COMPLETE DRILL PIPE ASSEMBLY

X95 vs G105 Drill Pipe Connection, Fatigue and Acceptance Checklist

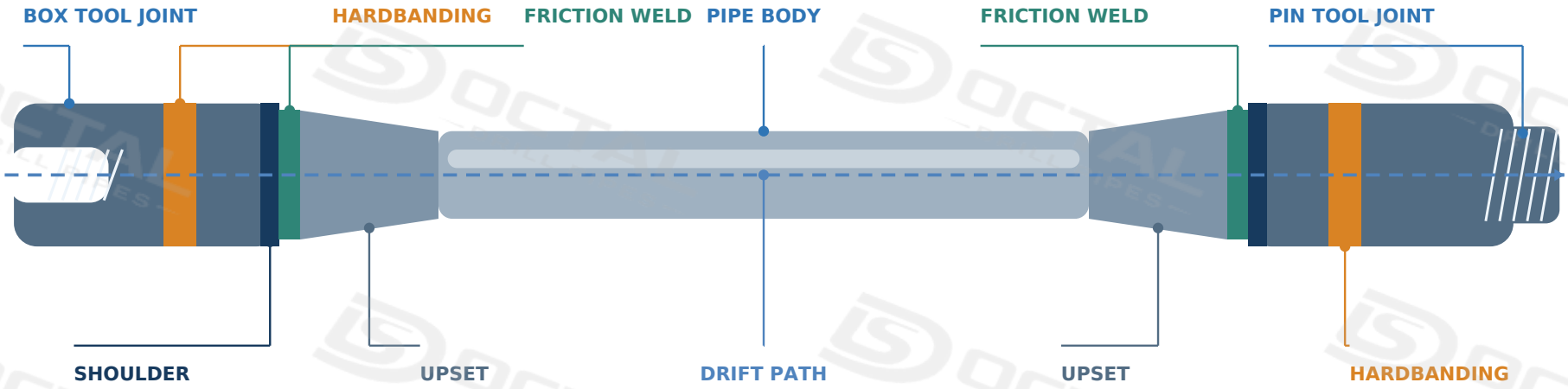
X95 and G105 identify pipe-body strength grades; connection geometry, tool-joint dimensions, weld integrity and service condition require separate acceptance.

X95 BODY | G105 BODY

Same assembly review logic: body grade does not define connection capacity.

COMPLETE WELD-ON TOOL-JOINT ASSEMBLY

Review the pipe body, upset geometry, weld zones and rotary-shouldered connections as one traceable joint.



01 Identity

Grade, heat number and joint identification must remain linked to the MTC and packing list.

02 Geometry

Use the approved connection drawing and actual tool-joint OD, ID, shoulder and thread data.

03 Condition

Accept after weld-zone NDT, thread/gauge review, drift confirmation and surface inspection.

CONNECTION REVIEW TABLE

Connection Review Table

Record the actual connection and tool-joint data. Nominal grade alone is not an acceptance value for make-up torque, torsional ratio or interchangeability.

1 DESIGNATION
NC, FH, IF or project-specific

2 DIMENSIONS
Actual OD, ID, shoulder and section

3 GAUGING
Thread form, gauge status and result

4 CAPACITY
Connection vs pipe-body limit

CHECK ITEM	ACTUAL REVIEW
1 **Connection designation**	NC, FH, IF or project-specific
2 **Tool joint OD and ID**	Approved dimensional data
3 **Pin and box geometry**	Interchangeability and remaining section
4 **Shoulder condition**	Contact, damage and refacing
5 **Make-up torque**	Approved value for actual connection
6 **Torsional ratio**	Connection versus pipe-body capacity
7 **Thread gauge**	Threading and gauging acceptance
8 **Drift diameter**	Tool passage and hydraulic clearance
9 **Hardbanding**	Type, position, cracking and wear

TORSIONAL REVIEW
Connection capacity / pipe-body yield; use actual remaining dimensions.

GAUGE EVIDENCE
Designation, gauge ID, calibration and result.

RELEASE RULE
Lowest verified governing limit.

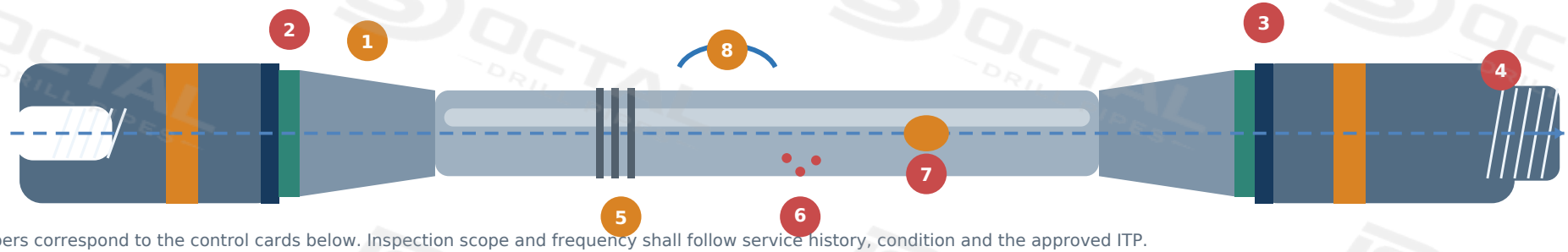
Use current approved product data, connection drawings, gauging procedures and the project ITP. Legacy names do not replace dimensional verification.

FATIGUE HOTSPOT MAP

Fatigue Hotspot Map

Fatigue is driven by local stress, cyclic load, surface damage, section loss and inspection history - not by grade name alone.

TYPICAL DRILL PIPE FATIGUE AND DAMAGE LOCATIONS



Numbers correspond to the control cards below. Inspection scope and frequency shall follow service history, condition and the approved ITP.

1 Upset transition

RISK Section change and cyclic bending

CONTROL Profile, wall thickness and NDT

2 Friction weld zone

RISK Weld discontinuity or local property change

CONTROL Weld-zone NDT and traceable result

3 Shoulder

RISK Poor contact, galling, wash or refacing loss

CONTROL Face condition and dimensional review

4 Last engaged thread

RISK Peak local bending and torsional stress

CONTROL Thread inspection, MPI and gauge status

5 Slip / tong marks

RISK Mechanical indentation or gouging

CONTROL Visual examination and depth assessment

6 Corrosion pits

RISK Local section loss and stress concentration

CONTROL Pit-depth mapping and remaining wall

7 Washout

RISK Erosion or leak path through reduced wall

CONTROL UT thickness and internal/external visual

8 Dogleg rotating section

RISK Repeated cyclic bending during rotation

CONTROL Service history and targeted inspection

SERVICE NOTE **A higher pipe-body grade does not remove fatigue hotspots. Combined load, dogleg severity, handling damage and remaining section can still govern.**

FINAL ACCEPTANCE CHECKLIST

Final Acceptance Checklist

Close the identity, mechanical, dimensional, connection, NDT and traceability records before release. The checklist applies to both X95 and G105 assemblies.

	ACCEPTANCE RECORD	EVIDENCE TO REVIEW	STATUS
1	**Grade and heat number**	Joint marking matches grade, heat and identification records.	☐ ☐ ☐
2	**MTC**	Applicable standard, chemistry, heat treatment and mechanical results are traceable.	☐ ☐ ☐
3	**Actual mechanical values**	Yield, tensile, impact and hardness values are recorded when required.	☐ ☐ ☐
4	**Tool joint dimensions**	Actual OD, ID, shoulder and remaining section match approved data.	☐ ☐ ☐
5	**Thread gauge record**	Gauge identity, calibration status and acceptance result are documented.	☐ ☐ ☐
6	**Weld-zone NDT**	Method, coverage, acceptance criteria, inspector and joint ID are recorded.	☐ ☐ ☐
7	**Wall-thickness record**	Pipe body, upset and local minimum wall values support condition review.	☐ ☐ ☐
8	**Drift result**	Specified drift passes through the required length and each covered joint.	☐ ☐ ☐
9	**Hardbanding inspection**	Type, position, dimensions, cracking and wear condition are acceptable.	☐ ☐ ☐
10	**Packing list traceability**	Joint / serial / heat mapping remains intact through shipment release.	☐ ☐ ☐

FINAL RELEASE GATES

All gates should close against approved requirements.

1. **IDENTITY** — Grade, heat and joint records align.
2. **CONNECTION** — Designation, dimensions, torque and gauging align.
3. **INTEGRITY** — Weld-zone NDT and wall condition are acceptable.
4. **CLEARANCE** — Drift and hydraulic/tool-passage requirements are met.
5. **TRACEABILITY** — MTC, inspection records and packing list remain linked.

RELEASE BASIS

Approved product data sheet + PO + ITP + actual inspection records.

FINAL DECISION: **Use the lowest verified governing limit. Do not release on grade marking or nominal connection name alone.**

Current technical references checked: API Spec 5DP (2nd Ed. + Addendum 1), API Spec 7-2 (2nd Ed. + Addendum 3), API RP 7G-2 (2nd Ed.), ISO 11961:2018.