

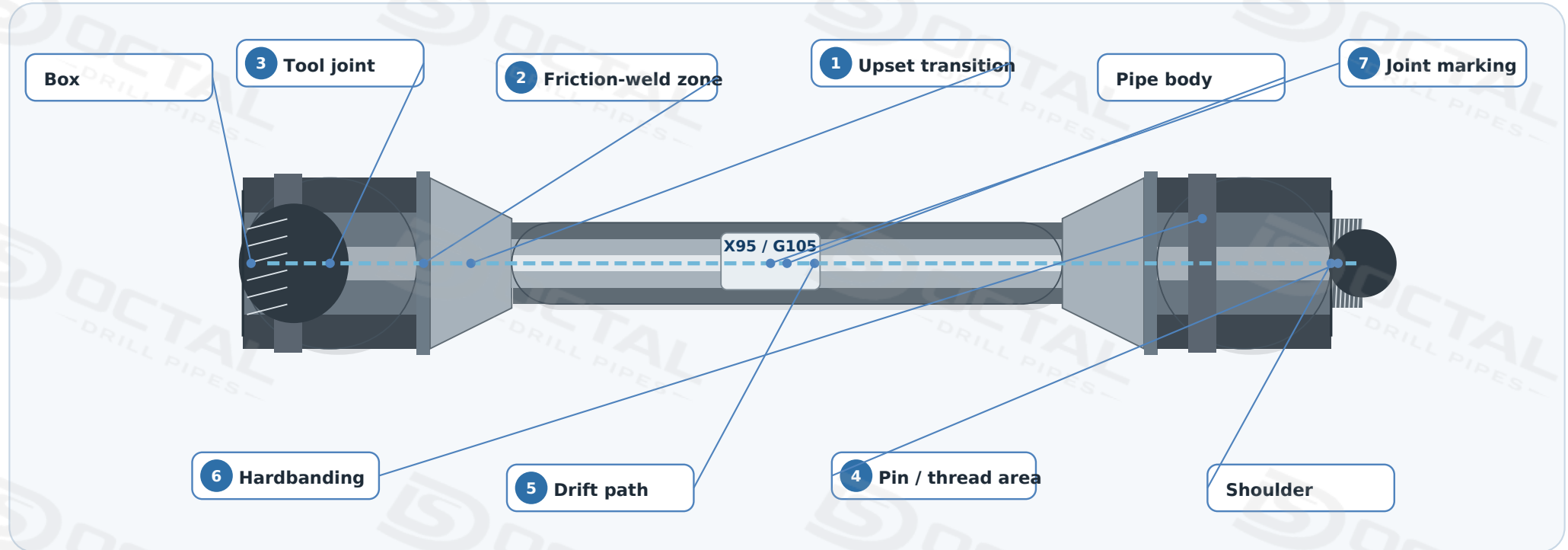
# X95 and G105 Drill Pipe Inspection and Acceptance Guide

Complete drill pipe inspection map

X95: 95 ksi / 655 MPa minimum yield

G105: 105 ksi / 724 MPa minimum yield

Grade is only one acceptance input



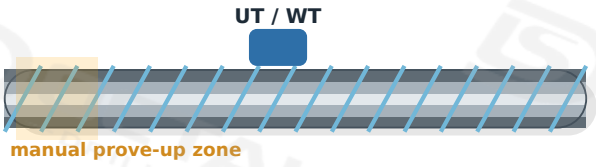
**ENGINEERING NOTE** X95 and G105 differ mainly in specified pipe-body strength. Final acceptance must also verify the weld, tool joint, connection, internal clearance and joint-level records.



# Pipe Body, Upset and Friction-Weld Verification

Factory verification, required record and purchaser acceptance focus

### 1 Pipe Body FULL LENGTH



UT / WT  
manual prove-up zone

#### FACTORY VERIFICATION

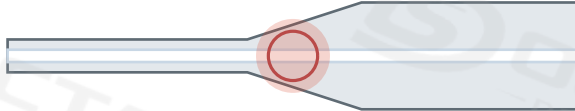
- OD, minimum wall thickness and location
- Straightness, ovality and surface condition
- Helical or longitudinal wall-thickness path
- Separate prove-up near uncovered end zones

#### REQUIRED RECORD

- Actual minimum wall and station
- Inspection coverage and method
- Heat / joint identity, result and disposition

**Purpose: confirms the actual load-carrying section used for tensile, torsional, pressure and collapse review.**

### 2 Upset Transition HOTSPOT



fatigue hotspot

#### FACTORY VERIFICATION

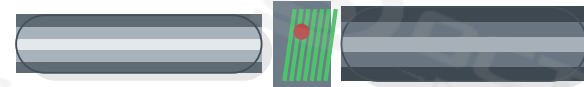
- Upset profile and transition length
- Minimum section and bore concentricity
- Laps, folds and abrupt section change
- Localized dimensional / UT confirmation

#### BUYER REVIEW

- Measured values, not nominal-only data
- Inspection coverage on both ends
- Defect disposition and reinspection record

**Purpose: controls dimensional discontinuity and fatigue concentration at the stiffness transition.**

### 3 Friction-Weld Zone 37 HRC MAX\*



MPI + hardness across weld / HAZ

#### FACTORY VERIFICATION

- Weld alignment and flash removal
- Complete external weld circumference
- Wet fluorescent MPI for relevant indications
- Surface and through-wall hardness
- Additional NDT per approved ITP

#### TRACEABILITY

**Pipe-body heat > tool-joint heat > weld lot > finished-joint number**

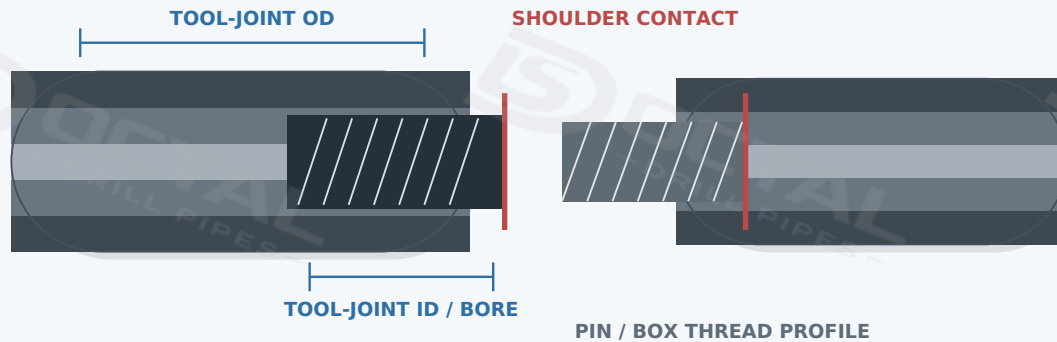
**Purpose: detects transverse cracking, excessive hardness and misalignment that can govern the assembly.**

### PURCHASER ACCEPTANCE FOCUS

- Actual values - not only "accepted"
- Inspection area and coverage identified
- Procedure, examiner and equipment traceable
- Repairs require documented reinspection

# Tool Joint, Connection and Internal Clearance

Verify the geometry that controls interchangeability, torque transfer and tool passage



## CONNECTION REVIEW DATA

<b>Designation</b>	NC / FH / IF / project-specific
<b>Dimensions</b>	Actual OD, ID, bore, weld-neck section
<b>Threads / shoulder</b>	Gauge ID, calibration, contact, refacing

**Higher pipe-body strength does not automatically increase tool-joint or connection capacity.**

### 📏 Tool Joint Dimensions

- Measure OD, ID, bore and weld-neck section after heat treatment / machining.
- Compare actual values with the approved tool-joint drawing.
- Review hardness and internal / external surface NDT.

**Purchaser focus: confirm remaining torsional section and hydraulic clearance.**

### 🕒 Pin, Box and Shoulder

- Inspect roots, flanks, taper, lead, standoff and shoulder face.
- Record galling, corrosion, impact damage and previous refacing.
- Identify connection, gauge, calibration status and result.

**Acceptance: interchangeability, torque transfer and shoulder sealing condition.**

### ➡ Full-Length Drift Path

- Pass the specified drift through body, both upsets and tool-joint bores.
- Record drift diameter, length, joint identity and pass / fail.
- Do not accept a body-only drift as final assembly evidence.

**Purpose: confirms tool passage and hydraulic clearance through the finished joint.**

### ⚠️ Hardbanding

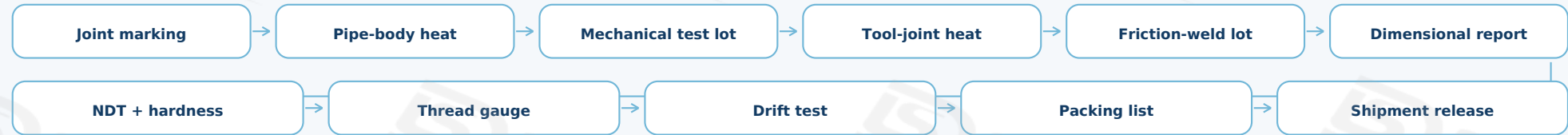
- Verify approved type, position, width, height and continuity.
- Inspect weld toes for cracking, spalling, undercut and wear.
- Confirm no interference with casing contact or connection handling.

**Purpose: wear protection without creating a new tool-joint defect or geometry conflict.**

# Final Acceptance and Traceability Checklist

Joint-level evidence from physical marking to shipment release

## JOINT-LEVEL TRACEABILITY FLOW



### PRODUCT IDENTITY

- X95 or G105 grade
- Pipe size and nominal mass
- Upset type
- Connection designation
- Joint / serial number
- Pipe-body heat number
- Tool-joint heat number
- Weld-lot identity

### DIMENSIONAL ACCEPTANCE

- Actual OD
- Minimum wall thickness
- Straightness and ovality
- Upset dimensions
- Tool-joint OD and ID
- Pin and box dimensions
- Drift result
- Hardbanding dimensions

### INSPECTION RECORDS

- Pipe-body NDT
- Upset-transition verification
- Friction-weld MPI
- Weld-zone hardness
- Tool-joint hardness
- Tool-joint surface NDT
- Thread-gauge record
- Shoulder inspection
- Repair / refacing reinspection

### DOCUMENT PACKAGE

- MTC and chemical analysis
- Actual yield / tensile values
- Impact test when specified
- Dimensional report
- NDT and hardness reports
- Drift report
- Packing list
- Heat / lot mapping
- Third-party release if required

### ACCEPT

Records, dimensions and inspection results match the approved specification.

### HOLD

Missing evidence, unclear traceability or results needing technical clarification.

### REJECT

Nonconforming dimensions, unacceptable indications, failed gauging / drift or broken traceability.

**A grade stencil supports identification but does not prove complete conformity. Acceptance requires dimensional verification, weld inspection, connection gauging, drift testing and traceable production records.**