

Pup Joint

Operation & Maintenance Manual

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High-Pressure Rigid Flowline | Quick Connection | Field Reliability



Document No.	Version	Language
SM-SJ-MAN-004	2026 Edition	English / EN

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

Jiangsu Shimai Machinery Co., Ltd. | Jiangsu, China

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

Pup joints are used in high-pressure flowlines, manifold trucks, fracturing manifolds, cementing/acidizing lines, pressure test lines and temporary flowlines for high-pressure fluid transfer, line extension and equipment-to-equipment connection. Products may be supplied in integral, pressure seal, NPST, hammer-union-end, or flanged constructions.

When selecting the product, confirm the bore size, Fig rating, pressure rating, length, end connection, service condition, and inspection requirements. For H₂S service, materials and seals shall comply with applicable NACE requirements.

2. Construction and Working Principle

Pup joints consist of a pressure-containing body, end connections, seals, and necessary fastening and locating parts. Matched connection and sealing structures provide pressure containment and fluid transfer functions in high-pressure flowline systems.

- Integral pup joints provide continuous pressure integrity and are suitable for high-pressure flowline connections.
- Pressure Seal and NPST pup joints are used for different sealing structures and field connection requirements.
- Hammer union end pup joints provide quick make-up and break-out through wing union ends.
- Flanged pup joints are suitable for flanged flowline systems.

3. Model, Pressure Rating and Connection Type

Model designation is recommended as: nominal size + Fig rating + construction type + pressure rating + length + connection type + service condition. Example: 2" Fig 1502 Pressure Seal, 105 MPa, 3000 mm, F × M.

Term	Description
Fig Rating	Indicates the hammer union or end-connection rating; it shall match adjacent equipment and flowlines.
F / M	F denotes the female-threaded end; M denotes the spherical male end.
NACE	Indicates suitability for H ₂ S sour service.
Length / Lay Length	Indicates the ordered length or installation lay length; confirm it based on field layout requirements.

4. Main Technical Parameters

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

Item	Common Range
Nominal Size	1" to 5"; common sizes include 2", 3", and 4".

Working Pressure	42 MPa, 70 MPa, 105 MPa, and 140 MPa.
Common Length	500, 1000, 1500, 2000, 2500, 3000, 4000, 5000, 6000 mm.
Construction Type	Integral, Pressure Seal, NPST, Hammer Union End, Integral Flanged, and Welded Flanged constructions.
Connection Type	Fig 602 / 1002 / 1502 / 2002, F × M, M × M, F × F, flanged connection, etc.
Service Condition	Standard service, NACE sour service and project-specific service conditions.

Select the construction type first. Example construction type: integral pup joint. Representative Model Examples:

Representative Model	Size	Pressure	Length (mm)	Connection Type	Service Condition
2" Fig 602 Pressure Thread Seal, 42 MPa	2"	42 MPa	500 ~ 6000	Fig 602	Standard
3" Fig 1002, 70 MPa, NPST	3"	70 MPa	500 ~ 6000	Fig 1002	Standard
2" Fig 1502, 105 MPa, NPST	2"	105 MPa	500 ~ 6000	Fig 1502	Standard
3" Fig 1502 NACE Pup Joint, 70 MPa	3"	70 MPa	Per Order	Fig 1502	NACE

5. Pre-Installation Inspection

- Verify model, size, pressure rating, connection type, length / direction and service condition.
- Check the pressure-containing body, end connections, sealing faces, threads, union nuts or flange faces. They shall be free from cracks, severe wear, deformation, pitting or obvious corrosion.
- Check seals, protective caps and cleanliness of connection ends. Treat aging, scratches, missing parts or foreign matter before installation.
- Confirm that the system flowline is depressurized and safe for operation.
- NACE, low-temperature or special-media products shall not be mixed with standard service products.

6. Installation and Operation Requirements

- Confirm complete system depressurization before installation, removal, maintenance or seal replacement.
- Do not mix components of different pressure ratings, Fig ratings or incompatible connection types.
- Use proper tools when tightening union nuts or connections to avoid damage to nuts, threads or sealing faces.
- The product shall not be subjected to external load, bending moment or impact load beyond design limits. Flowlines shall be properly supported.
- Raise pressure slowly. Check connections and sealing areas carefully during first pressurization and reuse after maintenance.

7. Maintenance

- Flush the bore thoroughly after each operation to remove mud, cement, acid, fracturing fluid, sand and other residues.
- Clean external surfaces. Apply rust preventive oil to exposed threads and sealing faces and fit protective caps.
- Regularly inspect wall thickness, seals, sealing faces and connection threads. Stop use if erosion, corrosion or wear exceeds company rejection criteria.
- Repair damaged coating promptly. Store long-term inventory in a dry, ventilated place away from rain and corrosive media.
- Before reuse after repair, perform pressure test and visual inspection as required.

8. Common Faults and Corrective Actions

Fault	Possible Cause	Corrective Action
Connection Leakage	Damaged seals, scratched sealing faces, insufficient make-up or specification mismatch.	Depressurize, disassemble and inspect; replace seals and check sealing faces and connection specifications.
Thread or Connection End Damage	Foreign matter, forced assembly, impact damage or insufficient protection.	Clean, repair and reinspect; replace parts if damage is severe.
Body Erosion or Corrosion	Sand-laden medium, acid residue, insufficient cleaning or improper selection.	Stop use, inspect wall thickness and surface condition, replace if necessary and reconfirm service condition.
Difficult Make-Up / Break-Out	Thread corrosion, contaminated sealing face, connection deformation or insufficient lubrication or rust prevention.	Clean, protect against rust and inspect connections. Do not hammer pressure-containing parts forcibly.

9. Ordering and Technical Confirmation

When ordering pup joints, provide the following information to confirm model, material, seals, inspection and delivery requirements:

- Product type, bore size, pressure rating, connection type and service condition.
- Length, lay length, direction, end combination or interface position requirements.
- Whether used for NACE sour, low-temperature, sand-laden, acidizing or other special media.
- Certificate requirements, pressure test requirements, NDT, third-party inspection, packaging, and transportation requirements.
- Whether spare parts, seals, manuals, tool kits, or matching manifold assemblies are required.

This manual is a general operation and maintenance document for pup joints. 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

<p>Jiangsu Shimai Machinery Co., Ltd. Address: No. 96 Xingye Road, Jingjiang City, Jiangsu Province, China Postal Code: 214500 Website: www.jqlk.com Email: drillingtool@163.com Technical Support</p>	 Scan to view product details
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