JINAN MEIDE CASTING CO., LTD

MECH Grooved Piping System for Steel 1” (DN 25) through 24”(DN600)

1. Summary:

A. Main Contents Includes:

1. Summary
2. Materials:
   a. Pipes
   b. Couplings
   c. Fittings
   d. Valves
3. Execution

B. Catalogues and Data sheet:

MECH products could be find on the catalogues and data sheets, the style or series number can be detailed listed on them for each products .

C. References:

1. ISO FDIS 6182-12
   Fire protection — Automatic sprinkler systems —Part 12: Requirements and test methods for grooved-end components for steel pipe systems
2. American Society for Testing Materials (ASTM)
   a. ASTM A-53 – Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless.
   b. ASME B36.10-2004
   c. ASTM A-183 – Carbon Steel Track Bolts and Nuts
   d. SAE J429 Mechanical and Material Requirements for Externally Thread Fasteners
   e. SAE J995 Mechanical and Material Requirements for Steel Nuts
      ASTM B633
   f. ISO 898-1 Mechanical properties of fasteners made of carbon steel and alloy steel—Part 1: Bolts, screws and studs with specified-property classes Coarse thread and fine pitch thread
   g. ISO_898-2 Mechanical properties of fasteners—Part 2:Nut with specified proof load valves-Coarse thread
   h. ASTM A-449 – Quenched and Tempered Steel Bolts and Studs
   i. ASTM A-536 – Ductile Iron Castings
   j. ASTM F-1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications

3. American Society of Mechanical Engineers
   a. ASME B16.9 – Factory Made Wrought Butt Welded Fittings
   b. ASME B31.1 – Chemical Plant and Petroleum Refining Piping
   c. ASME B31.9 – Building Services Piping

4. American Water Works Association
   a. AWWA C-606 – Grooved and Shouldered Joints

D. Quality Assurance

To assure uniformity and compatibility of piping components in grooved end piping systems, all grooved products utilized shall be supplied by JINAN MEIDE. If not, client should consult manufacturers for advice in advance.

2. Materials:

A. MECH Pipe/Grooved:

Carbon Steel, A-53B/A-106B - Roll or cut grooved-ends as appropriate to pipe material, wall thickness, pressures, size and method of joining. Pipe ends to be grooved in accordance with MECH current listed standards conforming to ISO 6182-2 or ANSI/AWWA C-606.

B. MECH Mechanical Couplings for Carbon Steel Pipes

1. Grooved Couplings

1 inch (DN25) through 12 inch (DN300): Manufactured in two segments of cast ductile iron, 14 inch (DN350) through 18 inch (DN450): Manufactured in three segments of cast ductile iron, 20 inch (DN500) through 24 inch (DN600): Manufactured in four segments of cast ductile iron, conforming to ASTM A-536, Grade 65-45-12.

Gaskets shall be pressure-responsive synthetic rubber, grade to suit the intended service, conforming to ASTM D-2000. (Gaskets used for potable water applications shall be NSF classified in accordance with ANSI/NSF-61 for potable water service.)

Mechanical Coupling bolts shall be zinc plated (ASTM B-633) heat treated carbon steel track head conforming to SAE J429 and ASTM A-183, minimum tensile strength 120,000 psi (830MPa) as provided standard . Bolts with M thread conform to ISO 898-1: 1992 for the mechanical property and material requirement. The minimum of tensile strength shall be M10-M16(800 MPa),M20- M22 (832Mpa)

a. **Rigid style-1G, 1GS**: Coupling housings bolt pads shall be used to provide system rigidity and support and hanging in accordance with ANSI B31.1, B31.9, and NFPA 13.

MECH 1G or 1GS rigid coupling，Gasket shall be Grade “E” EPDM compound with green color code designed for operating temperatures from -30 deg F (-34 deg C) to +230 deg F (+110 deg C).

b. **Flexible style-1N, 1NS**: Flexible couplings are mainly applied in locations where vibration attenuation and stress relief are required. They may be used in lieu of flexible connectors at equipment connections.
MECH 1N or 1NS，Gasket shall be Grade “E” EPDM compound with green color code designed for operating temperatures from -30 deg F (-34 deg C) to +230 deg F (+110 deg C).

2. **Flange Adapters-321,321A, 321E, 321AH**: Flanges are mainly connected with grooved end pipe and fittings, flat faced, for mating to ANSI Class 125 / 150 flanges. For direct connection to ANSI Class 300 flanges , please choose Style 321AH. For standard BS 4504 PN16, please choose 321. For TABLE E flange, please choose 321E which are mainly used in the Australian market.

3. **Gasket:** Synthetic rubber(like EPDM, NBR, etc) conforming to steel pipe outside diameter and coupling housing, manufactured of elastomers as designated in ASTM D-2000.
Rubber sealing is selected according to the different medium and environment of pipeline transportation. Reference to common material, recommended medium and temperature range of rubber sealing ring is given.

C. MECH Grooved Fittings:

1. **Grooved fittings (like elbows, tees, reducing couplings, caps etc)** shall be cast of ductile iron conforming to ASTM A-536, Grade 65-45-12
2. **Mechanical Tee**:

a. **Mechanical Tee Outlet with groove or thread**-3J,3G,3GS, 3JS.: Branch reductions on 2"(DN50) through 8"(DN200) header piping. Bolted branch outlets shall be manufactured from ductile iron conforming to ASTM A-536, Grade 65-45-12, with synthetic rubber gasket, and heat treated carbon steel zinc plated bolts and nuts conforming to physical properties of SAE J429,SAE J995. Style 3J 3G 3GS 3JS.

b. **U bolted Mechanical Tee-3L**: The thread shall be NPT or ISO 7/1. Housing shall be manufactured from ductile iron conforming to ASTM A-536, Grade 65-45-12, with synthetic rubber gasket. U bolts shall conform to physical properties of SAE J429,SAE J995

D. MECH Grooved Valves

1. **Grooved Gate Valves**

Style XZ81X or Z85X, 2"(DN50) to 12" (DN300) dimensions: 175PSI, 200PSI, 250PSI, 300PSI , PN10, PN16, PN25, suitable for cutting off or connecting the flow media in the pipeline under rated pressure. Grooved gate valve could not be used for adjustment and throttling media. The bearing parts of valve body and valve cover should be ASTM A536 ductile iron (grade 65-45-12). The gate skeleton material is ASTM A536 ductile iron (grade 65-45-12), and valve disc is 100% coated with EPDM or NBR. Stem is stainless steel 420, 304, 316 or other stainless steel or copper alloy, gate nut is copper alloy or stainless steel 316, etc.

Remarks: For specific size or configuration, please refer to Meide's latest version of catalogues or data sheets.

2. Grooved Strainers

Style V8, 2"(DN50) to 12" (DN300) dimensions, whose rated pressure could be 175 PSI, 200PSI, 250PSI, 300PSI, PN10, PN16, PN25. The Y filter body and cover are spheroidal graphite iron conforming to ASTM A536 (No. 65-45-12). The filter screen material is stainless steel 304 or 316, and the mesh diameter is 1/16 "(1,6mm) to 1/4" (6.35mm). There are punching nets and woven nets in the type of filter, which can be customized according to working conditions.

Remarks: For specific size or configuration, please refer to Meide's latest version of catalogues or data sheets.

3. Grooved Check Valve

Style H84X, H84XF4, 2"(DN50) to 12" (DN300) dimensions, whose rated pressure could be 175 PSI, 200PSI, 250PSI, 300PSI, PN10, PN16, PN25. Grooved Check Valves are mainly applied to prevent medium backflow in the pipeline, pump and its drive motor reversal, and the release of medium in the container. The pressure-bearing parts such as valve body and disc shall be ductile iron (grade 65-45-12) conforming to ASTM A-536, and the basic sealing rubber gasket shall be EPDM. Pin, spring and gasket are stainless steel 420, 304, 316. The pin bush and valve seat are copper alloy and so on.

Remarks: For specific size or configuration, please refer to Meide's latest version of catalogues or data sheets.

4. Grooved Butterfly Valve

Style D81X, D381X,XD381X, 2 "(DN50) to 12" (DN300) dimensions, , whose rated pressure could be 175 PSI, 200PSI, 250PSI, 300PSI, PN10, PN16, PN25. Grooved butterfly valve mainly plays a cutting and throttling media role in the pipeline. The valve body and other bearing parts should be ASTM A-536 ductile iron (grade 65-45-12). The butterfly plate framework material is ASTM A-536 ductile iron (grade 65-45-12), 100% EPDM is coated outside the valve disc. The stem is stainless steel431.

Remarks: For specific size or configuration, please refer to Meide's latest version of catalogues or data sheets.

5. Grooved Wet Alarm Valve

Style ZSFZ8X, 3 "(DN80) to 8" (DN200) size: whose rated pressure could be 232 psi, PN10, PN16. The alarm check valve works as a check valve by

preventing the reverse flow of water from the system piping to the water supply. The valve is trimmed with a water bypass line, which has an in-line swing check valve. The bypass line allows pressure surges to enter the system and to be trapped above the alarm check valve's clapper without the clapper lifting and causing false alarms. It is an important alarm control valve in sprinkler system. The bearing parts of valve body and valve cover should be ASTM A536 ductile iron (grade 65-45-12). Tin Bronze Seat, Brass Disc, Disc Cover, Stainless Steel 304 Spring and Pin Shaft, EPDM Mid-port Seal Gasket and Disc Seal Gasket, Seal Ring NBR

Remarks: For specific size or configuration, please refer to Meide's latest version of catalogues or data sheets.

3 Execution:

A. Installation:

1. Always read installation manual before installing any product.

2. Stay alert. To avoid serious personal injury, wear safety glasses, hard hat etc.

3. Designers must know and understand all relevant building and/or piping standards, codes and other specifications. It is the responsibility of the designer to select and/or specify the appropriate products for the intended use and service.

4. Always refer to the maximum pressure rating and range of service temperatures allowed for the MECH products and ensure that they are used within these limitations.

5. Always depressurize and drain the piping system before attempting disassembly, adjustment or removal of any piping component. Failure to do so may result in serious personal injury.

6. The pipe groove dimensions must be in accordance with required specifications listed in the handbook

7. Ensure that the coupling keys are engaged in the grooves.

8. Always tighten nuts evenly by alternating sides. Uneven tightening can cause the gasket to pinch or bind. If a gasket becomes pinched, replace immediately.

B. Application:

1. Grooved mechanical pipe couplings, fittings, valves and other grooved components may be used as an option to welding, threading or flanged methods. Saving time and costs.

2. All grooved components shall conform to local code approval and/or as listed by ISO 6182, ANSI-B-31.1, B-31.3, B-31.9, ASME, UL/ULC, FM, VdS, etc
3. Grooved end product manufacturer to be ISO-9001 and ISO 14001 certified.