



**HELLENIC GAS  
TRANSMISSION  
SYSTEM OPERATOR**

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**TECHNICAL JOB  
SPECIFICATION**

**578/1**

**REVISION 0**

**DATE 05/04/2011**

# **HIGH PRESSURE (HP) TRANSMISSION SYSTEMS**

## **MANUAL VALVE OPERATORS**

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**QUALITY ASSURANCE PAGE**

**CHANGES LOG**

**REVISIONS LOG**

0	05-04-2011	FIRST ISSUE	PQ DPT	VG
Rev. No	Rev. Date	REASON FOR CHANGE	Made By	Approved By

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**REFERENCE DOCUMENTS**

ELOT EN ISO 5210  
[Industrial Valves-Multi-Turn Valve Actuator Attachments]  
ELOT EN 60529  
[Degrees of protection provided by enclosures (IP code)]

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**1.0**        **SCOPE**

**1.1**        **ITEM**

Manual valve operators (wrench or gear) with or without stem extensions, as applicable.

**1.2**        **APPLICATION**

For indoor or outdoor, above/below ground installation on plug, ball or gate valves used in natural gas systems.

All gears and stem extensions -if required- shall on delivery be mounted on their respective valves and shall have been functionally tested together with the valve.

**1.3**        **ADDITIONAL INFORMATION**

Additional information may be given in the Valve Data Sheets or the Material Requisition and these documents should be read in conjunction with this Job Specification.

Any conflict between requirements of this Job Specification and Data Sheets or Material Requisition shall be referred to Owner for clarification before proceeding with fabrication of concerned part.

**2.0**        **GENERAL REQUIREMENTS**

**2.1**        **TORQUE (BOTH WRENCH & GEAR)**

Input torque necessary to operate the valve under service conditions with full pressure differential applied (equal to pressure rating of valve) shall not exceed following limits:

Break-away : max. 400 Nm  
Moving        : max. 250 Nm

**2.2**        **GEAR TYPES**

Worm gear, bevel gear, spur gear or combinations hereof.

The complete gear (housing, stem stops, bearings, gear drive, trunnions, etc.) shall be able to withstand an input torque of at least 1.50 x maximum break-away torque.

Replacement of gear shall be possible without interference in the pipeline operation.

For main block (ball) valves provision shall be made for future replacement of gear operator with pneumatic actuator.

**2.3**        **GEAR INSTALLATION LOCATION**

As per Valve Data Sheet.

Gears for above ground installation shall be suitable for use with valves mounted horizontally or vertically. Both bevel and spur gear operators shall be the type with 4 or 8 bolt mountings which allows them to be oriented on site at any of 90° or 45° positions (e.g. Torkmatic type B (Bevel) or S (Spur), or equal), without releasing bonnet joints.

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Gear for below ground installation shall have the gear box mounted directly on top of the valve. Gear operation shall take place via a vertical extended input shaft protected from soil by a casing.

Where a stem extension is required (see Valve Data Sheet) the tolerance on the specified length shall be  $\pm 50$  mm.

**2.4 OPERATING TURNS**

The number of turns to operate the gear from open to closed positions shall be as follows:

**2.4.1 FOR VALVES DN  $\leq$  300**

Preferably less than 50 and never exceeding 125.

**2.4.2 FOR VALVES DN  $\geq$  350**

Preferably less than 150 and never exceeding 200.

**2.5 HANDWHEEL**

Diameter shall not exceed 800 mm. Handwheel shall be removable and be fitted with a crank if number of turns to operate the gearbox exceeds 25. Orientation shall be as per Data Sheet. Vertical orientation shall be parallel with pipe axis.

Handwheel shall be of steel; cast iron is not acceptable.

**2.6 CLOSING DIRECTION**

Clockwise rotation.

**2.7 STEM STOPS**

Required.

Stem stops may be provided in the valve construction.

**2.8 INPUT SHAFT OF GEAR**

Keyed with dimensions as per **ELOT EN ISO 5210**, size F10 or F14.

**2.9 POSITION INDICATOR**

Required position indicator shall show open, intermediate and closed positions. The Greek terms "A-1/2-K" (A for open, K for closed) shall be used.

**2.10 WATER TIGHTNESS OF GEAR HOUSING**

Housing, gaskets, O-rings, etc shall provide full protection against the ingress of water and dust.

The degree of protection shall be as required according to **ELOT EN 60529** qualified to IP 66.

Casings for extended input shafts used with below ground gears shall provide the same water tightness.

**2.11 LUBRICANT**

Gearboxes shall, on delivery, be filled with the lubricant necessary for operation. Housing design shall ensure that lubricant cannot leak out during storage of the gearboxes in any position.

Any lubricants shall be suitable for the Minimum Winter and the Maximum

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Summer Design Temperature in the location where they are to be installed.

**2.12 SURFACE TREATMENT**

Above ground gear boxes shall be painted with a durable paint system suitable for outdoors applications as per Manufacturer's standard.

Below ground gear boxes shall be primed as the respective valve.

**2.13 MARKING OF GEAR**

Stainless steel marker plate riveted to gearbox with the following information:

- Manufacturer's mark.
- Owner Supply Contract Number.
- Type number.
- Type of valves that it can operate.
- Number of turns to close or open the valve.

Other technical data may be applied.

**3.0 SUPPLEMENTARY REQUIREMENTS**

Further requirements, if specifically mentioned on the Valve Data Sheet or Material Requisition shall be valid. In case of conflict between such requirements and the general requirements contained herein the former shall prevail.

**4.0 TECHNICAL DOCUMENTATION AND CERTIFICATION**

**4.1 QUANTITY**

Four copies of each, inclusive of original, for all Documents and Certificates.  
Four copies of each, inclusive of one reproducible, for all drawings.  
Also electronic files of all Documents and Certificates must be submitted by Contractor to the Owner.

**4.2 CERTIFICATION REQUIREMENTS**

No mandatory certification requirements, however, attention are drawn to the relevant valve specification where functional test results are required to be confirmed and reported.

**4.3 DOCUMENT REQUIREMENTS**

**4.3.1 WITH TENDER**

Statement of whether gear or wrench offered if stated as optional on the Valve Data Sheet.

For gear types the following information is to be given:  
Statement of make and type number.

Simple calculation sheet to show the ability to withstand an input torque of at least 1.50 x maximum break-away torque.

Catalogues, standard drawings or similar shall be enclosed, and shall, as a minimum, give the following data:

- Gear type (ref. **clause 2.2**) and reduction ratio.

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- Handwheel diameter.
- Facilities for later mounting of electric actuator.
- Torque (break-away and moving) necessary to operate valve under service conditions with full pressure differential applied.

For wrench types the following information is to be given:

- Square head dimensions.
- Length of wrench.
- Torque (break-away and moving) necessary to operate valve under service conditions with full pressure differential applied.

#### **4.3.2 ON DELIVERY**

Comprehensive operation, maintenance and reconditioning manuals.

List of recommended tools, spare parts, lubrications, etc necessary for two years operation.

#### **5.0 SHIPMENT**

All parts shall be properly prepared and protected for shipment. Parts subject to corrosion shall be properly treated with rust preventives. Lubricant will be supplied for gearboxes. Tapped opening shall be protected with plugs. Shipping crates or skedes shall be clearly marked and identified.

Small or loose items shall be tagged with stainless steel or other equally weather resistant materials, permanently fastened to the item with stainless steel screws or pins.