

# APPLICATION OF SUPPORT FOOT ASSEMBLY FOR LIFTING HEAVY EQUIPMENT'S

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## Abstract -

*In today's industrial world if we have to move or lift any heavy equipment we need to call crane which may be time consuming and expensive. Moreover manpower is also needed. So in order to avoid all these difficulties we can use assembly named as 'SUPPORT FOOT ASSEMBLY' which is used for lifting of heavy equipment's. The present research article discusses the concept of 'SUPPORT FOOT ASSEMBLY' which is an entire lifting assembly comes along with the equipment to be lifted. The Support Foot Assembly consists of ratchets and eye bolts with the help of which the entire equipment can be moved or lifted.*

**Key Words:** Support Foot Assembly, Ratchets, Eye bolts, Heavy equipment.

## 1. INTRODUCTION

In industries every time for lifting heavy equipment's or to maintain and service it, cranes are called. Calling cranes is always a time consuming task. Also along with cranes a lot of manpower is required. In order to avoid this tedious task, one can use an assembly which comes along with the entire equipment to be moved or lifted. This assembly can be called as Support Foot Assembly. The conventional lifting equipment's lead to limitations like unavailability of lifting equipment when it is urgently required. To overcome this limitation, a support foot assembly is one of the best solutions.

The support foot assembly can also be used with an elongated load bearing devices such as a crane or crutch. The

support foot assembly includes a mounting structure having a generally planar bottom surface and an upper surface which is provided with a large, deep generally cylindrical cavity.

The equipment to be lifted comes with support foot assembly consists of a long plate provided with two ratchets on each side of the plate. These ratchets consists of eye bolts on which the equipment to be lifted is attached. The capacity of weight to be lifted depends on capacity of eye bolts. The equipment to be lifted or to be moved to another place is hung to the ratchets. The ratchets give firm support to the equipment so that the equipment could be held tight. Even for servicing purpose the lower part of the equipment can be supported while the upper part could be opened so that inner parts can be serviced properly. So servicing of the inner parts becomes easier with this type of assembly. Delicate equipment's or parts can also be easily and safely lifted and moved using support foot assembly. Therefore damage to the delicate parts or equipment's should be avoided.

## 2. PROBLEMS RELATED WITH CONVENTIONAL LIFTING EQUIPMENT'S:

1. For moving and lifting purpose of heavy materials or parts cranes and conventional lifting equipment's are the only option and these are not readily available every time.
2. Time requirement for calling conventional devices at work place is more and it affects the productivity of other machineries and plants

3. Cranes and conventional lifting equipment's require skilled manpower for its operation.
4. Cranes and conventional lifting equipment's are very much risky and subject to accidents if they are not properly operated causing sudden failure.
5. Cranes and conventional lifting equipment's cannot work in certain environment conditions such as wind, changing ground conditions or during rainy conditions.
6. In many industries where there are alkaline and acidic conditions, conventional lifting equipment's cannot be used.

All the above problems can be overcome by using Support Foot Assembly.

### 3. What Is Support Foot Assembly?

1. The Support Foot Assembly is an extension of backup roll assembly with some modifications such that the entire support assembly comes with the equipment to be lifted itself.
2. The assembly consists of long elongated plate having provisions for the attachment of ratchets on both ends of the plate.
3. The ratchets consist of eye bolts which help in hanging the equipment.
4. The capacity of the assembly to lift the weight of the equipment depends on the capacity of eye bolts.
5. The eye bolts give firm support to the equipment to be lifted ensuring that the entire equipment is properly balanced.
6. The entire assembly runs on the electric motor. Hence with this type of assembly the lifting and moving equipment becomes simpler avoiding more manpower.
7. The assembly consists of stud which helps in separation of upper and lower part of the equipment to be lifted which enable in proper servicing of inner parts of the equipment to be lifted.
8. The assembly has a capacity of around 1 ton.

### 4. Advantages of Using Support Foot Assembly.

1. For moving and lifting purpose of heavy materials or parts we need cranes and other type of instruments.
2. To overcome this type of problem we need this type of lifting assembly in large scale industry.
3. Also this assembly comes with the equipment itself so assembling and disassembling of the equipment also becomes very easy.
4. A lot of human effort and time is saved.
5. We can also save maintenance and servicing charges using this assembly.
6. It does not require a lot of skilled manpower.
7. Can work in any environment conditions.
8. Delicate parts and equipment's can also be easily lifted and moved.

### 5. Applications of Support Foot Assembly.

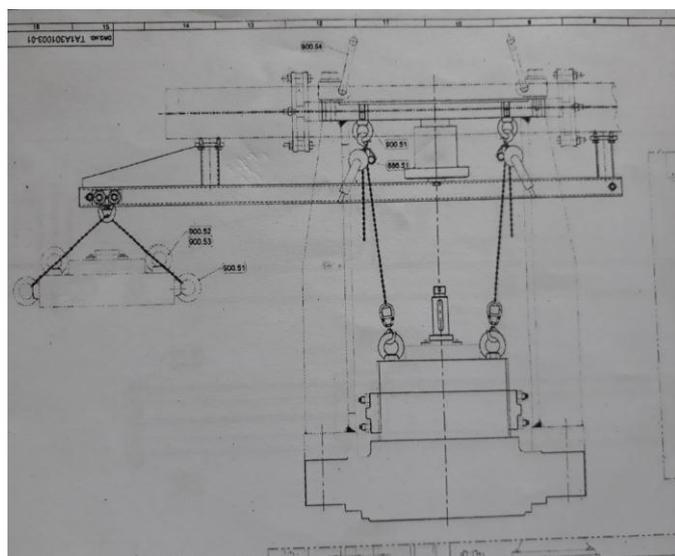
1. **Turbines-** For lifting and moving of the turbines due to some maintenance or technical problems we use conventional lifting equipment's. Instead we can use Support Foot Assembly which can come with turbine itself making lifting and moving simple. Also for cleaning of inner parts or for maintenance the upper and lower part of the turbine can be separated with the help of this assembly.
2. **Roll Assembly In Steel Industries-** A steel manufacturer requires a lifting device to handle their roll assemblies safely and hands free. Therefore it requires a single lifting device which can lift the top assembly, the transfer stool and the bottom assembly. The bottom assembly has to be removed from the pit with minimal clearance. Therefore Support Foot Assembly will be suitable for lifting both upper and lower assemblies.
3. **Lifting Of Heavy Gearboxes-** In industries after manufacturing of heavy gearboxes, they needed to be lifted and safely placed in transportation vehicles for which use of other conventional lifting equipment's becomes very difficult. Here support Foot Assembly can be easily used which makes lifting and placing of gearboxes easy.

**4. Lifting Of Delicate Equipment's-** Lifting and moving of delicate equipment's needs a lots of care and attention as there are chances of causing damage to the equipment's. Here Support Foot Assembly can be easily used which helps in easy lifting and delicate parts and equipment's without causing any damage to the parts or equipment.

**5. Maintenance Of stationary Heavy Equipment's-** Maintenance of heavy equipment's requires the equipment to be lifted and moved from one place to another within the industry itself. Here Support Foot Assembly can be used to lift the heavy equipment's and can also be used to move the equipment within the industry which helps in easy maintenance of the equipment.

**6. Disassembling Of Heavy Equipment's-** As Support Foot Assembly comes with the equipment itself it helps in separating the upper part of the equipment from its lower part such that upper part can be lifted and lower part remains stationary making disassembly of the equipment very easy. This helps in easy servicing and maintenance of the equipment as inner parts of the equipment can be properly serviced and maintained.

**7. Construction Site-** Support Foot Assembly can be used in construction sites where there is requirement of lifting and moving heavy parts and equipment's. This saves a lot of human effort and time.



**Pic 1- Support Foot Assembly**

**6. Comparison of Conventional Lifting Equipment's with Support Foot Assembly-**

Conventional lifting equipment's	Support Foot Assembly
1. For lifting and moving purpose we need to call conventional lifting equipment's every time. It may not be available sometimes.	1. It comes with the equipment itself. So no can move and lift equipment whenever needed.
2. Skilled worker is required.	2. Skilled worker is not required
3. The manpower and time required is very high than that of support foot assembly.	3. The manpower and time required is very less than cranes.
4. Calling conventional lifting equipment's every time is time consuming.	4. As it comes with the equipment a lot of time is saved.
5. Initial investment is not high.	5. The entire assembly is little costly.

**Table-1**

**7. Conclusion-**

As there is need of lifting and moving heavy equipment's in industry or in other fields, use of cranes and conventional lifting equipment's many times becomes difficult and uneasy. Therefore Support Foot Assembly can be used which makes lifting and moving of heavy equipment's very easy and simple. Also disassembling of parts of heavy equipment's becomes easy due to this assembly. Delicate parts and equipment's can also be easily lifted and moved without causing any damage to the equipment. Also Support Foot Assembly can be used in any type of environment where use of other conventional lifting equipments becomes difficult. Thus we can definitely say that Support Foot Assembly can help in dealing with many of the problems related to lifting of heavy equipment's and will have more scope in future.

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