## Working medium, air quality

Working medium: Dry, filtered compressed air to ISO 8573-1 class 3.4.3.

### Recommended air quality for valves

For best possible service life and trouble free operation, ISO 8573-1 quality class 3.4.3 should be used. This means 5µm filter (standard filter) dew point +3°C for indoor operation (a lower dew point should be selected for outdoor operation) and oil concentration 1.0 mg oil/m³, which is what a standard compressor with a standard filter gives.

### ISO 8573-1 quality classes

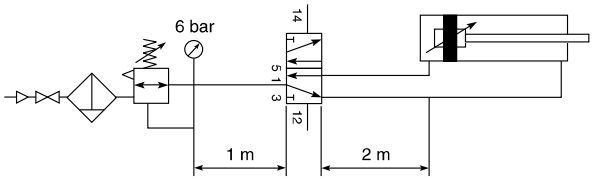
| Quality class | Pollution particle size (µm) | Pollution max. concentration (mg/m³) | Water max. press. dew point (°C) | Oil max. concentration (mg/m³) |
|---|---|---|---|---|
| **1** | 0,1 | 0,1 | -70 | 0,01 |
| **2** | 1 | 1 | -40 | 0,1 |
| **3** | 5 | 5 | -20 | 1,0 |
| **4** | 15 | 8 | +3 | 5,0 |
| **5** | 40 | 10 | +7 | 25 |
| **6** | - | - | +10 | - |

### Typical cylinders speeds which can be achieved with Viking valves and different tube sizes.

In the chart below you can find the suitable valves, tubes etc. for each cylinder size. If you have a tube length over 2 m, choose one tube size larger than in the chart.

Following data is valid:

Supply pressure : min 7,0 bar
Regulator pressure setting : 6,0 bar
Pipe length between air treatment unit and valve : max 1 m
Pipe length between valve and cylinder : max 2 m




| Cylinder bore | <20 | 20-32 | 40-50 | 63 | 80 | 100 | 125 | 160 | 200 |
|---|---|---|---|---|---|---|---|---|---|
| **Cylinder port** | M5 | G1/8 | G1/4 | G3/8 | G3/8 | G1/2 | G1/2 | G3/4 | G3/4 |
| **Tubing Ext/Int** | 4/2.7 | 6/4 | 8/6 | 10/8 | 10/8 | 12/9 | 14/11 | 18/15 | 20/18 |
| | | | 6/4 | 8/6 | 12/9 | 14/11 | | | |
| **P2LAX** | G1/8 | G1/8 | G1/8 | G1/8 | G1/8 | | | | |
| **P2LBX** | G1/4 | G1/4 | G1/4 | G1/4 | G1/4 | G1/4 | | | |
| **P2LCX** | | | G3/8 | G3/8 | G3/8 | G3/8 | G3/8 | | |
| **P2LDX** | | | | G1/2 | G1/2 | G1/2 | G1/2 | G1/2 | G1/2 |

Cylinder speed < 0,5 m/s
Cylinder speed < 1 m/s
Oversized
Cylinder speed > 1 m/s

## Material specification

### P2LAX

#### Valve

| | |
|---|---|
| Valve body | Anodised aluminium |
| End covers | Anodised aluminium |
| Lever housing | Acetal plastic |
| Spool | Aluminium + nitrile rubber |
| Piston | Acetal plastic/ Anodised aluminium |
| End cover sealings | Nitrile rubber |
| End cover screws | Stainless steel |
| Springs | Dacromet® - processed steel, Stainless steel |
| Lever | Reinforced polyamid plastic |
| Panel mounting nut | Polycarbonate plastic |
| Gaiter | Chloroprene rubber |
| Mounting screws for solenoid | Stainless steel |

#### Accessories

| | |
|---|---|
| Manifold bar | Anodised aluminium |
| Pressure bar | Anodised aluminium |
| Multiple manifolds | Anodised aluminium |
| End and intermediate blocks | Anodised aluminium |

### P2LBX

#### Valve

| | |
|---|---|
| Valve body | Anodised aluminium |
| End covers | Anodised aluminium |
| Lever housing | Anodised aluminium |
| Spool | Aluminium + nitrile rubber |
| Piston | Acetal plastic/ Anodised aluminium |
| End cover sealings | Nitrile rubber |
| End cover screws | Stainless steel |
| Springs | Dacromet® - processed steel, Stainless steel |
| Lever | Steel Zinc Plated |
| Gaiter | Chloroprene rubber |
| Mounting screws for solenoid | Stainless steel |
| Panel Washer | Nitrile |
| Twist Bush | Acetal |
| Helix Bush | Brass |
| Pin | Plated Steel |
| Twist Housing | Anodised Aluminium |
| Twist Knob | Polyamide 6 |
| Panel mounting ring | Acetal |
| Lever Housings | Anodised Aluminium |
| Lever selector | Zinc Diecast |

#### Accessories

| | |
|---|---|
| Manifold bar | Anodised aluminium |
| Pressure bar | Anodised aluminium |

### P2LCX

#### Valve

| | |
|---|---|
| Valve body | Anodised aluminium |
| End covers | Anodised aluminium |
| Spool | Aluminium + nitrile rubber |
| Piston | Acetal plastic/ Anodised aluminium |
| End cover sealings | Nitrile rubber |
| End cover screws | Stainless steel |
| Springs | Dacromet® - processed steel, Stainless steel |
| Lever | Steel Zinc Plated |
| Gaiter | Chloroprene rubber |
| Mounting screws for solenoid | Stainless steel |

### P2LDX

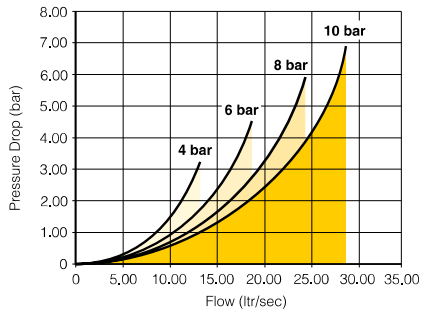
#### Valve

| | |
|---|---|
| Valve body | Anodised aluminium |
| End covers | Anodised aluminium |
| Spool | Aluminium + nitrile rubber |
| Piston | Acetal plastic/ Anodised aluminium |
| End cover sealings | Nitrile rubber |
| End cover screws | Stainless steel |
| Springs | Dacromet® - processed steel, Stainless steel |
| Lever | Steel Zinc Plated |
| Gaiter | Chloroprene rubber |
| Mounting screws for solenoid | Stainless steel |

## Flow characteristics

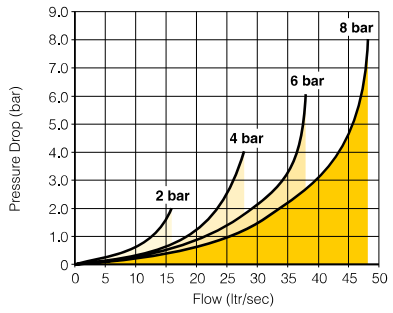
Flow capacities in accordance with ISO6358
All pressures = effective pressure
The curves in the diagram below are typical only

### Technical Data P2LAX



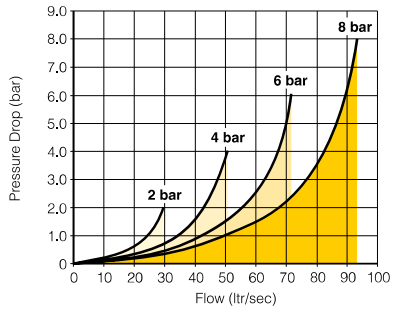

| | |
|---|---|
| Port size | G1/8 |
| Max operating pressure. | 16 bar |
| Working temperature. | |
| Air pilot lever solenoid. | -40°C to + 60°C |
| Air pilot solenoid. | -10°C to + 50°C |
| Standard and food version. | -40°C to + 60°C |
| Mobile version. | -40°C to + 60°C |
| Flow (acc. to ISO 6358) | c = 3,0 Nl/s x bar<br>b = 0,2<br>Qn = 11,0 l/s<br>Qmax = 19,0 l/s<br>Cv = 0,65 |

### Technical Data P2LBX



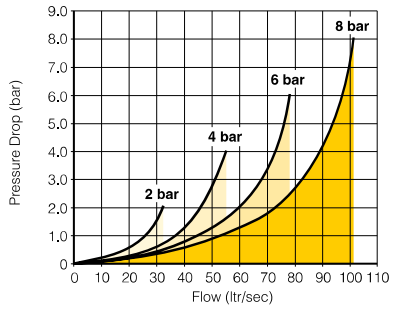

| | |
|---|---|
| Port size | G1/4 |
| Max operating pressure. | 16 bar |
| Working temperature. | |
| Air pilot lever solenoid. | -40°C to + 60°C |
| Air pilot solenoid. | -10°C to + 50°C |
| Standard and food version. | -40°C to + 60°C |
| Mobile version. | -40°C to + 60°C |
| Flow (acc. to ISO 6358) | c = 5,4 Nl/s x bar<br>b = 0,2<br>Qn = 21,5 l/s<br>Qmax = 38,0 l/s<br>Cv = 1,33 |

### Technical Data P2LCX




| | |
|---|---|
| Port size | G3/8 |
| Max operating pressure. | 12 bar |
| Working temperature. | |
| Air pilot lever solenoid. | -40°C to + 60°C |
| Air pilot solenoid. | -10°C to + 50°C |
| Standard and food version. | -40°C to + 60°C |
| Mobile version. | -40°C to + 60°C |
| Flow (acc. to ISO 6358) | c = 10,3 Nl/s x bar<br>b = 0,22<br>Qn = 41,0 l/s<br>Qmax = 72,0 l/s<br>Cv = 2,5 |

### Technical Data P2LDX



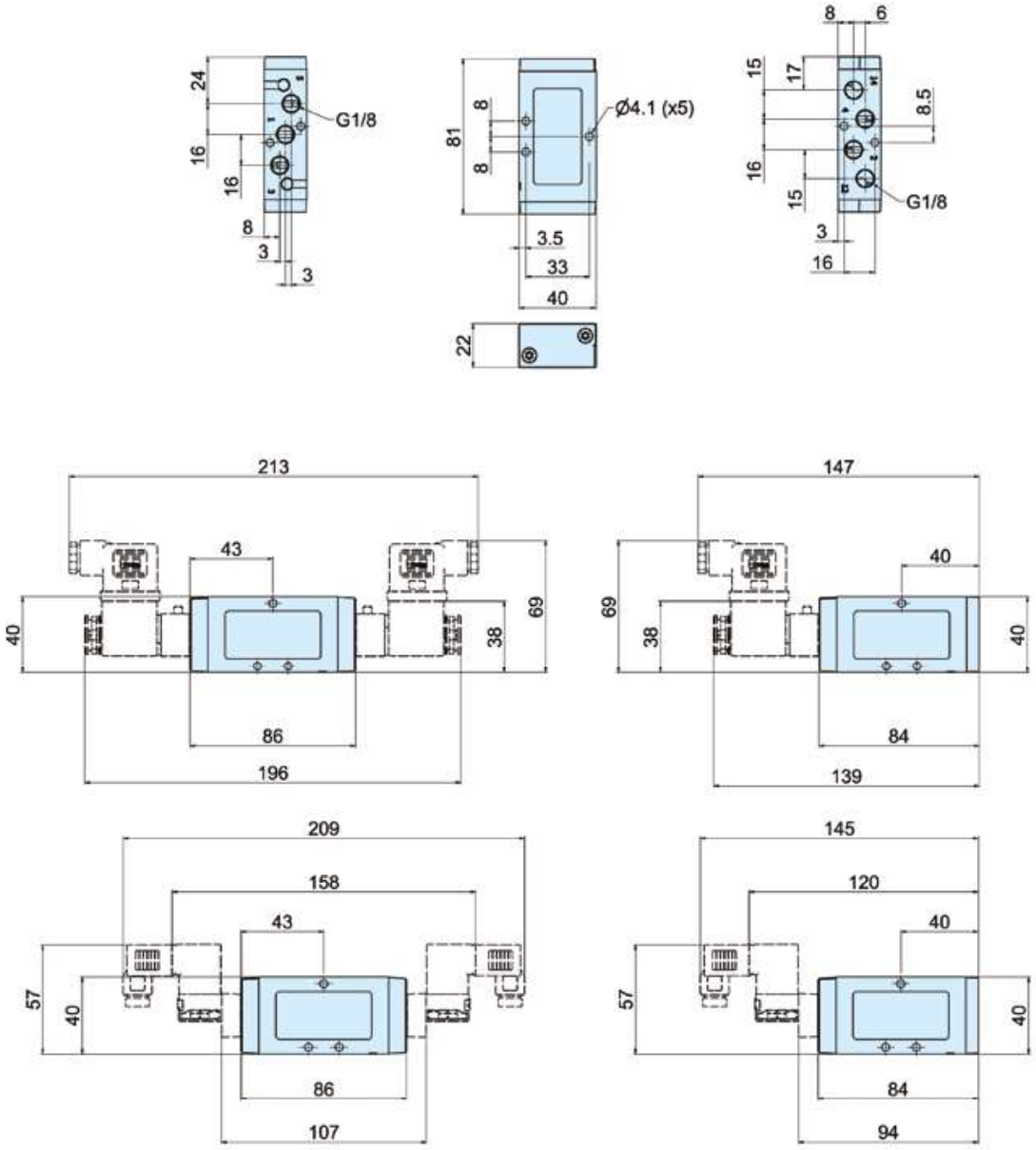

| | |
|---|---|
| Port size | G1/2 |
| Max operating pressure. | 12 bar |
| Working temperature. | |
| Air pilot lever solenoid. | -40°C to + 60°C |
| Air pilot solenoid. | -10°C to + 50°C |
| Standard and food version. | -40°C to + 60°C |
| Mobile version. | -40°C to + 60°C |
| Flow (acc. to ISO 6358) | c = 11,3 Nl/s x bar<br>b = 0,3<br>Qn = 44,3 l/s<br>Qmax = 78 l/s<br>Cv = 2,71 |



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## Dimensions

**P2LAX... all**
**5/2 and 5/3 valves**



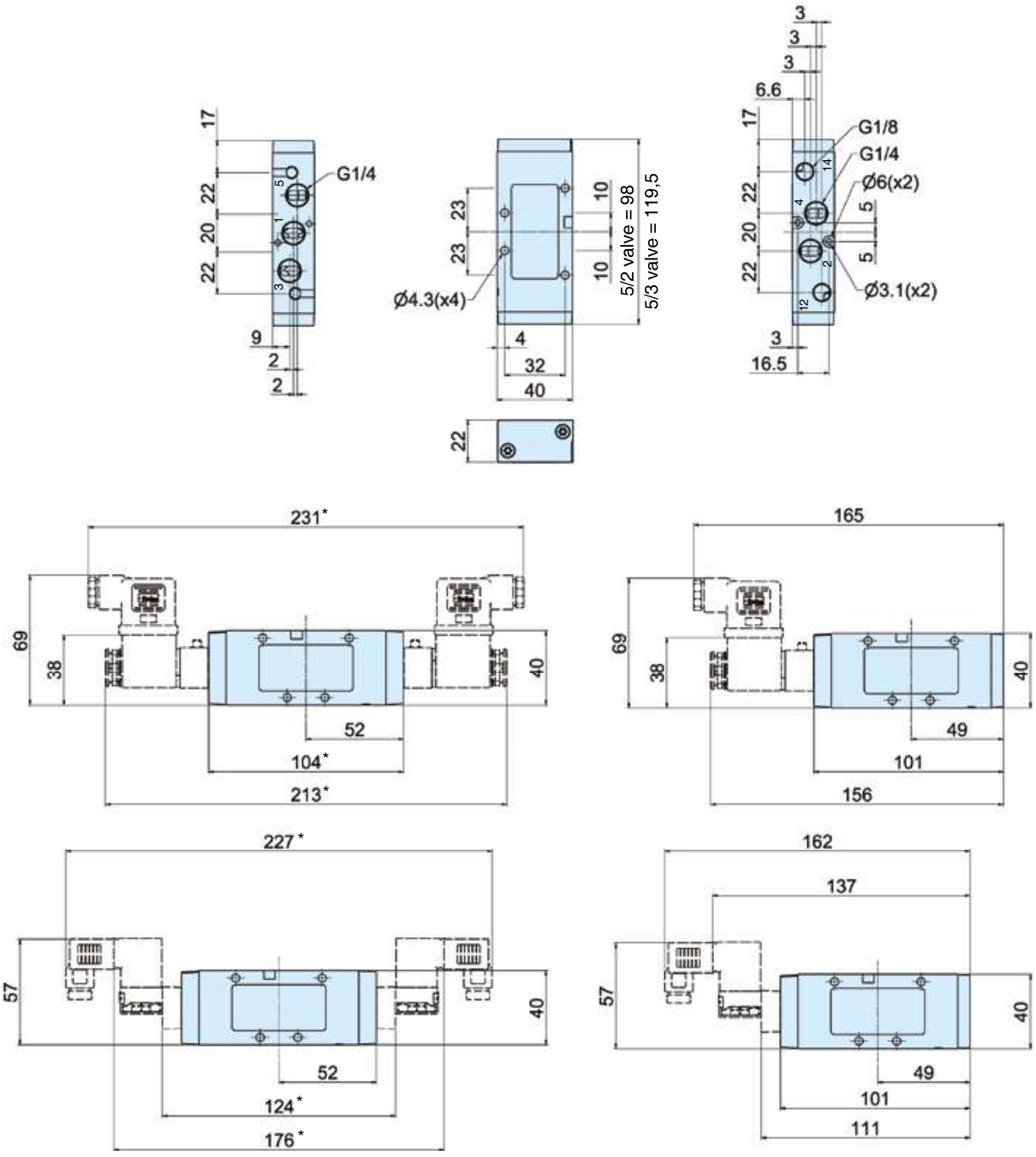

**Solenoid valves**
Cable plugs must be ordered separately.
One pilot valve is required for each E in the valve order code.



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## Dimensions

**P2LBX... all**
**5/2 and 5/3 valves**



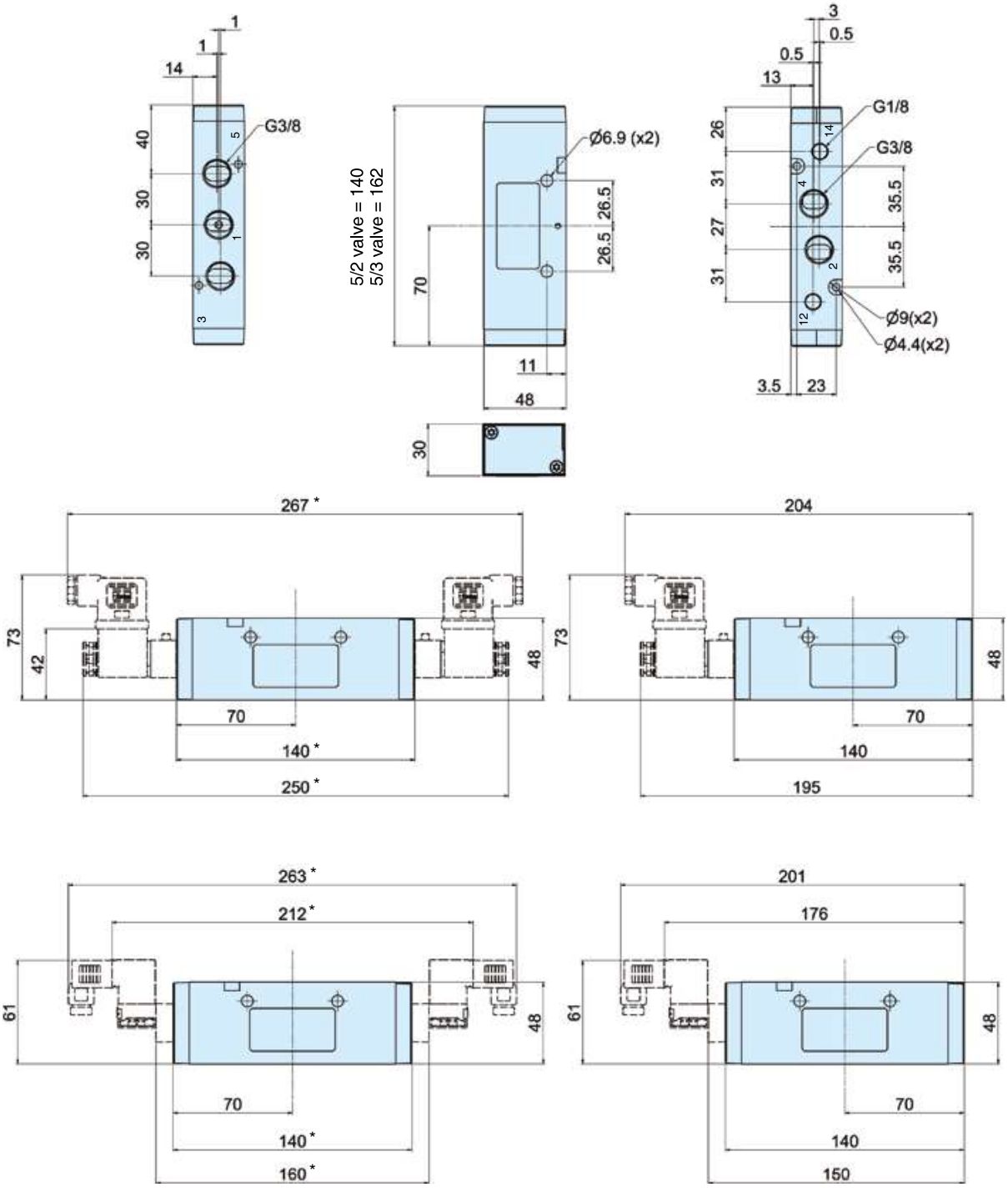

*** Note:** 5/3 valves - add 21.5mm



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## Dimensions

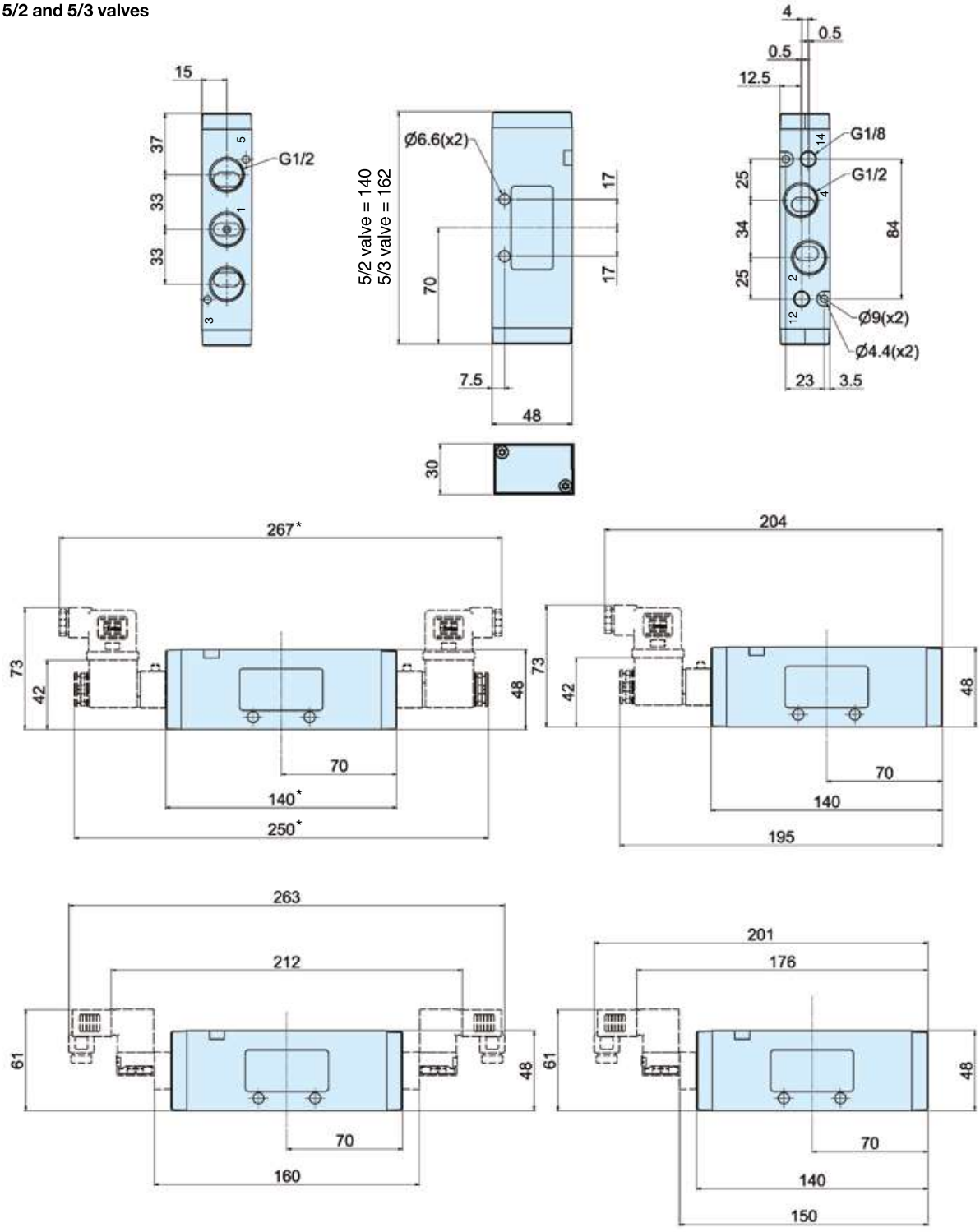
**P2LCX... all**
**5/2 and 5/3 valves**




*** Note:** 5/3 valves - add 22.0mm

## Dimensions

**P2LDX... all**
**5/2 and 5/3 valves**




*** Note:** 5/3 valves - add 22.0mm



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## Order chart - Viking Xtreme air pilot & manual valves - Xtreme operating pressure / temperature

**P 2 L  A  X  5  1 1  P S**

| | Valve family |
|---|---|
| P2L | Viking inline valve |

| | Size |
|---|---|
| A | 1/8 |
| B | 1/4 |
| C | 3/8 |
| D | 1/2 |

| | Version |
|---|---|
| X | Xtreme duty spool |

* Xtreme duty spool suitable for
max operating pressure
16 bar. (P2LAX + P2LBX) 12 bar (P2LCX + P2LDX)
Temperature range -40°C to +60°C

| | Port thread |
|---|---|
| 11 | G1/8 |
| 12 | G1/4 |
| 13 | G3/8 |
| 14 | G1/2 |
| 91 | 1/8 NPT |
| 92 | 1/4 NPT |
| 93 | 3/8 NPT |
| 94 | 1/2 NPT |
| 1N * | Namur G1/4 |
| 9N * | Namur 1/4 NPT |

* Not available in 3/2 version

| Valve type function | | |
|---|---|---|
| **Manual and pneumatic operated** | | |
| 3 |  | 3/2 valve |
| 5 |  | 5/2 valve |
| 6 |  | 5/3 valve closed centre position |
| 7 |  | 5/3 valve pressurised centre |
| 8 |  | 5/3 valve vented centre |

| | Pilot main actuator/return |
|---|---|
| J *** | Rotary button - 2 positions |
| P | Air signal |
| S | Spring (return only) |
| V | Lever, 2 positions, 90° to ports |
| Z *** | Lever, 2 positions, in line with ports |
| 1 ** | Lever, 3 positions self centred, 90° to ports |
| 2 ** | Lever, held 3 positions, 90° to ports |
| 5 *** | Lever, 3 positions, self centered in line with port |
| 6 *** | Lever, 3 positions, held in position in line with port |
| 7 *** | Rotary button - 3 positions held in position |

** Not available in 3/2 version

*** Only Available with port threads G1/4 and 1/4 NPT

Shaded part numbers are standard



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## Order chart - Viking Xtreme Normal Operating Pressure / Temperature

| P | 2 | L | A | X | 5 | 1 | 1 | E | S | N | D | D | B | 4 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | Valve family |
|---|---|
| P2L | Viking inline valve |

| | Size |
|---|---|
| A | 1/8 |
| B | 1/4 |
| C | 3/8 |
| D | 1/2 |

| | Version |
|---|---|
| X | Xtreme duty spool |

| | Port thread |
|---|---|
| 11 | G1/8 |
| 12 | G1/4 |
| 13 | G3/8 |
| 14 | G1/2 |
| 91 | 1/8 NPT |
| 92 | 1/4 NPT |
| 93 | 3/8 NPT |
| 94 | 1/2 NPT |
| 1N * | Namur G1/4 |
| 9N * | Namur 1/4 NPT |

* Namur version not available in 3/2 function

| | Solenoid pilot type |
|---|---|
| N | 10 bar / -10°C to 50°C |
| L** | 10 bar / -10°C to 50°C |

| | Solenoid exhaust |
|---|---|
| D | Vented |
| N | Captured/tapped M5 |
| X | 15mm solenoid vented |

| Valve type function | | |
|---|---|---|
| **Solenoid operated with internal supply to solenoid** | | |
| 3 |  | 3/2 valve |
| 5 |  | 5/2 valve |
| 6 |  | 5/3 valve closed centre position |
| 7 |  | 5/3 valve pressurised centre |
| 8 |  | 5/3 valve vented centre |
| **Solenoid operated with external pilot supply to solenoids through ports 10 & 12 for 3/2 version and through ports 12 & 14 for 5/2 & 5/3 version** | | |
| L |  | 3/2 valve |
| N |  | 5/2 valve |
| P |  | 5/3 valve closed centre position |
| Q |  | 5/3 valve pressurised centre |
| R |  | 5/3 valve vented centre |

| | Overrides |
|---|---|
| A* | None |
| B* | Flush - non locking |
| C | Flush - locking |
| D[1] | Extended non-locking |
| E* | Extended - locking |
| X | Less 15mm solenoid |

* Only available with enclosure 5

[1] 22mm solenoid option

| Voltage [2] | | | |
|---|---|---|---|
| | AC | | DC |
| | 60Hz | 50Hz | |
| 40 | 12 | | |
| 42 | 24 | 22 | |
| 45 | | | 12 |
| 47* | | | 12 |
| 48* | | | 24 |
| 49 | | | 24 |
| 53 | 120 | 110 | |
| 57 | 240 | 230 | |
| XX | valve less solenoid/coil | | |

* If 22mm solenoid required on mobile applications use model code no page 16. Alternatively check operating temperature and pressures with our technical department.

[2] Shaded part numbers are available from stock
Unshaded part numbers are available on request but will be subject to minimum order quantities
Otherwise order coil/solenoid and valve separately.

| | Pilot main actuator / Return |
|---|---|
| E | Solenoid operated valve |
| S | Spring (return only) |
| P | Press (return only) |

| | Solenoid enclosure / Lead length |
|---|---|
| 5 | 15mm, 3 pin Form C/ISO15217 in line with body |
| B | 22mm 3-pin Industrial Form B with coil |
| N | 22mm solenoid pilot less coil |
| X | Valve less 15mm solenoid |
| L** | Low power 22mm solenoid (only available with 24V DC) |

Shaded part numbers are standard



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Pneumatic Division - Europe

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## Order chart - Viking Xtreme Valves - Xtreme operating pressure / temperature

| P | 2 | L | A | X | 5 | 1 | 1 | E | S | H | D | D | B | 4 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | Valve family |
|---|---|
| P2L | Viking inline valve |

| | Size |
|---|---|
| A | 1/8 |
| B | 1/4 |
| C | 3/8 |
| D | 1/2 |

| | Version |
|---|---|
| X | Xtreme duty spool |

| | Port thread |
|---|---|
| 11 | G1/8 |
| 12 | G1/4 |
| 13 | G3/8 |
| 14 | G1/2 |
| 91 | 1/8 NPT |
| 92 | 1/4 NPT |
| 93 | 3/8 NPT |
| 94 | 1/2 NPT |

| | Valve type function | |
|---|---|---|
| **Solenoid operated with internal supply to solenoid** | | |
| 3 |  | 3/2 valve |
| 5 |  | 5/2 valve |
| 6 |  | 5/3 valve closed centre position |
| 7 |  | 5/3 valve pressurised centre |
| 8 |  | 5/3 valve vented centre |
| **Solenoid operated with external pilot supply to solenoids through ports 10 & 12 for 3/2 version and through ports 12 & 14 for 5/2 & 5/3 version** | | |
| L |  | 3/2 valve |
| N |  | 5/2 valve |
| P |  | 5/3 valve closed centre position |
| Q |  | 5/3 valve pressurised centre |
| R |  | 5/3 valve vented centre |

| | Pilot main actuator / Return |
|---|---|
| E | Solenoid operated valve |
| S | Spring (return only) |
| P | Press (return only) |

| | Solenoid pilot type |
|---|---|
| H[1] | 16 bar / -40°C to 60°C |

[1] Solenoid operated 'H' version supplied with B type enclosure 16 bar solenoid

| | Solenoid exhaust |
|---|---|
| D | Vented |
| N | Capture/tapped M5 |

| | Overrides |
|---|---|
| D | Extended non-locking |

| Voltage [3] | | | |
|---|---|---|---|
| | AC | | DC |
| | 60Hz | 50Hz | |
| 40 | 12 | | |
| 42 | 24 | 22 | |
| 45 | | | 12 |
| 47* | | | 12 |
| 48* | | | 24 |
| 49 | | | 24 |
| 53 | 120 | 110 | |
| 57 | 240 | 230 | |
| 72 | | | 110 |
| XX | valve less solenoid/coil | | |

* Mobile voltage see page 51 operating parameters

[3] Shaded part numbers are available from stock
Unshaded part numbers are available on request but will be subject to minimum order quantities
Otherwise order coil and valve separately.

| | Solenoid enclosure / Lead length |
|---|---|
| A | 22mm Solenoid pilot & 30mm coil Form A |
| B | 22mm Solenoid pilot & 22mm coil Industrial Form B |
| N | 22mm Solenoid pilot less coil |

Shaded part numbers are standard



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