO 3506-1 A2-70
13	Spacer	Nylon	Nylon	Nylon
14	Lock plate	Carbon steel	Carbon steel	Carbon steel
15	Circlip	Carbon steel	Carbon steel	Carbon steel
16	Lever	ASTM A536 GR.65-45-12	ASTM A536 GR.65-45-12	ASTM A536 GR.65-45-12
17	Hex bolt	IS 1367 HTS GR. 10.9	IS 1367 HTS GR.10.9/ ISO 3506-1 A2-70	IS 1367 HTS GR.10.9 / ISO 3506-1 A2-70
18	Stop pin	DIN 10089 51 Cr V4	DIN 10089 51 Cr V4	DIN 10089 51 Cr V4
19	Stud	ASTM A193 GR. B7M	ASTM A193 GR. B8M	ASTM A320 GR. L7M
20	Nut	ASTM A194 GR. 2HM	ASTM A194 GR. 8M	ASTM A194 GR. 7M

Product Selection Code - Series S

Series	Configuration	Construction	End Connection	Ratings	Bore	Body	Ball / Stem	Coating (Ball & Seat Rings)	Seat Insert (Ball Seal)	Seals (O-ring *, Lip Seal)	Operator (If Applicable)	Other (If Applicable)
S	S	2	RF RS FF FS RT ZZ	1 2 3 6 9	F R	C L 7 2 6 5 4 3 D F M N Z	6 2 7 P 4 5 A D F M N Z	N	T G L D P E Z	1 2 3 4 5 6 7 A K E L Z	A B C G L Z	SE BE SP NF ZZ

Series

S Soft seated Floating Side Entry - API 6D

Configuration

S Live Loaded Gland Design

Construction

S One Piece Cast

End Connection

RF Flanged Raised Face Serrated

RS Flanged Raised Face Smooth

FF Flanged Flat Face Serrated

FS Flanged Flat Face Smooth

RT Flanged RTJ

ZZ Other than above

Ratings

1 150#

2 1500#

3 300#

6 600#

9 900#

Bore

F Full

R Reduced/ Regular

Body

C WCB

L LCB

7 WCC

2 LCC

6 CF8M or F316

5 CF3M or F316L

4 CF8 or F304

3 CF3 or F304L

D Duplex (4A or F51)

F Super Duplex (6A or F55)

M Inconel® (825 or Cu5MCuC)

N Inconel® (625 or CW6MC)

Z Other than above

Ball / Stem

6 316 / 316

2 316 / 17-4 PH

7 316 / Duplex

P 316 / Inconel®

4 304 / 304

5 316L / 316L

A F6A / 410

D Duplex (4A or F51)

F Super Duplex (6A or F55)

M Inconel® (825 or Cu5MCuC)

N Inconel® (625 or CW6MC)

Z Other than above

Coating (Ball & Seat Rings)

N Not Applicable

Seat Insert (Ball Seal)

T PTFE

G RTFE

L Devlon™

D Delrin

P PEEK

E PCTFE (Kel F)

Z Other than above

Seals (O-ring *, Lip Seal, Gasket)

1 HNBR

2 HNBR 90 Durometer

3 HNBR AED *

4 HNBR Low Temp

5 FKM/ Viton®

6 FKM AED/ Viton® AED

7 FKM Low Temp

A FEPM

K FFKM

E EPDM

L Lip Seals (Material As Specified)

Z Other than above

* AED Orings mandatory for ASME Class 600 and above

Operator

A Actuator

B Bare Stem

C Gear with Chain Wheel

G Gear with Hand Wheel

L Lever/ Wrench

Z Other than above

Other (If Applicable)

SE Stem Extension

BE Bonnet Extension

SP Short Pattern

ZZ Other than above

EXAMPLE: 08.00 S - A - 2 - RF 3 - F - C 6 N - G - 5 - G -

8" Soft seated floating side entry ball valve, Gland packing stem seal configuration API 6D, 2 piece cast body, Raised face serrated flanged ends, 300# class, Full port, WCB body, 316 Stainless steel ball, seat rings and 4140 stem, RTFE seat inserts, FKM O-rings, gear with Handwheel

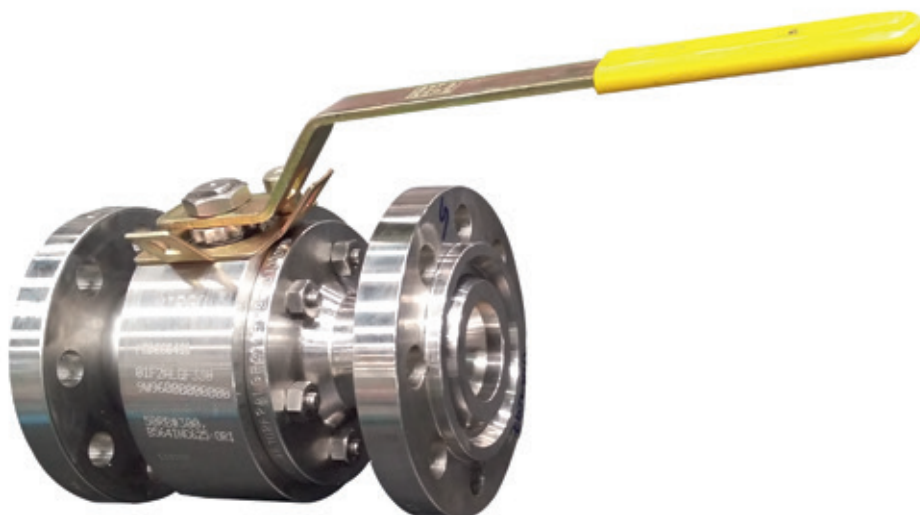
Series PH

Metal Seated Side Entry Floating Ball Valve

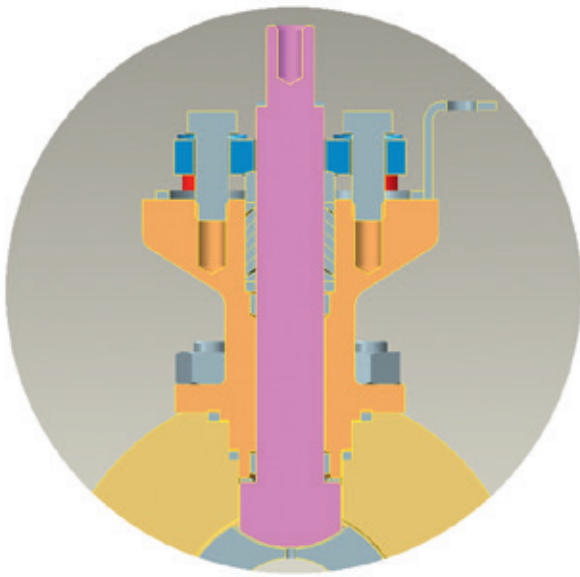
KTM Virgo Series PH metal seated floating ball valve is designed for dependable performance in your elevated temperature applications. The metal seat in the Series PH effectively operates at temperatures up to 752°F (400°C) while the mate-lapped ball and seat provides “leakage shutoff per international standards like API 6D”.

To minimize wear and extend life, the ball and seat are hard faced with tungsten carbide or chrome carbide using a High Velocity Oxygen Fuel (HVOF) process.

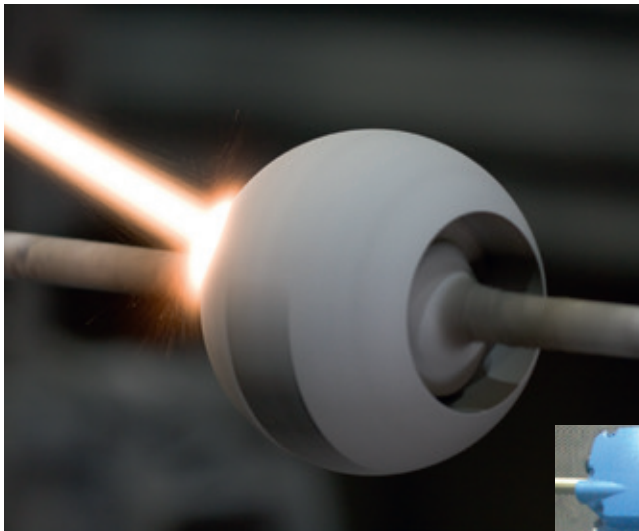
KTM Virgo Series PH valve utilizes a live loaded and gland packing stem design to ensure additional protection against leakage even at very low and high pressures.



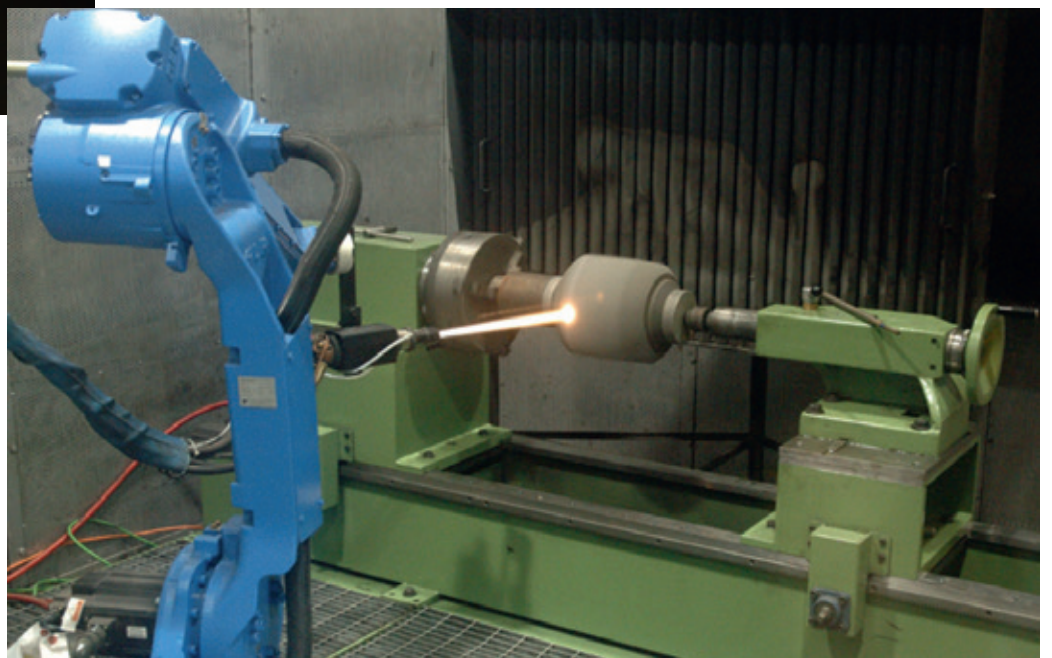
- Body Configurations: 2 Piece Forged
- Available Size: 1/2” to 2”
- Pressure Classes: ASME 150# to 1500#
- Featured Certifications: API 6D, API 608, API 6FA, API 598, BS EN ISO 10497, ISO 15848, SIL3 capable
- Body Materials: Carbon Steel, Stainless Steel, Low Temp Carbon Steel, Duplex, Alloys
- Activation Options: Manual, Bare Stem, Gear, Hand Lever, Fully Automated
- Bore: Full, Reduced

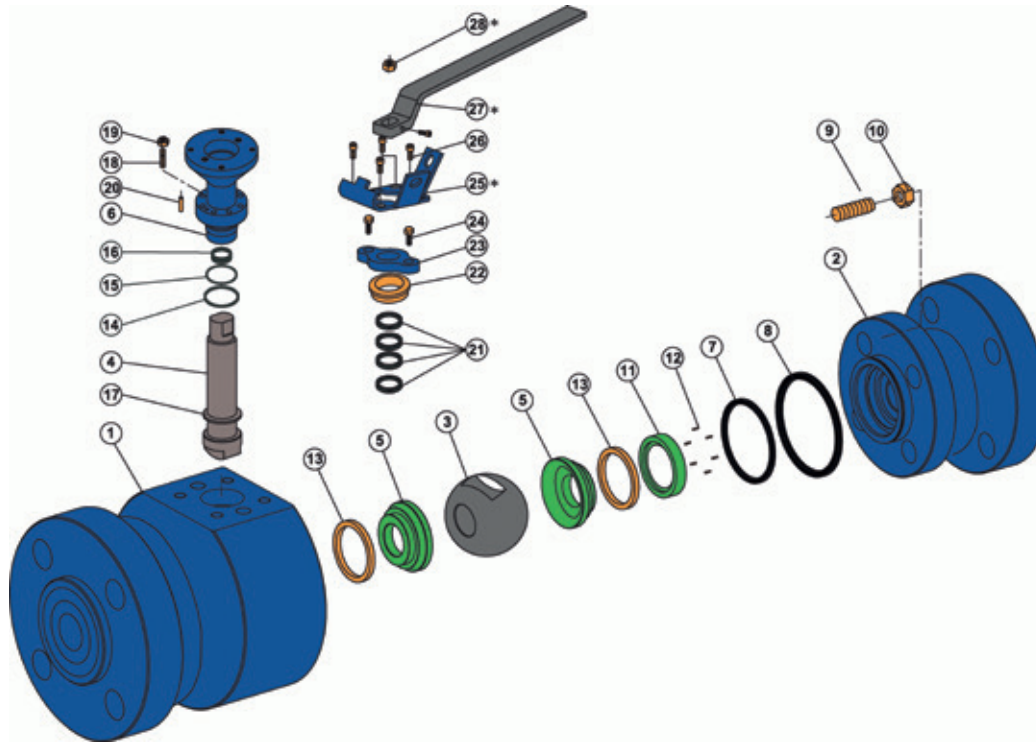


KTM Virgo Series PH valve utilizes a Multiple graphite gland packing seal design to provide a leak-proof seal and to minimize fugitive emissions. Live loaded stem design ensures additional protection against leakage through the stem housing even at very low and high pressures.



Metal-seated valves are excellent choice for high temperature applications. Both the ball and seat are hard faced with tungsten carbide or chrome carbide using a High Velocity Oxygen Fuel (HVOF) surface spray, one of the industry's most advanced coating processes.





Item No.	Part Name	1PC Body-A105 Trim-SS	6PC Body-F316 Trim-SS	8PC Body-LF2 Trim-SS
1	Body	ASTM A182 A105	ASTM A182 GR. F316	ASTM A350 LF2
2	Adapter	ASTM A182 A105	ASTM A182 GR. F316	ASTM A350 LF2
3	Ball	ASTM A182 GR. F316 + CrC Coating	ASTM A182 GR. F316 + CrC Coating	ASTM A182 GR. F316 + CrC Coating
4	Stem	INCONEL® 718 (API 6A)	INCONEL 718 (API 6A)	INCONEL 718 (API 6A)
5	Seat	ASTM A182 GR. F316 + CrC Coating	ASTM A182 GR. F316 + CrC Coating	ASTM A182 GR. F316 + CrC Coating
6	Housing	ASTM A182 A105	ASTM A182 GR. F316	ASTM A350 LF2
7	Gasket (body seal)	Graphite (die molded ring)	Graphite (die molded ring)	Graphite (die molded ring)
8	Gasket (body seal)	Graphite (die molded ring)	Graphite (die molded ring)	Graphite (die molded ring)
9	Stud	ASTM A193 GR. B7M	ASTM A193 GR. B8M	ASTM A320 GR. L7M
10	Nut	ASTM A194 GR. 2HM	ASTM A194 GR. 8M	ASTM A194 GR. 7M
11	Pusher king	ASTM A479 type 316	ASTM A479 type 316	ASTM A479 type 316
12	Spring	UNS N07750	UNS N07750	UNS N07750
13	Gasket (seat seal)	Graphite (die molded ring)	Graphite (die molded ring)	Graphite (die molded ring)
14	Gasket (housing seal)	Graphite (die molded ring)	Graphite (die molded ring)	Graphite (die molded ring)
15	Gasket (housing seal)	Graphite (die molded ring)	Graphite (die molded ring)	Graphite (die molded ring)
16	Bearing	INCONEL 625 + SP. Coating	INCONEL 625 + SP. Coating	INCONEL 625 + SP. Coating
17	Thrust washer	INCONEL 625 + SP. Coating	INCONEL 625 + SP. Coating	INCONEL 625 + SP. Coating
18	Stud	ASTM A193 GR. B7M	ASTM A193 GR. B8M	ASTM A320 GR. L7M
19	Nut	ASTM A194 GR. 2HM	ASTM A194 GR. 8M	ASTM A194 GR. 7M
20	Dowel pin	ASTM A321 Gr. 1040	ASTM A479 Type 316	ASTM A479 type 316
21	Packing set (stem seal)	Graphite	Graphite	Graphite
22	Gland bush	ASTM A479 type 316	ASTM A479 type 316	ASTM A479 type 316
23	Gland flange	ASTM A351 GR. CF8M	ASTM A351 GR. CF8M	ASTM A351 GR. CF8M
24	Gland bolt	ASTM A193 GR. B8M	ASTM A193 GR. B8M	ASTM A193 GR. B8M
25	Lock plate	ASTM A240 type 316	ASTM A240 type 316	ASTM A240 type 316
26	Lock plate screw	ASTM A193 GR. B8M	ASTM A193 GR. B8M	ASTM A193 GR. B8M
27	Lever / handle	Carbon steel	Stainless steel	Stainless steel
28	Handal lock nut	ASTM A194 GR. 8M	ASTM A194 GR. 8M	ASTM A194 GR. 8M

Product Selection Code - Series PH

Size	Series	Configuration	Construction	End Connection	Ratings	Bore	Body	Ball / Stem	Coating (Ball & Seat Rings)	Seat (Ball Seal)	Seals (O-ring*, Lip Seal)	Operator (If Applicable)	Other (If Applicable)
00.50 00.75 01.00 01.50 02.00	P	H	2	RF RS FF FS RT ZZ	1 2 3 6 9	F R	1 8 6 5 4 3 D F M N Z	6 2 7 P S A 5 D F M N Z	N	N	1 2 3 4 5 6 7 A K E L Z	A B C G L Z	SE BE SP NF ZZ

Series

P Metal seated Floating Side Entry

Configuration

H High Temp (230 to 450°C) - API 6D

Construction

2 Two Piece Forge

End Connection

RF Flanged Raised Face Serrated

RS Flanged Raised Face Smooth

FF Flanged Flat Face Serrated

FS Flanged Flat Face Smooth

RT Flanged RTJ

ZZ Other than above

Ratings

1 150#

2 1500#

3 300#

6 600#

9 900#

Bore

F Full

R Reduced/ Regular

Body

1 A105

8 LC2

6 CF8M or F316

4 CF8 or F304

D Duplex (4A or F51)

F Super Duplex (6A or F55)

M Inconel® (825 or Cu5MCuC)

N Inconel® (625 or CW6MC)

Z Other than above

* Only forged grades

Ball / Seat Ring* / Stem

1 A105 / A105 / 4140

8 LF2 / LF2 / 17-4 PH

L LF2 / LF2 / LF2

2 316 / 17-4 PH

7 316 / 316 / Duplex

P 316 / 316 / Inconel®

A F6A / F6A / 410

9 F60 (Carbon Steel)

D Duplex (4A or F51)

E Super Duplex (5A or F53)

F Super Duplex (6A or F55)

G Duplex F60

M Inconel® (825 or Cu5MCuC)

N Inconel® (625 or CW6MC)

Z Other than above

* Only forged grades

Coating (Ball & Seat Rings)

C Chrome Carbide

T Tungsten Carbide

Z Other than above

Seat Insert (Ball Seal)

N Not Applicable

Seals (O-ring*, Lip Seal, Gasket)

K FFKM

G Graphite sealing (No O-rings/Lip seals)

Z Other than above

* AED Orings mandatory for ASME Class 600 and above. O-ring at seat location only.

Operator

A Actuator

B Bare Stem

C Gear with Chain Wheel

G Gear with Hand Wheel

L Lever/ Wrench

Z Other than above

Other (If Applicable)

SE Stem Extension

BE Bonnet Extension

SP Short Pattern

ZZ Other than above

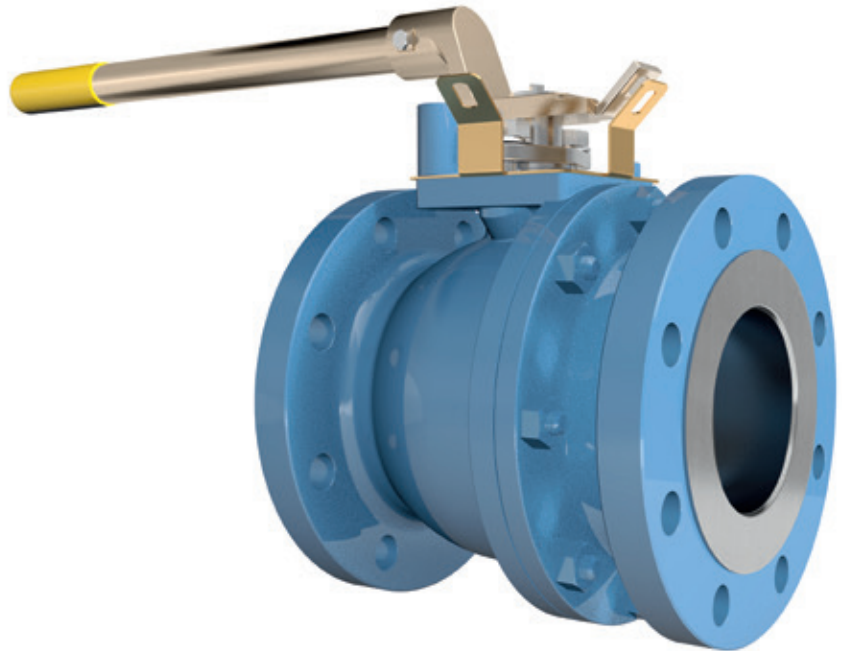
EXAMPLE: 1.00 P - H - R - RF 3 - F - 1 3 C - N - G - L - SE

1" Metal seated floating side entry ball valve, High Temp(230 to 450 Deg C) - API 6D, 2 piece forged body, Raised face serrated flanged ends, 300# class, Full port, A105 body, 316 Stainless steel ball and XM19 stem, CRC coating on Ball & Seat ring, Graphite seals, Lever Operator with Stem Extension

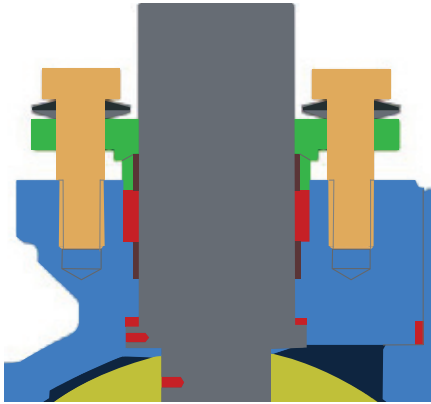
Series SD

Soft Seated Side Entry Floating Ball Valve

KTM Virgo Series SD ball valve was developed to meet or exceed some of the most stringent industry standards, including API 608. This design was then tested in an advanced test facility to ensure the products delivered to you are safe, dependable and perform as advertised. If your process needs performance and reliability the Series SD is a perfect solution.

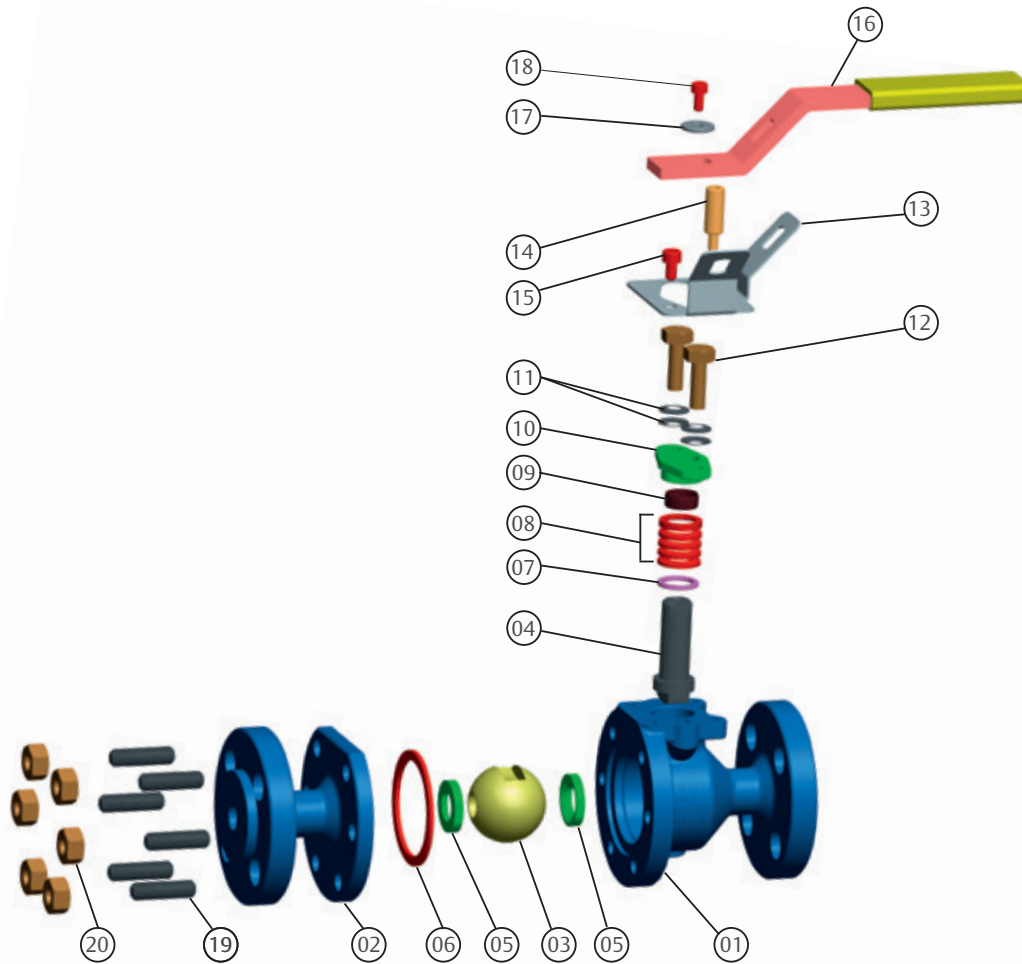


- Body Configurations: 2 Piece Cast
- Available Size: 1/2" to 8"
- Pressure Classes: ASME 150# to 1500#
- Featured Certifications: API 608, API 6D, API 607, API 6FA, API 598, BS EN ISO 17292, BS EN ISO 10497, ISO 15848, SIL3 capable
- Body Materials: Carbon Steel, Stainless Steel, Low Temp Carbon Steel, Duplex, Alloys
- Activation Options: Manual, Bare Stem, Gear, Hand Lever, Fully Automated
- Bore: Full, Reduced



KTM Virgo Series SD utilizes a thoroughly tested live loaded adjustable packing gland, graphite gasket, and a PEEK® gland bearing to maintain leak resistance and minimize fugitive emissions. This sealing arrangement maintains sealing performance with changes in temperature and process pressure.





Item No.	Part Name	Carbon/Stainless	Stainless/Stainless	LT Carbon/Stainless
1	Body	ASTM A216 GR. WCB	ASTM A351 GR. CF8M	ASTM A352 GR. LCC
2	Adapter	ASTM A216 GR. WCB	ASTM A351 GR. CF8M	ASTM A352 GR. LCC
3	Ball	ASTM A182 GR. F316	ASTM A182 GR. F316	ASTM A182 GR. F316
4	Stem	ASTM A479 type 316	ASTM A479 type 316	ASTM A479 type 316
5	Seat	Modified PTFE/RTFE for 150#/300# PEEK™ for 600#	Modified PTFE/RTFE for 150#/300# PEEK™ for 600#	Modified PTFE/RTFE for 150#/300# PEEK™ for 600#
6	Gasket (body seal)	Graphite	Graphite	Graphite
7	Thrust washer	RPTFE	RPTFE	RPTFE
8	Stem packing	Graphite or Teflon	Graphite or Teflon	Graphite or Teflon
9	Gland bearing	PEEK™	PEEK™	PEEK™
10	Gland	ASTM A351 GR. CF8M	ASTM A351 GR. CF8M	ASTM A351 GR. CF8M
11	Cup spring	ASTM A240 type SS316	ASTM A240 type 316	ASTM A240 type 316
12	Gland bolting	ASTM A193 GR. B8M	ASTM A193 GR. B8M	ASTM A320 GR. B8M
13	Lock plate	ASTM A516 GR. 70	ASTM A240 type 316	ASTM A240 type 316
14	Stop pin	AISI 1040	ASTM A479 type 316	ASTM A479 type 316
15	Lock plate cap screw	ASTM A193 GR. B8M	ASTM A193 GR. B8M	ASTM A193 GR. B8M
16	Handle	ASTM A516 GR. 70	ASTM A240 SS316	ASTM A240 SS316
17	Washer	ASTM A479 type 316	ASTM A479 type 316	ASTM A479 type 316
18	Cap screw	ASTM A193 GR. B8M	ASTM A193 GR. B8M	ASTM A193 GR. B8M
19	Stud	ASTM A193 GR. B7M	ASTM A193 GR. B8M	ASTM A320 GR. L7M
20	Nut	ASTM A194 GR. 2HM	ASTM A194 GR. 8M	ASTM A194 GR. 7M

Product Selection Code - Series SD

Size	Series	Configuration	Construction	End Connection	Ratings	Bore	Body	Ball / Stem	Coating (Ball & Seat)	Seat Insert (Ball Seal)	Seals (O-ring *, Lip Seal)	Operator (If Applicable)	Other (If Applicable)
00.50 00.75 01.00 01.50 02.00 03.00 04.00 06.00 08.00	S	D	2	RF RS FF FS RT	1 3 6	F R	C L 7 2 6 5 4 3 D F M N Z	6 2 7 P 4 5 A D F M N Z	N	T G P L D E Z	G T	A B G L Z	SE SP BE NF MF ZZ

Series

S Soft seated Floating Side Entry

Configuration

D Live Loaded Adjustable Packing to API 608

Construction

2 Two Piece Forge

End Connection

RF Flanged Raised Face Serrated

RS Flanged Raised Face Smooth

FF Flanged Flat Face Serrated

FS Flanged Flat Face Smooth

RT Flanged RTJ

Ratings

1 150#

3 300#

6 600#

Bore

F Full

R Reduced/ Regular

Body

C WCB

L LCB

7 WCC

2 LCC

6 CF8M or F316

5 CF3M or F316L

4 CF8 or F304

3 CF3 or F304L

D Duplex (4A or F51)

F Super Duplex (6A or F55)

M Inconel® (825 or Cu5MCuC)

N Inconel® (625 or CW6MC)

Z Other than above

Ball / Seat Ring * / Stem

6 316 / 316

2 316 / 17-4 PH

7 316 / Duplex

P 316 / Inconel®

4 304 / 304

5 316L / 316L

A F6A / 410

D Duplex (4A or F51)

F Super Duplex (6A or F55)

M Inconel® (825 or Cu5MCuC)

N Inconel® (625 or CW6MC)

Z Other than above

Coating (Ball & Seat Rings)

N Not Applicable

* Also from stem, if in Carbon steel material

Seat Insert (Ball Seal)

T PTFE

G RTFE

P PEEK

L Devlon™

D Delrin

E PCTFE (Kel F)

Z Other than above

Seals (O-ring *, Lip Seal, Gasket)

G Graphite Gasket / Graphite Packing

T PTFE sealing (No graphite)**

** Non fireSafe sealing

Operator

A Actuator

B Bare Stem

G Gear with Hand Wheel

L Lever/ Wrench

Z Other than above

Other (If Applicable)

SE Stem Extension

SP Short Pattern

BE Bonnet Extension

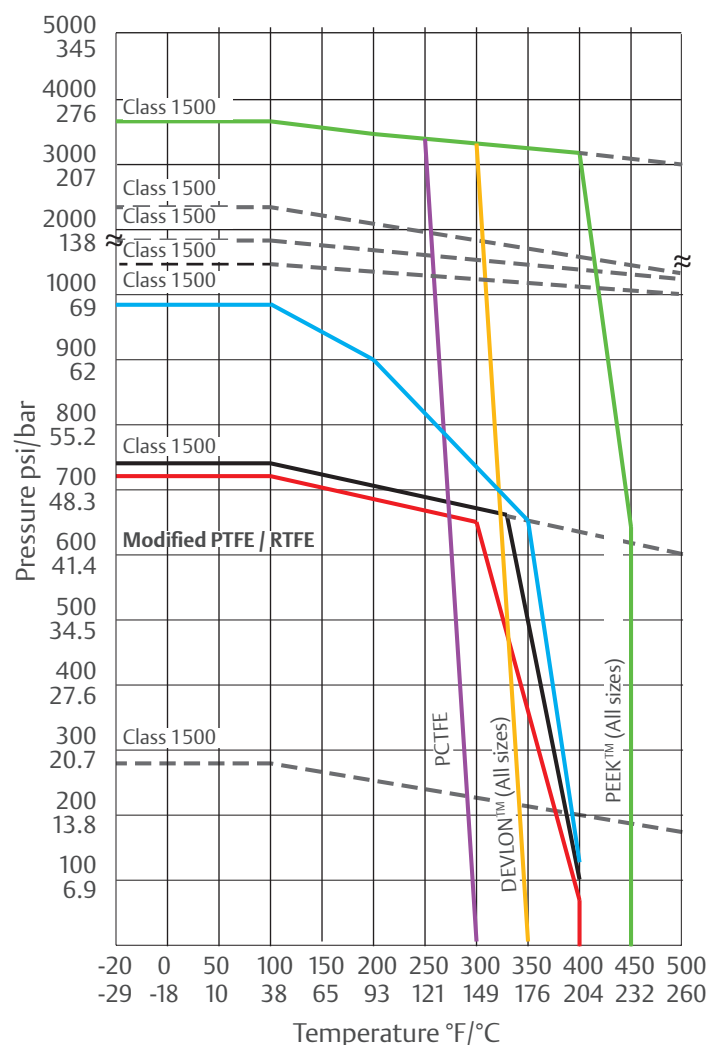
MF Multiple Features - eg., steam extension, etc.

ZZ Other than above

EXAMPLE: 08.00 S - D - 2 - RF 3 - F - C 6 N - G - 5 - G -

8" Soft seated floating side entry ball valve, Gland packing stem seal configuration API 6D, 2 piece cast body, Raised face serrated flanged ends, 300# class, Full port, WCB body, 316 Stainless steel ball, seat rings and 4140 stem, RTFE seat inserts, FKM O-rings, gear with Handwheel

Pressure/Temperature Ratings



Modified PTFE/RTFE

Size	Class	PT Rating
½" to 2"	150/300/400	—
3" to 4"	150/300	—
6" to 8"	150/300	—
10"	150	—

Temperature Limits

Typical values for commonly used materials

		Lower limit °F (°C)	Upper limit °F (°C)
Body Material	WCB	-20 (-29)	797 (425)
	A105	-20 (-29)	797 (425)
	LCC	-50 (-46)	653 (345)
	LF2	-50 (-46)	797 (425)
	CF8M	-425 (-254)	1000 (538)
	F316	-325 (-198)	1000 (538)
Seat Material	Modified PTFE / RTFE	-321 (-196)	As per graph
	Peek™	-321 (-196)	As per graph
	Devlon™ V-API	-40 (-40)	As per graph
	PCTFE	-321 (-196)	As per graph
O-Ring Material	HNBR	-20 (-29)	300 (149)
	Low Temp HNBR	-40 (-40)	300 (149)
	FKM	-4 (-20)	400 (204)
	Low Temp FKM	-40 (-40)	350 (177)
	FFKM	-4 (-20)	620 (327)

These ratings are a general guide. It is important that you analyze all aspects of your application. Due to the variety of operating conditions and applications for these products, the user, through his / her own analysis and testing, is solely responsible for making the final selection of the products and assuming that all performance, safety and warning requirements of the application are met.

Complete automation packages



Available automation packages include:

- Pneumatic actuators
- Gas or gas over oil actuators
- Line break systems
- Fireproof actuator systems
- Motor-operated valves
- Hydraulic / electro hydraulic-operated systems
- Valves with digital partial stroking
- HIPPS
- SIS

KTM Virgo Series SD ball valves can be automated to meet your unique system requirements. Automated valve solutions are available for isolation, emergency shutdown, remote operated SDVs and safety instrumented systems (SIS-SIL3 certified).

Delivers the quality, reliability and performance you expect.



KTM™

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