

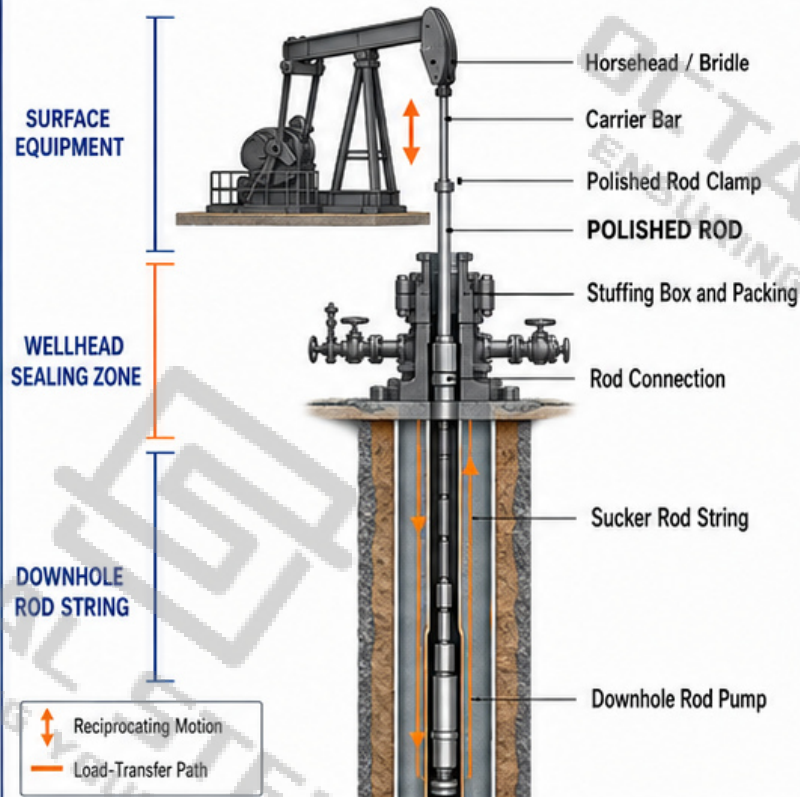
Polished Rod Function and System Position



Carbon Steel | Alloy Steel | Corrosion-Resistant Construction | Surface Protection Where Specified

A polished rod is the surface load-transfer member of a sucker rod pumping system. It connects the surface pumping equipment to the sucker rod string, reciprocates through the wellhead stuffing box and provides the working surface required for dynamic wellhead sealing.

01 SYSTEM POSITION



02 THREE FUNCTIONS



1) LOAD TRANSFER
Carries cyclic rod-string and pumping loads.

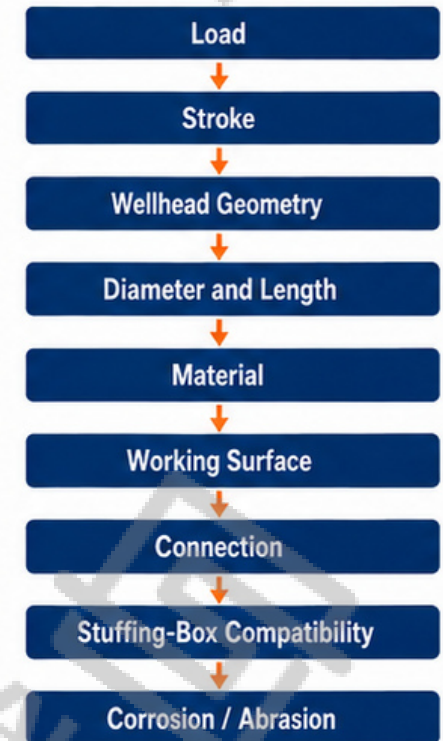


2) RECIPROCATING MOTION
Transfers the surface pumping stroke into the downhole rod system.



3) SEALING SURFACE
Slides through stuffing-box packing and directly influences friction, packing wear and leakage control.

03 INITIAL SELECTION INPUTS



Rod strength alone does not define polished-rod suitability. Load transfer, working-surface condition and connection compatibility must be considered together.

Polished Rod Types, Dimensions and Connection Compatibility

01 CONSTRUCTION TYPES

REGULAR



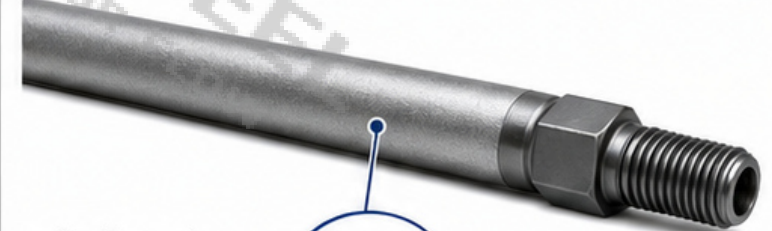
- Constant working diameter
- Conventional end configuration

END-UPSET

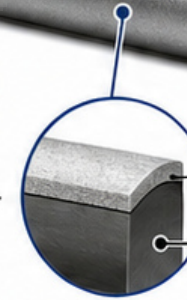


- Formed / enlarged end
- Specified polished working diameter retained
- Connection geometry must match mating component

SPRAY-METAL



- Steel base rod
- Protected metallic working-surface layer
- For demanding corrosion / abrasion conditions where specified



02 DIMENSION SELECTION

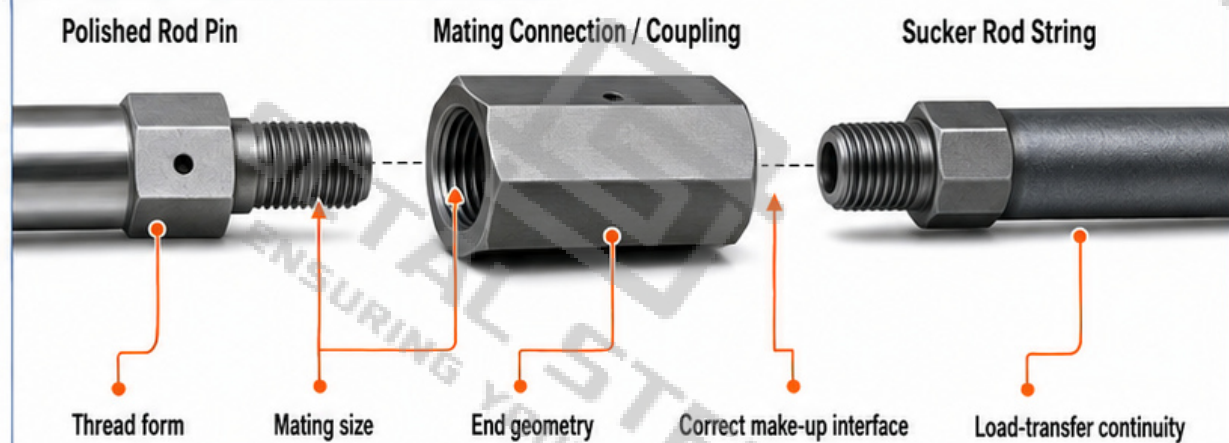
Item	Selection Basis
Diameter	Stuffing box, packing, clamp and rod-string interface
Length	Pumping-unit stroke, wellhead height and installed geometry
Working Section	Required sealing-zone geometry
End Configuration	Mating coupling / rod-string arrangement

Representative Industry Diameter

1-1/8"	1-1/4"	1-1/2"	1-3/4"
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Representative configurations only — final project dimensions follow the approved datasheet.

03 CONNECTION COMPATIBILITY



Nominal rod diameter alone does not establish interchangeability. Diameter, length, end geometry and mating connection must be confirmed together.

Polished Rod Material and Surface Selection

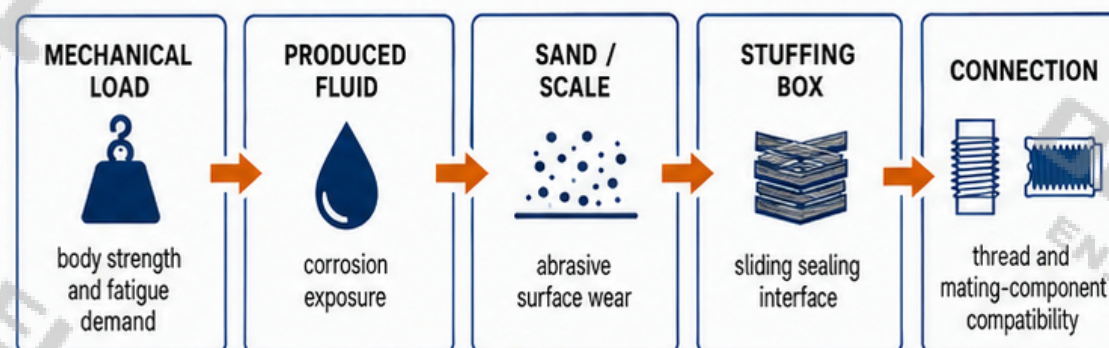
The material system must perform two jobs simultaneously:
 carry repeated rod-string loading and
 maintain a durable stuffing-box sealing surface.



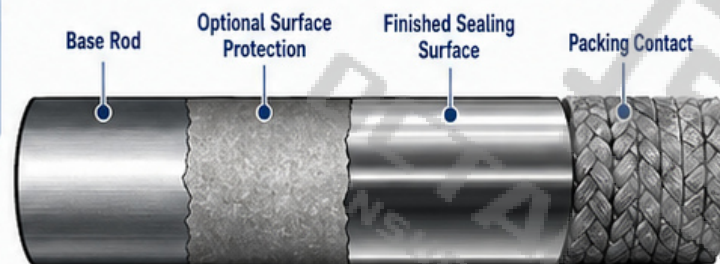
01 MATERIAL / CONSTRUCTION MATRIX

Material / Construction	Typical Engineering Use	Main Selection Controls
 Carbon Steel Polished Rod	conventional rod-lift service with controlled corrosion and moderate mechanical loading.	tensile load, straightness, surface condition, packing wear, produced-fluid condition.
 Alloy Steel Polished Rod	higher-load or demanding cyclic duty.	strength, heat treatment, fatigue duty, connection loading, corrosion exposure.
 Spray-Metal Polished Rod	combined working-surface abrasion and corrosion.	coating integrity, bond quality, finished surface, packing compatibility.
 Stainless / Corrosion-Resistant Construction	corrosion-dominated well-fluid conditions.	produced-fluid chemistry, corrosion mechanism, strength and connection compatibility.

02 SELECTION LOGIC



03 SURFACE CONSTRUCTION



The polished rod working surface is a system. Performance in the stuffing box depends on both the base material and the surface construction.

Selection must address the entire sealing zone, not just the rod core.



**Higher strength does not automatically provide better sealing-surface performance.
 Material, surface construction and well condition must be evaluated together.**

Working Surface, Stuffing Box and Wear Control

01 NORMAL SEALING CONDITION

Smooth Surface

Central Alignment

Packing Rings

Uniform Packing Contact

Smooth Surface → Even Contact → Controlled Friction → Stable Seal

02 WHY THE SURFACE DETERIORATES

1

Corrosive Produced Fluid

2

Sand or Scale

3

Rod Misalignment

4

Excessive Packing Compression

5

Poor Lubrication Where Applicable

6

Long-Term Sliding Wear

03 DAMAGE MECHANISMS

Corrosion Pit

Longitudinal Scoring

Abrasive Wear Band

Uneven Wear

Surface / Coating Damage

04 EFFECT ON OPERATION

Surface Damage

→

Higher Friction

→

Packing Wear / Local Heating

→

Uneven Sealing

→

Leakage Risk

05 CONTROL METHOD

Correct Material / Surface System

→

Rod Straightness

→

Wellhead Alignment

→

Correct Packing Adjustment

→

Lubrication Where Required

→

Surface Inspection

A polished rod can retain adequate structural strength but still become unsuitable for service when its stuffing-box working surface is damaged.

Operating Condition Selection and Enquiry Inputs

01 OPERATING CONDITION MATRIX

CONVENTIONAL ROD-PUMPED WELL



Condition	controlled corrosion and normal packing environment.
Controls	actual load, stroke, rod material, connection, packing arrangement.

CORROSIVE WELL FLUID



Condition	repeated chemical attack on the working surface.
Main risk	pitting becomes a sealing defect.
Controls	fluid chemistry, corrosion-resistant material/surface system, mechanical load.

ABRASIVE / SCALE-BEARING PRODUCTION



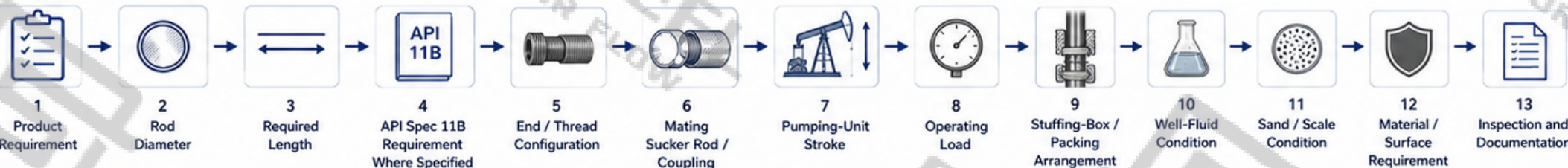
Condition	sand or scale reaches the stuffing-box interface.
Main risk	scoring and accelerated packing wear.
Controls	surface wear resistance, packing, alignment and solids condition.

HIGH-LOAD / LONG-STROKE OPERATION



Condition	increased cyclic loading and/or increased sliding distance.
Controls	fatigue demand, rod straightness, connection integrity, surface wear.

02 RFQ INPUT FLOW



03 PROJECT CHECK

DIMENSION



- Correct rod diameter
- Correct length
- Stroke and wellhead height compatibility

CONNECTION



- Thread form and size
- End geometry
- Mating coupling/interface verification

LOAD



- Cyclic load level
- Stroke length
- Fatigue duty consideration

FLUID



- Produced-fluid chemistry
- Corrosion mechanism
- Temperature influence

SURFACE



- Working-surface condition
- Surface construction
- Packing compatibility

DOCUMENTATION



- Material certificate
- Inspection records
- Traceability and marking



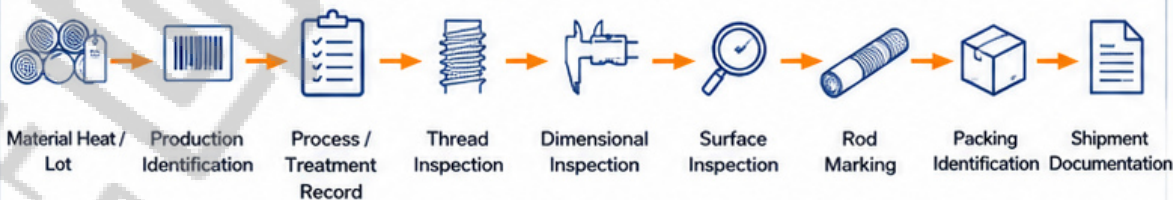
Ordering only by nominal diameter can result in incorrect length, connection, stuffing-box compatibility or surface construction.

Manufacturing, Inspection and Supply Release

01 MANUFACTURING FLOW



03 TRACEABILITY CHAIN



TECHNICAL SUPPORT



02 RELEASE CONTROLS



04 OCTAL STEEL SUPPLY SCOPE



REQUIRED DOCUMENTS WHERE SPECIFIED

- Material Certificates
- Mechanical-Test Records
- Dimensional Inspection Records
- Thread Inspection Records
- Marking
- Lot Traceability



Final manufacture and release follow the approved project specification and applicable product requirements.

Do not claim OCTAL STEEL manufacturing certification, API Monogram, production capacity, inspection percentage or stock availability unless separately supported.