DIRECTOR GENERAL BORDER ROADS
GENERAL MAINTENANCE INSTRUCTION NO- 229
OF
DAEMO V- SERIES HYDRAULIC BREAKERS

Introduction

1. Daemo V- Series Hydraulic Breakers play a major role in quarries and various construction sites, such as building disassembling, breaking up roads, housing, land development, rocks, sewage system etc. Chisel of breaker selection is dependent on working material in accordance with chisel appearance. Generally blunt type is for granite or gneiss, excessive hard rock and not splitting work and moil or wedge is for sand stone and weak metamorphic rock in to which chisel penetrate or on specially hard rocks or reinforced concrete, wedge point is used for civil engineering works and breaking flat rocks.

This GMI has come out for your under standing of products and its safe operation ,it contain safety guide, maintenance information, proper operating method etc, which are useful in installing operating and maintaining the equipment.

Daemo has manufactured various attachments with precious and updated technology, for example hydraulic breaker is made up of a small number of parts with simple structure and excellent maintenance.

Excellent durability, reliability, and trouble free operation result from the operation resulted from the above features, and they give much more profit and good performance for job, if you are not accustomed to operating properly, there may be unexpected accident or disorders, Consequently the performance and efficiency of the equipment will be dropped down sharply. So you must read this GMI carefully and thoroughly to keep operating well and the products need to be maintained periodically and operated correctly for good condition/out puts.

AIM:-

The instruction is issued as guide lines for schedule of preventive maintenance, lubrication of DAEMO manufactured by Daemo Engineering Co. Ltd for regular attention to keep the Machine in good mechanical condition and it must be strictly followed.

Action by

(a) **User Unit**:

To carry out periodic inspection and monitor regular/periodical maintenance as laid down in this instruction and record the tasks done in the log book.

(b) **Field Wksp (GREF)**

(i) To carry out and monitor, maintenance schedule and oil changes as per periodical maintenance laid down in the maintenance instructions and to check the record of maintenance including lubrication.

(ii) To advise the user unit in respect of any lapses noticed

(c) **Mobile maintenance team** :

To ensure that proper maintenance is carried out and report accordingly to Task Force Commander and OC Fd Wksp for necessary action.

4. **Details**: The details of maintenance and lubrication with their periodicity are as under :-

(a)	Hints for operators	- Appx ‘A’
(b)	Maintenance	- Appx ‘B’
(c)	Trouble shooting	- Appx ‘C’
(d)	Lubricants and coolant	- Appx ’D’

5. Please ack receipt.

(Hari Prakash)
SE (E&M) FS
Dir (Tech)
for Dir Gen Border Roads

Distribution
Normal

PRODUCT AND STRUCTURE

(a) DMB super breaker consists of four main sections.

1) Cylinder
2) Control valve
3) Front head
4) Head cap

(b) Cylinder contains a moving piston which strikes the chisel.

(c) Four through bolt are assembled to hold the cylinder and head cap together with front head.

(d) A control valve is assembled to the cylinder and regulates piston movement.

(e) Accumulator compensates for working oil flow in the hydraulic circuit and prevents pulsation.

(f) Chisel pin inside the front head prevent the chisel from coming out.

Appx 'A'

HINTS FOR OPERATORS

1. Always wear protective clothing to suit the job.
2. Always wear safety helmet, safety shoes, safety glasses, well fitting overalls, ear protectors, industrial gloves and breathing protector.
3. Don't wear a necktie or scarf and keep long hair restrained.
4. If you should be a skilled operator of the carrier machine to use breaker correctly.
5. Don't use or install the Breaker until you can drive the carrier machine?
6. Don't rush learning the job, take your time and learn carefully.
7. Hydraulic fluid at system is dangerous. Before disconnecting or connecting hydraulic hoses stop the carrier engine and release pressure trapped in the hoses, gas chamber then do the work.
8. Don't touch the hot parts.
9. If your carry out unfamiliar operations without practice, you and other can be seriously injured, practice should do on a clean area, and keep other people out.
10. Poor communication can cause accidents, work site it usually noisy, so do not – rely on spoken commands. If you working with other people make sure they understand your hand signals. Keep people around you away, and inform of what you will be doing.
11. Don't work near electric line, gas pipe, weak ground it is dangerous to machine and other all systems.
12. In public places, when visibility is reduced, place barriers around the machine. To keep people away, if there are no safety barriers, you have to obtain the working area of excavators to operate safety.
13. Never operate the equipment beyond its limit, if you do, it can cause damage.
14. When you need to replace old part for new one, please contact DAEMO service centre for repair. Service and repair are only to be made by authorized personnel.
15. Don't operate the breaker under water as a standard assembly, otherwise it will be damaged.
16. Please remove tool during transport of breaker and breaker from carrier during transport.
17. Close the front screen or splinter protection on the driver cab to prevent possible injury from flying rock splinters during operation.
18. During the operation, every person in the surrounding area, including the excavator driver must wear ear protector and breathing protection.
19. Hydraulic breaker should be operated from the driver seat and should not be put into operation until both the excavator and the breaker are in the correct position.
20. Don't operate while under the condition of any drugs and alcohol.
21. To brake effectively, a proper thrust force has to be applied to the breaker.
22. During hammering always keep in mind if applying a proper thrust to the breaker.
23. Always wear protective glasses when fitting or removing chisel since metal chips may fly off when the pin are hammered out.

Appx 'B'

Maintenance

1. Before starting work, check all the bolt, tightness and also be sure to retighten Loose bolts to the specified torque.
2. Check the high and low pressure hoses of the breaker vibrate excessively, if accumulator found defective contact to auth dealer and repair it properly.
3. Check oil leakage at the hose fitting pointes. If found leakage repair it properly.
4. avoid idle hammering to the utmost it may be damaged the accumulator bolt loosen broken.
5. Don't use the tool as a lever.
6. Don't continue to hammer for more than one minute.
7. Operate the breaker at a proper engine speed.
8. Don't operate the breaker in water and mud.
9. Don't allow the breaker to fall to a rock.
10. Don't hammer with the cylinders extended to the end of stroke.
11. Don't sling an object with the breaker.
12. As the breaker side bolts, nuts, pipe and hose fittings may b loosened due to vibration. Check the all nuts, bolts pipe fitting before starting the operation.
13. When the tool is used for many hours, it may be worn or got burs, in such a case remove them with a grinder.
14. Never hack with the breaker and chisel.
15. Never lift or transport load with the hydraulic breaker.
16. While assembling and disassembling of seals & rings, once seals and rings are removed, should not to be used again. Change all seals every 600 working hours.
17. Inspect control valve for signs of seizure or scuffing.
18. When working in temperature conditions lower then 20ºC below zero, the hydraulic breaker should not be put in to situation which the hydraulic oil is still cold, if run in cold hydraulic may be damage seals in the hydraulic breaker and diaphragm in the high pressure accumulator to be torn.
19. During the shift lubricate the chisel in every 2 hours.
20. Check the lower end of piston deformation.
21. Chek piston for seizure marks and scuffing.
22. While assembling seals, use brash lubricating oil.

DAILY MAINTENANCE

1. Tighten the all screw, nut and bolts, connections during first 50 hours.
2. Check hydraulic lines for leaks.
3. Check pipe clamps for tightness.
4. Check all adopter and brackets.
5. Check gas pressure.

WEEKLY MAINTENANCE

1. Check all screw, nut and bolts, connections for thghtnes.
2. Check adopter pins for wear.

3. Check locking bolts on retaining bars for tight fit.
4. Check impact surface of chisel for fracture.
5. Check chisel for burrs.
6. Check impact surface of piston for dents etc.

EVERY TWO WEEKS MAINTENANCE

1. Check chisel for wears,
2. Check lower bush for wear.
3. Check breaker bracket for wear.
4. Check bents and squashed pipes.
5. Check all hoses, if found any damage replace it.
6. Check oil quantity in tank and keep hydraulic oil clean.

MAINTENANCE OF CYLINDER GROUP

Cylinder group is a important part, when performing maintenance service the high attention should be paid.

1. **CYLINDER AND VALVE CASE**

Check the slide parts from cylinder and valve case for flows, if they are found scuffing flaws, finish the surface to be smooth with a buffing grinder or sand paper.

2. **PISTON**

If the slide face is scuffed, repair it by finishing with buffing grinder and sand paper, if the scuffed face is deeply, remove the burr fully and finish it to be smooth.

3. **VALVE**

In case of the scuffing circumferences of the valve remove it with sand paper, if extremely damage replaces the valve.

4. **VALVE PISTON**

In case scuffing of the inner diameter parts, finish them by buffing with grinder.

5. **ACCUMULATORS**

Accumulators only fill with nitrozen (N2) gas with pressure 16 bar at 20º C and remove remaining gas completely before disassembling.

Use only the hose nozzle to relieve the pressure.

Using nail, screw drivers or similar objects would damage the filling valve.

Use of other gas is extremely dangerous and may cause the accumulator to explode.

Check nitrozen gas pressure every 2 weeks, and ensure that there is no leakage while performing test.

6. WEARING PARTS

(a) Check the wearing parts such as chisel, chisel pins, stopper, rubber plugs, bolt and hydraulic hoses.
(b) Change face of each pin every 100 to 150 hours of operation.
(c) When replacing each parts, check each part for wear, breakage, scoures especially, after removing burrs and swelling on chisel pins.
(d) When the clearance between the chisel and front cover becomes large, to replace these parts to prevent from wear.

CAUTION FOR LONG TERM STORAGE

1. Store breaker in dry area with small temperature difference.
2. Tool should be removed and N2 gas should be released before storage the breakers.
3. Lower end of piston should be greased; tool and bushing should be coated with anti corrosive.
4. Fitting at excavator and main body are sealed with union cap to prevent contaminator from getting in to the pipes.
5. As well as possible, breaker should be put erectly, if not put the breaker on wooden square bars on the flat ground and check all seals in cylinder and corrosion bolts before operation.

OIL AND FILTERS

Oil should be refill first 250 hours then 500 hours.

LINE FILTER

Line filters change first 50 hours then every 125 hours.

OIL COOLER

The purpose of oil cooler is to reduce heat of oil due to movement, when hammering it the heat increase too high, replace the original cooler or install auxiliary cooler

Appx 'C'

TROUBLE SHOOTING

	Area of oil leakage	**condition**	**causes and remedies**
1	Between the tool and front cover	A large amount of oil is leaking, check if it comes from oil or grease.	seal are damage. Replace
2.	Surface of breaker	Oil leaking from the valve case & hose adopter portion	loose breaker hoses and bolts. Retighten.
3.	Valve case and cap bolts	Oil leakage from reassembly of valve after overhaul.	Normal: During assembly from lubrication oil & anti-rust oil applied.
4.	Between main valve & surface of cylinder	Oil leakage from reassembly of valve after overhaul.	Normal: clean oil check if seal is damaged, loosen bolts. Replace with new seals.
5.	Between cylinder and head cap	Oil leakage	Loose through bolts and nut. Retighten
		Oil leakage	Replace damage O – ring
6.	Between cylinder and front head	Oil is leaking	Loose plug assembled on the surface of cylinder retighten. Replace damage seals.

Appx 'D'

RECOMMENDED OIL & LUBRICANT

Grade	**Hydraulic oil**		**grease**
	in hot weather	in cold weather	NLGI No 2
Maker	ISO VG 68	ISO VG 48	
Shell	Shell Telius oil 56	Shell Telius oil 46	Shell Alvania EP2
ESSO	Nuto H 68	Nuto H 46	Lithian EP 2
Mobil	Mobil DET 26	Mobil DTE 25	Mobilplex 48

Grease should be used Molybdenum sulphide