WHITE STAR
Pump Company™

SUCKER ROD PUMPS

Exceeding standards. Setting new ones.

UKR-LAND as manufacturer

White Star Pump LLC has developed a manufacturing partnership with UKR-LAND SCIENTIFIC AND PRODUCTION COMPANY, LLC established in 1992 in Ukraine, Kharkov city, for the production of well sucker-rod pumps. All items of the specification manufactured on standard API Spec 11 AX.

By utilizing Ukrland's expertise in manufacturing White Star is able to produce the finest quality Sucker Rod Pump at the most competitive prices, even compared to the products coming out of Asia. We believe that production in Ukraine can offer the best value globally, by having both extremely low wages and the European craftmanship to build the finest equipment in the world.

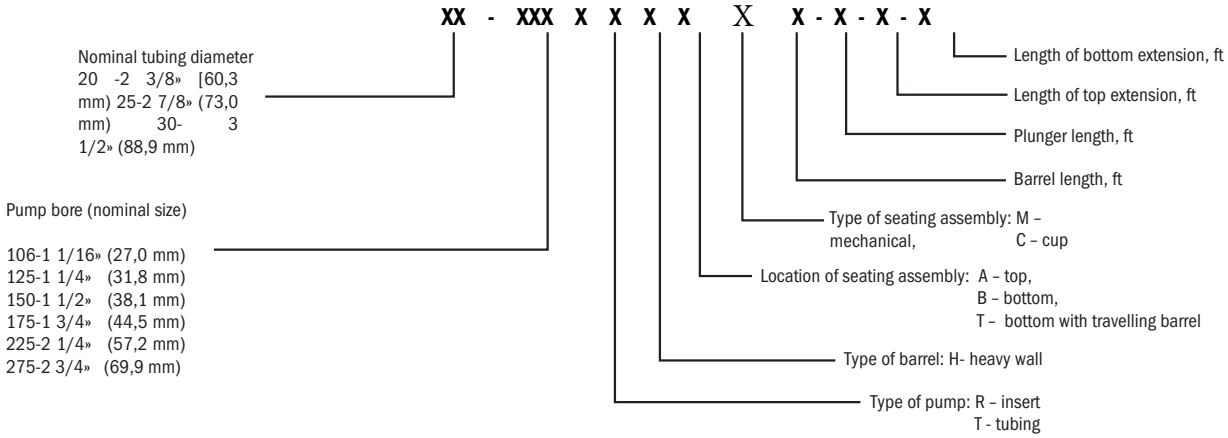
All product are manufactured under Strict API 11AX guidelines and then bench tested by the highest quality inspection and control tools.

ADVANTAGES

- European quality at prices that compete with Asian discount products
- On-line and qualified help and consultation service regarding to equipment choice in order to provide the optimal operating conditions of required parameters.
- Expedited production cycle & availability of kitting and spare parts at the warehouse.
- Individual approach and flexible price policy to each customer.
- Departure of our company specialists for pre balancing and commissioning works and training of employees to work on the production of pumps and service this equipment.

There produced more than 800 pump types and versions, both standard (as per API Specification 11AX) and special versions including pumps for operation in extra-heavy well conditions.

Full API pump designation:



Versions of pump components:

Barrel:

- Alloy steel, nitride-plated (HN);
- Carbon steel, chrome-plated (CR);
- Length of barrel – up to 14 feet, nitride-plated – up to 14 feet, chrome-plated – up to 16 feet, compound barrels (for long-stroke pumps) – up to 28 feet.

Plunger (nipple type):

- Carbon steel, chromium-nickel hard ally powder

Plunger (nipple type):

- Carbon steel, chromium-nickel hard ally powder sprayed (T);
- Grooved, smooth;
- Length – up to 5 feet, compound – up to 10 feet.

Valves:

- Standard and special designs, including double travelling and standing valves.

Valve cage:

- Alloy steel;
- Stainless steel.

Ball and seat:

- Stainless steel (SS);
- Cobalt alloy (ST);
- Tungsten carbide (TC1).

Plunger clearance is defined as a difference between nominal diameters of a plunger and a barrel plus sum of tolerances for plunger and barrel diameters.

Plunger clearance (range):

- Fit-1 – 0,025 … 0,088 mm
- Fit-2 – 0,050 … 0,113 mm
- Fit-3 – 0,075 … 0,138 mm
- Fit-4 – 0,100 … 0,163 mm

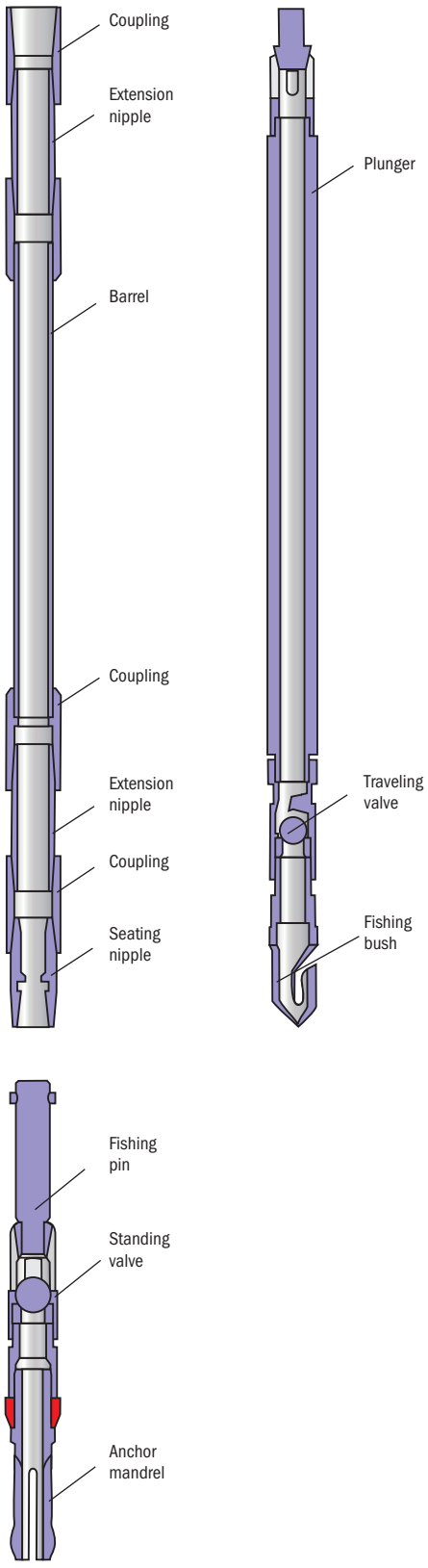
When making a request/order for pumps Customer should specify:

- denomination, full designation of a pump including tubing diameter; diameter and type of a pump; length of a barrel, plunger and extensions (or required plunger stroke);
- type of top seating arrangement of insert pumps: standard (accord-ing to API), in OM anchor (according to Industry standard OST) or special “taper-in-taper” type;
- Type of seating arrangement of standing valve of tubing pumps: standard (according to API), non-removalbe;
- plunger clearance (Fit 1,2,3,...);
- depth of pump installation (discharge);
- material of barrel, plunger, valves, valve cages;
- additional requirements to pump versions.

If no any requirements to material, clearance and discharge of pumps are specified, then pumps are delivered in the following type and version: barrel HN, plunger T, valves SS, alloy steel valve cages, Fit2, discharge up to 1500 m.

Seating nipples (anchors) of insert pumps, as well as filters, overflow valves, automatic tractive connections and other tools for SRP are not included in delivery set and should be ordered optionally.

THM tubing pump with mechanical seating arrangement acc. to API, schematically



Tubing pump versions

Seating arrangement of standing valve	Pump bore, mm	Tubing size, mm	Pump designation
Acc. to API Spec. 11AX with bayonet fishing tool (THM) or with cup seating arrangement (THC)	31,8	60,3	20-125 THM
		73,0	25-125 THM
	44,5	60,3	20-175 THM (THC)
		73,0	25-175 THM (THC)
	57,2	73,0	25-225 THM (THC)
	69,9	88,9	30-275 THM
Special (taper)	31,8	73,0	25-125 THM-K
	44,5	73,0	25-175 THM-K
	57,2	73,0	25-225 THM-K
Non-removable valve (additional drain valve of SKOK type is used)	31,8	73,0	25-125 THM-T
	44,5	73,0	25-175 THM-T
	57,2	73,0	25-225 THM-T
	69,9	88,9	30-275 THM-T
Non-removable valve, long plunger (10 feet), barrel with side hole	31,8	73,0	25-125 THM-T 11-10-2-2
	44,5	73,0	25-175 THM-T 11-10-2-2
	57,2	73,0	25-225 THM-T 11-10-2-2
	69,9	88,9	30-275 THM-T 11-10-2-2
Non-removable single (C) or doubled (CC) valve with built-in drain beating device	31,8	73,0	25-125 THM-C(CC)
	38,1	73,0	25-150 THM-C(CC)
	44,5	73,0	25-175 THM-C(CC)
	57,2	73,0	25-225 THM-C(CC)
	69,9	88,9	30-275 THM-C

Designation of pumps (except THM-T 11-10-2-2) is given without lengths of barrel, plunger and extensions which shall be selected for each size of pump, depending on required plunger stroke.

Plunger stroke of standard tubing pumps (THM) depending on combination of barrel-plunger-extension lengths

Combination of barrel-plunger-extension lengths	Max length of plunger stroke (from end to end), m
7-4-2-2	1,5
9-4-2-2	2,1
11 -4-2-2	2,7
11-4-2-3	3,0
14-4-2-2	3,6
11 -10-2-2	3,0
22-4-2-2	6,0
14-5-1,5-1,5	3,2
22-4-2-2	6,2

Example of tubing pump designation

Diameter 44,5 mm, standard seating arrangement of standing valve (acc. to API), length of barrel – 11 feet, length of plunger – 4 feet, length of extensions – 2 feet each, for installation in tubing with diameter 73 mm:25-175 THM 11-4-2-2.

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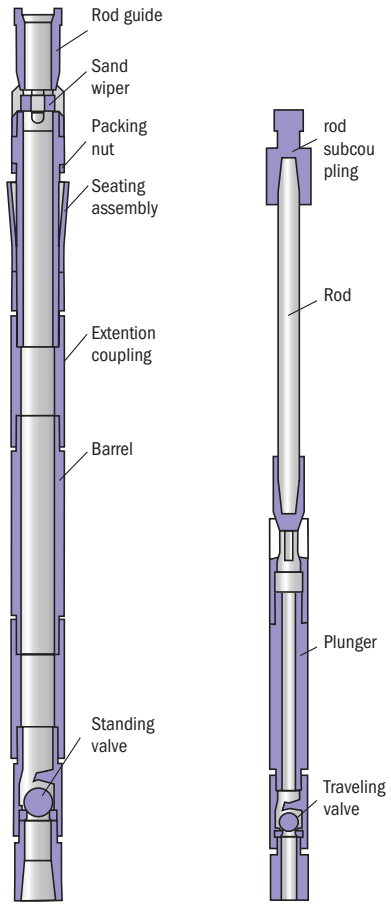
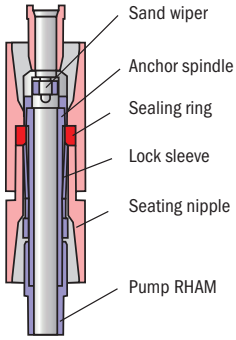
Rod (Insert) pumps

Rod (insert) pumps are delivered with sand wiper (sand valve). It is installed in rod guide to prevent sanding up of a pump during its idle time.
To provide better sealing of pump anchoring unit in corrosion environment, an anchor spindle of top mechanical seating arrangement as per API assembled with stainless steel packing nut is available.

Scheme of top (mechanical) anchored rod pump acc. to API



Scheme of seating arrangement



*Pump designation is given without lengths of a barrel, a plunger and extensions, which are selected for each pump type and version according to required plunger stroke.

Versions of rod pumps:

Seating arrangement	Pump bore, mm	Tubing size, mm	Pump designation*	Designation of seating nipple (anchor)
Top mechanical acc. to API	27,0	60,3	20-106 RHAM	40116-ZUS
		73,0		40116-M-ZUS
	31,8	60,3	20-125 RHAM	40116-ZUS
		73,0		40116-M-ZUS
	38,1	73,0	25-150 RHAM	40117-ZUS
	44,5		25-175 RHAM	
Top mechanical in OM support, acc. to OCT 26.16.06-86	27,0	60,3	20-106 RHAM	OM-60
	31,8		20-125 RHAM	
	38,1	73,0	25-150 RHAM	OM-73
	44,5		25-175 RHAM	
Top special (taper-in-taper)	27,0	73,0	25-106 RHAM	32001-M, 32001-KM, 40116-KM-ZUS
	31,8		25-125 RHAM	
	38,1		25-150 RHAM	32002-M, 32002-KM, 40117-KM-ZUS
	44,5		25-175 RHAM	
Top cup acc. to API	27,0	60,3	20-106 RHAC	32521
		73,0	25-106 RHAC	32522
	31,8	60,3	20-125 RHAC	32521
		73,0	25-125 RHAC	32522
	38,1		25-150 RHAC	
	44,5		25-175 RHAC	
Bottom mechanical acc. to API	27,0	60,3	20-106 RHBM	32756
		73,0	25-106 RHBM	32757
	31,8	60,3	20-125 RHBM	32756
		73,0	25-125 RHBM	32757
	38,1	73,0	25-150 RHBM	
	44,5		25-175 RHBM	
	57,2	88,9	30-225 RHBM	32758
Bottom mechanical, double-stage pump	57,2/38,1	88,9	30-225/150 RHBM 12-4-2-2	32758
Bottom cup acc. to API	27,0	60,3	20-106 RHBC	32521
	31,8		20-125 RHBC	
		73,0	25-125 RHBC	32522
	38,1		25-150 RHBC	
	44,5		25-175 RHBC	
Bottom mechanical acc. to API, set in pump bottom	27,0	73,0/ 60,3	25/20-106 RHM-T	40116-MT-ZUS
	31,8		25/20-125 RHM-T	
	38,1		25/20-150 RHM-T	
	44,5		25/20-175 RHM-T	
Travelling barrel, bottom mechanical acc. to OST	44,5	73,0	25-175RHTM	OM-73