

PRODUCT CATALOGUE



NS-SE ISO 9001 : 200 / ISO 9001: 2000 COMPANY



KHALSA OIL FIELD EQUIPMENTS (P) LTD.

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EQUIPPED WITH MACHINERY & EQUIPMENTS

Turning	-	14 Nos.
Milling & Shaping	-	06 Nos.
Grinding Machines	-	08 Nos.
Fabrication Facilities	-	14 Nos.
Heat Treatment Facilities	-	05 Nos.
Quality Control instruments & Equipments	-	19 Nos.



PRODUCTS

Slush Pump Expendables for Triplex Pumps

OILWELL	:	A-600PT, A-850A/A-1100PT, A-1400 PT/A-1700PT
NATIONAL	:	10P130, 12P160
GARDNER DENVER	:	PZ-8, PZ-9, PZ-10/PZ-11.
WIRTH	:	TPK-1600
IDECO	:	T1300 / T-1600
RUMANIAN	:	3PN 1300/ 3PN 1600
EMSCO	:	FB1600

1. Hy-chrome sleeved liners all standard sizes.
2. Valve Assy. (Nitrile/Polyurethane) & their components.
3. Piston Rod, Piston Rod Nut.
4. Piston Assy. & components all standard sizes.

Drilling Specialties

1. Drag Bits 3 Blade / 4 Blades 3" thru 6½"
2. Flexible Exhaust adopter (Bellow) for CATD399, D398, D397 Engine.
3. Exhaust Muffler for CAT D399, D-398, D397.
4. Wash pipes for S200, PC150, PC450, PC650 swivels.

Mud Conditioning Equipment

1. Orbital motion shale shakers.
2. Retrofit Basket for orbital Shale Shaker.
3. Linear Motion Shale Shaker.
4. Shaker Screens.

Hy-chrome Sleeved Liner

Hy-Chrome Sleeved Liner has been engineered to overcome the specific stresses that this part encounters in drilling operations.

Conventional liners have a decreasing hardness gradient from the bore. On the other hand, offers a bimetallic supreme sleeved liner. It is an assembly of liner shell with liner sleeve. The liner shell is centrifugally cast and heat treated to withstand hoop stresses generated in shrink fitting and stress reversals during operation.



Construction : The liner sleeve is of high chromium alloyed martensitic white iron and thin walled seamless tube. Special heat treatment ensures proper carbide grain formation, refined microstructure and controlled grain size. Liner sleeves, therefore, offer the maximum possible wear and corrosion resistance. Liner sleeves are through hardened to provide a uniform hardened wear surface throughout the useful life of the liner. The sleeve bore hardness is 60 to 67 Rockwell C scales while the hull has high tensile strength of more than 90000 psi. Uniform wear resistance increases service life – and reduces frequency of liner changes.

The liner is manufactured to tolerances tighter than API specifications. The result is a perfect fit between :-

- Pump bore and liner outside diameter.
- Liner bore and piston outside diameter.

LINERS SIZES : Hy-chrome liners are available from 5” – 6” in increments of ½” and from 6” – 7” in increments of ¼”.

TRIPLEX PUMP

Hy-Chrome Liners available for following make :-

Oil Well, NATIONAL, GARDNER DENVER, CONTINENTAL EMSCO, INDECO, ROMANIAN.

MODEL OF PUMPS :

A1700 PT / A-1400 PT, A-1100 PT/A-850 PT, 12P-160, 10P-130, PZ-8, PZ-9, PZ-10, PZ-11, F-1600, F-1000, F-1800, F-650, T-1600, 3PN-1000.

LINERS SIZES / MODELS

S. No.	OEM Part Number	Description	Wt
1.	24-0284	OILWELL Piston Rod Clamp PT Series	
2.	2011860	GARDNER DENVER PZ 7/8/9 Valve Cover	18
3.	7403364	Piston Rod Nut 1-1/2"	1.5
4.	0255-54HP	NATIONAL 9P100/10P130 Liner 5-1/2"	130
5.	0255-60HP	NATIONAL 9P100/10P130 Liner 6"	105
6.	0255-64HP	NATIONAL 9P100/10P130 Liner 6-1/2"	95
7.	0255-62HP	NATIONAL 9P100/10P130 Liner 6-1/4"	99
8.	0255-66HP	NATIONAL 9P100/10P130 Liner 6-3/4"	89
9.	0148-64HP	EMSCO F-800/1000 Liner 6-1/2"	67
10.	0148-66CR	EMSCO F-800/1000 Liner 6-3/4"	62
11.	0148-60HP	EMSCO F-800/1000 Liner 6"	90
12.	2145-64HP	EMSCO FB1300/1600 Liner 6-1/2"	140
13.	2145-70HP	EMSCO FB1300/1600 Liner 7"	115
14.	0284-70HP	OILWELL A-1400/1700PT Liner 7"	
15.	0284-64HP	OILWELL A-1400/1700PT Liner 6-1/2"	
16.	0287-64HP	OILWELL A-350/600PT Liner Bi Metal 6-1/2"	
17.	0285-64HP	OILWELL A-850/1100PT Liner 6-1/2"	
18.	0285-70HP	OILWELL A-850/1100PT LINER 7"	
19.	1191-64HP	GARDNER DENVER PZ8/9 Liner 6-1/2"	53
20.	1191-70HP	GARDNER DENVER PZ8/9 Liner 7"	50
21.	10-300-184	OILWELL A850-A1700-PT Wear Plate Liner 7	
22.	0259-70HP	NATIONAL 12P160 Liner 7" Bi Metal	135
23.	0200	GARDNER DENVER PZ 10/11 Piston Rod (Clamp)	31
24.	0191	GARDNER DENVER PZ 8/9 Piston Rod (Clamp Type)	17
25.	2011699	GARDNER DENVER PZ 7/9 Threaded Ring	58
26.	16-0191	GARDNER DENVER PZ 9 Pony Extension Rod (Clamp Type)	
27.	16-0192	GARDNER DENVER PZ7/8 Pony Extension Rod (Clamp Type)	50
28.	U5C-EEF	API 7 Valve Assy	9
29.	U5B-EH	API 6 Valve Assy	8
30.	6ADD-B6	API 6 Valve Seat	14
31.	7DD-B1	API 7 Valve Seat	11

VALVE ASSEMBLY AND COMPONENTS FOR SLUSH PUMPS

Valve Assembly Complete

Suitable for all drilling pressures. Valve assembly consists of valve body, valve insert and knock – on plate. Valve insert is secured to the valve body by a strong knock – on plate nut which minimizes the entry of solids such as lost circulation material under the insert and between the valve striking surface and insert.

The heavy and extra strong integral driving lugs on knock – on plate nut ensure easy assembly and disassembly when changing the valve insert.



The lower valve stem with flat end facilitates holding in the vice for insert replacement without damaging the guide area. The face as well as diameter of the valve body is threaded. Both threads on valve body are coated with anti-seize compound to prevent corrosion. This facilitates replacement of insert.

Selectively hardened lower flange face of valve body transmits severity of impact, if any, to flat cross arms of seat instead of tapered sealing surface. The valve body is placed square and flat on the valve seat. There is no shifting due to heavy load from fluid pressure.

Valve Inserts

Valve inserts are available in Nitrile and Polyurethane material. For low pressure and normal operating conditions, use Nitrile inserts. For high pressure and severe operating conditions, use Polyurethane inserts. During closing, the resilient valve insert makes first contact with the bevel on the seat and absorbs shock.

Valve Seats

Valve seat has precisely ground tapered outside diameter, which is perfectly matched with pump deck taper to provide metal-to-metal seal between high pressure and low pressure. Rigid design of three cross arms acts as a guide to valve stem. It increases metal-to-metal contact between valve body and seat for distributing the impact forces over a large area. It also provides enough flow-through area essential for smooth and knock-free operation of the pump. Wear groove at the junction of bevel sealing surface and flat cross arms indicates limit of permissible wear.

PISTON RODS WITH NUT & LOCK NUT; DUPLEX & TRIPLEX PUMPS

Piston Rods

Piston rods are available in single-piece design or two-piece design depending upon the type of mud pump. For 'L' head pumps such as National and Oil Well brands, two-piece rods are offered to facilitate removal of piston.

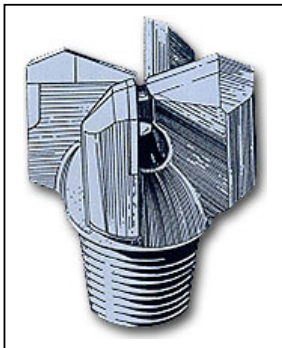
An elastic stop nut is available for tightening the piston on to the piston rod. A specially designed piston rod nut wrench is available to prevent crimping the wall of the splinted elastic stop nut. Other useful piston and rod removal tools are also offered.



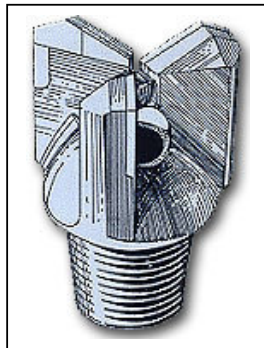
PISTON ASSEMBLY

For Triplex and Duplex mud Pumps Piston cores are made of normalized carbon steel forgings. Clearances of Piston core and liner bore are kept below 010". Piston rubber cup is of fluid king design. It features a stronger lip as compared to the cantilevered sharp lip. It also extends piston and liner life.

DRILLING BITS DRAG TYPE



Chevron 4 Wing



Chevron 3 Wing

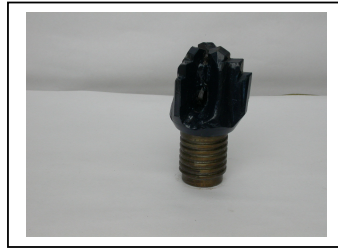


Khalsa Oilfield Equipment provides a variety of drag bits for many types of projects in sizes ranging from 3" to 6 1/2". Our tools are made from 4140 grade alloy steel for dependable services. Each bit is machined from a forging to exacting standards and then tipped with tungsten carbide for long life. Our drag bits range from step bits, for soft and medium formations, to chevron style bits for harder formations.

These Bits are primarily made for shot hole drilling applications. But also have been used to clear the casing, the extra cement after the cementing operations. The Bits are assembled by putting the forgings of wings together. The Pin threads are cut and subsequently backup surfaces for brazing Tungsten Carbide inserts are machined. Mining grade tungsten carbide tips are silver brazed to the Bit Wing face. After sharpening to the required cutting angle the bits are ready for use.



Step Type 3 Wing Bits



Step Type Bit with N Rod Thread



Step Type Bit with 2-3/8" API-Reg Threads



CHEVRON BITS WITH 2-3/8" API-REG THREADS



STEP TYPE COMBINATION BIT PILOT AND REAMER
(NO STANDARD SIZE MADE TO ORDER)



LARGE BIT WITH 3 1/2" API THREADS

FEATURES OF OUR CARBIDE INSERT DRAG BITS

- Behind carbide inserts relief is hand ground for maximum performance
- Carbide inserts are individually BRAZED using 50% nickel silver rod
- Bits we fabricate are welded with high tensile strength 7018 rod.
- Our blades originate from 4140 heat-treated steel forgings.
- Forgings are milled to better seat the carbide inserts
- Select grade tungsten Carbide inserts 3/16" thick are used
- Bits can be built to the gauge tolerances required.

DRAG BITS STEP TYPE (3-WING)

Size	Pin type
2 3/4" - 3 1/2"	4 THD N- Rod
3 3/4" - 5 3/4"	2 3/8" API
4 7/8" - 5 1/8"	2 3/8" API
5 1/4" - 5 1/2"	2 3/8" API
5 5/8" - 6"	2 3/8" API
6 1/8" - 6 1/4"	2 3/8" API
5 1/2" - 6 3/4"	2 3/8" API
5 1/2" - 6 3/4"	3 1/2" API
6 7/8" - 7 7/8"	3 1/2" API
8 " - 9"	3 1/2" API

DRAG BITS CHEVRON (3 WING)

Size	Type Pin
2 3/4" - 3 3/4"	3 THD / 4 THD N-Rod, 2" IF
3 3/8" - 3 3/4"	3 THD / 4 THD N-Rod, 2" IF
3 7/8" - 4 3/4"	2 3/8" API Pin
4 7/8" - 5 1/8"	2 3/8" API Pin
5 1/4" - 5 1/2"	2 3/8" API Pin

DRAG BITS CHEVRON (4 WING)

Size	Type Pin
2 3/4" - 3 1/4"	3 THD/4THD/N-Rod, 2" IF
3 3/8" - 3 3/4"	3 THD/4THD/N-Rod, 2" IF
3 7/8" - 4 3/4"	2 3/8" API Pin
4 7/8" - 5 1/8"	2 3/8" API Pin
5 1/4" - 5 1/2"	2 3/8" API Pin

PISTON ASSEMBLY

For Triplex and Duplex mud Pumps Piston cores are made of normalized carbon steel forgings. Clearances of Piston core and liner bore are kept below 010". Piston rubber cup is of fluid king design. It features a stronger lip as compared to the cantilevered shar lip. It also extends piston and liner life.



WASH PIPE FOR S-500/S-200 MUD SWIVEL

These Wash Pipes are made from solid bar stock, case hardening steel, carburized on the outer surface and hardened. They are ground to mirror finish. Flame spray coated with Nickel, Chrome, Boron Powder wash pipes are also available. These wash pipes render a much longer life as compared to case hardened ones.



SPRAY COATED WASH PIPES

The wash pipes are flame spray coated with Nickle, Chrome and Boron Powder wash pipes are also available. These wash pipes render a much longer life as compared to case hardened ones.

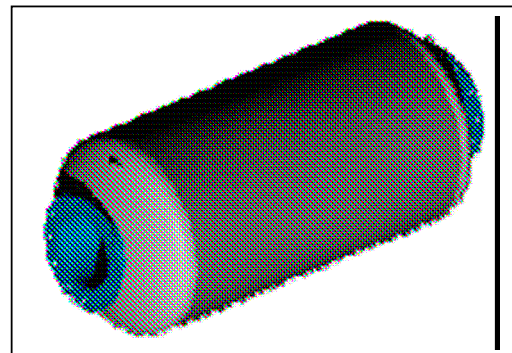
PLUNGERS : In above metallurgy available for all makes & sizes.

FLEXIBLE EXHAUST ADAPTER FOR CAT D399, D98, D397 ENGINE.



The bellow is made of SS 304, 24 SWG Sheet, Hydraulically formed in two ply construction for increased fatigue resistance and service life. The end flanges are welded by pulse tungsted inert gas process.

EXHAUST MUFFLER Exhaust Muffler with ceramic wool insulation jacket for CATERPILLAR D-397, D-398 & D-399 Engine. Part No 2W4076.



SHALE SHAKER SCREENS

1. Scalping Screens Size 4' x 5' AND 4' x 4'

MESH 20 x 20, 40 x 40, 60 x 60 and 80 x 80 are readily available.



2. **Pretension screens, plastic bonded screens for Linear Motion Shale Shaker.** We manufacture multi-layered pretension & plastic bounded screens for Kemtron/Harrisburg Liner Shakers (overall size 1219/718mm).

Brief Manufacturing Process :

- A. The screens are pretension in a jig for duplex screens and both layers secured together with the help of high-density polythene injection molded buttons with the help of a portable extrusion press.
- B. The side hook strip 20 SWG Galvanized sheet is then folded on hydraulic press brake to the required profile.

PORTABLE BORING BAR

We have developed a Portable Boring Bar for insitu repair of valve pot and gasket seat mud cuts of slush pumps used in drilling rigs.

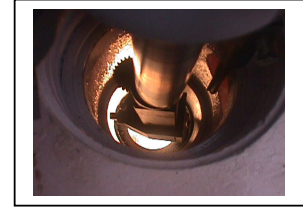
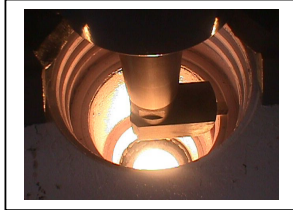
The mud cut fluid end is welded and subsequently machined using this portable boring bar to get a perfect taper of the valve deck and valve cover gasket groove. The various advantages of this machine tool are as under :-

- A. The repair can be carried out at site, without dismantling the fluid end.
- B. Exorbitant transportation cost from field to workshop is totally eliminated.
- C. For isolated projects it is a bare necessity.
- D. Rig shutdown time is reduced drastically.



E. This tool can be adapted to other drill site repair application with minor jig up.

The movable clamp rail is provided a special hinged arrangement to ensure uniform tensioning of the screen. Also it avoids under cutting of basket sides in the event of screen failure, as it does not vibrate loose.



The bearing housing shall be a insert type of facilitate repairs, the complete vibrating mechanism can be separated from the basket assembly if required.

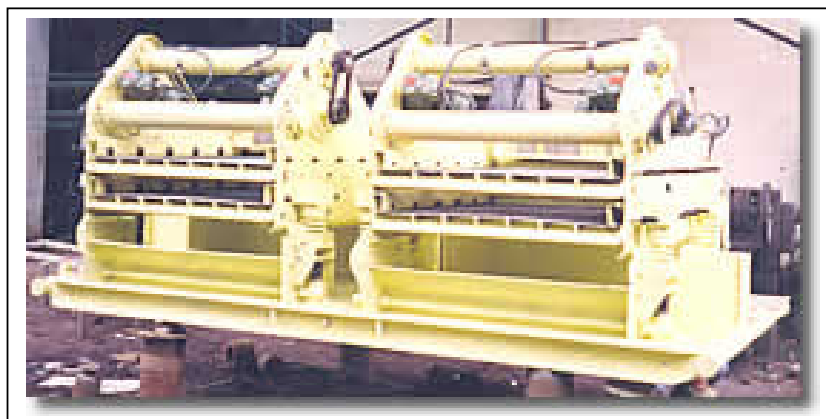
Retrofit Basket for Brandt Scalping Shaker, Features

1. Eccentric Shaft for counter weight hooks weights eliminated.
2. Up Slung screen.
3. Hinged tension rail.
4. Increased screen life.
5. No of decks.
6. Screen size 4' x 5'.

LINEAR MOTION TANDEM SHALE SHAKER

TECHNICAL SPECIFICATIONS

Configuration	:	Tandem (2 deck)
No. of Screen	:	2 per unit (4 total for dual tandem)
Screen types	:	Perforated panel pre-tensioned, fully bonded, hook strips, single and multi-layers.
Screen Area	:	Top Deck : 19 Sq. ft. Bottom deck : 19 Sq. ft. Total 38 Sq. ft. per unit (76 Sq. ft. for dual tandem)
Screen Mesh Size	:	Top panel : 8-20 mesh Lower Panel : 40 through 210
Vibrator RPM	:	1760
G-Factor Generated	:	5.5 <i>without mud weight</i>
Electrical Equipment	:	All components flame – proof for gas group I, IIA, IIB certified by CMRI Dhanbad (India), degree of protection IP55 as per IS : 4691
Construction	:	Skid and deck; carbon steel.
Motor	:	3 HP 440 Volts, 3 Phase, 1400 R.P.M. 50 Hz. Total four Nos. per unit.
Belt Size	:	A40, 3 Nos. per motor. Total 12 Nos per unit.
Shipping Weight	:	Single : 3,400 lbs. Empty. Dual : 4300 kg. Empty. Triple : 10,200 lbs. Empty.



FACTORS EFFECTING PERFORMANCE OF CYLINDER LINERS
(HIGH CARBON HIGH CHROME)

1. **DESIGN** : The sleeved/bimetallic liner consists of a liner sleeve of high chromium white iron which is very hard and equally brittle. It cannot stand internal pressure alone unless it is shrouded by a outer casing of ductile material. To achieve this the sleeve is shrink fitted in a low/medium carbon steel forged shell. The interference required for effecting shrink fit should be such that the compressive stresses induced in the inner sleeve are within its compressive yield strength. If they exceed the material shall yield in compression and thus making micro cracks in the inner surface of sleeve. These cracks under internal pressure cause havoc in the wear of the liner.
2. **METALLURGICAL REQUIREMENTS** : The hardness, Microstructure surface finish should be maintained to achieve maximum wear and corrosion resistance of the Liner.
3. **PROPER INSTALLATION CARE** : To ensure that the Liner Gasket is seated squarely in the linder groove after applying a thin layer of grease, there are not dents in the liner groove and the liner wear plate surface should be cleaned without any indication of any unevenness/wear. Otherwise it shall result in Mud-cut of liner at the groove rendering it useless for further operation the matching piston should be proper with no excessive interference as this shall result in overheating of Piston followed by its premature failure and eventually the liner will get mud-cut. The life of liner and piston are interdependent on each other.
4. **ALIGNMENT OF THE CORSS HEAD W.R.T. LINER AXIS** : Excessive deviation in the alignment of the cross head shall result in uneven wear of liner and eventually premature failure.
5. **MUD PUMP COOLING SYSTEM** : Flushing/cooling of liner and piston is an important factor responsible for life of liner as well as for piston. It should be done as per the Pump's manufacturers recommendation and entry of Mud/abrasive material to be avoided in the flushing liquid. Improper flushing results in less overheating of liner and piston. Eventually resulting in enhanced service life for vital components of the mud pump.
6. Timely change of piston cups shall enhance the life of Piston/liner. The cost of piston is much smaller as compared to Liner and it should be changed before it starts leaking.
7. Mud parameters mainly solid contents should be kept below the maximum permissible limit. High solid contents drastically reduce the life of mud pump expendables.
8. The life in hours of mud pump expendables is inversely proportional to the strokes per minute of the mud pump.

FACTORS EFFECTING PERFORMANCE OF VALVE ASSEMBLY

1. Valve assembly is a component of mud pump fluid end to prevent back flow of fluid (Non return valve). The valve body hammers on the valve seat with loads as high as working pressure multiplied by valve face area. The area of the right cross arms in the valve seat and its tapered surface distributes the heavy load. Insufficient load bearing area will drastically reduce the life of valve body as well as seat. Since valve disc/insert takes the sudden shock load caused by the impact of valve on seat, its quality should be excellent for abrasion, and suitable for working in the required fluid.
2. **METALLURGICAL REQUIREMENTS** : The functional requirements of the valve disc/valve seat are good abrasion resistance and high impact strength. Both these requirements are contrary to each other and can be achieved only in case hardened material.
3. **INSTALLATION CARE** : Worn out valve seat should be removed by proper seat puller and gas cutting should be avoided as far as possible. After removing seat the deck should be washed and wiped clean, free from any solid particles. New valve seat outer surface should be cleaned of any rust preventive with a rag diesel/kerosene soaked in and installed in the valve deck by hammering with a few blows of used piston rod.
4. **MUD PARAMETERS** : The sand/solid contents in Mud have drastic effect on the life of Mud pump expendables. These should be controlled to minimum possible.
5. **TIMELY REPLACEMENTS OF PARTS** : A worn out disc should be replaced immediately. This can be known by hearing the peculiar knocking sound outside the valve pot. If timely replacement is avoided it may result in mud cut of valve, valve seat and eventually the Fluid End.
6. **ENSURING PROPER ALIGNMENT OF MOVING PARTS** : The upper valve guide should be replaced, once it has worn out, otherwise it will not align centrally the valve body resulting in uneven wear of sealing surface and eventually premature failure. If the valve pot has been repaired by rebuilding and subsequent machining after mud cut, concentricity of the valve pot machined surface w.r.t. its axis be ensured.
7. **HYDRAULIC REQUIREMENTS** : To meet the requirement of higher discharge, the Pump SPM is increased. The service hours of the components will be decreased due to severity.
8. To get a prolonged trouble free life of valve Assembly, change both valve and valve seat together after first sign of wear. A worn out valve should never be put on a new seat and vice versa. Valve and seats are only compatible among similar make. Interchanging of components of different make result in decreased service life due to un-matching of load bearing surfaces.

FACTORS EFFECTING LIFE OF SHALE SHAKER SCREENS

OPERATIONAL PARAMETERS

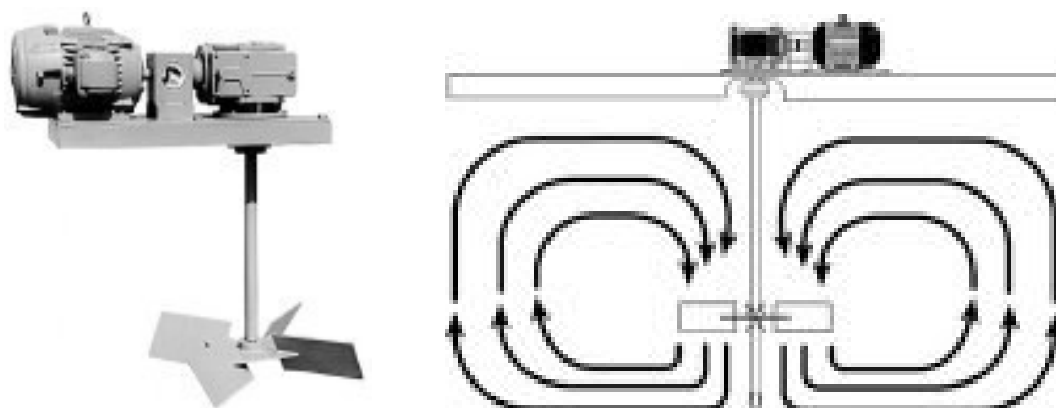
1. Maximum Particle Size.
2. Discharge of Mud.
3. Specific Gravity.
4. Screen Mesh Size.
5. Clogging Properties of Mud.
6. Hardness of Solids.

CONDITION OF EQUIPMENTS

1. Tension bolts.
2. **Springs** :
 - a) Rating.
 - b) Free Solid Length.
3. Screen Cushions.
4. Tensioning of Screen.
5. Condition of Bearings.
6. **Vibration Pattern of Equipment** :
 - a) Amplitude.
 - b) Frequency.
 - c) Mode.

MUD AGITATOR WORM GEAR TYPE

MODEL : KOE-AGIW



Specifications

- Low profile design to allow for positioning mud-conditioning equipment over mud tanks. Maximum overall height above tanks is 16 inches.
- Lightweight, but sturdy construction with the highest torque rating in the industry. Example: 15 hp KOE Agitator weighs 246.4 kg compared to industry average of 831.8 kg) for competitive units (excluding shaft and impeller in weight comparison).
- Available in 10, 15 & 20 hp models.
- Oversized shaft bearings are used for longer gearbox life and lower maintenance requirements.
- Cast iron housings are one-piece, reinforced and ribbed for extra strength.
- Detachable impeller shaft for ease of servicing without disassembling unit.
- Simple mounting. Agitator base rests on tanks structural cross beams held by six bolts.
- Electric motors: ZONE 1 & ZONE 2 and gas group I, II and II B , flame -proof electric motors are available in 50 or 60 hz.
- All internal shafts are heat-treated and ground for high loading capacity. No grease fittings.
- All internal TMLL bearings run in oil.
- Designed for a maximum 20 lb/gal (2.4 specific gravity) drilling mud.
- Gearbox coupled to agitator shaft with solid shaft to shaft coupling ensuring perfect alignment.

COMMON OIL FIELD SCREENS

MESH	WIRE DIAMETER (INCHES)	OPENING		AREA	API DESIGNATION
		INCHES	MICRONS		
8x8	.028	0.97	2464	60.2	8x8 (2464x2464, 60.2)
10x10	0.25	0.75	1905	56.2	10x10 (1905x1905, 56.3)
12x12	0.23	.060	1505	51.8	12x12 (1524x1524, 51.8)
14x14	0.20	.051	1295	51.0	14x14 (1295x1295, 51.0)
16x16	0.18	0.445	1130	50.7	16x16 (1130x1130, 50.7)
18x18	0.18	0.376	955	45.8	18x18 (955x 955, 45.8)
20x20	0.17	0.33	838	43.6	20x20 (838x838, 43.6)
20x8	0.020 / .032	.033/.093	762/2362	45.7	20x8 (762 x 2362, 45.7)
30x30	.012	.0213	541	40.8	30x30 (541 x 541, 40.8)
30x20	.015	.018/.035	465/889	39.5	30x20 (465 x 889, 39.5)
35x12	.016	.0126/.067	320/1700	42.0	35x12 (320 x 1700, 42.0)
40x40	.010	.015	381	36.0	40x40 (381 x 381, 36.0)
40x36	.010	.0178/.015	452/381	40.5	40x36 (452x381, 40.5)
40x30	.010	.015/.0233	381/592	42.5	40x30 (381 x 592, 42.5)
40x20	.014	.012/.036	310/910	36.8	40x20 (310x 910, 36.8)
50x50	.009	.011	279	30.3	50x50 (279x279, 30.3)
50x40	.0085	0.115/.0165	200/406	31.1	50x40 (200x406, 31.1)
60x60	.0075	.0092	234	30.5	60x60 (234x 234, 30.5)
60x40	.009	.0077/.016	200/406	31.1	60x40 (200 x 406, 31.1)
60x24	.009	.007/.033	200/830	41.5	60x24 (200 x 830, 41.5)
70x30	.0075	.007/.026	178/660	40.3	70x30 (178x 660, 40.3)
80x80	.0055	.007	178	31.4	80x80 (140 x 178, 31.4)
80x40	.007	.0055/.018	140/460	35.6	80x40 (140 x 140, 35.6)
100x100	.0045	.0055	140	30.3	100x100 (140 x 140, 30.3)
120x120	.0037	.0046	117	37.9	120x120 (117x117, 30.9)
150x150	.0026	.0029	105	37.4	150x150 (105 x 105, 37.4)
200x200	.0021	.0024	74	33.6	200x200 (74,x 74, 33.6)
250x250	.0016	.0024	63	36.0	250x250 (63x 63, 36.0)
325x325	.0014	.0017	44	30.0	325x325 (44x44, 30.0)

LIST OF PLANT & MACHINERY

A. TURNING.

1. Lathe machine lb. 25 Centre distance 3000mm, with hydraulic copy turning attachment.
2. Lathe machine Enterprise 1330 centre distance, 1000mm with all attachments.
3. Lathe machine Shimoga 2 (Mysore Kirlosker), Centre distance 2500mm.
4. Lathe Centre distance 2500mm.
5. Mysore Kirlosker Shimoga 3.
6. Lathe machine Enterprise 1550, admit between centre 1500mm.
7. Lathe machine J.C. Weisser West Germany.
8. Boring Machine.
9. Lathe cum Drill cum Boring Russian.
10. Russian lathe with variable height headstock.
11. Diachi Japan four in one tool room lathe.
12. Tool Room lathe PTC OKHLA.
13. Lathe South Bend USA 2 metre ABC.
14. Lathe HMT H-22 make 1.00M ABC
15. Lathe HMT H-22 make 1.50 ABC.

B. MILLING & SHAPING.

1. Vertical Milling Machine.
2. Universal Milling machine.
3. Shaping machine with Stroke 18".
4. Radial Drilling machine 1" Capacity.
5. Pillar Type drill machine 2" capacity Praga.
6. Universal Milling machine Brown & Sharpe USA.
7. Universal Milling machine no-2 Cincinnati.

C. GRINDING MACHINE.

1. Cylindrical Universal Grinding machine Centre distance 1300mm.
2. Lathe Grinding Attachment.
3. Two bench Grinders.
4. Taper Grinding Machine.
5. Hydraulic Cylinder Honing machine, Bore 8", Stroke 24" (2 Nos).
6. Bore Grinding Machine.
7. Hydraulic honing Machine Bames drill USA Bore 8" stroke 48".
8. Cylindrical grinder CHURCHILL USA.

D. **FABRICATION FACILITIES.**

1. Profile Flame cutting machine.
2. 15 KVA Welding A.C. Transformer.
3. Oxy Acetylene Brazing set with pre-heating Torch.
4. Sheet Bending Press.
5. Hand Shearing machine.
6. Spot Welding machine (ENGLISH- Phillips make).
7. Pre-tensioning Jig for wire cloth of Shale Shaker Screen.
8. Pretension layered screen fabricating machine for LMSS.
9. DC Welding Rectifier 400 amps make Sweden.
10. Hydraulic Press 100 Tons.
11. E.O.T. Crane SEKIGHARA Japan 5 Tonne.
12. Demag Germany 5 Tonne Electric Hoist.
13. Hydraulic Press Brake.
14. Flame Power Spray Gun for special coatings.

E. **HEAT TREATMENT FACILITIES.**

1. Oil Field Muffle Furnace for case carborising.
2. Oil Field Muffle Furnace for salt bath.
3. Electric Muffle Furnace 0-1300 C.
4. Quenching Oil Tank Capacity 15000 ltrs.
5. Air Blast Tunnel for Air Quenching.

QUALITY CONTROL INSTRUMENTS & EQUIPMENTS

1. Working and inspection Gauges for items on Rate Contract viz. Plug & Ring Gauge.
2. Vernier Calipers of various sizes from 200mm to 1000mm.
3. Micrometers from 0 to 300mm (Inside & outside).
4. Cylinder Bore gauge 50 to 400mm.
5. Surface Plate 24" x 24".
6. Sine Bar.
7. Two set of slip gauge of A+ Accuracy.
8. Height Vernier.
9. Depth Micrometer.
10. Rockwell hardness Tester with various fixtures for our products (Bench Model).
11. Portable Poldi Hardness Tester.
12. Digital & Analogue Temperature indicator.
13. Temperature Recorder for Monitoring soak period of case carburising operation.
14. Metallurgical Microscope.
15. Hydraulic test pump 7000 PSI.
16. Two axis measuring traveling microscope.
17. Surface finish comparison blocks.
18. Universal vibration measuring instrument.
19. Tachometers 3 Nos. for RPM measurement.
20. Thermocouple Calibration set.


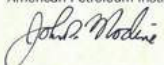
COMPOSITE PRODUCT LIST

Assy Description.	Part Description	OEM Part No
A-1700/850/1400 PT / 1100 PT Oil Well	Clamp Complete	16-484-114
PZ-8 / 9 Pump Gardner Denver	Cover Valve	2011660
Drag Bit	Drag Bits 3 Blade 4-1/2"	F3WY
Drag Bit	Drag Bits 3 Blade 4-1/8"	F3WZ
Drag Bit	Drag Bits 3 Blade 4-3/4"	F3WX
Drag Bit	Drag Bits 4 Blade 4-1/2"	F4WY
Drag Bit	Drag Bits 4 Blade 4-1/8"	F4WZ
Drag Bit	Drag Bits 4 Blade 4-3/4"	F4WX
Mud Cleaner screens 41"x27" Original Derrick DX 24 thru DX 110H	DX 24 thru DX 110H	
P-Rod & Nut A-700	Elastic Stop Nut	20-150-001
Caterpillar Engine D-398 / 397 / 399	Exhaust Muffler	2W4076
Caterpillar Engine D-398 / 397 / 399	Flexible exhaust adopter	5L6297
Fluid end Boring Bar Portable	For Repairing fluid end of mud pump	
10P-130 National	Liner 10P-130 5-1/2"	L4227
10P-130 National	Liner 10P-130 6"	L4247
10P-130 National	Liner 10P-130 6-1/2"	LU/95/37/7
10P-130 National	Liner 10P-130 6-1/4"	L4257
10P-130 National	Liner 10P-130 6-3/4"	LU/95-37/8
F-1000/800 C Emsco	Liner 6- 1/2"	S16717-62
F-1000/800 C Emsco	Liner 6- 3/4"	S16717-66
F-1000/800 C Emsco	Liner 6"	S16717-60
F-1600 C Emsco	Liner 6 1/2"	
F-1600 C Emsco	Liner 7"	
A1400/A1700PT Oil Well	Liner A1400/A1700PT 6-1/2"	07-326-651
A1400/A1700 PT Oil Well	Liner A1400/A1700 PT 7"	07-326-700
A-600PT Oil Well	Liner A-600PT 6-1/2"	07-329-650
A-850/1100PT Oil Well	Liner A-850/1100PT 6- 1/2"	05-330-651
A-850/1100PT Oil Well	Liner A-850/1100PT 7"	05-330-700
PZ-9 Gardner Denver	Liner PZ-9 6-1/2"	200-PZJ-456
PZ-9 Gardner Denver	Liner PZ-9 7"	207-PZJ-456
A-1700/850/1400 PT / 1100 PT Oil Well	Liner Wear Plate	10-300-184
12P-160 National	Liners 12P-160 6-1/2", 7"	L-4467
3PN-1300/1000	Liners 3PN-1300/1000 6-3/4"	617-17-01-102
3PN-1300/1000	Liners 3PN-1300/1000 6-2"	617-17-01-102E
3PN-1300-1000 Romanian	Liners 3PN-1300-1000 6-1/2", 7"	617-17-01-107E
P-Rod & Nut A-700	Lock Nut	49-003-372
A-700 duplex, oil well	P-Rod & Nut A-700	
PZ-10 / 11 Pump Gardner Denver	P-Rod & Nut for PZ - 10 / 11 Pump	200PZL060A
PZ-9 Pump Gardner Denver	P-Rod & Nut for PZ-9 Pump	IPZ 183
PZ-8 / PZ-9 Gardner Denver	Rod Extension	IP0183
PZ-8 / PZ-9 Gardner Denver	Ring Valve Cover	2011699
Mud Cleaner screen Brandt Mesh 100 thru 200	Screen 4' x 4' Mesh 100 thru 200	
Screen Swaco Shale Shaker	Screen 4' x 4' Mesh 20,40,60	
Screen Brandt Shale Shaker	Screen 4' x 5' Mesh 20 thru80	212334108 (MC)
Screen Brandt Shale Shaker With backup of 08 mesh	Screen 4' x 5' Mesh 60 thru100	212334108 (MC)
Dual/Trippl Tandem Shale shaker	Shale shaker Assembly	
Dual/Trippl Tandem Shale shaker	Shale shaker Basket	
API-6 Valve pots	Valve 4 Jaw (mission type)	U5B-EH
API-7 Valve Pots	Valve 4 Jaw (mission type)	U5B-EE
A-600 PT Oil Well	Valve Assy, API-6	20-160-171
33-5-RSL Oil Well	Valve Body 2-1/2"	08-018-382
A-1400PT / 1100 PT Oil Well	Valve Body A-1400 - API 7	20-160-162
A-600 PT Oil Well	Valve Disc, API-6	20-160-171
33-5-RSL Oil Well	Valve Insert 2-1/2"	991322005
A-1400PT / 1100 PT Oil Well	Valve Insert (Buna-Nitrile) A-1400 - API 7	20-180-018
33-5-RSL Oil Well	Valve Nut 2-1/2"	08-018-378
A-1400PT / 1100 PT Oil Well	Valve Nut A-1400 - API 7	20-860-015
A-600 PT Oil Well	Valve Nut, API-6	20-160-171
33-5-RSL Oil Well	Valve Seat 2-1/2"	08-216-025
API-6 Valve Pots	Valve seat 4 Jaw (mission type)	6ADD-B6
API-7 Valve Pots	Valve seat 4 Jaw (mission type)	7DD-B1
A-1400PT / 1100 PT Oil Well	Valve Seat A-1400 - API 7	20-160-105
A-600 PT Oil Well	Valve Seat, API-6	20-160-171
33-5-RSL Oil Well	Valve Spring 2-1/2"	08-516-070
A-1400PT / 1100 PT Oil Well	Valve W with Nut & Buna-N insert	20-160-164
A-1400PT / 1100 PT Oil Well	Valve W with Nut & Polyurethane insert	20-160-163

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