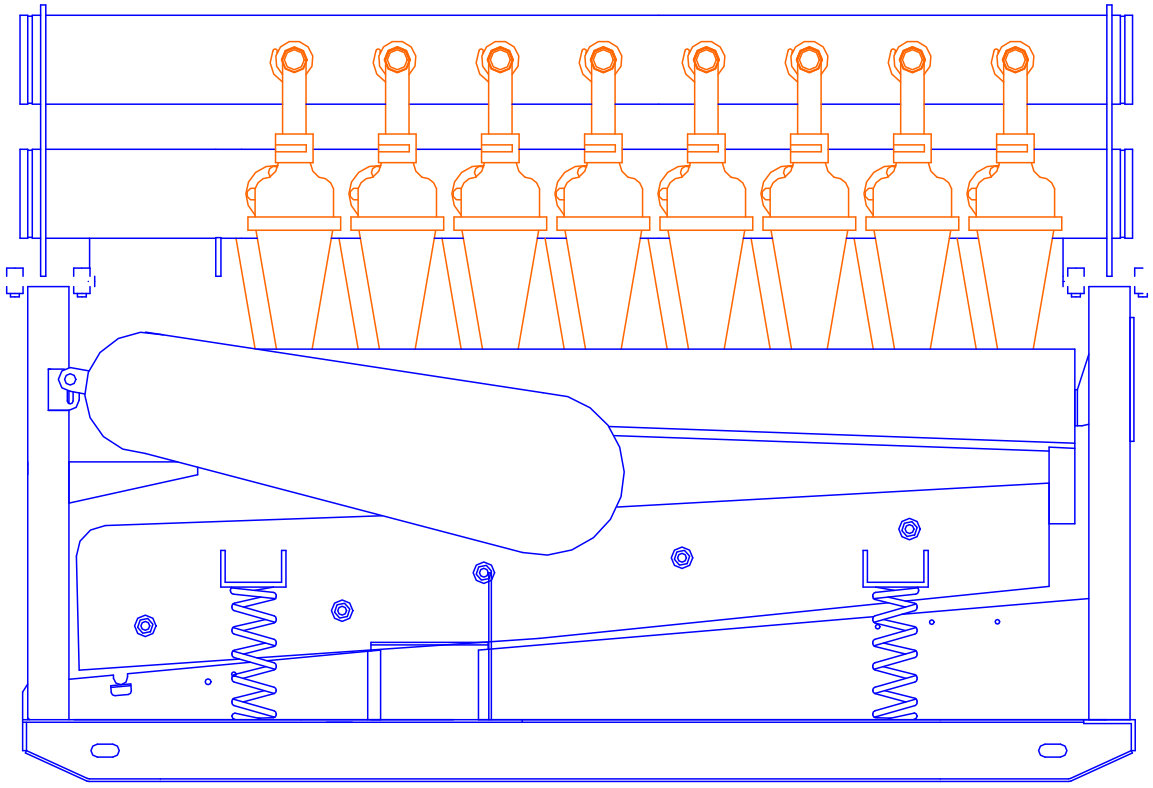
NATIONAL OILWELL

HBW SERIES ORBITAL MOTION Mudcleaners



INSTALLATION, OPERATION, & MAINTENANCE MANUAL

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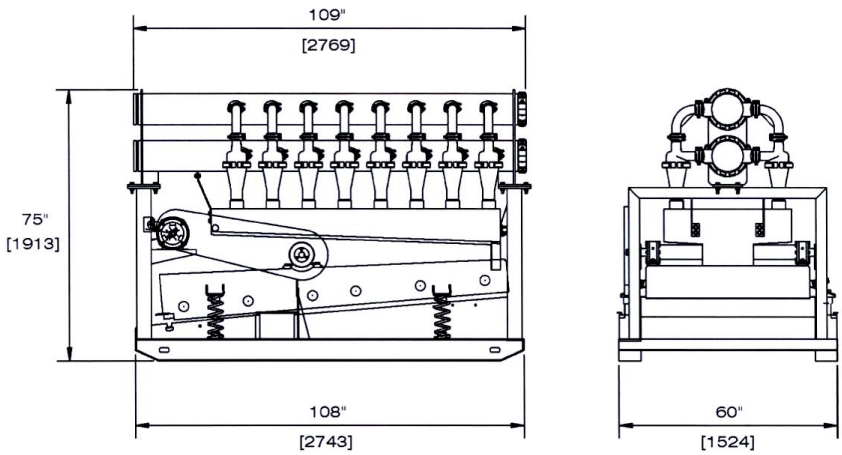
NATIONAL OILWELL
HOUSTON, TX
TOLL FREE: 1-877-690-4721

HBW Series Mud Cleaners



HBW SERIES MUD CLEANER CAPACITY:

Models of the HBW Series Mud Cleaner and their capacities are listed below:

MC-0640-08-5C
Capacity.....640 gpm [145 m^3/hr]
Manifold.....8 cone

MC-0800-10-5C
Capacity.....800 gpm [181 m^3/hr]
Manifold.....10 cone

MC-0960-12-5C
Capacity.....960 gpm [218 m^3/hr]
Manifold.....12 cone

MC-1120-14-5C
Capacity.....1120 gpm [218 m^3/hr]
Manifold.....14 cone

MC-1280-16-5C
Capacity.....1280 gpm [218 m^3/hr]
Manifold.....16 cone

TECHNICAL SPECIFICATIONS:

Motor
Quantity.....One (1)
Weight each.....120 lb [54 kg]
Horsepower.....5 Hp [3.7 kW]
Classification.....Explosion proof
.....UL, CSA, CE
.....Class I, II
.....Group C,D,E,F,G
Voltage/Frequency.....Multiple Available

Motor Starters
Quantity.....One (1)
Type.....Manual
Classification.....Explosion proof
.....UL, CSA
.....Class I, II
.....Group C,D,E,F,G

Vibrator Assembly
Drive.....Belt/Sheave
RPM.....1500 rpm
G-force.....3 G's
Lubrication.....Grease

Isolation System
Painted carbon steel springs

DESILTER CONE SPECIFICATIONS:

Standard Hydrocyclone: 5" CTX
Part No. 506-220
Nominal Inner Diameter.....5" [127 mm]
Material.....Cast Urethane
Capacity.....80 gal/min [18 m^3/hr]
d50 Cutpoint .....25 μ
Weight each.....20 lb [9.1 kg]
Inlet.....2 Inch Grooved End
Overflow.....2 Inch Grooved End

Optional Hydrocyclone: 5" HBW
Part No.....05-C-BT
Nominal Inner Diameter.....5" [127 mm]
Material.....Cast Urethane
Capacity.....80 gal/min [18 m^3/hr]
d50 Cutpoint .....25 μ
Weight each.....20 lb [9.1 kg]
Inlet.....1.5 Inch Flange (Four Bolt)
Overflow.....2 Inch Grooved End

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NATIONAL OILWELL

0001-0487-07 Rev. A

SAFETY FIRST
CAUTIONS AND GENERAL SAFETY RULES

This manual contains important information concerning installation, operation, and proper maintenance of the HBW Series Orbital Motion Mudcleaners. To prevent injury to personnel or equipment damage, this manual should be read by those responsible for the installation and operation of the equipment. In addition, the safety precautions below should be followed at all times.

- **TURN OFF. LOCK OUT, and TAG OUT** the electrical power supply to the unit before working on the electrical system or vibrator motors.

- **Lift the equipment only at lift points** detailed in this manual and use properly rated slings capable of handling the equipment weight. Look for a build up of dried solids or stored equipment in or on the equipment that may cause the lift load to exceed those listed in this manual.

- The structure on which the unit is to be installed must be capable of supporting the operational (wet) weight listed in this manual.

- The unit should only be installed in an area where walkways, lighting, and handrails allow safe access for screen changes and periodic maintenance.

- **Remove shipping brackets prior to start up**, and replace brackets before shipping the unit to prevent damage to the float mounts.

- Never make weld repairs to the shaker basket or attach external loads, like cuttings chutes, to the vibrating components of the equipment.

- Never lay tools or equipment on the screen bed. Be aware that any object that is placed on or falls into the screen bed will be conveyed forward and discharged once the shaker is placed in service. Falling objects discharged from the screen bed can cause injury to persons working on or below the unit.

- Inspect the unit regularly, and replace damaged or worn components only with parts supplied by the original equipment manufacturer.

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LIST OF ILLUSTRATIONS

SECTION 1 – INTRODUCTION

Role of Mudcleaner

Your National Oilwell Mudcleaner has been designed to provide extended service life in all oilfield related applications. Each unit is constructed of ¼" plate built on an oilfield type skid. The vibrating assembly is powered by an explosion proof motor. (50 or 60 Hertz – 3 phase).

Drilling operations are influenced by an ever-changing variety of conditions and special considerations may arise which are not covered in this manual. Should this occur, please contact your nearest National Oilwell representative.

New Unit Inspection

Each National Oilwell Mudcleaner is inspected prior to shipment. On your receipt of a new unit, be sure to check for any damage, which may have occurred during shipment.

Shaker Specification

The unit utilizes either 4" or 5" cones to handle the bulk processing of the fluid. The discharge of the cones is then processed by the screen for the final cut. The number of cones used determines the flow rate capacity.

The National Oilwell Mudcleaner uses a 3 H.P. explosion proof motor to drive the vibrating basket. The vibrator unit is located above the center of gravity.

Depending on liquid phase, solids content and plastic viscosity of the fluid the Mudcleaner can use, as fine as 325 mesh screen and still give desired solids removal, reclamation of fluid and chemicals in addition to most of the barite particle.

SECTION 2 - INSTALLATION

Electrical

Connect electrical service to the starter box. It is recommended that the user provide a fused switch in accordance with electrical codes.

Check motor voltage requirements before connecting any power cable to the connection box No controllers are provided with the National Oilwell Mudcleaner. It is strongly recommended that user refer to the National Electrical Code, Article 430, on motor circuits and controllers.

Full load current ratings for the three phase induction type squirrel cage motor should be read from actual motor nameplates before sizing any over current protection or circuit interrupting equipment.

The electric motor provided with National Oilwell Mudcleaner bears a label, which certifies listing with Underwriters' Laboratories, Inc. for Class 1, Group D hazardous locations. It is strongly recommended that user refer to the National Electrical Code, Article 501, on Class 1 locations so as to select proper equipment for connection of the motor. Make sure motor is securely grounded.

Equipment shall be visually inspected and thoroughly cleaned of any dirt, debris, or foreign material accumulated during transportation.
All field wiring and power cables shall be checked for connection to proper terminals.

All components shall be megger tested before being energized.

Make continuity checks of all circuits simulating actual operating conditions as far as possible without energizing equipment.

All motors shall be checked for proper lubrication.

All motors shall be checked for proper rotation after insulation test and lubrication check and before coupling the load.

Motor starter overload relay heaters shall be properly matched with motor nameplate information.

All seals shall be checked to determine if installed correctly and properly filled with approved sealing compound.

B. Welding Precautions

If electric welding is being done on or near the unit, care should be taken to properly ground the welding unit so that no current is allowed to pass through the electric motor. Doing so could cause damage to the motor.

C. Location

The unit should be located so that easy access is available for inspection and for normal maintenance such as screen tensioning or replacement, bearing lubrication, etc.

SECTION 2 - INSTALLATION

D. Piping

The correct piping system will have solids laden fluid from supply pump enters the units feed manifold that supplies the cone(s)' side entrance. The discharge manifold will receive the processed fluid from the cone's top exit.

The discharge piping should not extend too far below the desilter feed manifold or else siphoning effect may be created. This condition will have an adverse effect on the performance of the cones. If a "siphoning" condition is created, installation of a "vent" pipe on the discharge manifold will solve this problem.

E. Foundation

The foundation should be substantial to give rigid support for the unit base. The unit should be level in both directions. This is necessary to promote equal distribution of fluid on the screen.

SECTION 3 - OPERATIONS

A. Records

Maintain records whenever possible. This will provide information when ordering spare parts and for evaluating performance. Information included should be:

- Mudcleaner description and serial number.
- Frequency of operation.
- Service conditions.
- Records of maintenance, including parts usage and general condition of the unit.
- Nomenclature and part number of the replacement items.

B. Screen Procedures

- **Condition and Tensioning**

Proper screen tension will help maintain the optimum screen service life. Periodic checks of each tension bolt and making the necessary adjustments to maintain proper tension is a good practice to establish.

- **Adjustments of tension bolts should proceed as follows:**

After assembling the springs, bolts, nuts, washers and the screen to be loose but straight and centered position, start with the inside spring, 1/8" (3.2 mm). Proceed to the outer springs and repeat 1/8" (3.2 mm) compression.

Return to inside springs and adjust 1/16" (1.6 mm) and repeat with outside springs accordingly.

Run shaker several minutes with load.

Tighten springs in same series until there is a clearance between the individual coils of 1/8" inch.

Run the shaker twenty minutes and repeat last adjustment.

Inspection of screen condition is necessary to maintain proper operating conditions. If tears in the screen, sagging, or looseness etc. are noticed, the screen should be re-tensioned or replaced as needed.

It is always best to maintain your mud system in such a manner that will avoid allowing trash or debris of any sort to enter the system and possibly cause problems with the cones or other equipment.

Periodic clean out and inspection of each cone will benefit the longevity of the unit and ensure efficient, economical service.

Wash down screens, basket assembly, etc. when the unit is not in use. Avoid accumulation of dried solids.

SECTION 3 - OPERATIONS

- **Installation**

1. Align the screen's rail hooks with the tension rail.

2. After positioning the screen until it is straight and centered, begin tightening the inner tension nuts, compressing one spring and then the other, 1/8" (3.2 mm).

3. Proceed to the outer tension nuts and repeat the 1/8" (3.2mm) compression of the springs.

4. Return to the inside tension nuts and tighten until springs are compressed an additional 1/16" (1.6mm) and repeat on outside nuts accordingly.

5. Run the shaker several minutes without a load.

6. Tighten all nuts, in same series, until there is a clearance of .012" (.3mm) between the coils of each spring.

7. Run the shaker twenty minutes and then repeat last adjustment.

- **Removal of a Shaker Screen**

1. With a 1" wrench, loosen all tension nuts until all tension on the screen is alleviated.

2. Slide the screen out and remove from the basket.

3. Inspect the rubber cushions on the support rails for any condition that may be detrimental to screen life (embedded foreign material, tearing, excessive wear, etc.).

4. Clean support rails prior to installing the cushion rubber.

5. Check that each rubber cushion is properly seated on each rail.

SECTION 4 - MAINTENANCE

A. Motor Maintenance

All bearings consume a very small amount of lubricant, but enough must be present at all times to avoid damage. The length of time a bearing can run without having grease added or replaced will depend on the operating conditions.

The motor represents a vital part of the equipment and should be treated as such. Therefore, certain steps should be taken to preserve these units.

For best results, follow the below maintenance procedures:

Re-lubricate every 2,000 hours. Complete renewal of grease can be accomplished by forcing out the old grease with the new. Thoroughly wipe the housing around the filler and drain plugs. Remove filler drain plugs and free drain hole of any hardened grease which may have accumulated. Add new grease through filler hole until it starts to come out of drain hole. (The motor should not be operating.)

Use Shell Oil Company Alvania #2 or equivalent grease that has a 200 degree F safe operating temperature.

Note: If lubrication instructions are shown on motor, they will supercede this general instruction.

Refill only with a fresh, uncontaminated lubricant. Before replacing the drain plugs, run the motor for ten (10) to twenty (20) minutes to expel any excess grease. Thoroughly clean filler and drain plugs and replace them in holes A and B.

B. Lubrication

All National Oilwell Mudcleaners are shipped with the vibrator bearings lubricated. Each set of bearings located at the ends of the vibrator shaft has a grease fitting that allows re-lubrication while in service.

Fifteen shots of grease every 30 days will suffice for re-lubrication. Care must be taken to use grease that is compatible with the original grease. A medium temperature, lithium based grease such as SR1 #2 (Chevron) or Alvania #2 (Shell) is recommended. **Do not use greases containing hard fillers such as molydisulfide.**

Bearing Temperature – Bearing operating temperatures should not be higher than 130 – 140 **F**. Higher temperatures may occur for short periods during start-up.

SECTION 4 - MAINTENANCE

C. Assembly of a Vibrator Assembly

- Inspect the packing in both ends of the tube assembly. Replace if necessary.
- Insert the shaft into the tube assembly. (Note: Inner snap ring should be on shaft.)
- Install bearings into the bearing housing. Slide bearing/bearing housing (with gasket) onto the shaft – both ends.
- Install the outer snap ring on the drive side of the shaft. Inspect packing in outer retainer plates – replace if necessary.
- Install outer retainer plates (with gaskets) secure plates with the 3/8" hex head screws and tighten screws.
- Mount vibrator assembly onto basket.
- Install mounting bolts and tighten with 1-1/8" wrench.
- Slide eccentric weights onto shaft. Tighten eccentric weight retainer screw (square head) and install the eccentric weight guard.
- Tighten the 3/8" nuts that secure the guard to the basket.
- Replace the basket sheave (on the drive side) onto the shaft.
- Be certain the ¼" square key is in place.
- Install the ¼" cap screws into the sheave but do not tighten at this time.
- Place a straight edge along the side of the motor sheave and basket sheave. Tap the basket sheave as needed to align with motor sheave.
- With a 7/16" wrench, tighten the ¼" screws on the basket sheave.
- Replace the V-belts.
- With a ¾" wrench, turn the screw on the side of the motor mount in a counter clock-wise direction. This will increase the tension in the V-belts.
- Place a straight edge on the edge of the motor and basket sheaves as shown below. Depress the V-belt in the middle of the span between the sheaves. Check the clearance between the belt and the straight edge. Continue to adjust the motor mount screw until the clearance is 1-1-1/2".
- With a 9/16" wrench, tighten the 3/8" nuts on the motor mount. Replace the belt guard.
- With a 9/16" wrench, tighten the 3/8" screws to secure the belt guard to the supports.
- Review the disassembly and assembly procedures making sure each step has been completed.
- Reconnect electrical power to unit.
- Test the unit.

SECTION 4 - MAINTENANCE

D. Disassembly of a Vibrator Assembly

- Disconnect power to unit.
- With a 9/16” wrench, loosen the 3/8” nuts at the base of the motor.
- With a ¾” wrench, turn the hex head screw at the side of the motor mount in a clockwise direction to relieve tension on the V-belts.
- With a 9/16” wrench, remove the 3/8” screws that secure the belt guard to the support.
- Remove the 3/8” screws that secure the eccentric weights guard.
- Remove the belt guard and the eccentric weights guard.
- Remove the V-belt.
- With a 7/16” wrench, remove the three ¼” screws from the basket sheave. Tap lightly to slide off shaft.
- With an adjustable wrench, loosen the square head screws that secure the eccentric weights to the shaft. Remove eccentric weights.
- With a 1-1/8” wrench, remove the hex head bolts that secure the bearing housing assembly to the basket.
- Remove vibrator assembly from basket.
- With a 9/16” wrench, remove the 3/8” hex head screws that secure the outer retainer plate to the housing tube assembly.
- With a large pair of snap ring pliers, remove the outer snap ring (Drive side only).
- Slide bearing housing and bearing off of the shaft.
- Push the bearing out of the housing.
- After both bearing housings have been removed, the shaft can be removed from the housing tube. (Note: One snap ring will still be on the shaft.)

SECTION 4 - MAINTENANCE

D. Cone Assembly

After removal of the cone from the unit, disassembly is relatively easy. The National Oilwell 4" Desilter cone is comprised of four components. The top half has internal threads that the bottom half screws into. The apex is located in the socket at the bottom of Item 2 and is held in place by the apex holder. You may notice that the apex holder has tapered surface that contracts the apex when assembled. By tightening the apex holder, the tapered surface in contact will cause the apex opening to constrict, thereby allowing some "tuning" of the underflow spray by alternating the apex diameter.

There are two designs of the National Oilwell 5" Desilter cones. One is the threaded design much like the 4" cone and is assembled the same way. The 2nd utilizes a clamp to hold the top and bottom halves of the cone body together. The apex holder of this design screws "into" the bottom of the cone as opposed to "onto" the cone as on the first design. In both cases, tightening the holder causes the "constriction" of the apex.

The assembly and disassembly of each of these is basically simple. Inspection of the lower half of a cone can be made without removal of the entire cone after following shutdown procedures.

Adjustment of the clamp bands should be tight enough to firmly hold the two sections together and should not be over tightened. Over tightening of the apex holder will eventually cause a clogged apex and defeats the performance of the cone.

E. Cone Installation & Removal

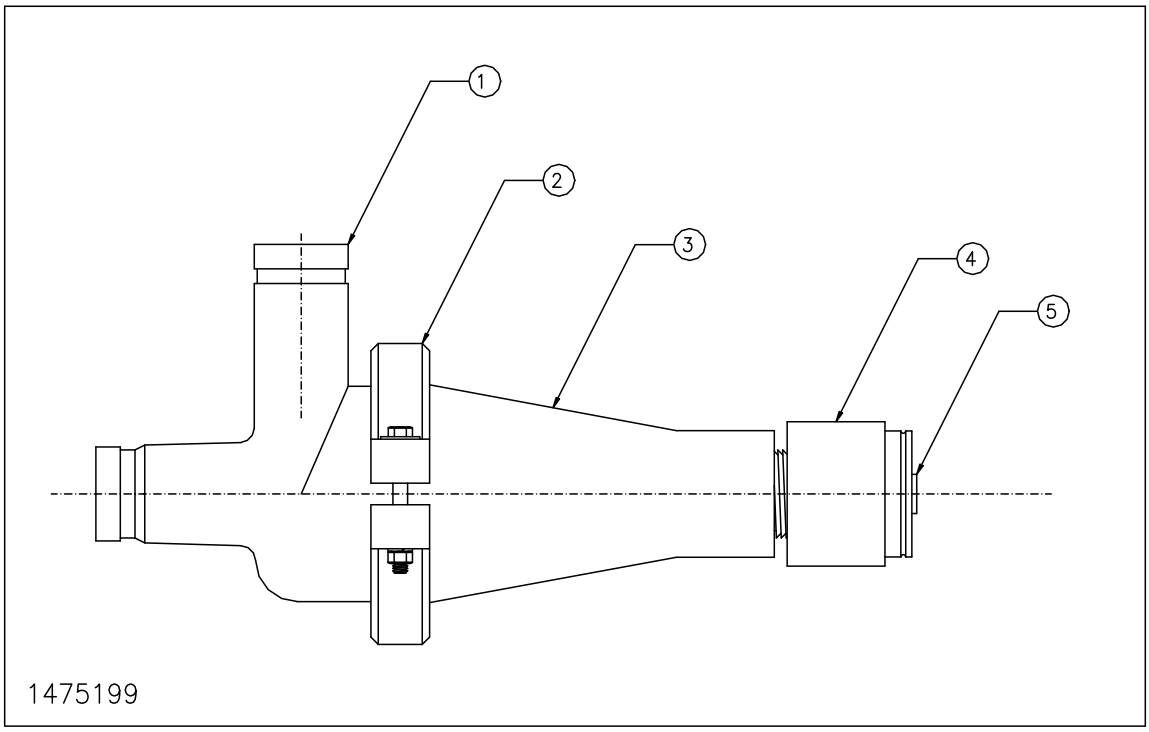
Before removal of any or all of the cones, be certain to shut off pump supplying the unit. Close the shut-off valve between the pump and the desilter.

Remove vitualic clamps and/or mounting bolts that hold the cone to the feed and discharge manifolds.

The unit can be put back into operation with a cone removed after the exposed ports are each sealed with a blank and properly clamped or bolted so no leaking of fluid will occur. The unit must be shutdown again for reinstallation of a cone.

SECTION 6 – PARTS LIST

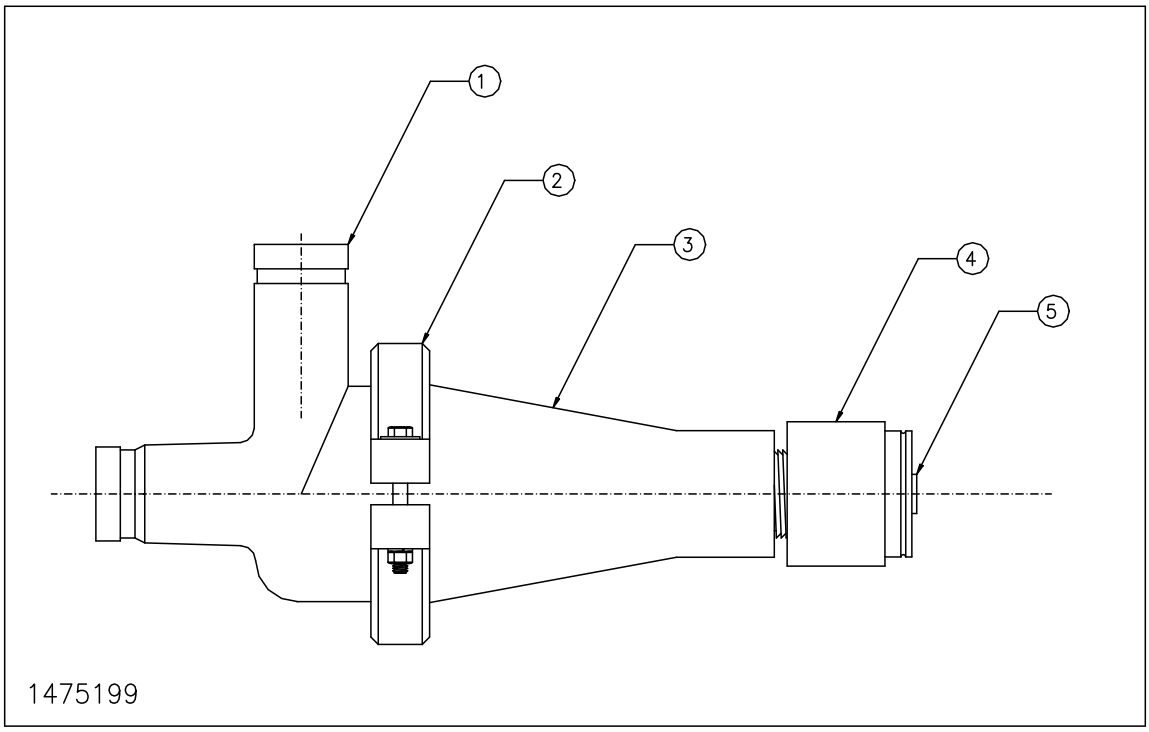
FIGURE 6.1: 4” CTX CONE ASSEMBLY
406-218-U



ITEM	PART NUMBER	DESCRIPTION	REQ’D
1	406-203	Fluid Splitter, 4” CTX, GXG	1
2	184-315-U	Clamp, 4” CTX Urethane	1
3	406-213	Bottom Section 4” CTX	1
4	406-212	Nut, Adjusting 4&5 CTX	1
5	406-204	Apex, 4&5 CTX	1

SECTION 6 – PARTS LIST

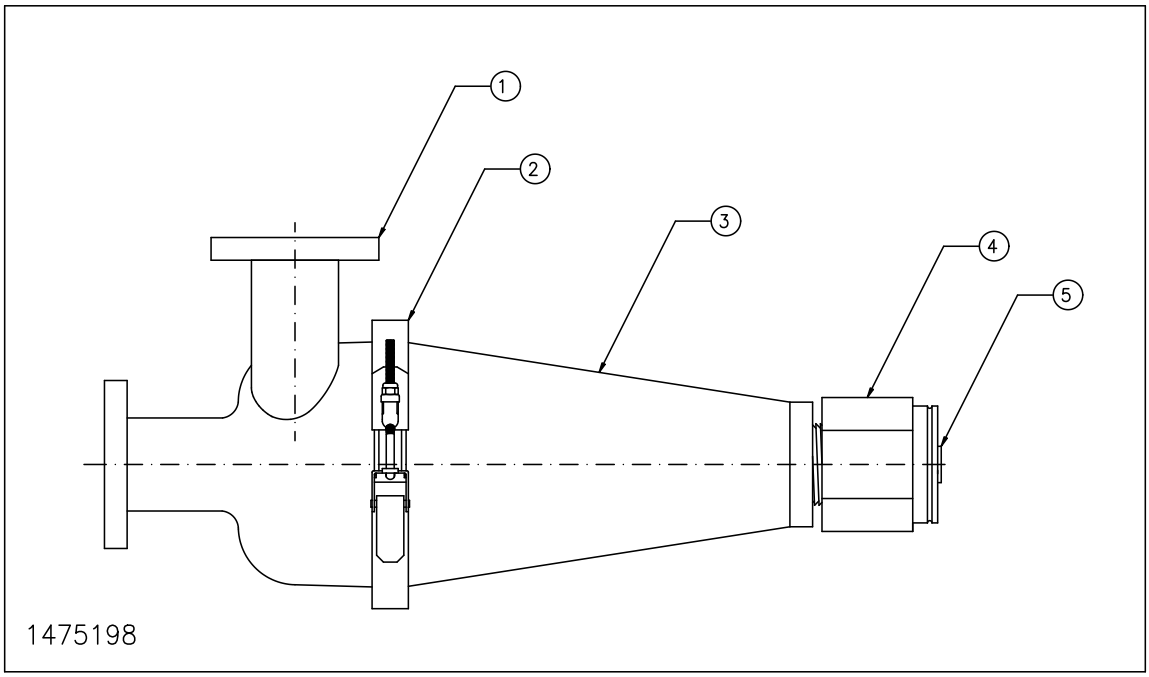
FIGURE 6.2: 4” CTX CONE ASSEMBLY
406-218



ITEM	PART NUMBER	DESCRIPTION	REQ’D
1	406-203	Fluid Splitter, 4” CTX, GXG	1
2	04-CB	Clamp Band, 4” CTX SST	1
3	406-213	Bottom Section 4” CTX	1
4	406-212	Nut, Adjusting 4&5 CTX	1
5	406-204	Apex, 4&5 CTX	1

SECTION 6 – PARTS LIST

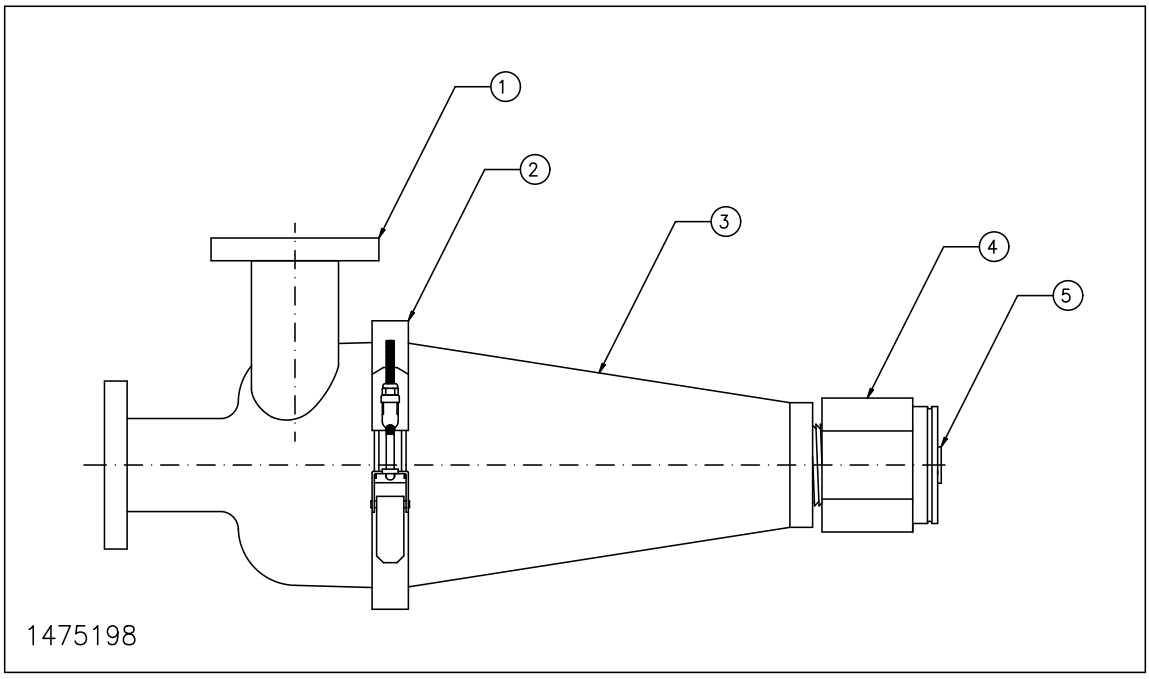
FIGURE 6.3: 5” CTX CONE ASSEMBLY (CLAMP TYPE) 506-218



ITEM	PART NUMBER	DESCRIPTION	REQ’D
1	506-203	Fluid Splitter 5” CTX FXG	1
2	514-629	Clamp Band 5” CTX SST	1
3	506-214	Bottom Section 5” CTX	1
4	406-212	Nut, Adjusting 4&5 CTX	1
5	406-204	Apex, 4&5 CTX	1

SECTION 6 – PARTS LIST

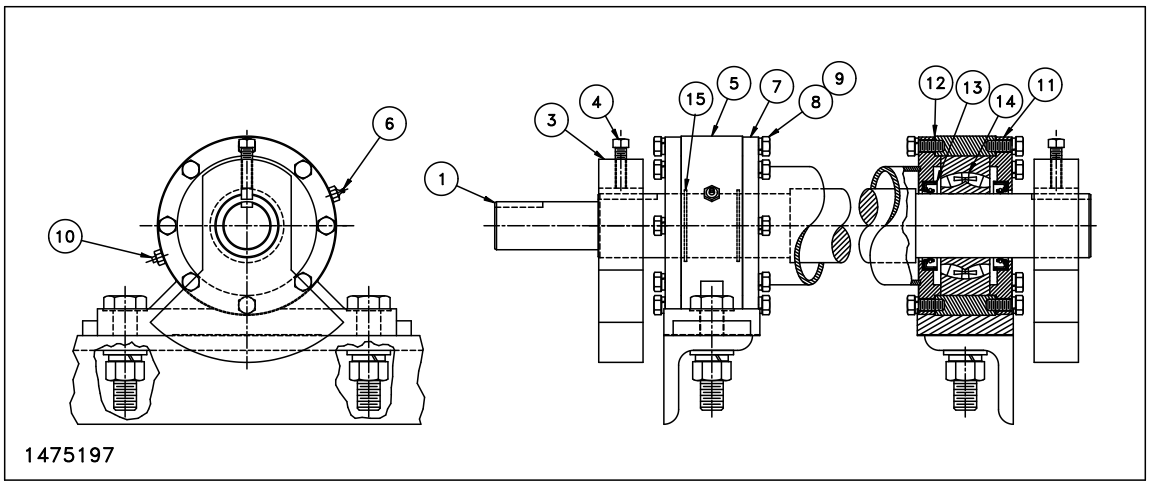
FIGURE 6.4: 5” HBW CONE (CLAMP TYPE)
05-C-BT



ITEM	PART NUMBER	DESCRIPTION	REQ’D
1	05-TH-BT	Fluid Splitter 5” HBW, FXG	1
2	05-CB	Clamp Band, 5” HBW	1
3	05-BH-BT	Bottom Section 5” HBW	1
4	05-AH	Nut, Adjusting 5” HBW, FXG	1
5	APEX-0.75	Apex ¾, 5” HBW, Band Type	1

SECTION 6 – PARTS LIST

FIGURE 6.5: Mudcleaner VIBRATOR ASSEMBLY SPARE PARTS LIST



ITEM	PART NUMBER	DESCRIPTION	REQ'D QTY
1	MC-S	Mudcleaner shaft	1
2	K-3/8-3/8x1-1/2	Keystock, 3/8" x 3/8" x 1-1/2" Lg.	2
3	MC-EW	Vibrator Eccentric Weight	2
4	7435240	Bolt, Sq. Hd., 3/8" x 1-1/4" Lg.	2
5	MC-BH	Bearing Housing, 55mm	2
6	GF-125	Grease Zerk, 1/8" NPT	2
7	MC-HSA	Housing Tube Assembly	1
8	7411022	Cap Screw, Hexhead, 3/8" x 1" Lg.	32
9	7409249	Lock washer, 1/8"	32
10	GRF	Grease Relief 1/8" NPT	2
11	MC-RP	Outer Retainer Plate	2
12	MC-BHG	Bearing Housing Gasket	4
13	MC-GS	Grease Seal	4
14	MC-B	Spherical 2 Row Bearing, 55mm	2
15	MC-SR	2" Diaz. Snap Ring #215	2

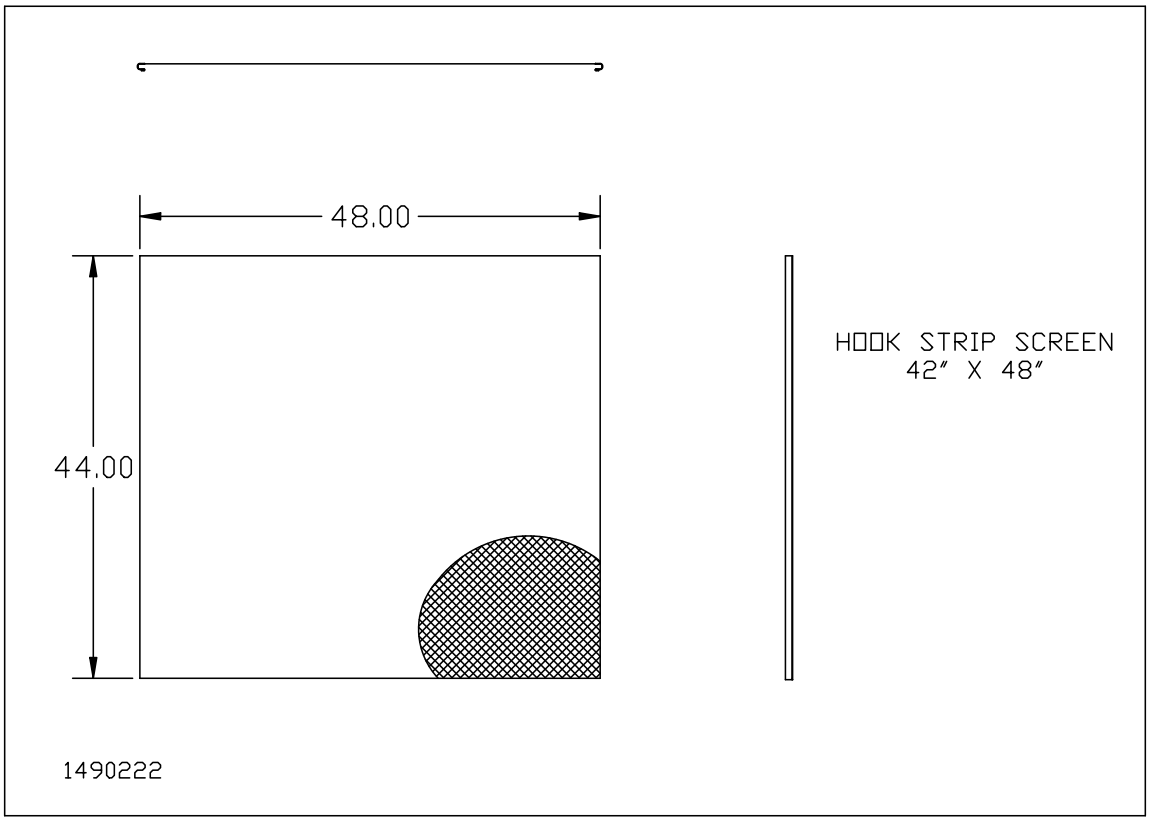
SECTION 6 – PARTS LIST

FIGURE 6.6: Mudcleaner MAIN ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	REQ'D QTY.
1	MC-BASE-FAB	Base, Mudcleaner	1
2	MC-BSK-FAB	Basket Fab Mudcleaner HBW Style	1
3	(varies)	Header	1
4	(varies)	Pan	1
5	MC-VA	Vibrator Assembly Mudcleaner HBW	1
6	MC-BG	Guard, Belt MC HBW Style	1
7	MC-EWG	Guard, Eccentric Weight	1
8	(varies)	Hydrocyclone End, 6" w/ Gasket	(varies)
9	VC-06/77	Victaulic clamp 6" w/seal Style 77	4
10	VC-06B	Blanking Cap, 6" Grooved End	2
11	HG	Pressure Gauge	1
12	MC-FP-MB	Front Pan Mounting Bracket	1
13	VARIES	Screen	2
14	RN-MC	Rubber, Nosing, ¼" x 43 ½" Lg.	14
15	MC-FR	Rubber, Flat, ¼" x 2 x 43 ½" Lg.	4
16	MC-TR	Tension Rail	4
17	TBA-MC	Tension Bolt Assembly	12
18	MC-SS	Spring Shock HBW Style	4
19	9402527	Motor Starter	1
20	B-090-2	Belt, V, B90-2	1
21		Nipple, 6" Grooved End x Buttweld	1
22	2B7	Sheave, 2B7.0	1
23	B-SDS1.6250	Bushing, SDS, 1 5/8"	1
24	2B6	Sheave, 2B6.0	1
25	Varies	Heater, Motor Overload	3
26	B-SDS1.1250	Bushing, SDS, 1 1/8"	1
27	9400079	Motor, XP 5 HP, 1800 rpm	1

SECTION 6 – PARTS LIST

FIGURE 6.7: REPLACEMENT SCREENS



Item	Part Number	Description
1	S-HMC-080	Screen 3.5X4 F/ M/C 80X80 Mudcleaner
2	S-HMC-100	Screen 3.5X4 F/ M/C 100X100 Mudcleaner
3	S-HMC-120	Screen 3.5X4 F/ M/C 120X120 Mudcleaner
4	S-HMC-140	Screen 3.5X4 F/ M/C 1400X140 Mudcleaner
5	S-HMC-165	Screen 3.5X4 F/ M/C 165X165 Mudcleaner
6	S-HMC-180	Screen 3.5X4 F/ M/C 180X180 Mudcleaner
7	S-HMC-200	Screen 3.5X4 F/ M/C 200X200 Mudcleaner
8	S-HMC-250	Screen 3.5X4 F/ M/C 250X250 Mudcleaner
9	S-HMC-325	Screen 3.5X4 F/ M/C 325X325 Mudcleaner

SECTION 6 – RECOMMENDED SPARE PARTS LIST

FIGURE 7.1: ONE-YEAR SPARE PARTS LIST

Item	Part Number	Description	Required Qty for One Year.
1	MC-S	Shaft Mudcleaner	1
2	MC-BH	Housing 55MM Bearing F/MC	1
3	MC-B	Bearing 55MM F/MC	1
4	MC-GS	Grease Seal for Mudcleaner	2
5	MC-SR	Snap Ring for Mudcleaner	2
6	MC-BHG	Gasket for Mudcleaner Bearing	2
7	MC-RP	Plate Retainer Outer F/MC	1
8	MC-EW	Eccentric Weight MC	1
9	2B6	Sheave 2B 6.0	1
10	B-SK1.6250	Bushing SDS 1 5/8”	1
11	2B7	Sheave 2B 7.0	1
12	B-SDS1.1250	Bushing SDS 1 1/8”	1
13	B-090-2	Belt V	2
14	TBA-MC	Tension Bolt Assembly F/Mudcleaner	12
15	RN-MC	Rubber Nosing F/MC-43 ½” Lg.	14
16	MC-TR	Tension Rail F/Mudcleaner	3
17	MC-FR	Rubber Flat ¼” x2	2
18	HG	Gauge Header 0-100 Scale	2
19	05-TH-BT	Cone Top Half 5 Band Type	2
20	05-BH-BT	Cone Bottom Half 5 Band Type	5
21	05-CB	Clamp Band 5” IN.	5
22	APEX-0.75	Apex ¾” F/5 Cone	10
23	05-AH	Apex Holder for 5” Cone	2
24	OE-2	Elbow Overflow 2	2
25	VC-02/78	Clamp Vict 2 S/Seal STY 78	3
26	VC-2B	Blank Vict 2	1
27	VC-06/77	Clamp Vic 6 W/Seal STY 77	1
28	VC-06/78	Clamp Vict 6 W/Seal STY 78	1
29	VC-06/90	Clamp Vict 6 W/Seal STY 90	1
30	VC-06B	Blank Victaulic 6	1
31	VC-02S	Seal Vic 2 Seal STY 78	8
32	9400079	Motor Exp-Proof 5hp 1800 RPM	1
33	S-HMC-080	Screen 3.5X4 F/ M/C 80X80 Mudcleaner	20
34	S-HMC-100	Screen 3.5X4 F/ M/C 100X100 Mudcleaner	20
35	S-HMC-120	Screen 3.5X4 F/ M/C 120X120 Mudcleaner	20
36	S-HMC-140	Screen 3.5X4 F/ M/C 1400X140 Mudcleaner	20
37	S-HMC-165	Screen 3.5X4 F/ M/C 165X165 Mudcleaner	20
38	S-HMC-180	Screen 3.5X4 F/ M/C 180X180 Mudcleaner	20
39	S-HMC-200	Screen 3.5X4 F/ M/C 200X200 Mudcleaner	20
40	S-HMC-250	Screen 3.5X4 F/ M/C 250X250 Mudcleaner	20
41	S-HMC-325	Screen 3.5X4 F/ M/C 325X325 Mudcleaner	20

SECTION 5 - TROUBLESHOOTING

PROBLEM	CAUSE OR SOLUTION
Large mud/fluid particles fall into bottom of pan.	• Check for torn screen. • Check to make sure screen is flush against backstop. Readjust if necessary. • Use smaller mesh screens.
Mud/fluid runs over top of back tank.	• Check for maximum gate and wear plate opening. • Discharge area at back tank may be blocked with build-up. Clean out build-up.
Mud/fluid runs off screen.	• Screen basket needs re-leveling • Need larger mesh screens. • Check for proper screen tension. • Check rubber cushions on screen for proper seating.
Mud/fluid collects at rear area of screen.	• Gates are partially open. • Build-up in bottom pan discharge area. • Belt to loose, adjust to proper tension.
Screen loose or flopping.	• Wash out build-up mud. • Check for bent gateway. • Check screen tension. • Check for proper installation of screen. • Check for binding of adjustment bolts or nuts. • Check for proper quantity of all components of screen adjustment assembly. • Check for torn screen. Replace if necessary. • Check for proper seating of rubber cushions on screen basket tension bars. • Check for stretched screen, due to prolonged usage. Use spacers (washers) to gain additional thread length to obtain desired screen tension.

SECTION 5 - TROUBLESHOOTING

PROBLEM	CAUSE OR SOLUTION
Screen tearing.	• Check for proper installation of screen. • Check rubber cushions on screen tension bars for excessive wear, tearing, and proper seating. Replace and/or readjust if necessary. • Check for proper quantity of screen adjustment assembly. • Check for proper vibrator shaft and motor alignment. • Check for proper drive belt tension. Readjust if necessary.
Vibrator housing runs hot.	• Needs grease. Fill as required. • Check drive system alignment. • Check for proper drive belt tension. Readjust if necessary. • Check for worn bearings. Replace if necessary.
Loud chattering noise.	• Check screen basket to see if shipping hold down bolts are removed. • Check rubber vibration isolators for excessive wear. Replace if necessary. • Check for worn bearings. If chattering is loud and bearing area is extremely hot, replacement is necessary. • Check for belt guard interference with shaft or screen basket. • Check for rattling gates or loose parts.