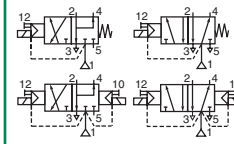




SOLENOID VALVES

pilot operated valve
aluminium, stainless steel 1/4 and 1/2
with DNV-GL approval
(Ballast Water Treatment application)



3/2
5/2
Series
551
553

FEATURES

- These spool valves are qualified for used in water ballast equipment for marine application
- The NAMUR version has all ports on the same side and with the same threads for a better resistance to water, dust and better fitting connection
- The valve technology offers environmental protection against the ingress of liquids, dusts or any other foreign matter (environmentally-protected construction)
- Can be externally piloted (external air pilot supply) to convert valve to zero minimum operation by flipping a gasket
- The solenoid valve is available with solenoid for safe area or explosion proof area (Ex d, Ex mb, Ex ia)

GENERAL

Differential pressure 2 - 10 bar [1 bar = 100 kPa]
Flow (Qv at 6 bar) 1/4: 700 l/min (ANR)
1/2: 3000 l/min

Ambient temperature range -25°C to +55°C

| fluids (*) | temperature range (TS) | seal materials (*) |
|--------------------------|------------------------|------------------------------------|
| air, inert gas, filtered | -25°C to +55°C | NBR (nitrile) + PUR (polyurethane) |

MATERIALS IN CONTACT WITH FLUID

(*) Ensure that the compatibility of the fluids in contact with the materials is verified

| | |
|-----------------------------------|--|
| Body | Aluminium, black anodized with PBT spring return or 316L stainless steel |
| End cover (spring return) | Glass-filled PA or 316L stainless steel |
| Interface plates | Glass-filled PA |
| Spool valve internal parts | Stainless steel, (POM), aluminium |
| Pilot internal parts | Refer to specific solenoid catalogue pages |
| Pilot end covers | Aluminium or 316L stainless steel |
| Core tube | Stainless steel |
| Core and plugnut | Stainless steel |
| Core spring | Stainless steel |
| Seals | NBR + PUR |
| Top disc | PA |
| Disc holder | POM |
| Cartridge (low power) | Welded, packless AISI 430 |
| Seat | Brass |
| Seat insert | POM |
| Shading coil | Copper |
| Rider rings (low power) | PTFE |

CONSTRUCTION

Screws of valve assembly Stainless steel

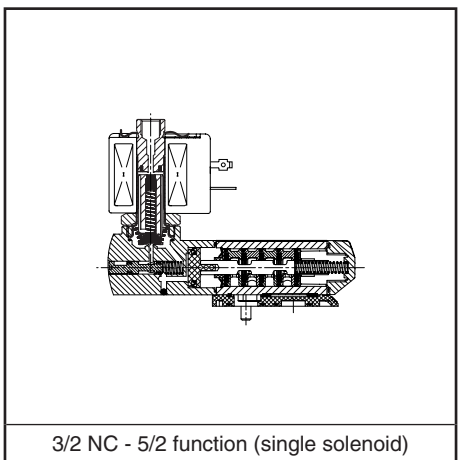
SPECIFICATIONS

| pipe size | orifice size | flow coefficient kv | operating pressure differential (bar) | | power level | prefix optional solenoids | | | | basic catalogue number | | |
|--|--------------|---------------------|---------------------------------------|-----------|-------------|---------------------------|-------|----------|------|------------------------|--------------------------|--------------------------|
| | | | min. | max. (PS) | | ATEX / IECEx | | | IP65 | aluminium | stainless steel | |
| (ϕ) | (mm) | (m³/h) (l/min) | | air (*) | hot/cold | Ex d | Ex mb | Ex ia | | | | |
| | | | | = | | NF | PV | (WS)NFIS | SC | | | |
| 3/2 NC - 5/2 - Solenoid air pilot operated - spring return (monostable) | | | | | | | | | | | | |
| 1/4 | 6 | 0,6 | 10 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *Xϕ551A482MO.24/DC.20897 | *Xϕ551A409MO.24/DC.20897 |
| 1/2 | 13 | 2,49 | 41,5 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *Xϕ553A482MO.24/DC.20897 | *Xϕ553A409MO.24/DC.20897 |
| 3/2 NC - 5/2 - Solenoid air pilot operated and return (bistable) | | | | | | | | | | | | |
| 1/4 | 6 | 0,6 | 10 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *Xϕ551A484MO.24/DC.20897 | *Xϕ551A410MO.24/DC.20897 |
| 1/2 | 13 | 2,49 | 41,5 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *Xϕ553A484MO.24/DC.20897 | *Xϕ553A410MO.24/DC.20897 |

* Select the good prefix.

ϕ Select 8 for NPT ANSI 1.20.3 or select G for ISO G (228/1)

○ Available feature in DC only



ELECTRICAL CONNECTIONS

| prefix | connection |
|--------------|--|
| SC | Spade plug connector with cable gland EN175301-803A (ISO 4400) for cables with an outer diameter from 6 to 10 mm |
| NFIS, WSNFIS | M20 plastics cable gland for cables with an outer diameter from 7 to 12 mm |
| NF, WSNF | 1/2" NPT threaded cable entry. Enclosures are supplied without cable gland |
| PV | Moulded-in cable, standard length 2 m |

ADDITIONAL OPTIONS

- Valves configured for external pilot air supply, TPL 20547
- Other pipe threads are available on request
- Ex mb (prefix "PV") solenoid can be supplied with various cable lengths
- Ex ia Prefix "NFIS" execution: solenoid enclosure has a cable gland with integral strain relief for cables with an o.d. from 7 to 12 mm and housing is provided with an internal and external connection facility for an earthing or bonding conductor
- 1/2" NPT, prefix "T" conduits (aluminium or 316 SS) available for steel solenoid housing

INSTALLATION

- Multi language installation/maintenance instructions are included with each valve
- The solenoid valves can be mounted in any position without affecting operation
- Do not connect the pressure supply to the exhaust port 3. The "environmentally-protected" construction is not adapted for a "distributing" function or use in NO function. Contact us for functions available in specific versions
- IEC 61508 Functional Safety (suffix SL). Check temperature range of valve body and solenoid for suitability. For probability of failure, contact us
- It is necessary to connect pipes or fittings to the exhaust ports to protect the internal parts of the spool valve and its pneumatic operator if used outside or in harsh environments (dusts, liquids etc.)
- Threaded pipe connection identifier is: 8 = NPT (ANSI 1.20.3); G = G (ISO 228/1)
- Prefix "NF" enclosure is provided with a 1/2" NPT threaded entry hole. Both are supplied without cable gland

DIMENSIONS (mm), WEIGHT (kg)

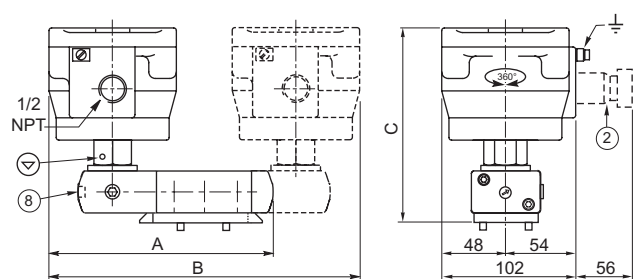
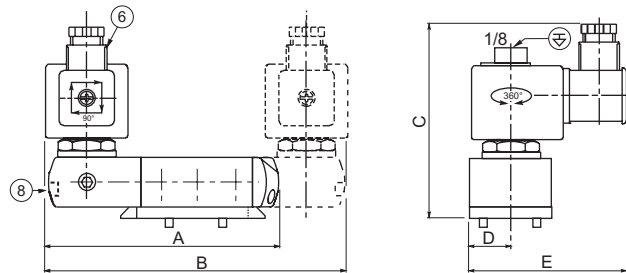
Others dimensions: **Aluminium** ; **Stainless steel**



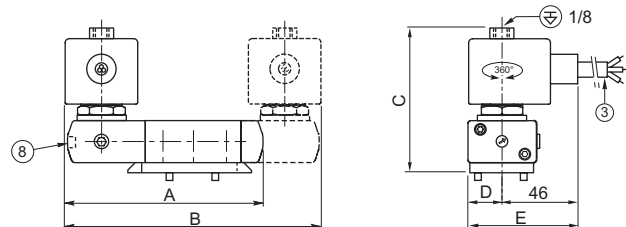
TYPE 01:
Epoxy moulded
SC: IEC 335 / ISO 4400



TYPE 02:
Aluminium; epoxy coated / AISI 316L SS
NF/WSNF: EN/IEC 60079-1, 60079-31
NFIS / WSNFIS : EN/IEC 60079-11, 60079-31



TYPE 05:
Epoxy encapsulated
PV: EN/IEC 60079-18



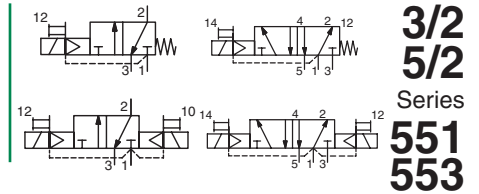
- ② NF/WSNF: Ex d certified cable gland (on request)
NFIS/WSNFIS: M20 plastics cable gland for cables with an outer diameter from 7 to 12 mm
- ③ Three-core cable, length 2 m
- ⑥ Connector rotatable by 90° increments, cable Ø 6 - 10 mm
- ⑧ Push type or screw type manual operator, suffix MO
- ⊕ Connectable pilot exhaust port

| type | prefix option | A | | | | B | | | | C | | | | D | | | | E | | | |
|------|-----------------|-----------|-------|-----------|-----|-----------|-------|-----------|-----|-----------|-------|-----------|-----|-----------|-------|-----------|-----|-----------|-------|-----------|-----|
| | | aluminium | | st. steel | | aluminium | | st. steel | | aluminium | | st. steel | | aluminium | | st. steel | | aluminium | | st. steel | |
| | | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 |
| 01 | SC | 125 | 179,5 | 132 | 182 | 174 | 225 | 172 | 229 | 107,7 | 121,2 | 108 | 117 | 22,5 | 36,15 | 22,5 | 87 | 86,5 | 100,2 | 36,5 | 101 |
| 02 | (WS)NF/(WS)NFIS | 152 | 224,3 | 159 | 209 | 218 | 314,6 | 225 | 282 | 146,8 | 160,3 | 148 | 157 | - | - | - | - | - | - | - | - |
| 03 | PV | 126 | 179,5 | 132 | 182 | 166 | 225 | 172 | 229 | 93 | 106,5 | 93 | 102 | 22,5 | 36,15 | 22,5 | 69 | 67,5 | 81,2 | 36,5 | 83 |



SOLENOID VALVES

pilot operated valve
aluminium, stainless steel 1/4 and 1/2
with DNV-GL approval
(Ballast Water Treatment application)



3/2
5/2
Series
551
553

FEATURES

- These spool valves are qualified for used in water ballast equipment for marine application
- The spool valve exists in 3/2 NC, 5/2, threaded ports
- The valve offers environmental protection against the ingress of liquids, dusts or any other foreign matter (environmentally-protected construction)
- Can be externally piloted (external air pilot supply) to convert valve to zero minimum operation by flipping a gasket
- The solenoid valve is available with solenoid for safe area or explosion proof area (Ex d, Ex mb, Ex ia)

GENERAL

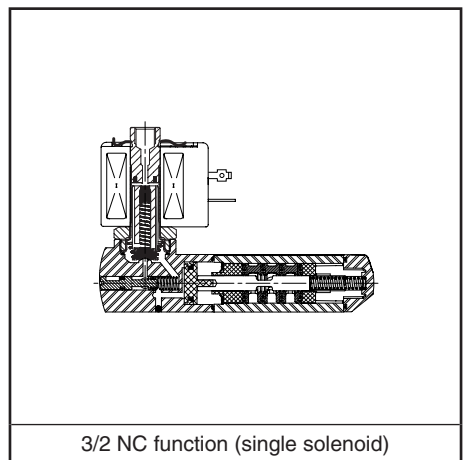
Differential pressure 2 - 10 bar [1 bar = 100 kPa]
Flow (Qv at 6 bar) 1/4: 860 l/min (ANR)
1/2: 3800 l/min
Ambient temperature range -25°C to +55°C

| fluids (*) | temperature range (TS) | seal materials (*) |
|--------------------------|------------------------|------------------------------------|
| air, inert gas, filtered | -25°C to +55°C | NBR (nitrile) + PUR (polyurethane) |

MATERIALS IN CONTACT WITH FLUID

(*) Ensure that the compatibility of the fluids in contact with the materials is verified

| | |
|-----------------------------------|--|
| Body | Aluminium, black anodized with PBT spring return or 316L stainless steel |
| End cover (spring return) | Glass-filled PA or 316L stainless steel |
| Spool valve internal parts | Zamak, stainless steel, (POM), aluminium |
| Pilot internal parts | Refer to specific solenoid catalogue pages |
| Pilot end covers | Aluminium or 316L stainless steel |
| Core tube | Stainless steel |
| Core and plugnut | Stainless steel |
| Core spring | Stainless steel |
| Seals | NBR + PUR |
| Top disc | PA |
| Disc holder | POM |
| Cartridge (low power) | Welded, packless AISI 430 |
| Seat | Brass |
| Seat insert | POM |
| Shading coil | Copper |
| Rider rings (low power) | PTFE |



3/2 NC function (single solenoid)

CONSTRUCTION

Screws of valve assembly Stainless steel

SPECIFICATIONS

| pipe size | orifice size | flow coefficient kv | operating pressure differential (bar) | | power level | prefix optional solenoids | | | | basic catalogue number | | |
|--|--------------|---------------------|---------------------------------------|-----------|-------------|---------------------------|-------|-------|-----------|------------------------|--------------------------|--------------------------|
| | | | min. | max. (PS) | | ATEX / IECEx | | IP65 | aluminium | stainless steel | | |
| (*) | (mm) | (m³/h)/(l/min) | air (*) | = | hot/cold | Ex d | Ex mb | Ex ia | | | (WS)NFIS | SC |
| 3/2 NC - Solenoid air pilot operated - spring return (monostable) | | | | | | | | | | | | |
| 1/4 | 6 | 0,6 | 10 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *X❖551A491MO.24/DC.20897 | *X❖551A413MO.24/DC.20897 |
| 1/2 | 13 | 2,49 | 41,5 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *X❖553A491MO.24/DC.20897 | *X❖553A413MO.24/DC.20897 |
| 3/2 NC - Solenoid air pilot operated and return (bistable) | | | | | | | | | | | | |
| 1/4 | 6 | 0,6 | 10 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *X❖551A493MO.24/DC.20897 | *X❖551A414MO.24/DC.20897 |
| 1/2 | 13 | 2,49 | 41,5 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *X❖553A493MO.24/DC.20897 | *X❖531A414MO.24/DC.20897 |
| 5/2 - Solenoid air pilot operated - spring return (monostable) | | | | | | | | | | | | |
| 1/4 | 6 | 0,6 | 10 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *X❖551A497MO.24/DC.20897 | *X❖551A421MO.24/DC.20897 |
| 1/2 | 13 | 2,49 | 41,5 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *X❖553A497MO.24/DC.20897 | *X❖553A421MO.24/DC.20897 |
| 5/2 - Solenoid air pilot operated and return (bistable) | | | | | | | | | | | | |
| 1/4 | 6 | 0,6 | 10 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *X❖551A498MO.24/DC.20897 | *X❖551A422MO.24/DC.20897 |
| 1/2 | 13 | 2,49 | 41,5 | 2 | 10 | 9W/11,2W | ○ | ○ | ○ | ○ | *X❖553A498MO.24/DC.20897 | *X❖553A422MO.24/DC.20897 |

- * Select the good prefix.
- ❖ Select 8 for NPT ANSI 1.20.3 or select G for ISO G (228/1)
- Available feature in DC only

90409GB-2016/R02
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ELECTRICAL CONNECTIONS

| prefix | connection |
|--------------|--|
| SC | Spade plug connector with cable gland EN175301-803A (ISO 4400) for cables with an outer diameter from 6 to 10 mm |
| NFIS, WSNFIS | M20 plastics cable gland for cables with an outer diameter from 7 to 12 mm |
| NF, WSNF | 1/2" NPT threaded cable entry. Enclosures are supplied without cable gland |
| PV | Moulded-in cable, standard length 2 m |

ADDITIONAL OPTIONS

- Valves configured for external pilot air supply, TPL 20547
- Other pipe threads are available on request
- Ex mb (prefix "PV") solenoid can be supplied with various cable lengths
- Ex ia Prefix "NFIS" execution: solenoid enclosure has a cable gland with integral strain relief for cables with an o.d. from 7 to 12 mm and housing is provided with an internal and external connection facility for an earthing or bonding conductor
- 1/2" NPT, prefix "T" conduits (aluminium or 316 SS) available for steel solenoid housing

INSTALLATION

- Multi language installation/maintenance instructions are included with each valve
- The solenoid valves can be mounted in any position without affecting operation
- Do not connect the pressure supply to the exhaust port 3. The "environmentally-protected" construction is not adapted for a "distributing" function or use in NO function. Contact us for functions available in specific versions
- IEC 61508 Functional Safety (suffix SL). Check temperature range of valve body and solenoid for suitability. For probability of failure, contact us
- It is necessary to connect pipes or fittings to the exhaust ports to protect the internal parts of the spool valve and its pneumatic operator if used outside or in harsh environments (dusts, liquids etc.)
- Threaded pipe connection identifier is: 8 = NPT (ANSI 1.20.3); G = G (ISO 228/1)
- Prefix "NF" enclosure is provided with a 1/2" NPT threaded entry hole. Both are supplied without cable gland

DIMENSIONS (mm), WEIGHT (kg)

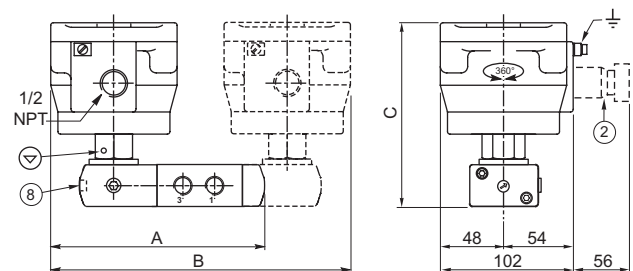
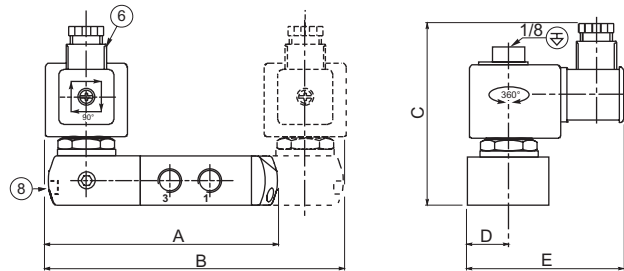
Others dimensions: Aluminium, **3/2** or **5/2** ; Stainless steel; **3/2** or **5/2**



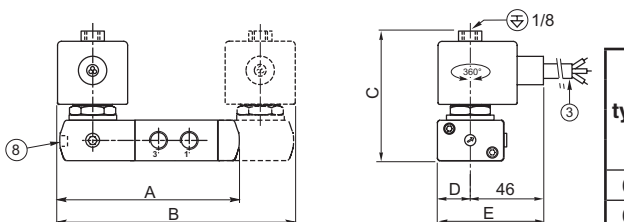
TYPE 01:
Epoxy moulded
SC: IEC 335 / ISO 4400



TYPE 02:
Aluminium; epoxy coated / AISI 316L SS
NF/WSNF: EN/IEC 60079-1, 60079-31
NFIS / WSNFIS : EN/IEC 60079-11, 60079-31



TYPE 05:
Epoxy encapsulated
PV: EN/IEC 60079-18



- ② NF/WSNF: Ex d certified cable gland (on request)
NFIS/WSNFIS: M20 plastics cable gland for cables with an outer diameter from 7 to 12 mm
- ③ Three-core cable, length 2 m
- ⑥ Connector rotatable by 90° increments, cable Ø 6 - 10 mm
- ⑧ Push type or screw type manual operator, suffix MO
- ⊕ Connectable pilot exhaust port

| type | prefix option | A | | | | | | | | B | | | | | | | |
|------|-----------------|-----------|-----|-------|-------|-----------|-----|-------|-----|-----------|-----|-------|-------|-----------|-----|-------|-----|
| | | aluminium | | | | st. steel | | | | aluminium | | | | st. steel | | | |
| | | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 |
| 01 | SC | 132 | 144 | 152,5 | 179,5 | 132 | 144 | 154 | 182 | 170 | 182 | 198 | 225 | 172 | 184 | 201 | 229 |
| 02 | (WS)NF/(WS)NFIS | 158 | 170 | 197,3 | 224,3 | 158 | 170 | 198,8 | 208 | 224 | 236 | 287,6 | 314,6 | 224 | 236 | 290,6 | 281 |
| 03 | PV | 132 | 144 | 152,5 | 179,5 | 132 | 144 | 154 | 182 | 172 | 184 | 198 | 225 | 172 | 184 | 201 | 229 |

| type | prefix option | C | | | | | | | | D | | | | | | | | E | | | | | | | |
|------|-----------------|-----------|-------|-------|-------|-----------|-----|-------|-----|-----------|------|-------|-------|-----------|------|------|------|-----------|------|-------|-------|-----------|----|------|------|
| | | aluminium | | | | st. steel | | | | aluminium | | | | st. steel | | | | aluminium | | | | st. steel | | | |
| | | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | 551 | 553 | | | | |
| 01 | SC | 102,7 | 102,7 | 112,2 | 112,2 | 103 | 103 | 108,4 | 109 | 22,5 | 22,5 | 36,15 | 36,15 | 22,5 | 22,5 | 36,5 | 36,5 | 86,5 | 86,5 | 100,2 | 100,2 | 86,5 | 87 | 101 | 101 |
| 02 | (WS)NF/(WS)NFIS | 141,8 | 141,8 | 151,3 | 151,3 | 142 | 142 | 147,5 | 148 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 03 | PV | 88 | 88 | 97,5 | 97,5 | 88 | 88 | 93,7 | 94 | 22,5 | 22,5 | 36,15 | 36,15 | 22,5 | 22,5 | 36,5 | 36,5 | 67,5 | 67,5 | 81,2 | 81,2 | 68,5 | 69 | 82,5 | 82,5 |