

Wheel operated carbon steel cylinder valve in packed design for Ammonia & amines

Series SWN-22



- High resistance to leakage
- Prevents gas contamination
- Low torque operation & reduced maintenance
- Extended valve life

TPED Certification (T mark)
by BAM as notified body:
ID-0589



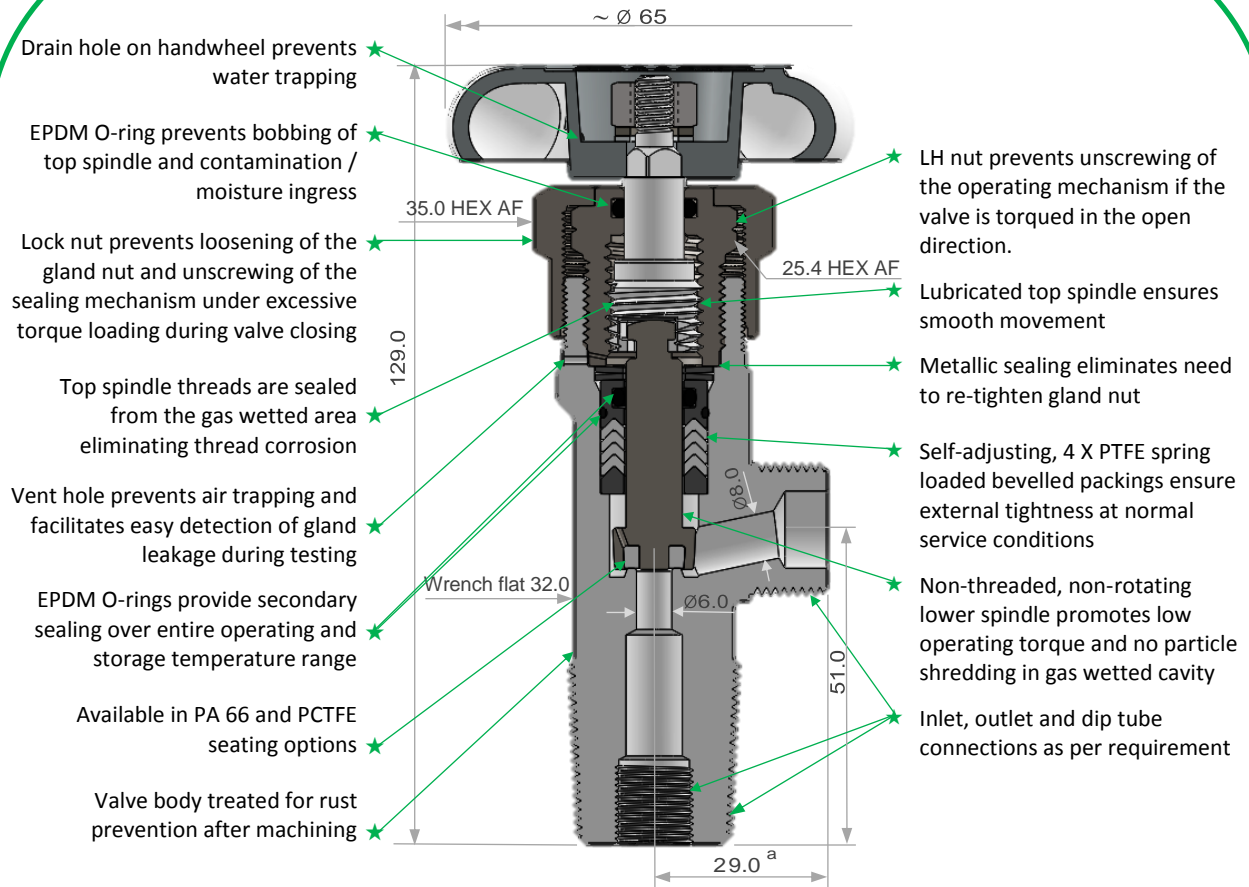
Bundesanstalt für
Materialforschung
und -prüfung



tekno valves
driven by excellence

ISO 9001:2008 & TPED certified valve manufacturer

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Dimensions are in mm


Dimensions shown are for 25E inlet and DIN 6 outlet

a Depends upon outlet connection

Design Specifications

- MIN life : 2000 cycles
- Operating and storage temperature range : -46 °C to + 65 °C
- MIN closing torque : 6 Nm
- Gland nut installation torque : 50-60 Nm
- Handwheel nut installation torque : 8-10 Nm
- Maximum test pressure (TP) : 100 bar
- Lubricant : Krytox GPL 225
- Flow coefficient (C_v) : 0.90
- MAX weight of package mass without valve protection : 111 kg

Testing and certification

- ✓ Valve meets EN ISO 10297:2014, tested by BAM Berlin
- ✓ Production testing as per EN ISO 14246:2014
- ✓ Certified by BAM Berlin to European Transportable Pressure Equipment Directive (TPED) and available with 

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Identifying features

The handwheel operated packed valve uses elastomeric seat and the sealing mechanism is designed to seal with only hand force. The design uses 4 x PTFE self-adjusting, spring loaded bevel packings. EPDM O-rings provide secondary sealing in case of leakage through packings. This eliminates gland leakage associated with conventional packed valves. The design employs two-piece spindle in which the non-threaded non-rotating lower spindle is connected by T-slot to the threaded top spindle. The lower spindle assembly seals against the seat without rotating which reduces wear and particle generation. This sealing motion and soft seating allows the valve to be operated using hand torque, thereby eliminating the need for special wrenches to open and close the valve. The gland nut of the valve has left-hand thread (flats have notches machined into them for identification) and secures directly against the valve body (metal contact) and this prevents loosening of the gland nut when the upper spindle is torqued in the opening direction and facilitates safe failure without any ejection of the operating mechanism. Lock nut prevents loosening of the gland nut and unscrewing of the sealing mechanism under excessive torque loading during valve closing.

The carbon steel body design is suitable for a variety of gases like ammonia and other amines considering copper alloys are not compatible with these gases. No threads are in the wetted gas stream. The external tightness sealing mechanism provides very high seal integrity compared to conventional packed valves.

Recommended opening procedure

The T-slot interface of the top and lower spindle creates a free play of about $\frac{1}{4}$ turn. The handwheel rotates 2-1/2 full turns from closed to fully open. While it is desirable to open the valve fully to achieve full flow, it is not recommended to fully backseat the valve. It is advisable to open the valve fully in anti-clockwise direction and then rotate the handwheel clockwise about $\frac{1}{2}$ turn. This position provides maximum flow and allows the quickest closing in the event of an emergency.

Recommended closing procedure

Close the cylinder valve tightly in clockwise direction using a gloved hand.

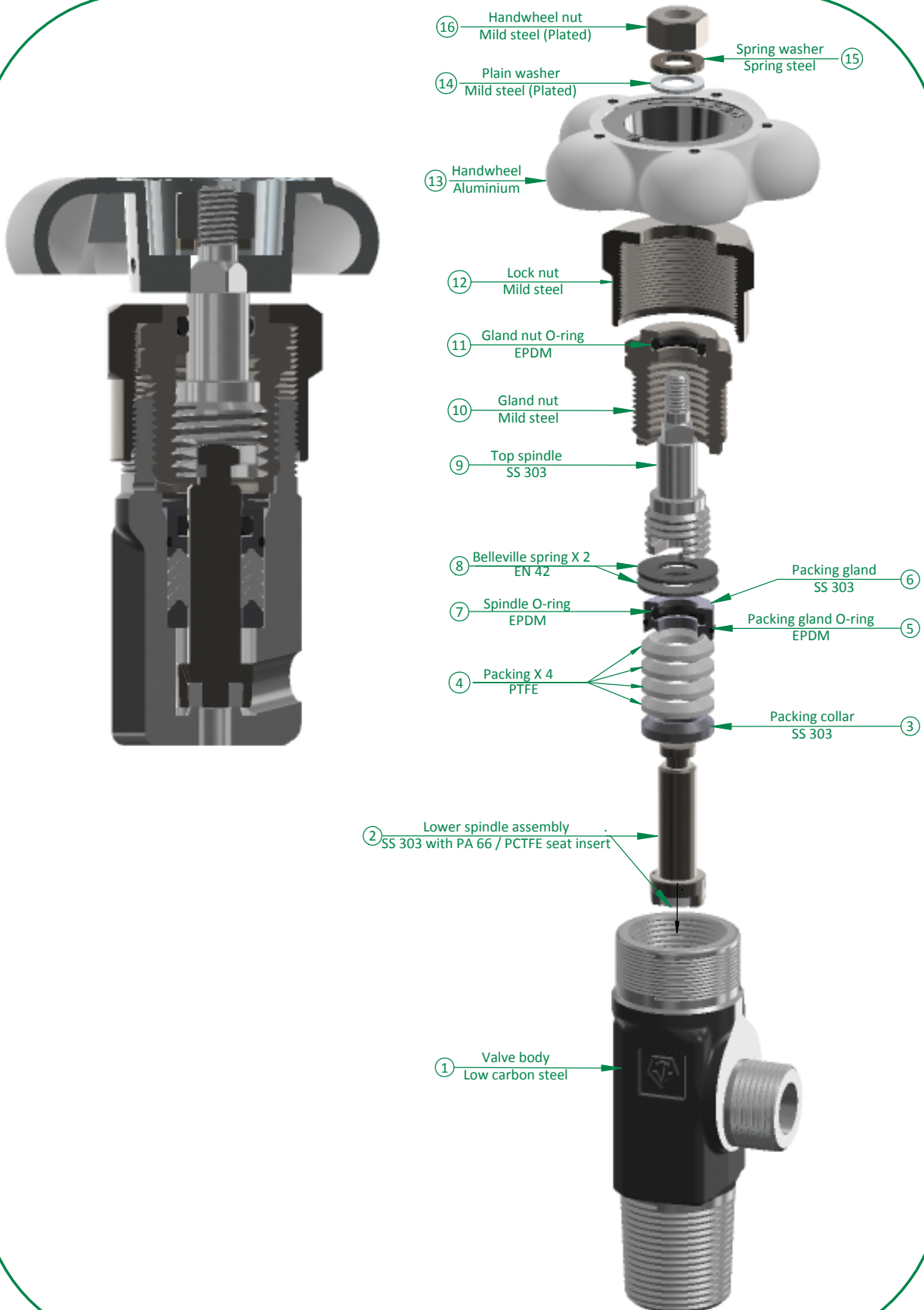
Valve installation

Valving procedure and torque guidelines should be as per EN ISO 13341.

⚠ CAUTION

1. NEVER use wrenches or other persuaders to operate the valve.
2. Valving tools (e.g. sockets or jaws) used to screw the valve into the cylinder must only make contact with the flats provided in the valve body (and not touching any part of the valve outlet). The tools should fit the valve properly without causing damage.
3. Over-torquing the valve into the cylinder must be avoided as they cause high stresses in the cylinder neck, leading to overload failures. Over-torquing also leads to irreparable damage to the valve stem.

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Disassembly of valve

1. Place the valve assembly after removing from the cylinder in a vice or similar holding fixture. The holding fixture should securely grip the valve body (1) on the wrench flats so that no damage is done to the internal bores, inlet & outlet threads.
2. Using an 11 mm socket, remove the handwheel nut (16) from the handwheel (13) by turning it counter clockwise.
3. Remove the handwheel from the spindle square.
4. Using a 35.0 mm socket wrench or hex box wrench, unscrew the lock nut (12) by turning it counter clockwise.
5. Using a 25.4 mm socket wrench or hex box wrench, remove the gland nut (10) by turning it clockwise. The entire operating mechanism will come out with the gland nut. Using the handwheel, rotate the top spindle (9) in clockwise direction till the lower spindle assembly (2) can be removed from the T-slot. Now remove the handwheel & unscrew the top spindle from the gland nut by rotating it in clockwise direction.
6. Remove other parts as necessary.

Inspection of valve & components

1. Valve body (1)
 - a. Inspect the valve body chamber for dirt, debris or damage. Where possible, blow out the valve body chamber using clean, dry compressed Air or Nitrogen to remove any foreign particles.
 - b. Inspect the valve body for seat damage & thread wear.
 - c. Do not attempt to repair the valve body if it is damaged.
2. Components
 - a. Always discard the packings (4) once removed from the valve & use new packings.
 - b. Inspect all parts visually for wear / damage. Replace parts as necessary.
 - c. Handwheel (13) should only be reused if in good condition.

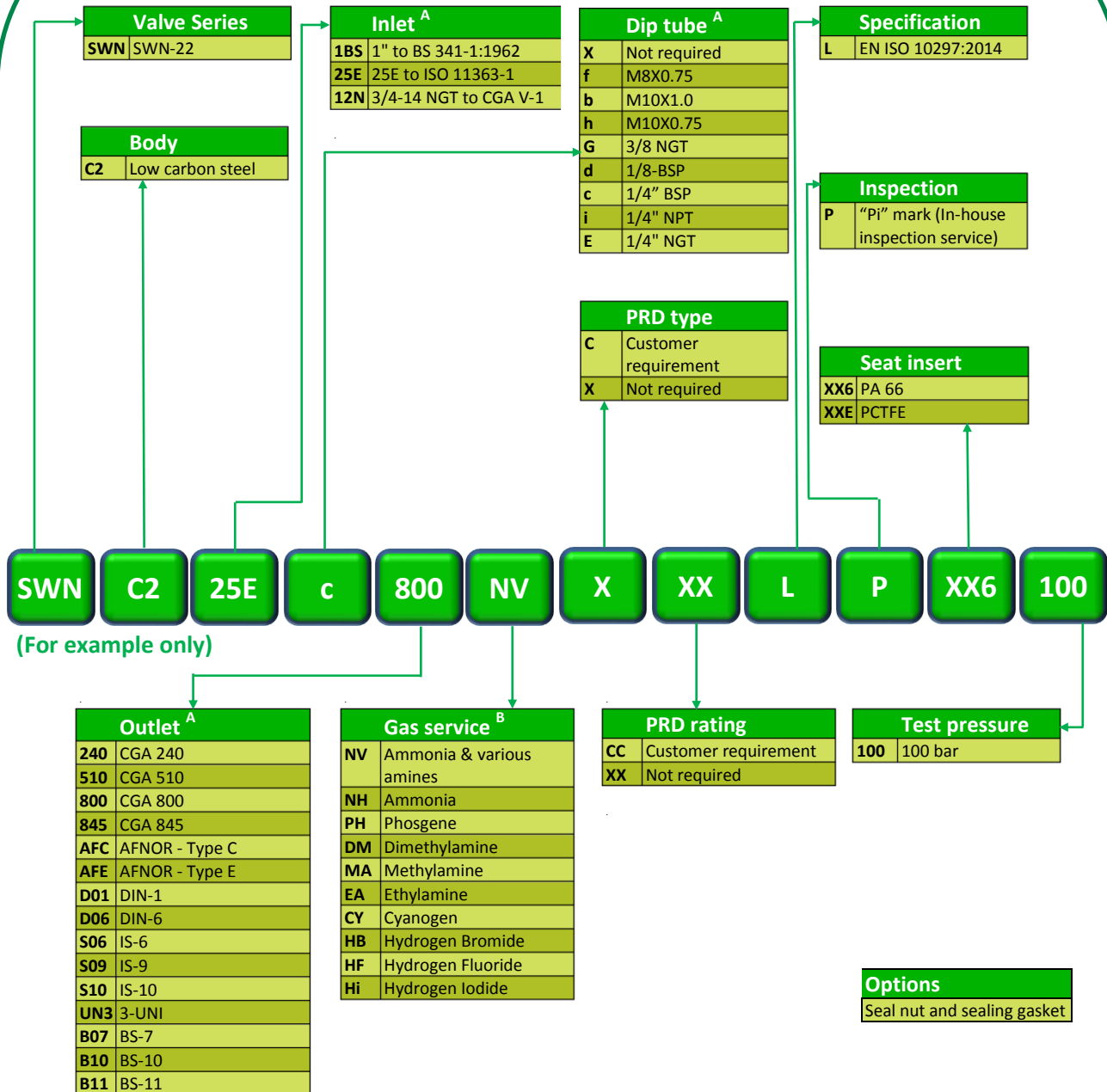
Assembly of valve

1. Lubricate top spindle (9) & O-rings as per GA drawing.
NOTE Customer will receive parts in lubricated condition.
2. Insert gland nut O-ring (11) in the gland nut (10) internal groove.
3. Insert packing collar (3) in the lower spindle assembly (2) ensuring the flat face rests on the step.
4. Insert 4 x PTFE bevelled packings (4) in overlapping configuration.
5. Insert packing gland O-ring (5) in the external groove & spindle O-ring (7) in the internal groove of the packing gland (6).
6. Place packing gland on the PTFE packings ensuring the bevelled face rests on top of the packings.
7. Place 2 x Belleville springs (8) on top of the packing gland so that it properly loads the packings.
8. Screw in top spindle in the gland nut up to 2 turns by rotating it in anticlockwise direction.
9. Insert lower spindle assembly with assembled parts in the T-slot of the top spindle & fully rotate the top spindle in anticlockwise direction.
10. Insert the assembled operating mechanism inside the valve body (1) & rotate the gland nut in anticlockwise direction.
11. Clamp the valve body in vice with Nylon clamp pads, ensuring no damage to the valve body & tighten the gland nut using 25.4 mm socket wrench or hex box wrench at torque of 50-60 Nm in anti-clockwise direction.
12. Screw the lock nut (12) on the gland nut by rotating it in clockwise direction. Using a 35.0 mm socket wrench or hex box wrench, tighten the lock nut at torque of 30-35 Nm so that the lock nut rests on the gland nut face.
13. Fit handwheel (13) by tightening handwheel retaining nut (16) over plain washer (14) & spring washer (15) at torque of 8-10 Nm

NOTE Refer "Material of construction & assembly arrangement" page to identify the part No. given in the bracket.

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Valve item code matrix



A - Other inlet, outlet connections and dip tube threads are available as per customer requirement
 B - Gas compatibility list shall be provided on request



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