

**MS-V3A MUD SAVER  
CERTIFICATION DATA BOOK**

**UNIT SERIAL NUMBER: V3248  
DATE: 19/02/15**

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## **SECTION 1**

### **CERTIFICATE OF CONFORMITY**



**CERTIFICATE OF CONFORMITY**

This is to certify that the referenced parts have been manufactured/produced/procured under the control of the Sub-drill Quality Assurance programme and comply with the requirements of the purchase order unless otherwise noted.

<b>Customer</b>	<b>Purchase Order No.</b>	<b>Sales Order No.</b>
TRANSOCEAN	GLOBE-00014252245	19829

<b>Item No</b>	<b>Qty</b>	<b>Part No.</b>	<b>Description</b>
1	1	MS-V3A	SUB-DRILL AIR OPERATED MUD SAVER SERIAL NO: V3248

*Susan Reid*

For and on behalf of Subdrill Supply Ltd

*19/02/15*

Date



**Sub-drill Supply**

## **SECTION 2**

### **FACTORY ACCEPTANCE TEST**

**Factory Acceptance Test**  
**Sub-Drill V3 Mud Saver**



Unit S/N V3248

Date 19/2/15

**Check Certification of Lifting Components:-**

- MPI - Pad Eyes (2) on top of unit
- Test Certificate for two leg sling supplied
- Load Test Certificate supplied

√ / X	Notes
✓	
✓	
✓	

- Check all Bracket Bolts are tight**
- Check both 6" NPT outlets with blanking cap**

✓	
✓	

**Check Pneumatic Schematic Diagram**

✓	
---	--

**Check Operation of Controls**  
(Refer to Operating Instructions)

- Air Supply Open/Close Valve
- Air Vent Open/Close Valve
- Door Control Open/Close Valve

✓	
✓	
✓	

**Check Operation of Unit on Test Stand**

- Mud Saver closes on Pipe
- Check all Seals are meeting
- Check the angle of the linkage
- Retract Mud Saver from the Pipe
- Pneumatic System Air Tight

✓	
✓	
✓	
✓	
✓	

**Check Seal Changing Procedure**  
(Refer to Operating Instructions)

✓	
---	--

**Check Shutting Down Sequence**  
(Refer to Operating Instructions)

✓	
---	--

Customer Acceptance  
(If applicable)

Accepted By  MP Rejected

Take necessary action and complete new FAT

Signed \_\_\_\_\_

Signed [Signature]

Print Name \_\_\_\_\_

Print Name M. DUTTON

Date \_\_\_\_\_

Date 19/2/15

Client \_\_\_\_\_

For: Sub-Drill

## **SECTION 3**

### **LOAD TEST & LIFTING EQUIPMENT CERTIFICATES**

1. MPI LIFTING POINT WELDMENTS CERTIFICATE
2. LOAD TEST CERTIFICATE
3. 2-LEG SLING CERTIFICATE
4. SAFETY SHACKLE CERTIFICATE



Unit 9 Catherinefield Industrial Estate  
 Dumfries  
 DG1 3PQ  
 Tel: 01387 255816

**MAGNETIC PARTICLE INSPECTION REPORT**

KEL Job No: 25979	Customer: Sub-Drill	Customer Order No: 15626
Date inspection started: 28/01/2015	Drawing No: SDS0071	Rev No: F
Location of test: Kellwood Engineering Ltd, Dumfries		Part No: MS-V3248
Job Description: Mudbucket Assembly		
Acceptance Criteria: Record Findings	Technique/Standard: BS EN9934-1 2001	Material: Carbon Steel
Stress Relief: N/A	Diagnostic Area: MPI Lifting Points Weldments 100%	Surface Condition: As Welded

**EQUIPMENT, TECHNIQUE & APPLICATION METHOD**

Magnetic Flow: Electromagnetic	Ink/Powder Type: Necol B magnetic ink	Carrier Liquid: Kerosene
Mag Flow Equip & Serial No: Jay 110V / JY1 - 0282	Flux Indicators: Castrol Strip	Batch No: B2011
Initial Demag: N/A	Final Demag: N/A	Test Temp: Ambient
Contact Spacing (mm): 75 - 100 mm	Pull Test: ✓	Ink/Powder Application: Spray
Field Application Time: 5 Sec	Contrast Paint: NeoPaint NPT16	Batch B261114
Current Value/mm: N/A	Post test cleaning: N/A	

**MAGNETIC PARTICLE INSPECTION RESULTS**

Date of inspection	Quantity inspected	Defect type	Component/Welded Part No	Result	Comments
28/01/2015	1	none	MS-V3248	Pass	

Technician: Stewart Smith	Qualifications: PCN II 311482	Report Date: 28/01/2015
Technician Signature: <i>S. Smith</i>	Client Signature:	Third Party:

Results stated above relate exclusively to the item(s) identified above.



**CERTIFICATE of Test and Thorough Examination of:-**

Lifting equipment

Accessory for Lifting

**CERTIFICATE No.**

DG1/0207/15

**Contract No.**

1305/1587

This certificate is as prescribed by the Secretary of State and as approved by the International Labour Organisation for the Test and Examination of Lifting Equipment and Accessories for Lifting

**Name of Owner** Kellwood Engineering Ltd  
**Address** Unit 9, Catherinefield Industrial Estate, Dumfries, DG1 3PQ  
**Plant location if different** N/A

Description and Identification Mark of the Equipment Date of Manufacture and Details of Test	Number Tested & Examined	Date of Test and Examination	Proof Load Applied	Working Load Limit
Bucket Assembly Type Mud Bucket V3, s/n V3248  Two frame lifting points as provided to above assembly. Load applied vertically from each lifting point.  Frame lifting point s/n V3248/1 Frame lifting point s/n V3248/2  Test load verified by 5te load cell E00 222. Certificate No. 4051Z2463, Dated 30.04.14  Purchase Order 30353	One	26.1.15	1,500 kg per lifting point	750 kg per lifting point

**Declaration** I hereby declare that the 'Lifting Equipment' or 'Accessories for Lifting' described in this certificate was tested, thoroughly examined in accordance with S I 1998 Nos. 2306 & 2307, as appropriate, and found free from any defect likely to affect safety and that the above particulars are correct.

**Date of Examination** 26.01.15

**Date the certificate is made**

26.01.15

**Signature** 

Name, address and qualification of the person making the declaration and responsible for the authentication of this certificate

**Robert W Burton, BEng (Hons), MIET, AMBES - Senior Engineer Surveyor, Plansafe Solutions Ltd.**

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**GLOBAL  
EQUIPMENT  
SPECIALISTS**

ATR Lifting Solutions Ltd  
Unit 12 Denmore road, Bridge of Don  
Aberdeen, AB23 8JW  
Tel: 01224 826662

Report Number: 115321  
Exam Date: 13/02/2015  
Customer Ref / PO: 0000015913

## EC DECLARATION OF CONFORMITY

Quantity & Description of Equipment, Serial numbers	Manufacturer & Date of Manufacture	Working Load Limit	Proof Load
<p>3 TWO LEG WIRE ROPE SLING TO EN13414-1 TWO LEGS 1MTR X 13MM DIA IWRC GALV FITTED TO HA16ML MASTER LINK BEARING TO BEARING LENGTH = 1.15MTR WLL: 2.5 TONNE ANGLE OF LIFT 0 - 45 DEGREES</p>	<p>ATR Lifting Solutions 13/02/2015</p>	<p>SEE DESC</p>	
<p>Serials No(s): 1-3CRLY  * 1CRLY *</p>			
<p>Name &amp; address of Employer for whom the thorough examination was made: SUB-DRILL SUPPLY LTD ENDEAVOUR DRIVE ARNHALL BUSINESS PARK WESTHILL</p>	<p>Address of premises at which the examination was carried out: ATR Lifting Solutions Ltd Unit 12 Denmore road, Bridge of Don Aberdeen, AB23 8JW Tel: 01224 826662</p>	<p>Name, address and qualifications of the person who carried out the examination:  JOHN ROSE COMPANY APPOINTED EXAMINER</p>	<p>Name, address of the person signing the report on behalf of its author  Reference No: 0000015913 Customer Order: 0000815255</p>
<p>Signature of the Person Who carried out the exam _____ Signature on behalf of author for ATR Lifting solutions by _____</p>			
<p>I declare that the item(s) described above complies with the requirements of The Machinery Directive 2006/42/EC and for electrically powered equipment The Electromagnetic Compatibility Directive 2004/108/EC</p>			

**REPORT OF THOROUGH EXAMINATION  
(AND CERTIFICATE OF TEST IF APPLICABLE)**

The Lifting Operations and Equipment Regulations SI 2307:2008  
The Merchant Shipping and Vessels (Lifting Operations and Lifting Equipment) Regulations SI 2148:2006  
The Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) (Amendment) Regulations SI 2166:2008

Report Number: 115326  
Exam Date: 13/02/2015  
Customer Ref / PO: 0000015913

Quantity & Description of Equipment, Serial numbers	Manufacturer & Date of Manufacture (if known)	Working Load Limit	Proof Load Applied	First Examination Yes/No	Date of Last Thorough Examination	Date of Next Thorough Examination	Next Test Due	Test Certificate Number
6 2t G2130 SAFETY PIN BOW SHACKLE CERT NO: CC4-2015021300586	CROSBY	2.00 t		NO	13/02/2015	13/08/2015		SEE DESC

Serials No(s): 1-3LYA-B

\* 1LYA-B \*

Particulars of Defects which are dangerous to persons or 'None'	Particulars of any other Defects or 'None'	Date by which other defect are to be repaired	Particulars of any Repair, alteration to remedy defect or 'None'	Particulars of any observations
NONE	NONE		NONE	
Name & address of Employer for whom the thorough examination was made: RUB-DRILL SUPPLY LTD RINDEAVOUR DRIVE RINHALL BUSINESS PARK VESTHILL BERDENSHIRE	Address of premises at which the examination was carried out: ATR Lifting Solutions Ltd Unit 12 Denmore road, Bridge of Don Aberdeen, AB23 8JW Tel:01224 826662	Name, address and qualifications of the person who carried out the examination: JOHN ROSE COMPANY APPOINTED EXAMINER	Name, address of the person signing the report on behalf of its author	Reference No:0000015913 Customer Order: 815255

Signature of the Person Who carried out the exam



Signature on behalf of author for ATR Lifting solutions by

I hereby certify on the above stated date the items(s) described above were thoroughly examined, and as far as is reasonably practicable by this type of examination, considered to be safe to operate unless stipulated otherwise in 'Particulars of Defects'

## **SECTION 4**

### **AIR SUPPLY HOSE CERTIFICATE**



Safer • Smarter • Solutions

**PRESSURE TEST CERTIFICATE NO:** **EMH159835**

**Customer:** **SUB-DRILL SUPPLY LTD**

**Customer Order No:** **0000015914**

**EnerMech Ref:** **RS-N104572**

**Hose Assembly Specification:** **MUD BUCKET AIR HOSE ASSY**  
**AS PER CUSTOMERS SKETCH**  
**WP = 150 PSI**

**Max Working Pressure:** **150 PSI**

**Test Pressure:** **225 PSI**

**Theoretical Burst Pressure:**

Test Pressure Held for 3 Minutes.

**Report:** **SATISFACTORY**

Qty	EnerMech Tag No	Customer Tag No
1	EMH159835	

**Pressure Tested By (PRINT):**

*N. HETHERINGTON*

**Pressure Tested By (SIGN):**

*N.H.*

**Date Pressure Tested:**

*12-02-15*

Enermech Ltd • Enermech House • Howes Road, Bucksburn, Aberdeen • AB16 7AG  
T. 01224 723300 F. 0845 638 6441 www.enermech.com

## **SECTION 5**

### **COMMISSIONING & OPERATING INSTRUCTIONS**

**SUB-DRILL MS-V3A AIR MUD SAVER**  
**OPERATING & MAINTENANCE INSTRUCTIONS - ISSUE 5 SEPTEMBER 2011**  
**Page 1 of 2**

**Description**

The MS-V3A AIR MUD SAVER is a tool designed to collect the drilling fluid retained inside stands of drill pipe as they are tripped out of the hole, and return it to the mud system.

**Safety**

The MS-V3A is designed to close around the pipe with **high force** to minimise fluid loss.

- **Keep hands away from the doors during operation.**
- **Always disconnect the air supply before changing seals or conducting repairs.**
- **The safety guards fitted to the unit must always be in place during operation.**
- **Hard objects penetrating between the doors during closure may damage the doors or side seals.**
- **The unit should be regularly maintained to ensure safe operation - see section on maintenance.**

**Setting-Up**

- Install suitable Double Leg Sling assembly, and check attachments are secure to a tong counterweight or tugger line.
- Check that the line will not snag with the overhead equipment in the derrick during operation.
- Connect the Discharge Hose to the preferred side of the MS-V3A using the Camlock Connector. (Note - If the Discharge Hose is too long it can be shortened. Re-fitting the 6" nipple and clamp is made easier by immersing the hose-end in very hot water to expand and soften it, before pushing in the nipple and replacing the clamp).

**Operation**

- The MS-V3A operates from the normal 100psi rig-air supply on the drill floor. Ensure the Air Supply Valve on the Control Panel is in the "CLOSE" position, and the Air Vent Valve is in the "CLOSE" position, and then connect the air supply hose to the MS-V3A using the Safety QD Connection. **IMPORTANT NOTE** – The doors of the MS-V3A may open or close immediately when the air supply is switched on, depending on the setting of the Control Valve.
- Keeping hands clear of the doors, select "OPEN" on the Air Supply Valve, and then use the Control Valve to open and close the MS-V3A a few times to check function and familiarise personnel with the unit's operation.
- Push/Pull the MS-V3A on to the pipe around the tool joints, at a safe distance above the slip handles and allowing for the upward movement of the stand of pipe above, **making sure that the pipe is hard up against the pipe guides** (if not damage to the seals or shells may occur, or the unit may spring backwards) then operate the Control Valve and the doors will close.
- Pick up the drill pipe to discharge the drilling fluid.
- After drilling fluid has discharged, turn Control Valve to the open position and remove the MS-V3A from the pipe.

**End Seal Changing Procedure**

- Open unit to full open position using Control Valve.
- **Turn off the air supply pressure at source.**
- **Select "OPEN" on Air Vent Valve. (All the air in the hose and Mud Saver will vent**
- **Cycle the Control Valve from "OPEN" to "CLOSE" twice to ensure any trapped pressure is released.**
- **Disconnect the Air Supply Hose from the Mud Saver.**
- **Return the Control Valve to the "OPEN" position.**
- **Select "CLOSE" on Air Vent Valve.**
- **Select "CLOSE" on Air Supply Valve. (This will ensure that the doors do not move when hammering the seals)**
- Pull out Seal Locking Tabs and remove End Seals using Slide Hammer provided.
- Remove excess mud from seal pocket areas, apply a liberal coat of general purpose grease to the seal pockets, and install new End Seals. (Note – the "suction" of the grease keeps the seals seated when removing the Mud Saver from the pipe.).
- Connect the Air Supply Hose
- Select "OPEN" on Air Supply Valve.
- Check operation before using on pipe.

[Continued page 2 of 2]

### **Side Seal Changing Procedure**

- Open Bucket to fully open position using Control valve.
- Isolate and disconnect air supply line.
- Select "OPEN" on the Air Vent Valve.
- Cycle the Control Valve from "OPEN" to "CLOSE" twice to ensure any trapped pressure is released.
- Prise the old seals from the channel sections using a screwdriver or similar tool.
- Remove the majority of remaining sealant and clean and dry the channels.
- Trim the new Side Seals with a hacksaw to the correct length. (This is best done with the End Seals in position so that a snug fit can be achieved)
- Coat the inside back of the channel with a suitable adhesive, and push the seals into the channel sections.
- Reconnect the air line and close the bucket to bed the seals into the sealant. Leave to set.

### **After Use**

When not in use, and particularly before long-term storage, it is recommended that the MS-V3A should be pressure washed to remove all mud and dirt, but as a minimum the End Seal pockets must be cleaned out and general purpose grease applied, and the unit left in the open position.

### **Repairs and Maintenance**

(Refer Parts List and Pneumatic Diagram for part numbers and ordering information)

- **The MS-V3A must be disconnected from the air supply before any adjustment, repair or maintenance is carried out.**
- Isolate the air supply and then vent the air pressure from the system before disconnecting the hose.
- Cycle the Control Valve from "OPEN" to "CLOSE" twice to ensure any trapped pressure is released.
- Any damage or wear and tear that affects the safe operation of the MS-V3A should be repaired immediately. This should include as a minimum :- **Lifting Points** - Should be regularly inspected by a qualified person. **Lubrication** - Grease main moving parts regularly using nipples provided. **Air Hoses and Connections** - should be regularly inspected for wear and tear and replaced as required.

### **Air Leaks**

The force of the seals on the pipe is in direct relation to the air pressure. Any leak in the pneumatic system will seriously affect the efficiency of the Mud Saver. Checking for air leaks will be much easier in a quiet environment. A water/detergent mixture applied to the suspect location will confirm if a leak is present.

### **Maintenance - Monthly**

- Remove guards and grease the 4 nipples located on each of the 3 sets of mechanism hinge pins. (Page 4 Parts List, Item 9, 10, 11 and 12)
- Remove guards and check air system for leaks and damage.
- Check that the mechanism holding bolts located on the same side as the controls are tight. (Page 2 Parts List, Item 13)
- Check that the controls work correctly and have not been damaged in any way. (Page 3 Parts List, Item 3 and 4)
- Check that all hinge pins are securely in place with cir-clips fitted.
- Repair damaged paintwork to prevent corrosion
- Do a basic walk round and inspect for damage that may affect the performance of the tool.
- **If damaged, repairs should be carried out immediately.**

### **Maintenance - Every 6 months**

- Carry out NDT inspection in accordance with an Industry Recognised Standard.
- Recommend changing the side seals.

Refer to rig rules and regulations for inspecting lifting equipment and carry out inspection at lowest time period stated.

## **Sub-drill**

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AB32 6UF, Scotland, UK  
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## **SECTION 6**

### **PARTS LIST**

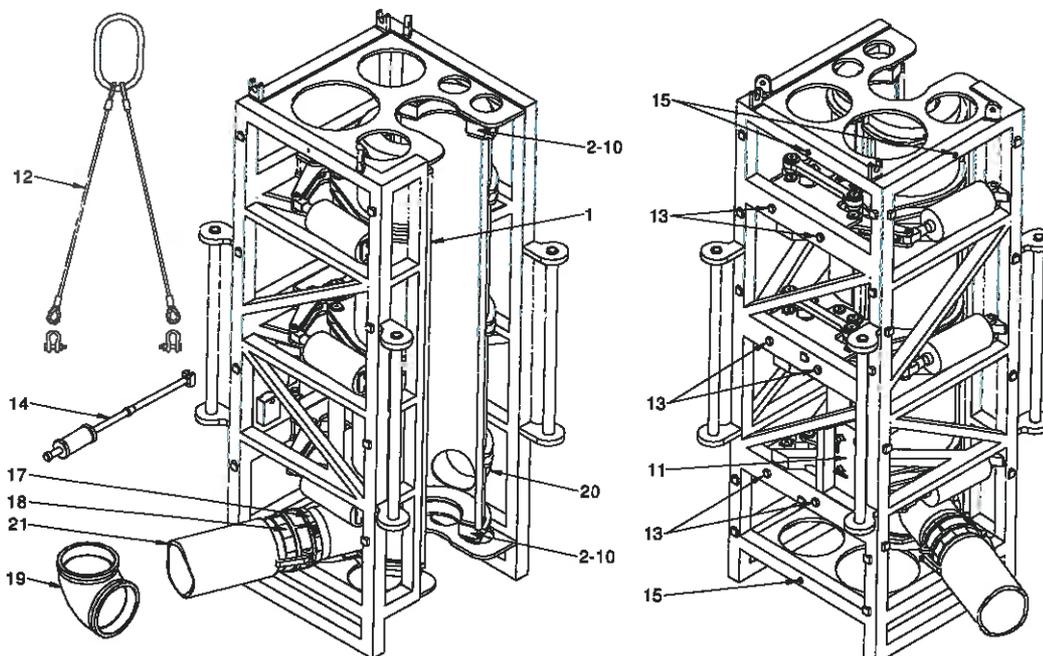


MS-V3A MUD SAVER

PARTS LIST

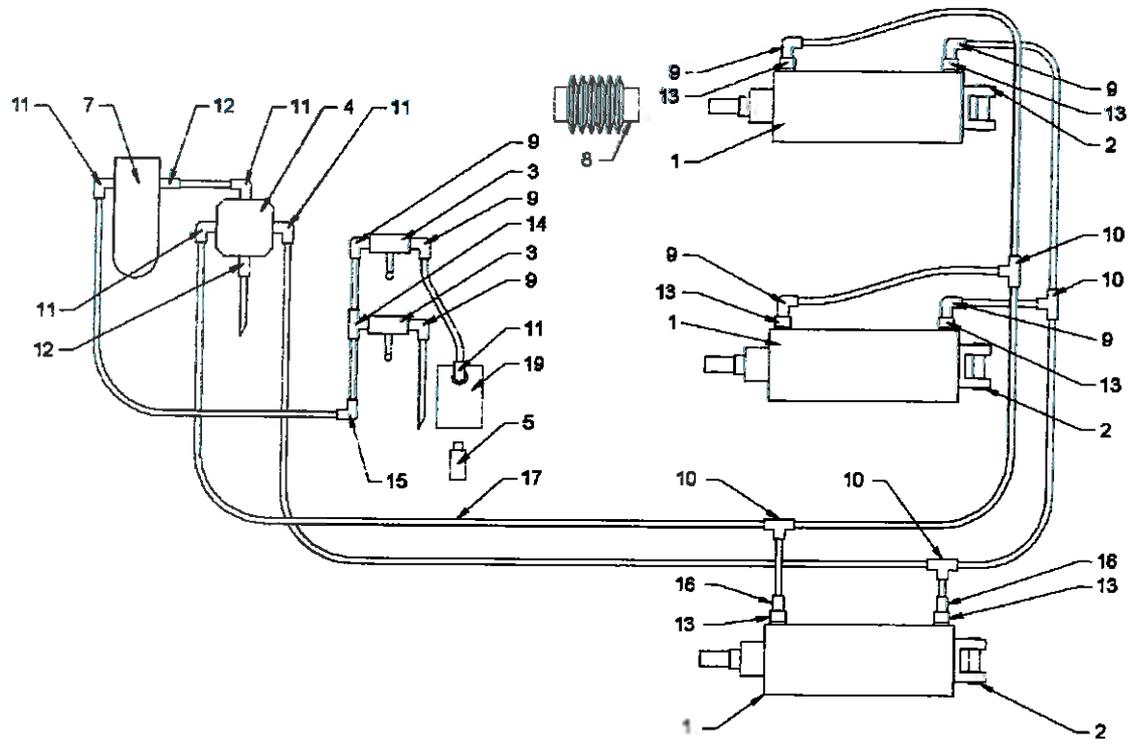


ITEM	PART No	QTY	DESCRIPTION
1	630000	1	Side seals, 2 x 2 metre lengths
2	630001	-	2-3/8" end seal set (4 pieces)
3	630002	-	2-7/8" end seal set (4 pieces)
4	630003	-	3-1/2" end seal set (4 pieces)
5	630004	-	4" end seal set (4 pieces)
6	630005	-	4-1/2" end seal set (4 pieces)
7	630006	-	5" end seal set (4 pieces)
8	630007	-	5-1/2" end seal set (4 pieces)
9	630008	-	5 7/8" end seal set (4 pieces)
10	630009	-	6" end seal set (4 pieces)
10a	630010	-	6-5/8" end seal set (4 pieces)
11	630084	1	Control panel fascia plate
12	630074	1	Sling assembly c/w safety shackles
13	630075	6	Bolt, bracket to frame
14	630080	1	Slide hammer
15	630082	4	Screw, guard to frame
16	630107-50	1	50 ft x 3/8" air hose, 3/8 QD x US crowfoot
17/18	600200	1	6" Hammer Union Fig 100 NPTF
19	630302	1	Elbow, 90 degree, 6" NPTF
20	630308	1	Blanking cap, 6" NPTF
21	630320-XXX	1	6" discharge hose c/w 6" NPT nipples (XXX = overall length in inches)
22	SDS0089	1	Guards, set of 4 (not shown)
23	600150	4	Seal Locking Tabs (not shown)



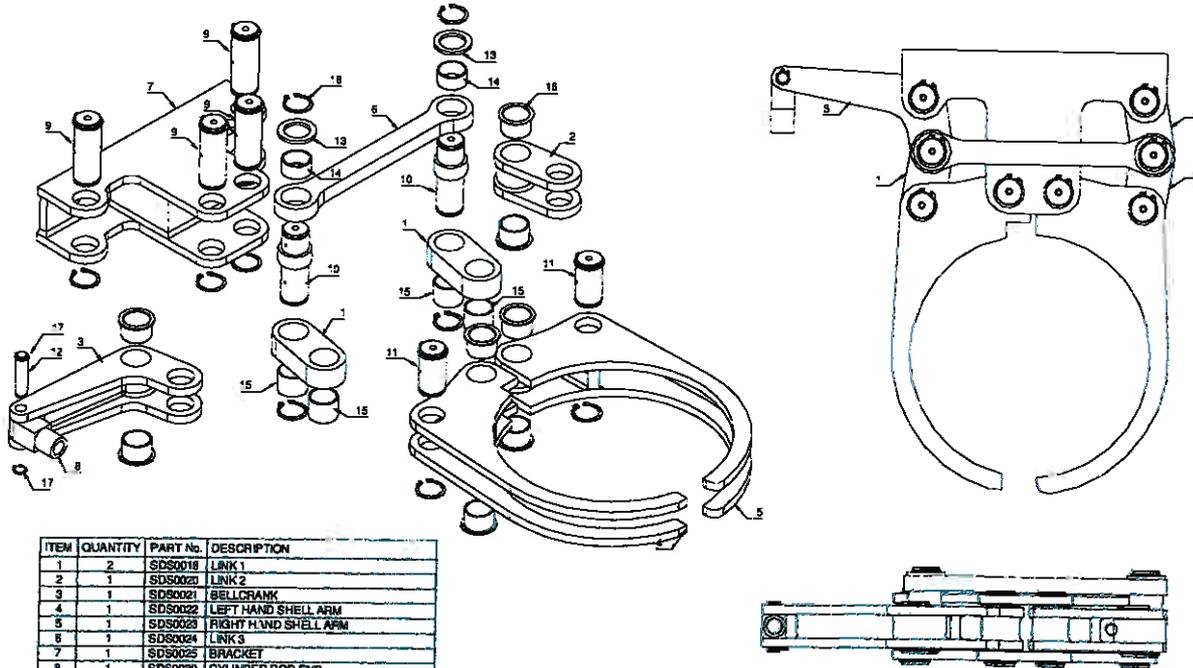


ITEM	PART No	QTY	DESCRIPTION
1	630112	3	Air cylinder
2	630113	3	Pivot bracket c/w pin
3	630102	2	Ball valve
4	630115	1	Control valve
5	630104	1	Air QD connector 3/8" NPT(M)
6	630114	-	Repair kit, 630112 air cylinder
7	630108	1	Filter, auto drain
8	630111-1	3	Bellows, 630112 air cylinder
9	630153	7	8mm OD x 1/4" BSPT male swivel elbow
10	630158	4	8mm OD union tee
11	630163	5	8mm OD x 3/8" BSPT male swivel elbow
12	630164	2	8mm OD x 3/8" BSPT male stud
13	630161	6	1/2" NPT x 1/4" BSPT reducing bush
14	630165	1	8mm OD x 1/4" BSPT swivel branch tee
15	630166	1	8mm OD equal tube elbow
16	630154	2	8mm OD X 1/4" BSPT Male Stud
17	630159	-	8mm OD nylon tube
18	630167	1	Air hose and fitting kit complete (includes items 9-16)
19	SDS0156	1	Bracket, air connection 3/8" NPT(F)





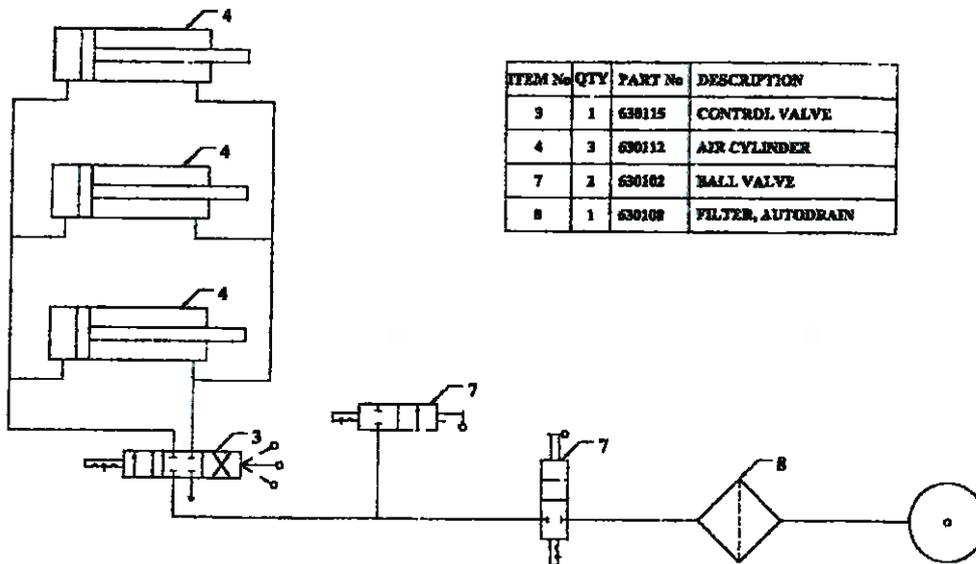
LINKAGE DETAIL



ITEM	QUANTITY	PART No.	DESCRIPTION
1	2	SDS0018	LINK 1
2	1	SDS0020	LINK 2
3	1	SDS0021	BELLCRANK
4	1	SDS0022	LEFT HAND SHELL ARM
5	1	SDS0023	RIGHT H AND SHELL ARM
6	1	SDS0024	LINK 3
7	1	SDS0025	BRACKET
8	1	SDS0030	CYLINDER ROD END
9	4	SDS0035	PIN, BRACKET
10	2	SDS0034	PIN, LINK 1 / LINK2 / LINK 3
11	2	SDS0035	PIN, SHELL TO LINK 1
12	1	SDS0036	PIN, CYLINDER ROD END TO BRACKET
13	2	SDS0038	WASHER, LINK 3
14	2	630070	20mm LONG BUSH
15	4	630071	30mm LONG BUSH
16	8	630072	FLANGED BUSH
17	2	630078	14mm CIRCLIP
18	16	630079	32mm CIRCLIP

NOTE:  
 THERE ARE 3 COMPLETE LINKAGES IN EACH MUD SAVER.  
 TOTAL QUANTITIES ARE 3 TIMES THOSE SHOWN.  
 SHELL ARMS (4) AND (5) ARE PARTS OF PRE-WELDED ASSEMBLIES.  
 IN THE LOWEST LINKAGE, LINK 3 (6) AND PINS (10) ARE INVERTED.

CONTROL SCHEMATIC



ITEM No	QTY	PART No	DESCRIPTION
9	1	638115	CONTROL VALVE
4	3	630112	AIR CYLINDER
7	2	630102	BALL VALVE
8	1	630108	FILTER, AUTODRAIN