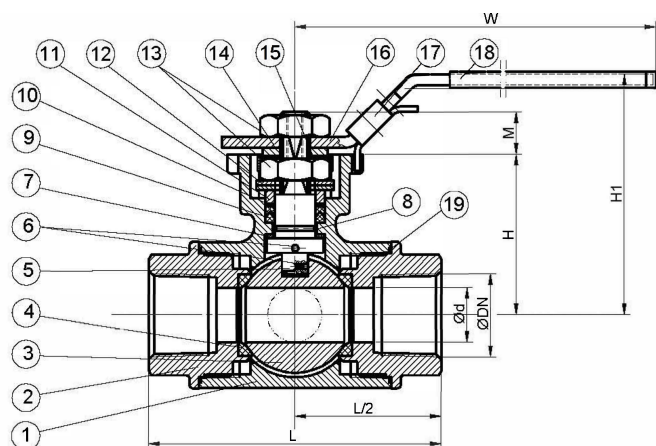


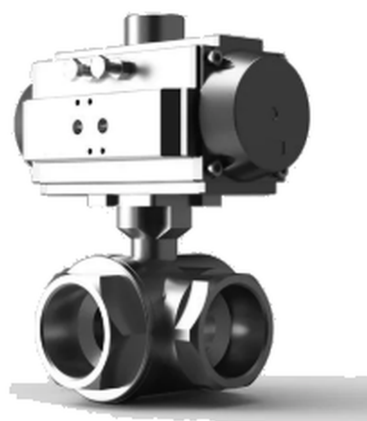
V-Tork Pneumatic Actuated 3-Way BSP Ball Valve

316 Stainless Steel · L-Port or T-Port · 69 bar (1000 WOG) · 1/4" – 2" BSP · V-Tork VT Series Rack and Pinion Actuator

A factory-assembled automated three-way ball valve package. The valve is a 316 stainless three-piece body rated 69 bar cold working pressure, with female BSP threaded ends, an L-port or T-port ball and an integral ISO 5211 direct-mount pad. The actuator is a V-Tork VT series rack and pinion unit, double acting or spring return, bolting straight onto that pad without a bracket. One actuated valve replaces two two-way valves and the pipework between them for diverting, mixing or line-selection duty.



VALVE — SECTIONAL ASSEMBLY



ASSEMBLED UNIT — 3-WAY BALL VALVE WITH V-TORK VT SERIES ACTUATOR

Valve — Technical Data

Assembly	Three-way 316 stainless ball valve with V-Tork rack and pinion pneumatic actuator, factory assembled, stroked and function tested
Valve type	Three-way, three-piece body with screwed end caps, floating ball
Flow pattern	L-port (diverting, two positions) or T-port (mixing or diverting, three positions) — specify at order
Size range	1/4" to 2" BSP (DN8 to DN50)
Pressure rating	69 bar / 1000 psi cold working pressure (1000 WOG)
End connections	BSP parallel or taper female threads. NPT, PT and DIN threads also available
Body, caps & ball	CF8M (316) investment casting
Stem	SUS316, blow-out proof, anti-static device
Seats	TFM1600 standard; PTFE or RTFE optional
Seals	PTFE V-ring stem packing and cap gasket, FKM (Viton) O-ring, Belleville washer live-loaded gland
Actuator mounting	Integral direct-mount pad, two bolt circles (4 × ØA1 on ØB1 PCD, 4 × ØA2 on ØB2 PCD)
Temperature range*	-20 °C to +180 °C typical for TFM1600 / PTFE seats; actuator seals limit the assembly to -18 °C to +80 °C as standard

* The assembly is limited by whichever component reaches its limit first. With standard NBR actuator seals that is the actuator at +80 °C; specify FPM or silicone seals where the process runs hotter or colder.

Valve — Key Features

- **Three-way body** for diverting, mixing or selecting between two lines with a single quarter-turn actuator, replacing two two-way valves and the pipework between them
- **L-port or T-port ball** — L-port diverts between two outlets, T-port also allows both outlets open together
- **Three-piece construction** with screwed end caps — seats, seals and ball are accessible without disturbing the actuator mounting
- **All-316 wetted parts** — body, caps, ball and stem
- **TFM1600 seats as standard**, with better creep resistance and a wider temperature range than conventional PTFE
- **Blow-out proof stem** with anti-static device between ball, stem and body
- **Live-loaded gland** using a Belleville washer to hold packing load through thermal and pressure cycling
- **Integral direct-mount pad** — the actuator bolts to the valve without a bracket

Valve — Dimensions BSP screwed ends, all dimensions in millimetres

SIZE	DN	Ød bore	L	H c/l to pad	M	F	ØP	HEX.B	MOUNTING PAD				ISO 5211 PAD
									ØB1	4-ØA1	ØB2	4-ØA2	
1/4"	DN8	11	79	42	9	39.5	9	27	42	6	36	6	F04 / F03
3/8"	DN10	11	79	42	9	39.5	9	27	42	6	36	6	F04 / F03
1/2"	DN15	11	79	42	9	39.5	9	27	42	6	36	6	F04 / F03
3/4"	DN20	15	88	49	9	44	9	34	50	7	36	6	F05 / F03
1"	DN25	20	108	59.5	11	54	11	41	50	7	42	6	F05 / F04
1-1/4"	DN32	25	124	63	11	62	11	50	70	9	42	6	F07 / F04
1-1/2"	DN40	32	135	73.5	14	67.5	14	56	70	9	50	7	F07 / F05
2"	DN50	40	164	82.8	14	82	14	70	70	9	50	7	F07 / F05

L is end to end across the through ports; the branch port is on the valve centreline at L/2, at dimension F from it. ØP and M are the stem drive dimensions and HEX.B the end cap hex — see the reference views. ISO 5211 pad designations are derived from the published bolt circle diameters; confirm the tapping thread against the order.

Valve — Materials of Construction

NO.	PART	MATERIAL	NO.	PART	MATERIAL
1	Body	CF8M	12	Belleville washer	SUS301
2	Cap	CF8M	13	Stem nut	A194-8
3	Ball	CF8M	14	Handle gland †	SUS304
4	Ball seat	TFM1600 / PTFE / RTFE	15	Stop-lock cap †	SUS304
5	Stem	SUS316	16	Handle †	SUS304
6	Anti-static device	SUS316	17	Lock device †	SUS304
7	Thrust washer	PTFE	18	Handle sleeve †	Vinyl plastic
8	O-ring	FKM (Viton)	19	Cap gasket	PTFE
9	V-ring stem packing	PTFE	20	Stop bolt	A193-B8
10	Bushing	50% SS + 50% PTFE	21	Nut	A194-8
11	Gland	SUS316L			

† Lever components, supplied only where the valve is ordered manually operated — they are replaced by the actuator on an automated assembly. Alternative seat, seal and material combinations are available on request.

Actuator — Key Features

- **Common body and end caps** for double acting and spring return in the same model — conversion is a matter of adding or removing spring cartridges, cutting spares holding
- **Modular preload spring cartridges**, coated for corrosion resistance and safe to handle
- **Twin opposed pistons** giving compact envelope, high cycle life and symmetrical mounting
- **External travel stops** with $\pm 4^\circ$ adjustment on both open and closed positions, set without stripping the actuator
- **Composite bearings and guides** on pinion and pistons for low friction and long life
- **Hard anodised extruded body** with fine ground bore
- **NAMUR interfaces** — VDI/VDE 3845 accessory pad and NAMUR air ports for direct-mount solenoids and switch boxes

Actuator — Technical Data

Actuator type	Rack and pinion, twin opposed piston, 90° quarter turn
Action	Double acting (D) or spring return (S), 4 to 12 spring cartridges
Rotation	90° standard, clockwise to close; direction reversed by inverting the pistons
Air supply	2.5 to 8 bar, neutral clean air
Travel stops	Dual independent external stops, $\pm 4^\circ$ adjustment in both directions
Body	Extruded aluminium alloy, hard anodised internally and externally
End caps	Aluminium alloy, coated; RAL colour options
Pinion	45# steel; 304 or 316 stainless output shaft available
Fasteners	Stainless steel throughout, internal and external
Seals	NBR -18 to +80 °C standard. FPM -18 to +150 °C, silicone -40 to +80 °C and fluorosilicone -60 to +80 °C available
Air connections	G1/8" (VT032), G1/4" (VT050-VT210), G1/2" (VT240-VT400), NAMUR pattern
Standards	ISO 5211 flange, DIN 3337 drive, VDI/VDE 3845 (NAMUR) accessory interface, ISO 9001 manufacture
Certification	ATEX 2014/34/EU, CE to MD 2006/42/EC, SGS, DNV. 100% pressure and leak tested with serial number traceability
Position indicator	Multifunctional indicator with NAMUR slot for direct sensor mounting

Actuator — Output Torque Double acting, N·m at 90° stroke

MODEL	AIR SUPPLY PRESSURE (bar)									
	2.5	3	3.5	4	4.5	5	5.5	6	7	8
VT032	2.9	3.4	4.0	4.6	5.3	5.9	6.5	7.1	8.3	9.5
VT050	8.6	10.4	12.3	14.2	16.0	17.9	19.8	21.6	25.4	29.1
VT065	17.4	21.2	25.0	28.7	32.5	36.3	40.1	43.9	51.4	59.0
VT075	27.0	32.9	38.8	44.7	50.5	56.4	62.3	68.2	79.9	91.7
VT085	39.7	48.3	56.9	65.6	74.2	82.8	91.4	100.1	117.3	134.6
VT095	55.7	67.9	80.0	92.1	104.2	116.4	128.5	140.6	164.8	189.1
VT110	72.0	89.3	105.0	120.6	136.3	152.0	167.6	183.3	214.6	245.9
VT125	128.7	159.5	187.5	215.4	243.4	271.4	299.4	327.4	383.3	439.3

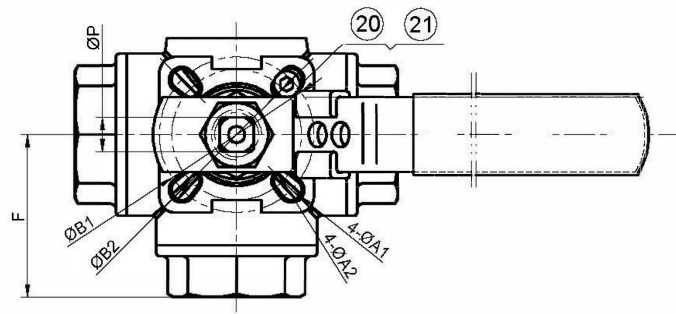
Double acting output is constant through the stroke. Spring return output varies across the stroke and is published separately for each spring count (S05 to S12) — ask for the spring return table when specifying a fail-safe assembly. Models above VT125 are available where a higher torque margin is required.

Actuator — Dimensions All dimensions in millimetres

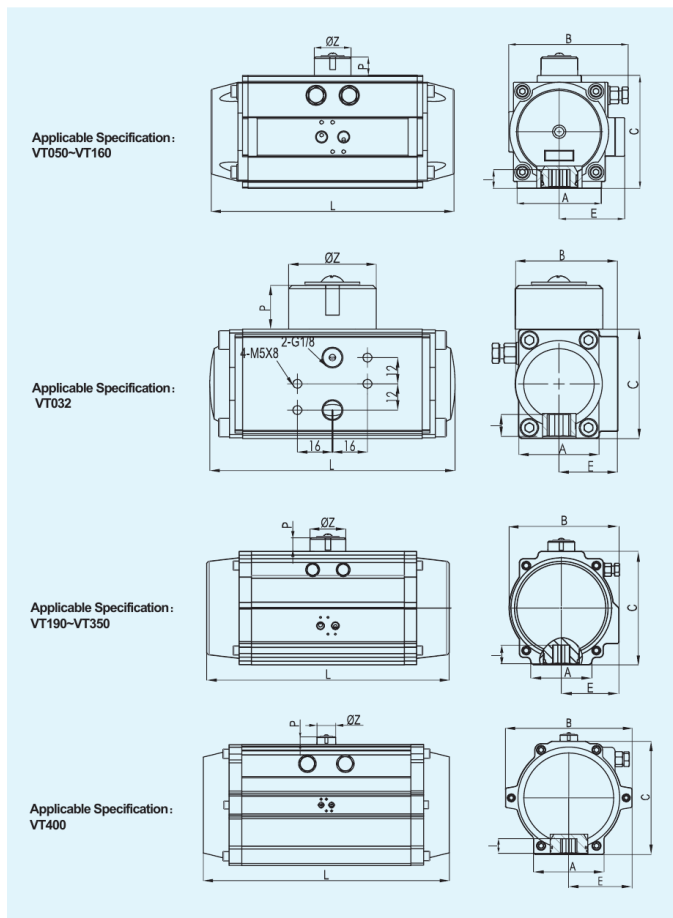
MODEL	A	B	C	L	E	F	P	ØZ	N	I	ISO 5211 FLANGE	Q	Q1	W	W1	Ch square	T air
VT032	37	47	50	110	27	50	20	40	10	10	F03	—	36	—	M5×8	9×9	G1/8"
VT050	45	70.5	70	154	41.5	80	20	40	10	12	F03/05	36	50	M5×7.5	M6×9	11×11	G1/4"
VT065	62	89.5	89	189	51.5	80	20	40	10	16	F05/07	50	70	M6×9	M8×12	14×14	G1/4"
VT075	68	102.5	100	210	59	80	20	40	14	16	F05/07	50	70	M6×9	M8×12	14×14	G1/4"
VT085	68	112.5	113	229	63.5	80	20	40	14	19	F05/07	50	70	M6×9	M8×12	17×17	G1/4"
VT095	92	126	123	264	71	80	20	40	14	19	F05/07	50	70	M6×9	M8×12	17×17	G1/4"
VT110	93	138.5	136	266	76.5	80	20	40	14	19	F07/10	70	102	M8×12	M10×15	17×17	G1/4"
VT125	96	157	161	337	85	80	30	56	22	25	F07/10	70	102	M8×12	M10×15	22×22	G1/4"

Q and Q1 are the two ISO 5211 bolt circle diameters; W and W1 the corresponding tapping threads and depths. Ch is the female drive square. Letters A to I refer to the actuator outline drawings on page 5.

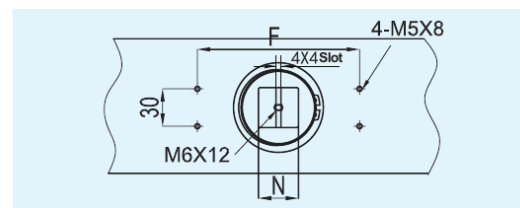
Reference Views



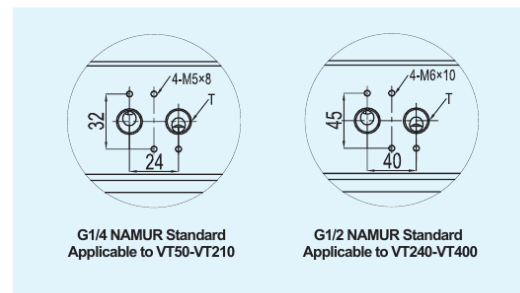
VALVE — PLAN VIEW SHOWING BRANCH PORT AND MOUNTING PAD



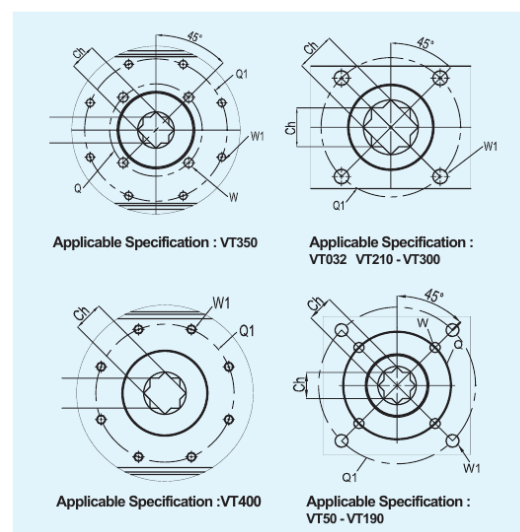
ACTUATOR — OUTLINE DIMENSIONS BY MODEL GROUP



Air Supply Interface



Bottom View



ACTUATOR — TOP VIEW, NAMUR PORTS, ISO 5211 FLANGE

Mounting Compatibility

Valve pad bolt circle against actuator flange

VALVE SIZE	VALVE PAD PCD ØB1 / ØB2	MATCHING ACTUATOR PCD	ACTUATOR MODELS
1/4" - 1/2"	42 / 36	36 (F03)	VT032, VT050
3/4"	50 / 36	36 (F03) or 50 (F05)	VT032, VT050
1"	50 / 42	50 (F05)	VT050, VT065, VT075, VT085, VT095
1-1/4"	70 / 42	70 (F07)	VT065, VT075, VT085, VT095, VT110, VT125
1-1/2" - 2"	70 / 50	50 (F05) or 70 (F07)	VT050 to VT125

Compatibility above is by bolt circle diameter only. Actuator selection must also satisfy the valve breakaway torque at the available air supply pressure, with a safety margin appropriate to the duty. The valve stem drive square is not published on the valve assembly drawing — confirm the stem square against the actuator Ch dimension, or specify a coupling, when ordering.

Actuator Model Coding

Format	Model · Type and spring quantity · ISO flange · Square · Cylinder and cap colour · Seal
Type	D = double acting. S = spring return, followed by the spring count from 04 to 12
Example	VT095D F07/10 17 P7046 — VT095 double acting, ISO F07 and F10 flange, 17 mm square, smooth hard anodised body, cap colour grey RAL 7046, standard nitrile seals
Example	VT190S12 F10/14 36 S5021 HT — VT190 spring return with 12 springs, ISO F10 and F14 flange, 36 mm square, sandblasted hard anodised body, cap colour green RAL 5021, fluororubber seals

Accessories & Options

- **Solenoid valve** — NAMUR mounted, 3/2 for spring return or 5/2 for double acting
- **Limit switch box** — mechanical, inductive or proximity sensors on the VDI/VDE 3845 pad
- **Positioner** — pneumatic or electro-pneumatic for modulating duty
- **Manual gear override** and declutchable handwheel
- **Mounting kit** — bracket and coupling where a direct mount is not used
- **Reduced square output shaft inserts** and alternative flange or square combinations

Compiled by Actuation Valve & Control Ltd from the valve assembly drawing for the 1/4" to 2" 1000 WOG three-way valve and the V-Tork VT series actuator catalogue. Assemblies are built, stroked and function tested before despatch. Certified drawings, spring return torque tables and torque sizing for a specific duty are available on request against an order.