



Astava Slimline Monoflanges

partner for “One-Stop Supply Hook-Up” solutions

DOK. NR.: Slimline

REV.: 0

DATUM: 04-07-07

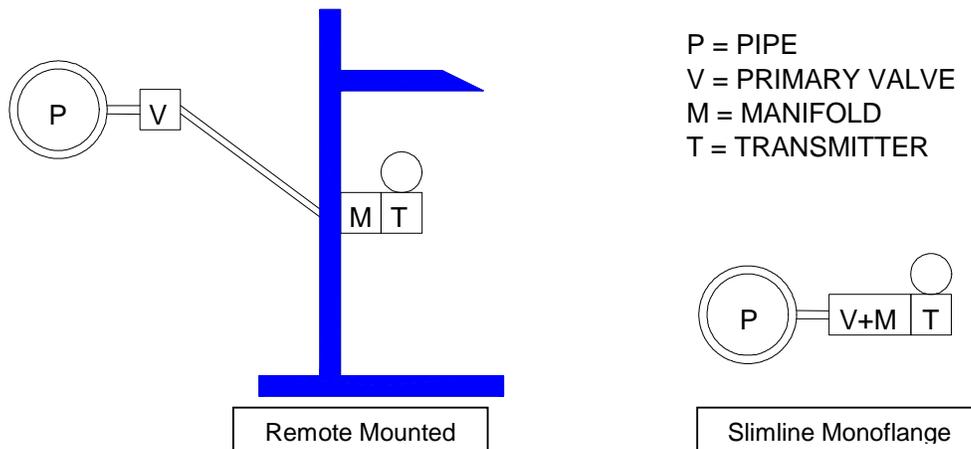
BLAD 1 VAN 6

1, Slimline Monoflange Solutions

A new trend in process industry is to go towards **slimline monoflanges (close coupled)** and reduction of instrument tubing as is used in the **remote modular mounting systems** (section D of Astava catalogue). Astava is following this new trend closely and has developed a complete new range of slimline monoflanges.

But when to use a slimline monoflanges or remote mounting system?

Each on-line instrument with its own properties has to deal with different process and environmental conditions. These instrument properties, process and climatic conditions are criteria for the selection of the slimline monoflanges concept or remote modular mounting concept.



Modern instrumentation requires less access as a result of improved MTBF (MeanTime between Failure, MVC (Measurement Validation and Comparison), and remote diagnostics via 'intelligent' communication.

Increased TCoO awareness and on-line instrument developments are the main criteria for the development and selection of direct mounting systems.

In the slimline concept, the on-line instrument and its manifold are mounted directly on and supported from the process connection(s). The primary isolation valve and instrument manifold are combined in one component. The primary isolation valve is fulfilling all mechanical requirements, like fire-safety, Outside screw and Yoke (OS&Y), a round handwheel and a backseat. The primary valve satisfies the requirements of mechanical and instrument engineering.

This concept is characterised by a small number of components, forming a compact design with no or some standardisation. The market forces requires manufacturers to design economically attractive and technically reliable solutions. **The role of the manufacturer in projects will be that of a solutions provider instead of a material supplier.**

In general it can be said that in 85% of the cases the close coupled systems can be used



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2. Advantages / Disadvantages

Concept Aspects	Remote (Modular) mounting	Slimline Monoflange Concept
Accessibility	<ul style="list-style-type: none"> - Location of field instruments is dependant on maintenance purposes, resulting in long impulse lines, platforms and ladders. - - “Christmas Tree” designs 	<ul style="list-style-type: none"> - Limited freedom for instrument location. - Suited for modern field instruments, which require less access. - Close to the process which gives a better realtime representation of the process conditions. - Compact design.
Total Cost of Ownership	<ul style="list-style-type: none"> - Many components, needs an instrument support and labour intensive installation and testing. - Impulse lines and compression fittings are easy to be damaged during construction of a plant. 	<ul style="list-style-type: none"> - <u>Less components and connections which is a mayor cost saver, from approximately 30% up to 50% per hook-up.</u> - Less potential leakage points. - (pre-)assembly is possible, which is better to control at the manufacturer, than during field installation.
Responsibilities Timing , Risks	<ul style="list-style-type: none"> - Responsibilities of mechanical and instrument engineering are very clear. - The components are standardised. - Material delivery is not time critical 	<ul style="list-style-type: none"> - The monoflange with its primary isolation valve has to fulfil the requirements of both disciplines. - Plant design will be affected, this requires an early consultation of the monoflange manufacturer and his product design details. - Pressure testing of equipment and process piping can not start before the monoflanges are placed.
Weight	<ul style="list-style-type: none"> - Weight is not important, each instrument has its own support. 	<ul style="list-style-type: none"> - Weight and length of the instrument with it's accessories have to be reviewed to prevent to high stresses on the process nozzle.¹⁾
Temperature	<ul style="list-style-type: none"> - Instruments can be located far from the process where temperature is more ambient. 	<ul style="list-style-type: none"> - The instrument housing operates close to the process operating temperature. The upper and lower temperature limits of sensor fluids and electronics of instruments makes the use of the direct direct mounting concept for high and low temperature applications more complicated.²⁾

1. Special supportive constructions and the Grayloc® flange connection can reduce the stresses and/or weight. The Grayloc® flange connection requires less flange material and smaller bolts for the same pressure/temperature ratings. Reduction of flange material is also favourable for temperature control of direct mounting heated versions.
2. High and low temperature applications might give some problems for direct mounting systems. An built-in integral condenspot and/or syphon and insulation of the instrument electronic part are possible solutions.



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3. Applicable standards

STANDARD	APPLICATION
API 6D, Section 8	Preparations for shipping
ASME B1.20.1, ISO 228/1	NPT threads
ASME B16.34, Stoomwezen, AD Merkblätter, BS 1560	The minimum wall thickness of valve body, temperature / pressure ratings
ASME B16.5, DIN 2500, API 6A,B	Flange dimensions and Ratings
ASME B18.2.1, EN 3506	Transmitter Bolts
ASME B18.3, EN 3506	Transmitter Bolts
ASME B31.3, AD Merkblätter	Welding when performed
ASME B46.1	Stem roughness
ASTM / DIN 17440/ AFNOR	Material standards
BS 5501 Part 1, DIN 4102	Enclosure material
BS 6755 Part 1 Appendix D, DIN 3230	Valve pressure testing
BS 6755 Part 2	Soft seats or seals fire-testing
Cenelec EN 50014	Area classification
DIN 19213 facing, part 2 April 1980 (Draft IEC 61518, Type A), Rosemount integral concept , 33mm c-to-c	Interface between transmitter and Level-manifold
DIN 46319	Glands and plugs
EEMUA publication No. 182 (ISBN 085931 125 2)	Specification for Intergral Block and bleed valve manifolds for direct connection to pipework
EN 50014	Junction box
EN 50019	Junction box
Hart Foundation ®	Transmitter
EN 60529	Ingress Protection code (IP-code)
NACE MR0175	Pressurized parts in contact with H ₂ S
EN 10204	Material certificates

* Leakage rates

Instead of the requested TA-Luft approval Astava slimline monoflanges are tested on Fugitive Emission (FE) by an independent laboratory, under supervision by Shell Global Solutions, in accordance with SHELL SPE 77/312 and resulted in the following leakage rates for the valves incorporated within the products mentioned in this offer:

Temperature: -50 degrees Celsius up to 200 degrees Celsius

Tightness class*: B

FE primary: 3.10⁻⁶ 8.10⁻⁶

FE secondary: 1.10⁻⁶ 3.10⁻⁶

Conclusion of test:

The Astava valves passed the FE type approval test successfully according to rate B of 77/312 rev. 30-12-2004.

* Tightness class A is also available.



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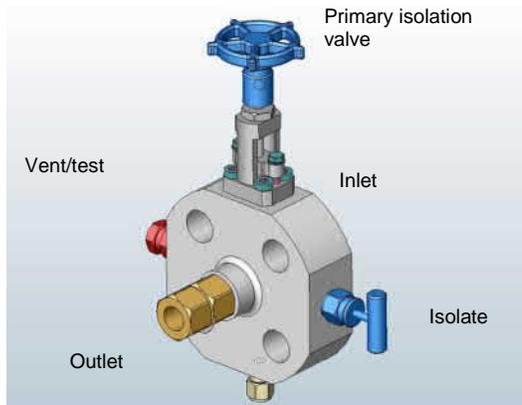
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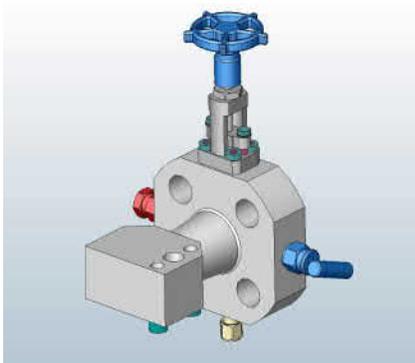
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1. Pressure assembly 1/2"NPT



2. Pressure assembly 1/2 DIN Facing





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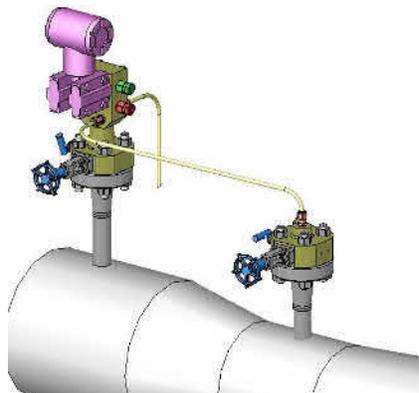
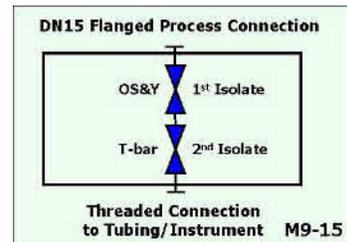
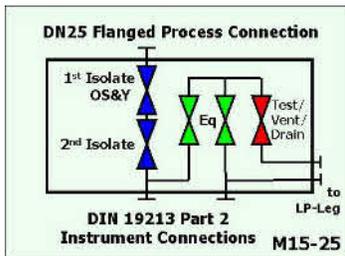
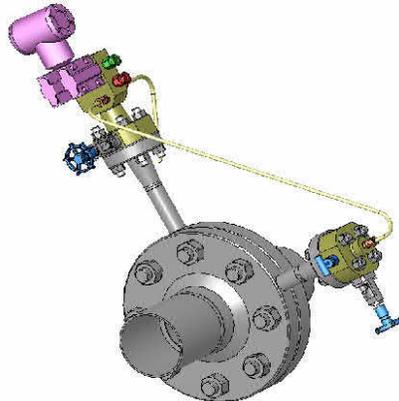
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3. Differential pressure / Flow assembly





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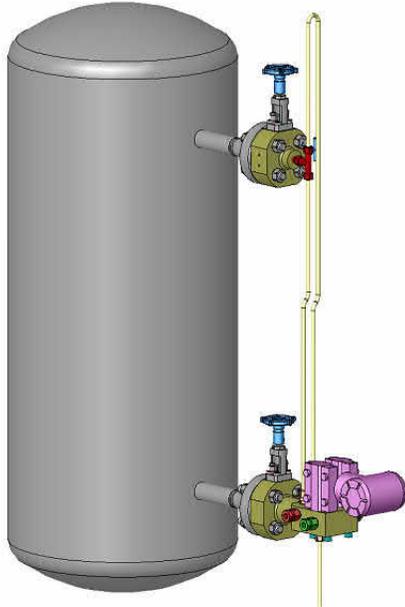
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4. Level assembly



Complete assembly

The slimline monoflange solutions as mentioned above are available in a wide range and configuration, like:

Sizes	up to 4"		
Rating	150 -2500 lbs 0 – 10.000 psi		
Material	AISI 316 6Mo	Duplex INC 625	HC-276 INC 825

Also assembling and pressure testing of complete hook-ups including transmitters, junction boxes, heaters, instrument housings and connectors can be executed.

For more information please contact:

ASTAVA BV - MEPPEL – THE NETHERLANDS

Tel: +31-522-237030

Fax: +31-522-237040

E-mail: info@astava.com

Internet: www.astava.com