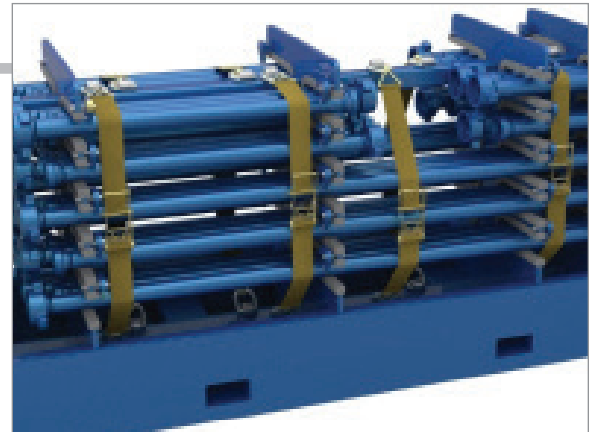


TETRA utilizes piping systems to transport well flow between the various equipment components in the well test systems. Generally, the piping is hammer union type or flanged and provided in lengths of 3, 5, or 10 feet along with "90s", "45s", "Tees", etc. to fit the process. All TETRA flowline connections and equipment are designed to industry standards. TETRA's flowline construction standards include ASME B31.3 and/or API 6A. These standards are used for all relevant production testing flowline systems above 285 psi working pressure. TETRA U.S.A. and some operations outside of the U.S. allow for the use of Non-Pressurized-Seal-Thread, (NPST) pipe. The design is based on approval by API 5B, Specification for Threading, Gauging & Thread Inspection, and API 5C3, Bulletin on Formulas & Calculations.

### Features/Benefits

- Construction as per ASME B31.3 & NACE MR-01-75
- Provides for NPST flow systems as per API 5B & API 5CE
- Color-coded to identify service and pressure rating
- Color-coded to identify hammer union and union type
- Individually serialized and traceable
- Various sealing mechanisms available (i.e., Metal-to-Metal, O-Ring, Lip Seal)
- Bi-annual certification as standard, can be changed to meet regional content as needed



### Applications

- Solids removal during frac flow back of plug material resulting from a mill-out process
- Positioned upstream of sand separators and choke manifolds
- Onshore and offshore operations
- Helps prevent plugging of chokes and process equipment

### Technical Specifications

Press (psi)	BAND COLOR	PIPE COLOR
20,000	White - RAL 9010	Flange & Hub API Pipe and 1502 are Blue
15,000	Safety Purple - RAL 4005	
10,000	Sulfur Yellow - RAL 1023	
5,000	Safety Orange - RAL 2009	
2,500	Signal Brown - RAL 8002	
2,000	Black - RAL 9017	602, 206, 200, 100 & ANSI 600, 300 & 150
1,000	Signal Red - RAL 3001	Flange Pipe are Grey
H <sub>2</sub> S	Medium Green - RAL 6024	All Sour Service

ANSI-Rated Flanges		
Class	MACWP <sup>1</sup> psi	MATP <sup>2</sup> psi
150	285	427.5
300	740	1110
600	1480	2220
900	2220	3330
1500	3700	5550
2500	6170	9255
Maximum Allowable Cold Working Pressure @ 100°F		
Maximum Allowable Test Pressure		

- » Pipe color indicates connection type; Band color indicates pressure rating.
- » H<sub>2</sub>S service is identified by a green band.
- » Pressure ratings are identified in alphanumeric characters of contrasting color to the background.
- » For pipe work pressure ratings, the lettering is to be a minimum of 0.75 inches high for small items (crossovers, elbows, etc.) and 1.5 inches high for larger items (pipes, etc.) and are to be placed in a minimum of three positions around the circumference of the pipe. Pressure rating, color coding, and lettering may be stenciled or a suitable, all-weather tape used.

Typical Hammer Unions Used by TETRA				
Figure	Size	MACWP <sup>1</sup> psi Sour	MATP psi	Color Code
206	2"/3"/4"6"	2,000	3,000	Grey
602	3"/4"	5,000	7,500	Grey
1502	2"/3"	10,000	15,000	Blue
2202	2"	15,000	22,500	Blue

API-Rated (High Temperature)		
Size	MACWP <sup>1</sup> psi	MATP psi
1-13/16", 2-1/16", 2-9/16", 3-1/16", 4-1/16"	5,000	7,500
	10,000	15,000
	15,000	22,500
	20,000	30,000
	25,000	37,500

