

Hammer Union / Wing Union

Operation & Maintenance Manual

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High-Pressure Flowline Connection | Quick Make-Up and Break-Out | Field Reliability



Document No.	Version	Language
SM-SJ-MAN-003	2026 Edition	English / EN

Applicable standards: API Spec 6A / API Spec 16C / NACE MR0175

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WARNING: Before use, verify that the product model, pressure rating, connection type and field service conditions match the operating requirements.

CAUTION: Do not exceed rated pressure, disassemble under pressure, strike damaged connection components, or mix components with different pressure ratings.

CAUTION: Stop operation and isolate the product immediately if cracks, deformation, thread damage, seal failure, abnormal raceway wear, or unclear markings are found.

1. Application and Scope

Hammer unions / wing unions are used for quick make-up and break-out in high-pressure flowlines, manifolds, pump discharge lines, temporary flowlines, pressure test lines, cementing, acidizing, fracturing and other oilfield high-pressure operations. The wing nut, male sub and female sub provide efficient field assembly, sealing and pressure containment.

Product selection shall be based on nominal size, Fig rating, working pressure, sealing thread, end type, and service condition. For H₂S service, use NACE-compliant products. For butt-weld unions, confirm pipe material, wall thickness, welding procedure, and NDT requirements.

2. Construction and Working Principle

Hammer unions normally consist of a wing nut, male sub, female sub, seal ring, and end connection structure. The wing nut provides axial make-up force through thread engagement, while the seal ring or metal sealing face forms a pressure-containing seal between the male and female subs.

- The wing nut is used for quick make-up and break-out. Threads shall be intact and free from cracks or severe deformation.
- Male and female subs are the main pressure-containing connection components. Sealing faces, spherical faces or tapered faces shall be free from obvious scratches, pitting and erosion.
- The seal ring is a critical wear part and shall be selected according to the medium, temperature, pressure, and service condition.
- Available end types include LP thread, TBG thread, butt-weld end, and metric Tr thread.

3. Model, Pressure Rating and Connection Type

Model designation is recommended as: nominal size + Fig rating + pressure rating + end/thread type + service condition. Example: 2" Fig 1502, 105 MPa. Add NACE for sour service; TBG thread or butt-weld end may be clearly stated in the model.

Item	Description
Fig 100 / 200 / 602 / 1002 / 1502	Indicates the hammer union rating and corresponding pressure series; it shall match the flowline system.
LP / TBG	Indicates the sealing thread type; TBG is commonly used where tubing thread connection is required.
Butt-Weld	Indicates a butt-weld union; pipe material, wall thickness and welding procedure shall be confirmed.
NACE	Indicates suitability for H ₂ S sour service; materials and seals shall

	meet applicable NACE requirements.
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4. Main Technical Parameters

The following values are typical supply ranges. Final dimensions, weight, color coding, materials, seals, and inspection requirements shall be governed by the purchase order, approved drawings, and valid product documents.

Item	Common Range
Nominal Size	1", 1.5", 2", 3", 4", etc.
Working Pressure	7 MPa, 14 MPa, 28 MPa, 42 MPa, 70 MPa, 105 MPa, etc.
Connection Rating	Fig 100, Fig 200, Fig 400, Fig 602, Fig 1002, Fig 1502, etc.
End Type	LP thread, TBG thread, butt-weld end, metric Tr thread, etc.
Service Condition	Standard service, NACE sour service, and project-specified special service conditions.
Applicable and Reference Standards	SY/T 5211-2016; API Spec 6A; NACE MR0175

Representative Model Examples:

Representative Model	Size	Pressure	End / Thread	Service Condition
2" Fig 602, 42 MPa	2"	42 MPa	2" LP	Standard
3" Fig 1002, 70 MPa, TBG	3"	70 MPa	3 1/2" TBG	Standard
2" Fig 1502, 105 MPa	2"	105 MPa	2" LP	Standard
3" Fig 1502, 70 MPa, NACE	3"	70 MPa	3" LP	NACE
3" Fig 602, 42 MPa, Butt-Weld	3"	42 MPa	Butt-Weld End	Standard

5. Pre-Installation Inspection

- Verify union size, Fig rating, pressure rating, sealing thread, end type and service condition.
- Check the wing nut, male sub, female sub, sealing faces and threads. They shall be free from cracks, severe deformation, damaged threads, impact damage or obvious corrosion.
- Check that the seal ring is intact. Replace it if aging, hardening, cuts, compression deformation or missing parts are found.

- Clean threads, sealing faces and flowline ends before connection. Sand, iron chips, welding slag or other hard foreign matter shall not be trapped.
- For butt-weld unions, confirm bevel, pipe material, wall thickness and welding procedure documents. Inspect after welding as required.

6. Installation and Operation Requirements

- Confirm that the system is fully depressurized before installation, removal or seal replacement. Disassembly under pressure is strictly prohibited.
- Unions of different Fig ratings, sizes or sealing structures shall not be mixed.
- Tighten the wing nut evenly. Use proper tools for hammering to avoid wing deformation, cracks or metal splash.
- Operators shall wear safety glasses, gloves and required field PPE.
- Threaded connections shall be tightened to the project or company specified torque. If no requirement is specified, technical personnel shall confirm before work.
- Raise pressure slowly. Check connections carefully during first pressurization, reuse after maintenance and after seal replacement.

7. Maintenance

- Flush and clean the union bore and connection ends after operation to reduce mud, acid, fracturing fluid or sand-laden residue.
- Apply rust preventive oil to exposed threads and sealing faces. Fit protective caps during storage to prevent impact damage and corrosion.
- Regularly inspect the seal ring, male / female sealing faces, wing nut threads and wings. Replace or remove from service if damage is found.
- For unions frequently assembled / disassembled or used under high-pressure cycling, shorten inspection intervals and keep service records.
- Repair damaged coating promptly. Before reuse after long-term storage, recheck seals and rust prevention condition.

8. Common Faults and Corrective Actions

Fault	Possible Cause	Corrective Action
Connection Leakage	Damaged seal ring, scratched sealing face, insufficient nut make-up or size mismatch.	Depressurize, disassemble and inspect; replace the seal ring and check sealing faces and size matching.
Difficult Wing Nut	Thread damage, foreign matter,	Clean threads and apply rust preventive oil;

Make-Up	corrosion or nut deformation.	replace parts if damage is severe.
Crossed or Seized Threads	Misalignment, forced make-up, insufficient lubrication or mixed specifications.	Stop use and inspect threads; do not hammer forcibly. Replace the connection if necessary.
Frequent Seal Damage	Medium or temperature mismatch, sealing face damage, or incorrect pressure rating selection.	Confirm service condition and seal material, inspect sealing faces, and reselect if necessary.
Abnormality Near Weld End	Welding defects, heat-affected-zone cracks, or insufficient post-weld inspection.	Stop use and recheck according to welding inspection requirements; repair or replace if necessary.

9. Ordering and Technical Confirmation

When ordering hammer unions / wing unions, provide the following information to confirm model, material, seals, inspection and delivery requirements:

- Nominal size, Fig rating, working pressure and end type.
- Sealing thread type: LP, TBG, metric Tr thread or other specified thread.
- Whether butt-weld union is required, with pipe material, outside diameter, wall thickness and welding requirements.
- Service condition: standard, NACE sour service, low-temperature service, or other special media.
- Certificate requirements, pressure test requirements, NDT, third-party inspection, packaging, and transportation requirements.
- Whether seal rings, repair kits, manuals, or manifold assemblies are required.

This manual is a general operation and maintenance document for hammer unions / wing unions. Field operation shall also comply with owner safety rules, equipment nameplates, product drawings, project technical agreements and applicable standards.

Customer Feedback / After-Sales Service Information

Customer Feedback Form

Product Name		Model / Specification	
Product No.		Date of Manufacture	
User / Customer		Contact Person	
Telephone		Email	
Service Condition		Date of Use	
Issue Type	<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input type="checkbox"/> Quality <input type="checkbox"/> Transportation <input type="checkbox"/> Other	Urgency	<input type="checkbox"/> General <input type="checkbox"/> Important <input type="checkbox"/> Urgent
Issue Description			
Field Description			
Suggestions			
Signature		Date	

Manufacturer and Technical Support

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