5 TAV vent-valve

5.1 Description

To maintain cleanliness of your vacuum system, we recommend that you vent the pump or vacuum system whenever you switch the pump off.

The TAV vent-valves are 24 V d.c. electrical-solenoid operated valves which you can use to vent your vacuum system with atmospheric air or dry nitrogen when you switch the nEXT pump off.

The TAV vent-valve is normally open when the solenoid is de-energised. In the case of a power failure, the vacuum system and pump will vent and the pump will slowly come to a halt.

Refer to Figure 11. The TAV vent-valve is supplied with a sintered bronze inlet filter (1), a riffled hose connector (7) and 3 metres of cable.

You can connect your dry nitrogen supply to the hose connector.

An NW10 adaptor (Figure 11, item 3) is also supplied to convert the 1/8 inch BSP outlet connector (Figure 9, item 2) of the TAV vent-valve for direct connection to your vacuum system.

The TAV vent-valve can be powered by the nEXT drive electronics, controlled from a TIC controller, or from any suitable electrical supply.

CAUTION

Correct venting is essential to prevent suck-back of hydrocarbon vapour present in the backing line - especially when using oil-sealed rotary vane pumps. To prevent suck-back when stopping the nEXT pump, always begin the venting sequence before the nEXT pump has slowed to 50% of normal rotational speed. Always introduce venting gas to the venting port or to the high vacuum inlet. Never vent to the backing line.

5.2 nEXT85 TAV5 vent-valve

There are two 24 V d.c. TAV5 solenoid-operated vent-valve options available for the nEXT85 pump for system venting; these are either 'normally open (N/O)' or 'normally closed (N/C)'.

Both valves are available with either a wired connector which connects directly to the auxiliary port on the controller or as a bare wire option.

All vent-valves have a 0.5 mm diameter orifice and are suitable for venting small vacuum systems of < 5 litres.

The vent-valves are pre-wired to Vent Option 1 and that the default is set to fully vent at 50% (option 0).The solenoid valve is fitted in place of the manual valve, or alternatively can be fitted with an adaptor (supplied with the valve) and be used with any suitable NW10 flanged port on your vacuum system. The vent port adaptor allows the vent port or the purge port to be used with any suitable NW10 fitting. Refer to Table 11.

If the valve type is set to normally closed, and either vent options 14 or 15 are used, the controller will ensure that the TAV solenoid valve will only ever 'open' upon receipt of a stop command. Therefore there is no need to send the delayed start command.

Table 11 - TAV vent-valve and vent port adaptor

Product	Item Number
nEXT85 TAV5 kit N/C connector fitted (0.3 m)	B8G200835
nEXT85 TAV5 kit N/C bare wire (3 m)	B58066040
nEXT85 TAV5 kit N/O connector fitted (0.3 m)	B8G200834
nEXT85 TAV5 kit N/O bare wire (3 m)	B58066010

5.3 Technical data

Table 12 - TAV vent-valve technical data

	TAV5	TAV6
Maximum inlet pressure	1 bar gauge, 2 x 10^5 Pa	1 bar gauge, 2 x 10^5 Pa
Orifice diameter	0.5 mm	1.0 mm
Helium leak rate (valve closed)	< 1 x 10^{-8} mbar l s^{-1} < 1 x 10^{-6} Pa l s^{-1}	< 1 x 10^{-6} mbar l s^{-1} < 1 x 10^{-4} Pa l s^{-1}
Valve inlet-filter	Sintered bronze	Sintered bronze
Hose connector	Riffled nozzle for 4 mm bore tube	Riffled nozzle for 4 mm bore tube
Dimensions	See Figure 9	See Figure 9
Mass	0.08 kg	0.08 kg
Item Numbers	B580-66-010	B580-66-020
Configuration	Normally open	
Pollution degree	EN61010 Part 1, Category 2	
Equipment type	Fixed equipment for indoor use only	
Nominal electrical supply voltage	24 V d.c.	
Electrical supply voltage range	15 to 24 V d.c.	
Pull-in voltage	14 V d.c.	
Drop-out voltage	10 V d.c.	
Power consumption	1.8 W	
Cable type and length	2-core screened, unterminated, 3 m long	
Cable cores	Red (positive), black (negative)	
Valve electrical connector type	2 pole and earth (ground), miniature DIN	
Vale inlet-connection	M5 female	
Valve outlet-connection	1/8 inch BSP	

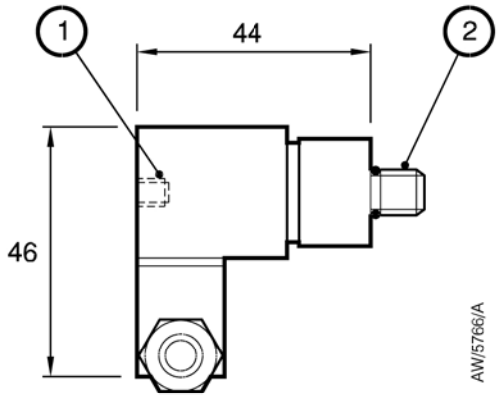
Table 13 - nEXT85 TAV5 vent-valve technical data

	nEXT85 TAV5 vent-valve
Maximum inlet pressure	1 bar gauge, 2 x 105 Pa
Orifice diameter	0.5 mm
Helium leak rate (valve closed)	< 1 x 10^{-8} mbar 1 s^{-1} < 1 x 10^{-6} Pa l s^{-1}
Valve inlet filter	Sintered bronze
Hose connector	Riffled nozzle for 4 mm bore tube
Dimensions	See Figure 9
Mass	0.08 kg
Configuration	Normally open or Normally closed
Pollution degree	EN61010 Part 1, Category 2
Equipment type	Fixed equipment for indoor use only
Nominal electrical supply voltage	24 V d.c.
Electrical supply voltage range	15 to 26.4 V d.c.
Pull-in voltage	14 V d.c.

Table 13 - nEXT85 TAV5 vent-valve technical data (continued)

	nEXT85 TAV5 vent-valve
Drop-out voltage	10 V d.c.
Power consumption	1.8 W
Valve inlet connection	M5 female
Valve outlet connection	1/8 inch BSP
Cable type and length (for bare wired option)	2-core screened, unterminated, 3 m long
Cable cores	Red (positive), black (negative)
Valve electrical connector type	2 pole and earth (ground), miniature DIN

Figure 9 - TAV vent-valve dimensions (mm)



1. M5 female thread
2. 1/8 inch BSP male thread

5.4 Installation

5.4.1 Unpack and inspect

Remove all packing materials and protective covers and check the TAV vent-valve.

If the TAV vent-valve is damaged, notify your supplier and the carrier in writing within three days; state the Item Number of the TAV vent-valve together with your order number and your supplier's invoice number. Retain all packing materials for inspection. Do not use the TAV vent-valve if it is damaged.

5.4.2 Fit the TAV vent-valve to the pump

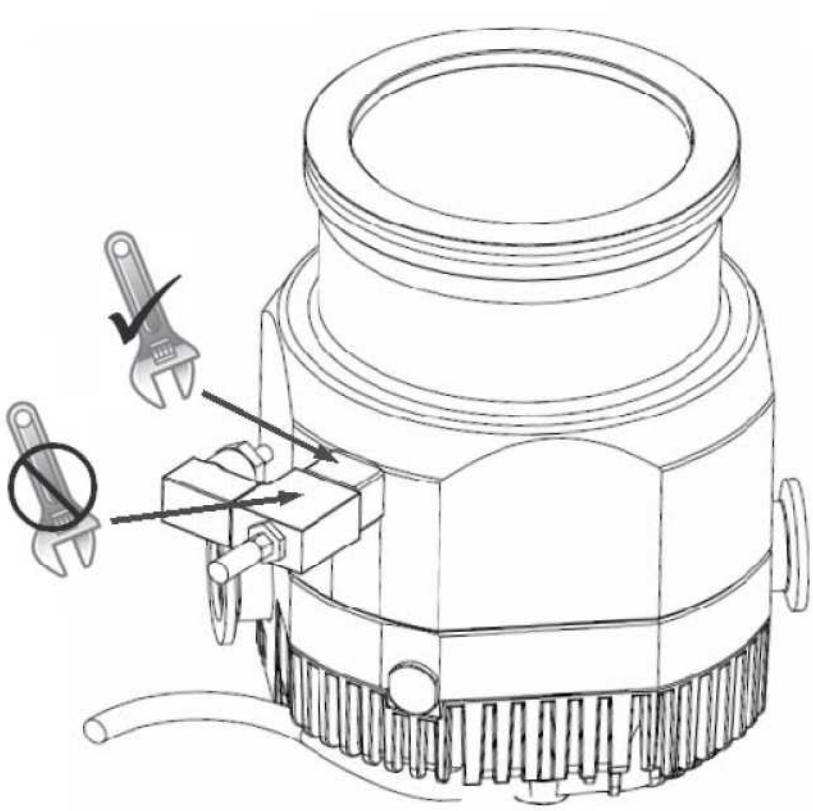
WARNING

Before you install the accessory, ensure that you switch off the pump and disconnect the power supply as described below.

CAUTION

When fitting the TAV vent-valve, apply torque to the steel body only. On no account should torque be applied to the solenoid body, failure to do so could damage the valve which may cause it to leak.

Figure 10 - Fitting the TAV vent-valve



Refer to Figure 1.

1. Switch off the pump, isolate the pump controller from the electrical supply, and wait until the pump has stopped running.
2. If your nEXT pump has a manual vent-valve, unscrew and remove it, then continue at step 4.
3. If your nEXT pump does not have a manual vent-valve, fit the vent-valve adaptor to a suitable NW10 flange on your pump or vacuum system.
4. Check that the TAV vent O-ring (Figure 11, item 4) is fitted and screw the TAV vent-valve into the vent-valve adaptor or into the 1/8 inch BSP hole vacated by the manual vent-valve.
5. Connect your dry nitrogen or other inert gas supply pipeline to the M5 inlet (Figure 11, item 2) or use the riffled hose connector (Figure 11, item 7) supplied.
6. If you vent the pump with air, fir the sintered bronze inlet-filter (Figure 11, item 1) to protect your system against the entry of dust.

5.4.3 Electrical connection

CAUTION

Ensure that the electrical supply is correct. If it is not, you can damage the TAV vent-valve.

The TAV vent-valve requires a 24 V d.c. electrical supply.

The nEXT pump includes drive electronics which provide facilities for regulated pulsed venting (see pump manual for details). This ensures that your vacuum system can be vented to atmosphere as rapidly as possible without damage to the pump.

Alternatively, you can connect the TAV vent-valve to a TIC (see TIC instruction manual for details) or your own electrical supply.

5.5 Operation

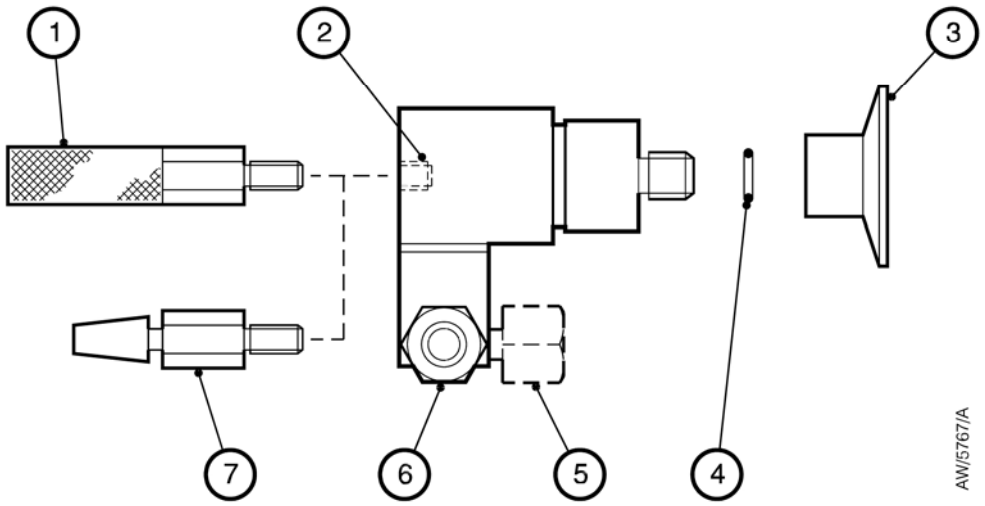
CAUTION

If you manually vent the pump when it is at full rotational speed and the rate of pressure rise is too high, the pump life may be reduced. When using the manual vent-valve supplied, we recommend that you either limit the vent or only open the vent-valve after the nEXT pump speed has fallen to 50% of full rotational speed. Do not vent the backing line as this may lead to contamination. If you vent into your vacuum system and use an oil sealed rotary backing pump, select a point upstream of the nEXT pump, to prevent oil back-streaming from the backing line.

Operation of the TAV vent-valve depends on how you have conneted it:

- If you have connected the TAV vent-valve to the drive electronics of the nEXT pump; refer to the nEXT pump instruction manual.
- If you have connected the TAV vent-valve to a TIC: refer to the TIC instruction manual for operating instructions.
- If you have connected the TAV vent-valve to your own electrical supply, switch on the electrical supply to operate the vent-valve.

Figure 11 - TAV vent-valve connections



1. Air filter
2. Inlet-port
3. Vent-valve adaptor
4. O-ring
5. Alternative electrical supply connector position
6. Electrical supply connector
7. Hose connector