

Solenoid valves VZWF, force pilot operated, NPT

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Solenoid valves VZWF, force pilot operated, NPT

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Key features and overview

Function

Normally closed solenoid valve with diaphragm and forced lifting. When the solenoid is energised, the differential pressure from the secondary side of the diaphragm is reduced via the servo hole. The effective differential pressure lifts

the diaphragm away from the valve seat. If there is no differential pressure, the diaphragm is lifted directly by the solenoid. The valve opens and closes without a differential pressure between the inlet and outlet.

General

-  - Connecting thread
NPT $\frac{1}{4}$... NPT2
-  - Flow rate Kv
1.8 ... 28 m³/h

-  - Note

The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Application

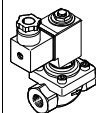
- Suitable for closed applications such as cooling or filling systems
- Vacuum
- Liquid gas
- Bottling systems

Design

- Diaphragm valves
- Forced lifting of the valve diaphragm
- 2/2-way valve, normally closed

Advantages

- Choice of sealing materials for different fields of applications
- Medium pressure 0 bar or higher

Version	Type	Process valve connection	Nominal size (DN)	Process valve nominal pressure (PN)	→ Page/Internet
	VZWF-...	NPT $\frac{1}{4}$	13.5	40	4
		NPT $\frac{3}{8}$	13.5		
		NPT $\frac{1}{2}$	13.5		
		NPT $\frac{3}{4}$	27.5		
		NPT1	27.5		
	VZWF-...	NPT114	40	40	8
		NPT112	40		
		NPT2	50		

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Type codes

VZWF - B - L - M22C - G14 - 135 - V - 2AP4 - 10 - R1

Type

VZWF	Solenoid valve, force pilot operated
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Product version

-	Standard
B	Optimised function

Type of directional control valve

L	In-line valve
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Valve function

M22C	2/2-way valve, normally closed
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Process valve connection

N14	NPT 1/4
N38	NPT 3/8
N12	NPT 1/2
N34	NPT 3/4
N1	NPT 1
N114	NPT1 1/4
N112	NPT1 1/2
N2	NPT 2

Nominal size (DN)

135	13.5 mm
275	27.5 mm
400	40 mm
500	50 mm

Sealing material

-	Standard (NBR)
E	EPDM
V	FPM

Nominal operating voltage

1	24 V DC
2A	110 V AC/50-60 Hz
3A	230 V AC/50-60 Hz

Electrical connection

P4	Plug socket, 3-pin
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Medium pressure

6	Max. 6 bar
10	Max. 10 bar

Corrosion protection

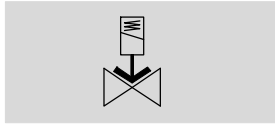
-	Standard (brass)
R1	Stainless steel

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Technical data – Connecting thread NPT $\frac{1}{4}$... NPT1

Function



-  - Flow rate Kv
1.8 ... 11 m³/h

-  - Connecting thread
NPT $\frac{1}{4}$... NPT1



General technical data					
Process valve connection	NPT $\frac{1}{4}$	NPT $\frac{3}{8}$	NPT $\frac{1}{2}$	NPT $\frac{3}{4}$	NPT1
Nominal size (DN)	13.5	13.5	13.5	27.5	27.5
Valve function	2/2-way, single solenoid, closed				
Design	Diaphragm valve, force pilot operated				
Type of mounting	In-line installation				
Actuation type	Electric				
Manual override	None				
Mounting position	Solenoid vertical				
Sealing principle	Soft				
Direction of flow	Non-reversible				
Max. viscosity [mm ² /s]	22				
Protection class	IP 65				
Product weight [g]	1000			1500	

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Technical data – Connecting thread NPT $\frac{1}{4}$... NPT1

Operating and environmental conditions						
Process valve connection		NPT1/4	NPT3/8	NPT1/2	NPT3/4	NPT1
Switching time on	[ms]	130			275	
Switching time off	[ms]	180			290	
Standard nominal flow rate	[l/min]	1920	2350	2660	8020	11750
Flow rate	[m³/h]	1.8	2.2	2.5	7.5	11
Process valve nominal pressure (PN)		40				
Differential pressure	[bar]	0				
Medium pressure ³⁾	[bar]	0 ... 10			0 ... 6	
Medium		Compressed air in accordance with ISO 8573-1:2010 [7:-:-]				
		Inert gases				
		Mineral oil				
		Water				
		Neutral liquids				
		Further media upon request				
Ambient temperature	[°C]	-10 ... +35 °C				
Temperature of medium	[°C]	-10 ... +80 °C				
Leak rate to EN 12266-1		A				
Corrosion resistance class						
CRC ¹⁾ Brass		1				
CRC ²⁾ Stainless steel		3				

- 1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
- 2) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.
- 3) The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Materials		
Solenoid valves		Material number
Housing	Brass casting	CW617N
	Stainless steel casting	1.4581
Screws	High-alloy stainless steel	1.4301
Seals	NBR, FPM, EPDM	–
Note on materials	Contains PWIS (paint-wetting impairment substances)	
	RoHS-compliant	

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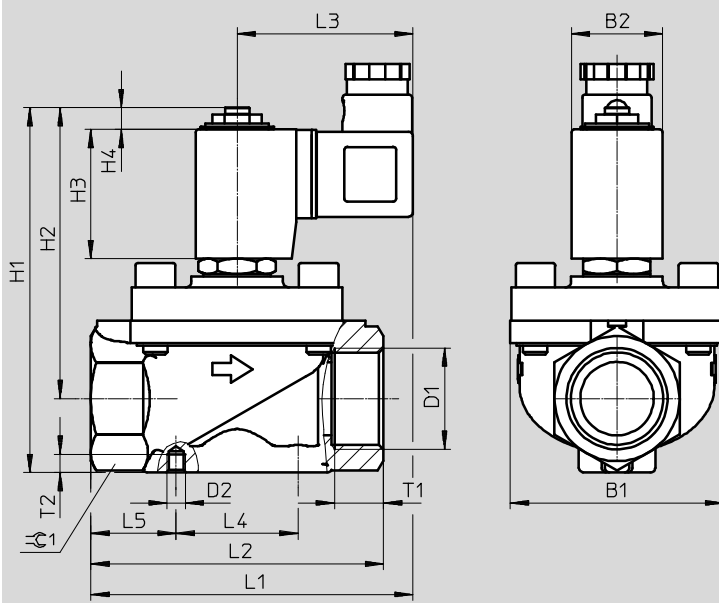
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Technical data – Connecting thread NPT $\frac{1}{4}$... NPT1

Electrical data			VZWF- ... 1	VZWF- ... 2A	VZWF- ... 3A
Electrical connection			Plug to EN 175301-803 type A, square design		
CE mark as per EU Pressure Equipment Directive			–	Yes	Yes
Coil characteristics	Direct current DC	[V]	24	–	–
	Alternating current AC	[V]	–	110	230
		[W]	11	–	–
	Switching power	[VA]	–	19	18
	Holding power	[VA]	–	16	15
		[Hz]	–	50, 60	50, 60
Permissible voltage fluctuations			[%]	±10	

Dimensions

Download CAD data → www.festo.com

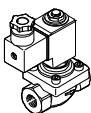


	B1	B2	D1	D2	H1	H2	H3	H4	L1	L2	L3	L4	L5	T1	T2	⌀
VZWF-B-L-M22C-N14-135-...	48	30	NPT $\frac{1}{4}$	M4	101	86	42	7	92	67	58	25	21	12	4	27
VZWF-B-L-M22C-N14-135-...-R1	44	30	NPT $\frac{1}{4}$	M4	101	86	42	7	94	67	58	25	21	12	4	27
VZWF-B-L-M22C-N38-135-...	48	30	NPT $\frac{3}{8}$	M4	101	86	42	7	92	67	58	25	21	12	4	27
VZWF-B-L-M22C-N38-135-...-R1	44	30	NPT $\frac{3}{8}$	M4	101	86	42	7	94	67	58	25	21	12	4	27
VZWF-B-L-M22C-N12-135-...	48	30	NPT $\frac{1}{2}$	M4	101	86	42	7	92	67	58	25	21	12	4	27
VZWF-B-L-M22C-N12-135-...-R1	44	30	NPT $\frac{1}{2}$	M4	101	76	42	7	94	67	58	25	21	12	4	27
VZWF-B-L-M22C-N34-275-...	70	30	NPT $\frac{3}{4}$	M6	120	96	42	7	106	96	58	40	28	16	6	41
VZWF-B-L-M22C-N1-275-...	70	30	NPT1	M6	120	96	42	7	106	96	58	40	28	16	6	41

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Technical data – Connecting thread NPT $\frac{1}{4}$... NPT1

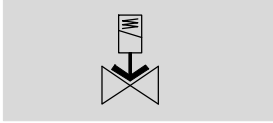
Ordering data – Solenoid valve VZWF					
	Process valve connection	Brass housing		Stainless steel casting housing	
		Part No.	Type	Part No.	Type
	NPT $\frac{1}{4}$	1492174	VZWF-B-L-M22C-N14-135-E-1P4-10	1492166	VZWF-B-L-M22C-N14-135-1P4-10-R1
		1492158	VZWF-B-L-M22C-N14-135-1P4-10	1492182	VZWF-B-L-M22C-N14-135-E-1P4-10-R1
		1492254	VZWF-B-L-M22C-N14-135-2AP4-10	1492390	VZWF-B-L-M22C-N14-135-V-3AP4-10-R1
		1492350	VZWF-B-L-M22C-N14-135-3AP4-10	1492198	VZWF-B-L-M22C-N14-135-V-1P4-10-R1
		1492270	VZWF-B-L-M22C-N14-135-E-2AP4-10	1492262	VZWF-B-L-M22C-N14-135-2AP4-10-R1
		1492286	VZWF-B-L-M22C-N14-135-V-2AP4-10	1492278	VZWF-B-L-M22C-N14-135-E-2AP4-10-R1
		1492366	VZWF-B-L-M22C-N14-135-E-3AP4-10	1492294	VZWF-B-L-M22C-N14-135-V-2AP4-10-R1
		1492190	VZWF-B-L-M22C-N14-135-V-1P4-10	1492358	VZWF-B-L-M22C-N14-135-3AP4-10-R1
		1492382	VZWF-B-L-M22C-N14-135-V-3AP4-10	1492374	VZWF-B-L-M22C-N14-135-E-3AP4-10-R1
	NPT $\frac{3}{8}$	1492175	VZWF-B-L-M22C-N38-135-E-1P4-10	1492167	VZWF-B-L-M22C-N38-135-1P4-10-R1
		1492159	VZWF-B-L-M22C-N38-135-1P4-10	1492183	VZWF-B-L-M22C-N38-135-E-1P4-10-R1
		1492255	VZWF-B-L-M22C-N38-135-2AP4-10	1492391	VZWF-B-L-M22C-N38-135-V-3AP4-10-R1
		1492351	VZWF-B-L-M22C-N38-135-3AP4-10	1492199	VZWF-B-L-M22C-N38-135-V-1P4-10-R1
		1492191	VZWF-B-L-M22C-N38-135-V-1P4-10	1492263	VZWF-B-L-M22C-N38-135-2AP4-10-R1
		1492271	VZWF-B-L-M22C-N38-135-E-2AP4-10	1492279	VZWF-B-L-M22C-N38-135-E-2AP4-10-R1
		1492287	VZWF-B-L-M22C-N38-135-V-2AP4-10	1492295	VZWF-B-L-M22C-N38-135-V-2AP4-10-R1
		1492367	VZWF-B-L-M22C-N38-135-E-3AP4-10	1492359	VZWF-B-L-M22C-N38-135-3AP4-10-R1
		1492383	VZWF-B-L-M22C-N38-135-V-3AP4-10	1492375	VZWF-B-L-M22C-N38-135-E-3AP4-10-R1
	NPT $\frac{1}{2}$	1492176	VZWF-B-L-M22C-N12-135-E-1P4-10	1492168	VZWF-B-L-M22C-N12-135-1P4-10-R1
		1492256	VZWF-B-L-M22C-N12-135-2AP4-10	1492184	VZWF-B-L-M22C-N12-135-E-1P4-10-R1
		1492352	VZWF-B-L-M22C-N12-135-3AP4-10	1492392	VZWF-B-L-M22C-N12-135-V-3AP4-10-R1
		1492192	VZWF-B-L-M22C-N12-135-V-1P4-10	1492200	VZWF-B-L-M22C-N12-135-V-1P4-10-R1
		1492272	VZWF-B-L-M22C-N12-135-E-2AP4-10	1492264	VZWF-B-L-M22C-N12-135-2AP4-10-R1
		1492288	VZWF-B-L-M22C-N12-135-V-2AP4-10	1492280	VZWF-B-L-M22C-N12-135-E-2AP4-10-R1
		1492368	VZWF-B-L-M22C-N12-135-E-3AP4-10	1492296	VZWF-B-L-M22C-N12-135-V-2AP4-10-R1
		1492384	VZWF-B-L-M22C-N12-135-V-3AP4-10	1492360	VZWF-B-L-M22C-N12-135-3AP4-10-R1
		1492160	VZWF-B-L-M22C-N12-135-1P4-10	1492376	VZWF-B-L-M22C-N12-135-E-3AP4-10-R1
	NPT $\frac{3}{4}$	1492385	VZWF-B-L-M22C-N34-275-V-3AP4-6	1492169	VZWF-B-L-M22C-N34-275-1P4-6-R1
		1492161	VZWF-B-L-M22C-N34-275-1P4-6	1492185	VZWF-B-L-M22C-N34-275-E-1P4-6-R1
		1492257	VZWF-B-L-M22C-N34-275-2AP4-6	1492393	VZWF-B-L-M22C-N34-275-V-3AP4-6-R1
		1492353	VZWF-B-L-M22C-N34-275-3AP4-6	1492201	VZWF-B-L-M22C-N34-275-V-1P4-6-R1
		1492177	VZWF-B-L-M22C-N34-275-E-1P4-6	1492265	VZWF-B-L-M22C-N34-275-2AP4-6-R1
		1492193	VZWF-B-L-M22C-N34-275-V-1P4-6	1492281	VZWF-B-L-M22C-N34-275-E-2AP4-6-R1
		1492273	VZWF-B-L-M22C-N34-275-E-2AP4-6	1492297	VZWF-B-L-M22C-N34-275-V-2AP4-6-R1
		1492289	VZWF-B-L-M22C-N34-275-V-2AP4-6	1492361	VZWF-B-L-M22C-N34-275-3AP4-6-R1
		1492369	VZWF-B-L-M22C-N34-275-E-3AP4-6	1492377	VZWF-B-L-M22C-N34-275-E-3AP4-6-R1
	NPT1	1492162	VZWF-B-L-M22C-N1-275-1P4-6	1492170	VZWF-B-L-M22C-N1-275-1P4-6-R1
		1492258	VZWF-B-L-M22C-N1-275-2AP4-6	1492186	VZWF-B-L-M22C-N1-275-E-1P4-6-R1
		1492354	VZWF-B-L-M22C-N1-275-3AP4-6	1492394	VZWF-B-L-M22C-N1-275-V-3AP4-6-R1
		1492178	VZWF-B-L-M22C-N1-275-E-1P4-6	1492202	VZWF-B-L-M22C-N1-275-V-1P4-6-R1
		1492274	VZWF-B-L-M22C-N1-275-E-2AP4-6	1492266	VZWF-B-L-M22C-N1-275-2AP4-6-R1
		1492370	VZWF-B-L-M22C-N1-275-E-3AP4-6	1492282	VZWF-B-L-M22C-N1-275-E-2AP4-6-R1
		1492194	VZWF-B-L-M22C-N1-275-V-1P4-6	1492298	VZWF-B-L-M22C-N1-275-V-2AP4-6-R1
		1492290	VZWF-B-L-M22C-N1-275-V-2AP4-6	1492362	VZWF-B-L-M22C-N1-275-3AP4-6-R1
		1492386	VZWF-B-L-M22C-N1-275-V-3AP4-6	1492378	VZWF-B-L-M22C-N1-275-E-3AP4-6-R1

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Technical data – Connecting thread NPT1¼ ... NPT2

Function



-  - Flow rate Kv
20 ... 28 m³/h

-  - Connecting thread
NPT1¼ ... NPT2



General technical data			
Process valve connection	NPT1¼	NPT1½	NPT2
Nominal size (DN)	40	40	50
Valve function	2/2-way, single solenoid, closed		
Design	Diaphragm valve, force pilot operated		
Type of mounting	In-line installation		
Actuation type	Electric		
Manual override	None		
Mounting position	Solenoid vertical		
Sealing principle	Soft		
Direction of flow	Non-reversible		
Max. viscosity [mm²/s]	22		
Protection class	IP 65		
Product weight [g]	4500		6500

Solenoid valves VZWF, force pilot operated, NPT

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Technical data – Connecting thread NPT1¼ ... NPT2

Operating and environmental conditions			
Process valve connection		NPT1¼	NPT1½
Switching time on	[ms]	620	1220
Switching time off	[ms]	1140	2140
Standard nominal flow rate	[l/min]	21370	23500
Flow rate	[m³/h]	20	22.5
Process valve nominal pressure (PN)		40	
Differential pressure	[bar]	0	
Medium pressure ³⁾	[bar]	0 ... 10	0 ... 6
Medium		Compressed air in accordance with ISO 8573-1:2010 [7:-:-]	
		Inert gases	
		Mineral oil	
		Water	
		Neutral liquids	
		Further media upon request	
Ambient temperature	[°C]	-10 ... +35 °C	
Temperature of medium	[°C]	-10 ... +80 °C	
Leak rate to EN 12266-1		A	
Corrosion resistance class			
CRC ¹⁾ Brass		1	
CRC ²⁾ Stainless steel		3	

- 1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
- 2) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.
- 3) The valves are suitable for vacuum with Pabs > 100 mbar. Please ensure the direction of flow corresponds to the direction of the arrow.

Materials		
Solenoid valves		Material number
Housing	Brass casting	CW617N
	Stainless steel casting	1.4581
Screws	High-alloy stainless steel	1.4301
Seals	NBR, FPM, EPDM	–
Note on materials	Contains PWIS (paint-wetting impairment substances)	
	RoHS-compliant	

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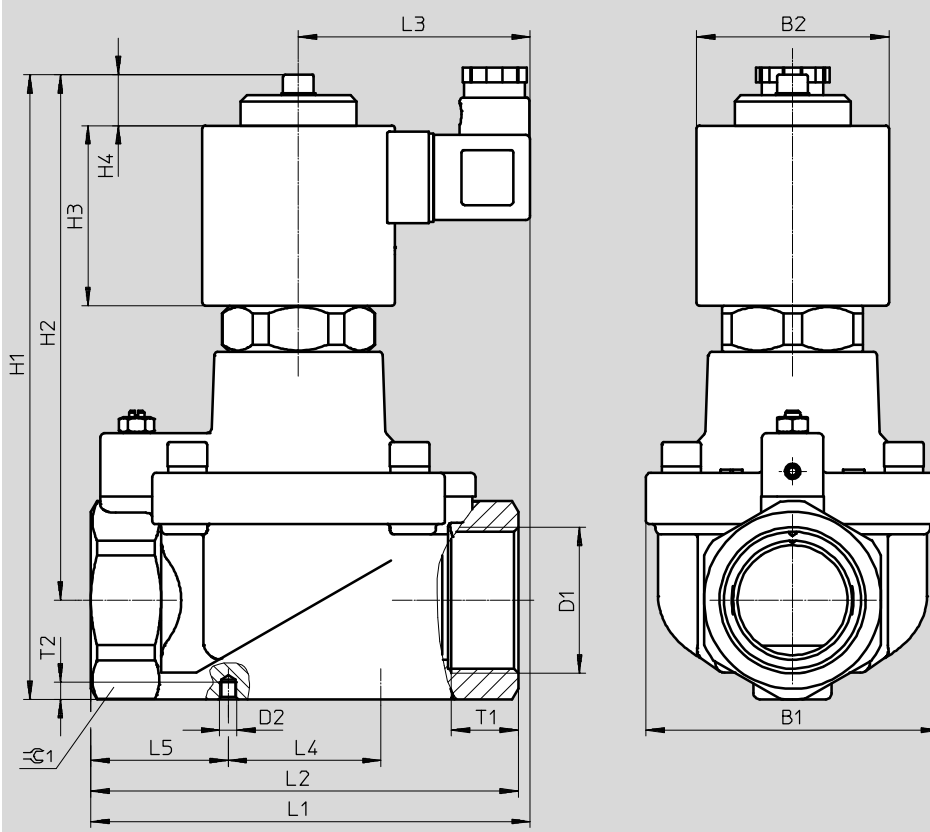
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Technical data – Connecting thread NPT1¼ ... NPT2

Electrical data			VZWF- ... 1	VZWF- ... 2A	VZWF- ... 3A
Electrical connection			Plug to EN 175301-803 type A, square design		
CE mark as per EU Pressure Equipment Directive			–	Yes	Yes
Coil characteristics	Direct current DC	[V]	24	–	–
	Alternating current AC	[V]	–	110	230
		[W]	30	–	–
	Switching power	[VA]	–	30	30
	Holding power	[VA]	–	30	30
		[Hz]	–	50, 60	50, 60
Permissible voltage fluctuations			[%]	±10	

Dimensions

Download CAD data → www.festo.com

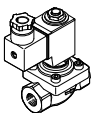


	B1	B2	D1	D2	H1	H2	H3	H4	L1	L2	L3	L4	L5	T1	T2	⌀
VZWF-L-M22C-N114-400-...	96	63	NPT1¼	–	205	173	59	17	148	140	76	–	–	22	–	58
VZWF-L-M22C-N112-400-...	96	63	NPT1½	–	205	173	59	17	148	140	76	–	–	22	–	58
VZWF-L-M22C-N2-500-...	112	63	NPT2	M6	218	179	59	17	159	168	76	60	55	25	6	70

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Technical data – Connecting thread NPT1¼ ... NPT2

Ordering data – Solenoid valve VZWF					
	Process valve connection	Brass housing		Stainless steel casting housing	
		Part No.	Type	Part No.	Type
	NPT1¼	1492387	VZWF-L-M22C-N114-400-V-3AP4-10	1492171	VZWF-L-M22C-N114-400-1P4-10-R1
		1492163	VZWF-L-M22C-N114-400-1P4-10	1492187	VZWF-L-M22C-N114-400-E-1P4-10-R1
		1492259	VZWF-L-M22C-N114-400-2AP4-10	1492395	VZWF-L-M22C-N114-400-V-3AP4-10-R1
		1492355	VZWF-L-M22C-N114-400-3AP4-10	1492203	VZWF-L-M22C-N114-400-V-1P4-10-R1
		1492179	VZWF-L-M22C-N114-400-E-1P4-10	1492267	VZWF-L-M22C-N114-400-2AP4-10-R1
		1492195	VZWF-L-M22C-N114-400-V-1P4-10	1492283	VZWF-L-M22C-N114-400-E-2AP4-10-R1
		1492275	VZWF-L-M22C-N114-400-E-2AP4-10	1492299	VZWF-L-M22C-N114-400-V-2AP4-10-R1
		1492291	VZWF-L-M22C-N114-400-V-2AP4-10	1492363	VZWF-L-M22C-N114-400-3AP4-10-R1
		1492371	VZWF-L-M22C-N114-400-E-3AP4-10	1492379	VZWF-L-M22C-N114-400-E-3AP4-10-R1
	NPT1½	1492388	VZWF-L-M22C-N112-400-V-3AP4-10	1492172	VZWF-L-M22C-N112-400-1P4-10-R1
		1492164	VZWF-L-M22C-N112-400-1P4-10	1492188	VZWF-L-M22C-N112-400-E-1P4-10-R1
		1492260	VZWF-L-M22C-N112-400-2AP4-10	1492396	VZWF-L-M22C-N112-400-V-3AP4-10-R1
		1492356	VZWF-L-M22C-N112-400-3AP4-10	1492204	VZWF-L-M22C-N112-400-V-1P4-10-R1
		1492180	VZWF-L-M22C-N112-400-E-1P4-10	1492268	VZWF-L-M22C-N112-400-2AP4-10-R1
		1492196	VZWF-L-M22C-N112-400-V-1P4-10	1492284	VZWF-L-M22C-N112-400-E-2AP4-10-R1
		1492276	VZWF-L-M22C-N112-400-E-2AP4-10	1492300	VZWF-L-M22C-N112-400-V-2AP4-10-R1
		1492292	VZWF-L-M22C-N112-400-V-2AP4-10	1492364	VZWF-L-M22C-N112-400-3AP4-10-R1
		1492372	VZWF-L-M22C-N112-400-E-3AP4-10	1492380	VZWF-L-M22C-N112-400-E-3AP4-10-R1
	NPT2	1492165	VZWF-L-M22C-N2-500-1P4-6	1492173	VZWF-L-M22C-N2-500-1P4-6-R1
		1492261	VZWF-L-M22C-N2-500-2AP4-6	1492189	VZWF-L-M22C-N2-500-E-1P4-6-R1
		1492357	VZWF-L-M22C-N2-500-3AP4-6	1492397	VZWF-L-M22C-N2-500-V-3AP4-6-R1
		1492181	VZWF-L-M22C-N2-500-E-1P4-6	1492205	VZWF-L-M22C-N2-500-V-1P4-6-R1
		1492277	VZWF-L-M22C-N2-500-E-2AP4-6	1492269	VZWF-L-M22C-N2-500-2AP4-6-R1
		1492373	VZWF-L-M22C-N2-500-E-3AP4-6	1492365	VZWF-L-M22C-N2-500-3AP4-6-R1
		1492197	VZWF-L-M22C-N2-500-V-1P4-6	1492301	VZWF-L-M22C-N2-500-V-2AP4-6-R1
		1492293	VZWF-L-M22C-N2-500-V-2AP4-6	1492285	VZWF-L-M22C-N2-500-E-2AP4-6-R1
		1492389	VZWF-L-M22C-N2-500-V-3AP4-6	1492381	VZWF-L-M22C-N2-500-E-3AP4-6-R1