**Comparison**

**Tube Turns Monolithic Insulated Joints and Flange Insulation Gasket Kits**

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| **Tube Turns Monolithic Insulated Joints** | **Flange Insulation Gasket Kits** |
| Effective long-term electrical isolation and cathodic protection of sections of long line API 5L X Grade line pipe (liquid/natural gas) | Not long-term electrical isolation |
| IJs are prefabricated non-separable unions of butt weld construction for buried service; eliminates short circuits and field assembly; manufactured under controlled factory conditions; **eliminates bolted connections** | Shipped as kit w/insulating gaskets, sleeves, washers, threaded fasteners, studs, nuts, which are major causes of short circuits in flange isolation assemblies |
| Codes/Standards:* Designed and manufactured to: ANSI/ASME B31.4, B31.8
* ASME Sec. IX welding
* ASTM applicable material standards
* ISO 9001 quality standards
 | Depends on supplier |
| Complies with “**Buy America**” provisions: US made at our ASME facility in Louisville, KY with US made steel | Depends on supplier |
| Our MIJ is on the AML of most oil and gas transmission and gathering pipelines | Depends on supplier |
| Standard Hub Materials* Pipe (2 – 6 inch) SA 106 Br. B/C 52K min yield
* Forgings (8-inch +) SA105/SA350 LF2 CL1 and A694 F52 (dual or triple certified) serialized and heat code identified
* Test reports w/each shipment
* Higher yield material available
 | Material depends on supplier; flange isolation kits not serialized, or heat code identified; not individually hydro tested or electrically tested; Standard offerings in carbon steel |
| Maintenance-free, leak-proof insulated joint; **simple installation by butt welding into pipeline** | Flanged into pipeline; maintenance required |
| IJ ends beveled to match pipe ends per ASME B16.25 | Flanged into pipeline |
| Hydrostatic pressure test: 1.5 times design pressure: each IJ pressure tested to 2225 psi (CL600) or 3350 psi (CL900) for min 15 minutes | Not individually tested |
| Dielectric strength test: 5 KV @ 1 min. or special test | Not individually tested |
| Resistance test of 25 megohms min at 1000 VDC | Not individually tested |
| Yoke closure welds UT examined | N/A |
| Approval drawings furnished with each shipment | N/A |
| Data package includes:* Hydrostatic test report (1.5 x design pressure)
* Electrical test report (resistance & withstand)
* Weld test report (UT of closure welds/ends)
* MTRs
* Approval Drawings
 | Depends on supplier |
| Marking: each IJ marked by low stress steel stencil on outside of yoke with the following:* Serial number
* Pipe size
* Pressure Class
* Material heat number
* Material grade/yield
 | N/A |
| Internal seals are under compression and locked into position permanently to assure ZERO LEAKAGE; Completely sealed to atmosphere | Susceptible to flange leakage from water infiltration |
| Monolithic weld-end construction designed to withstand same pressures and loads that pipeline exposed to; exceeds strength of the pipeline; able to withstand pressure stress and bending moments | Strength of the flange insulation kit is determined by the strength of threaded fasteners/bolts |
| For buried service; all metal components, inside and out, are two-part epoxy coated to prevent bridging of the insulating gap; variety of epoxy coatings to choose from including Coal Tar Epoxy, Denso Protol 7200, others | Above ground service only |