

TS-SINOTAI

FACTORY:

TONGHUA PETRO-CHEMICAL MACHINERY MANUFACTURE CO., LTD Add: Tonghua City, Jilin Province, China

OFFICE:

SINOTAI PETROLEUM EQUIPMENT CO., LTD Add: Dongying City, Shandong Province, China Tel: +86 546 8300512 Email: info@sinotaicn.com Web: www.sinotaicn.com









DRILLING WORKOVER RIG





- S Truck-mounted drilling and workover rig
- S Trailer-mounted drilling and workover rig
- S No-guyline workover rig
- Anchorless workover rig
- S Cold-weather drilling and workover rig
- S Multi-function workover rig

 - Snubbing unit
 - Well flushing and workover rig
- S Desert workover rig
- Slant-well workover rig
- S CBM drilling and workover rig
- S Hydraulic workover rig
- S Dual power workover rig
- Skid-mounted drilling rig

KEEP MOVING NEVER STOP



TS-SINOTALIS A JOINT VENTURE COMPANY OF THPETRO AND SINOTAI.

Tonghua Petro-Chemical Machinery Manufacture Co. Ltd (hereinafter referred to as THpetro) is a trusted global supplier of oil field equipment and services with glorious history. Established in 1958, THpetro was honored as the earliest oilfield manufacturer in China. In 1965, THpetro invented the "First Workover Rig" of People's Republic of China. After half a century, THpetro has become the leading supplier of oil field machineries in China, acting as the key partner of CNPC and Sinopec.

Sinotai Petroleum Equipment Co., Ltd (hereinafter referred to as SINOTAI) located in Shengli Oilfield, is the international sales company of THpetro, mainly engaged in the integration of complete package of the drilling and workover rigs. SINOTAI has built long term strategic cooperation with most of the top brand in China like GF, BOMCO, RG, RGM, Rongsheng etc. With their strong support, SINOTAI can supply the best program for the complete of the rig package, faster and more economical. Not only supply the equipment, but also focus on solving the problem, increasing efficiently and saving the cost.

TS-SINOTAI is capable of providing a broad spectrum of workover rigs (XJ150-XJ750) with service depths from 1000m to 8000m, drilling depths 1000m to 3000m. To deliver the first class customer service, we constantly develop special workover rigs through strong R&D capabilities to satisfy various customers' requirements. The No-guyline and anchorless Workover Rig is designed to fit service well in desert and small spatial area. Multi-function equipment (e.g. Complex Flushby Unit, Snubbing Unit) improves the efficiency and reduces the cost for our customers through achieving workover, flushing, swabbing concurrently. For regions with alternative energy available, our Electric Drive Workover Rig allows customers to take advantage of flexible energy sources and minimize the environmental impact.

Keep moving, never stop. TS-SINOTAI will always use its extensive experience to apply the best available technology and the most appropriate solutions to meet customers' requirement.



API 4F



WORKOVER RIG TECHNICAL PARAMETERS

Description			XJ750 (150T)	XJ650 (120T)	XJ550 (100T)	XJ450 (80T)	XJ350	XJ300 (50T)	XJ250 (40T)	XJ150 (30T)	
Minor overhaul depth Φ73mm (2 7/8" EUE tubing)		m	-	8500	7000	5500	4000	3600	3200	2600	
	Φ73mm(2 7/8″ DP)	m	8000	7000	5800	4500	3200	2600	2000	1500	
Overhaul depth	Φ88.9mm(3 1/2" DP)	m	6500	5500	4500	3500	2500	2300	-	-	
	Φ114mm(4 1/2" DP)	m	5000	4200	3600		-	-	-	-	
Drilling depth		m	3000	2000	1500	1200	800	700	600	-	
Rated hook load		KN	1500	1200	1000	800	600	500	400	300	
Max. hook load K		KN	1800	1580	1350	1125	900	750	700	585	
Engine model			CAT C15 X 2	CAT C18	CAT C15	CAT C15	CAT C9	CAT C9/ WP10G336E341	WP10.336E53	WP10.300	
Engine power		KW (HP)	403(540) X 2	470(630)	403(540)	354(475)	261(350)	261(350)/250(336)	250(336)	216(290)	
Transmission			Allision M5620AR X 2	Allision M6620AR	Allision M5620AR	Allision M5620AR	Allision 4700 OFS	Allision 4700/4430 OFS	YJ409Gc	YJ409Gc	
Chassis driving type			14x8	12x8	10x8	10x8	10x8/8x4	10x8/8x4	8x8/8x6/6x6	6x4	
Approach/departure angle			33°/ 17°	25°/ 16°	25°/ 16°	25°/ 16°	25°/ 16°	25°/ 16°	25°/ 16°	25°/ 16°	
Min. ground clearance mr		mm	310	310	310	310	310	310	310	310	
Mast height m		m	38	35	33	33/31.7	31.7/21(No-guyline)	29/21(No-guyline)	29/17/21(No-guyline)	17/18	
Mast type			Front opened, double section, telescope mast Front opened, double/single mast								
Valid rope number			10(6X5)	8(5x4)	8(5x4)	8(5x4)	6(4x3)	6(4x3)	6(4x3)	6(4x3)	
Hoist rope diameter mn		mm	φ32/φ29	φ29	φ26	Ф26	φ26	φ26	φ22	φ22/φ19	
Transportation dimensions(L x W x H) m		m	24.00X3.30X4.5	20.12X2.95X4.4	18.50X2.85X4.20	18.50X3.03X4.20	18.50X2.90X4.20	16.90X2.50X4.30	12.94X2.44X4.00	14.30X2.44X3.80	
Total weight kg		kg	76000	55000	53000	51500	51000	36000	27380	23000	
Drum			Single / double drum								
Main drum assist brake system			Air control disk brake / hydraulic disc brake / Water brake								

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TRUCK-MOUNTED DRILLING AND WORKOVER RIG

- These drilling and workover rigs have following advantages: reasonable design structures and high integration, a small working space and a reliable transmission.
- Adopt self-propelled or truck chassis to satisfy the different customers' requirements.
- The mast is single or telescope model, can be equipped with power swivel to finish the rapid service.
- The main drum adopts band brake or disc brake, the auxiliary brake adopts water cooling or air cooling disc brake. _____
- S It can be equipped with the multi-parameter monitor, wellhead automatic equipment to realize intelligent operation.
- Safety and inspection measures are strengthened under the guidance of the design concept of "Humanism Above All" to meet the requirements of HSE.







TRAILER-MOUNTED DRILLING AND WORKOVER RIG

- These Drilling and workover rigs have following advantages: reasonable design structures and high integration, a small working space and a reliable transmission.
- S The heavy-duty trailer is equipped with some desert tires and large-span axles to improve the moveability and the cross-country performance.
- main brake, the air water-cooling disc brake is equipped as auxiliary brake.
- sections can be lifted up or fallen down and telescoped. · · · ·
- can be risen by 6 legs spirally.
- Safety and inspection measures are strengthened under the guidance of the design concept of "Humanism Above All" to meet the requirements of HSE.



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_____ • The drawwork can be single or double drums, the hydraulic disc brake/band brake is equipped as the • The mast which is front-open type and has two-section structure with an inclination angle or erective

• The substructure has a parallelogram integral structure for easy transportation and installation, which









In order to maintain the stability of the workover rig under the conditions of maximum hook load, full stand, 60 knots wind load and empty stand 90 knots wind load, a series of anchorless devices were adopted.

- Small working area is needed.
- S Less preparation time before operation, fast rig-up a
- S The rig is arranged reasonably to ensure the uniform
- All the guy lines are fixed on the rig to save the cost
- S The anti-tilt electronic alarm device is installed to im



NO-GUYLINE WORKOVER RIG

Patent for invention

No-guyline workover is a small workover rig without wind load guyline, it was invented according to the characteristics of large number of shallow wells and short operation period of small workover operation in oil field.

Only with two guylines fixed on the supporting without the anchor, improves the disassembly and movement efficiency.

Anti-roll device and anti-tilt anti-collision electronic alarm device ensure the safety of operation.

- S No-guyline workover rig adopts max. 22m telescope mast or max. 18m single mast.
- The mast base has anti-roll and anti-overturn device, and equipped with tilt alarm.
- S Adopt self-propelled or truck chassis, fast moving and good off-road performance.
- Less preparation time before operation, fast rigging-up and rigging-down.



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and rig-down.	
n distribution of forward and backward loads.	
and work of cording anchor.	
prove the operation safety of the rig.	



COLD-WEATHER DRILLING AND WORKOVER RIG

The cold-weather drilling and workover rig can normally be operated under a working ambient temperature of-45 degrees, which is suitable for using in the severe cold oil fields in Russia, Canada and other similar regions.

- The main loading parts of this drilling rig are produced with cryogenic materials which are assessed strictly after low-temperature welding.
- The travelling block and crown block are produced with special materials and technology rocesses to ensure good working performance under low temperature conditions.
- The hydraulic lines, pneumatic lines, cables, valves and oils that we selected have a cold weather performance.
- S Electrical heating system or steam heating system is used for the transmission box, oil tank or water tank.
- Special windproof sheds, heat insulation and heating measures are used for drilling and workover rigs.



MULTI-FUNCTION WORKOVER RIG

S WELL FLUSHING AND WORKOVER RIG

- S The flushing and workover rig is a special equipment for oil and mine filed which merge withflushing and workover.
- S It is composed of steyr second chassis, transfer case, hydraulic torque converter, triplex plunger pump, revert reducer, draw works, mast, traveling block, hydraulic system, air system etc.
- The engine is fitted with governor for all the way, the power of engine is passed to transfer case through transmission shaft.
- Then transfer case pass the power to rear axle of truck, revert reducer and triplex plunger pump. So it can realize the function of truck moving, workover and flushing.
- The transfer case can drive the hydraulic pump, supply the oil to hydraulic system.





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Patent for invention



The flushby Unit is a multifunctional equipment mainly used for well flushing and sand washing in thick oil well, and performing quick workover service of shallow/thick oil well. It is the next generation of service machine that outperforms service unit, pump truck and crane truck working together.

- Flushby unit can substitute the crane, flush truck, pump truck in sand washing work of thick oil well in rotary screw pump type. It can also work as a light and efficient small workover rig. It is a true all in one complex unit.
- The mast is equipped with long diagonal draw bar to open and shut automatically, which makes the rig not only facilitate horizontal drilling, but also act on a well slanted at a 45 degree angle.





There are two type of snubbing unit, Integrated and split type. The split type snubbing unit is to transport workover rig and BOP snubbing unit in separate, easily to move.

- Reduce fuel consumption, save energy.
- Adopt the second class chassis, small overall size, small turning radius, fast traveling speed, more suitable for small well's oilfield and mountain oilfield.
- The drawwork brake is using the hydraulic disc brake, equipped with the remote control function.
- The driller's console can be moved onto the operating platform, and it can be see clearly and convenient for communicating. Meanwhile, it reduces the drillers' working strength and improves brake reliability.
- The tubing coupling's semi-seal ram BOP in wellhead device is replaced with the quick BOP. It will save the time of changing the semi-seal ram, and save the steps of disassembling cylinder. So it can eliminate the leakage of hydraulic oil problem.



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DESERT WORKOVER RIG

- All kinds and tonnage of rigs have corresponding models suitable for the desert.
- S The chassis is heavy-duty 8x8 all-wheel-drive, with a hydraulic steering system, and large diameter low pressure desert tires.
- The diesel engine is equipped with a sand-proof filter and the desert workover rig is installed with a sand-proof shed so as to maintain the rig's working performance and safe movement in the desert.
- An inner-circulated forced water cooling system can ensure the drawworks operate normally under high-temperature conditions. _____
- S The mast is a front-open, tilting and double-section telescopic type with a heavy-duty wind-proof design, and it can be hydraulically rigged up and down.
- The substructure is twin-body telescopic type or parallelogram structure, both of which are convenient for installation and transportation.



SLANT-WELL WORKOVER RIG

- The slant-well workover rig can be applied for the service and workover operations on the slant wells of oil, gas and water with the slant degree of 45° ~ 80°, less than 1500m depth.
- The substructure is heavy-duty 8x4 normally–drive, which has a good cruise performance with hydraulic steering system.
- The whole unit could be moved both in longitudinal and transverse directions with stepless adjustable function to have the wellhead centralized.
- These workover rigs also can be used for slant-well drilling operation if fitted a power swivel.
- The monkey board and high-duty working platform are lifted hydraulically and locked mechanically, which is reliable.



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CBM DRILLING AND WORKOVER RIG

S CBM drilling and workover rig is special made for the CBM production according the environment need.

- There are two type, truck-mounted and trailer-mounted for option.
- S The CBM drilling and workover rig has mechanical drive and hydraulic drive, which power unit, mast, drawwork, and air compressor are installed on the truck to create good mobile capacity.
- Hoisting operations and rotary operations of the drilling and workover rig are controlled by a hydraulic system.
- The CBM drilling and workover rig can meet the requirements of the mud drilling, air drilling, water drilling, foam drilling and the other types of the drilling as well.





- The hydraulic drawworkless workover rig is new design for the energy saving.
- It is driven hydraulically for drilling, workover and hosting operations. It is unnecessary to use drawwork, wireline, travelling block, hook block and rotary table on the rig.
- It is equipped with a hydraulic power end, hydraulic pipe handing tools and other automatic tools which can reduce heavy labor and achieve safety and high efficiency.
- Due to the simple design, it is easy to maintain and have a long using life.
- This kind of workover rig is suitable for under-balance drilling, slim-hole operation, general workover, snubbing operation, heavy drilling and side tracking etc.



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HYDRAULIC WORKOVER RIG (DRAWWORKLESS)



DUAL POWER WORKOVER RIG (DIESEL & ELECTRIC)

The dual power workover rig has two models, one is for small load from XJ150 to XJ450, which has the function of energy storage, the other is for heavy workover rig from XJ550 to XJ750. It is mainly composed of electrical transmission system, electric energy storage system (XJ150 to XJ450), machinery hydraulic system, intelligent control system, chassis and mast, etc.

MAIN FEATURES:

- The power grid is used as the power source, which save over 40% fuel cost.
- The field transformer is capable for the equipment, so there is no need for another transformer substation(XJ150 to XJ450).
- Security of the electric energy when braking and moving down helps save energy(XJ150 to XJ450).
- The equipment can reduce pollutant emission and on-site oil contamination.
- The working noise is below 60 dB, so that the workover operation on whole area of oilfield can be realized.
- The equipment can realize full electronic control and stepless speed regulation, provide a high operating efficiency and low labor intensity.
- The equipment has long service life, low maintenance frequency and low cost.
- The equipment is equipped with mast and can realize autonomous walking, which reduce the operating cost.
- S The equipment has emergency hydraulic power to ensure the operation safety during the power outage.









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MODULARIZED DRILLING RIG



										112000
Model		ZJ30K	ZJ30DB	ZJ40K	ZJ40LDB	ZJ40DB	ZJ50DB	ZJ70LDB	ZJ70DB	ZJ90DB
Drilling depth	5200-9800	8200-13000	8200-13000		8200-13000	8200-13000	11000-16000	15000-23000	15000-23000	29500
(m)	4900-8200	6600-10000	6600-10000		6600-10000	6600-10000	9200-15000	13000-20000	13000-20000	26000
Max. hook load (lbs)		380000	380000	500000	500000	500000	700000	1000000	1000000	1517400
Hook speed (ft/s)		0.67~4.9	0~3.9	0.49~4.5	0.67-4.6	0-3.9	0-3.9	0-3.9	0-3.9	0~6
Mast height (ft)		108	135	141	141	141	141、148	148	148	157
Mast type		Erective section	K type	Erective section	K type	K type	K type	K type	K type	K type
Height of t	he drill floor (ft)	18.37	16.4	19.68	24.61	24.61	24.61、29.53	29.53、34.45	29.53、34.45	40
Substructure type		Folding frame	Folding frame	Folding frame /telescopic	Swing-up	Swing-up	Swing-up /sling-shot	Swing-up	Swing-up	Swing-up
Engine type		CAT3408 DITA Or 2×C-15 ATAAC	AC-VF motor	2×CAT3412 DITA or 2×C-16 ATAAC	G12V190PZL-3	CAT3512B generator set	CAT3512B generator set	A12V190PZL-3	CAT3512B generator set	CAT3512B generator set
Engine power (No×hp)		2×531 or 2×526	671	2×650 or 2×660	3×1086	2×1676+536	3×1676	3×1421	4×1676	5x1757
Transmission type		Hydraulic+ mechanical	Electrical+ Mechanical	Hydraulic+ mechanical	hydraulic+ mechanical	VFD	VFD	hydraulic+ mechanical	VFD	VFD
Model of the transmission box		2×M5620AR	JZK-190 4-shiftgear box	M6620AR	YZOJ750	ZJ40	ZJ50	YZOJ750	ZJ70	ZLQ90DB
Traveling system		5×6/4×5	5×6	5×6/6×7	5×6	5×6	6×7	6×7	6×7	7x8
Drawwork Model		JC30K	JC30DB	JC40K	JC40LDB	JC40DB	JC50DB	JC70LDB	JC70DB	JC90DB
Drawwork power (hp)		536	671	986	986	1073	1609	1971	2146	3000
Main brake		Band	Band /disc	Band/disc	disc brake	Disc brake	Disc brake	Disc brake	Disc brake	Disc brake
Auxiliary brake		324WCB	324WCB	236WCB	FDWS40	Energy-consumption braking	Energy-consumption braking	FDWS70	Energy-consumption braking	Motor resistance brake
Main wireline diameter (in)		1-1/8″ / 1-1/4″	1-1/8″	1-1/4″	1-1/4″	1-1/4″	1-3/8″	1-1/2″	1-1/2″	1-3/4″
Model of the hook block		YG225	YG225	YG225	YC225、DG225	YC225、DG225	YC315、DG315	YC450、DG450	YC450、DG450	YC675、DG675
Model of the swivel		SL225	SL225	XSL225	SL225	SL225	SL450	SL450	SL450	SL750
Model of rotary table		ZP205、P275	ZP275	ZP275	ZP275	ZP275	ZP375	ZP375	ZP375	ZP495
Mud pump power (hp/set)		986/2	986/2	1287/2	960/2	960/2	960/2	1180/3	1180/3	2200/3
Working pressure of the hydraulic system (psi)		2030/2320								
Working pressure of air system (psi)						145				
Weight (lbs)		176000	190000	220000	710000	660000	770000	990000	880000	990000

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