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## **SPECIFICATION OF LIFTMAK COMPACT, LOW STOWED HEIGHT TRUCK MOUNTED Z-BOOM 11M/15M WORKING HEIGHT HYDRAULIC TELESCOPIC, ZERO ELBOW PLATFORMS**

### **1. SCOPE & DESIGN CONCEPT**

Liftmak models **LMTHPZ-11/15** telescopic hydraulic access platforms of 11m/15m working height, has been designed to satisfy the needs of the most demanding applications, which require:

- ▶ Chassis to be of small size so as to enter into narrow lanes and confined spaces.
- ▶ The stowed height of the equipment should not exceed the chassis cabin height, so that the equipment does not foul with overhead wires and other overhead obstructions.
- ▶ The rear overhang of the built up equipment should not exceed 50% of chassis wheel base to conform to RTA rules and also to make the unit as compact as possible.
- ▶ The cage should rest on chassis deck to facilitate easy and quick entry at start up.
- ▶ The cage should be automatically level in all positions with an additional hydraulic control at cage to adjust the cage level directly by the operator, if felt necessary.
- ▶ The hydraulic platform should have continuous, unlimited and endless slew rotation in both directions
- ▶ The reach of the cage should be 5m maximum with a telescopic boom for easy access
- ▶ The maximum working height of the hydraulic platform should be 11m/15m
- ▶ The hydraulic platform should have 'zero-elbow'; no part of hydraulic platform on side opposite to cage, should extend beyond the outrigger width so as not to obstruct traffic or create hazard during operation
- ▶ The vehicle should be automatically stabilized on 4-outriggers through an electronic auto-levelling mechanism to eliminate human error in leveling of the vehicle. Interlocks between outriggers and booms should be provided to ensure that the hydraulic platform cannot be operated unless outriggers have been deployed and vehicle leveled. The interlock should also ensure that the outriggers cannot be accidentally retracted unless the booms are stowed.

In other words, Liftmak **LMTHPZ-11/15** hydraulic access platforms involves a no-compromise design, which has a unique boom geometry and unparalleled safety for the operator.

To address this demanding application, **LMTHPZ-11/15** hydraulic access platforms, which have all the above features and much more, has been designed for mounting on compact chassis. Ofcourse, it is easily possible to install the hydraulic platform on longer wheel base chassis as well, if so desired.

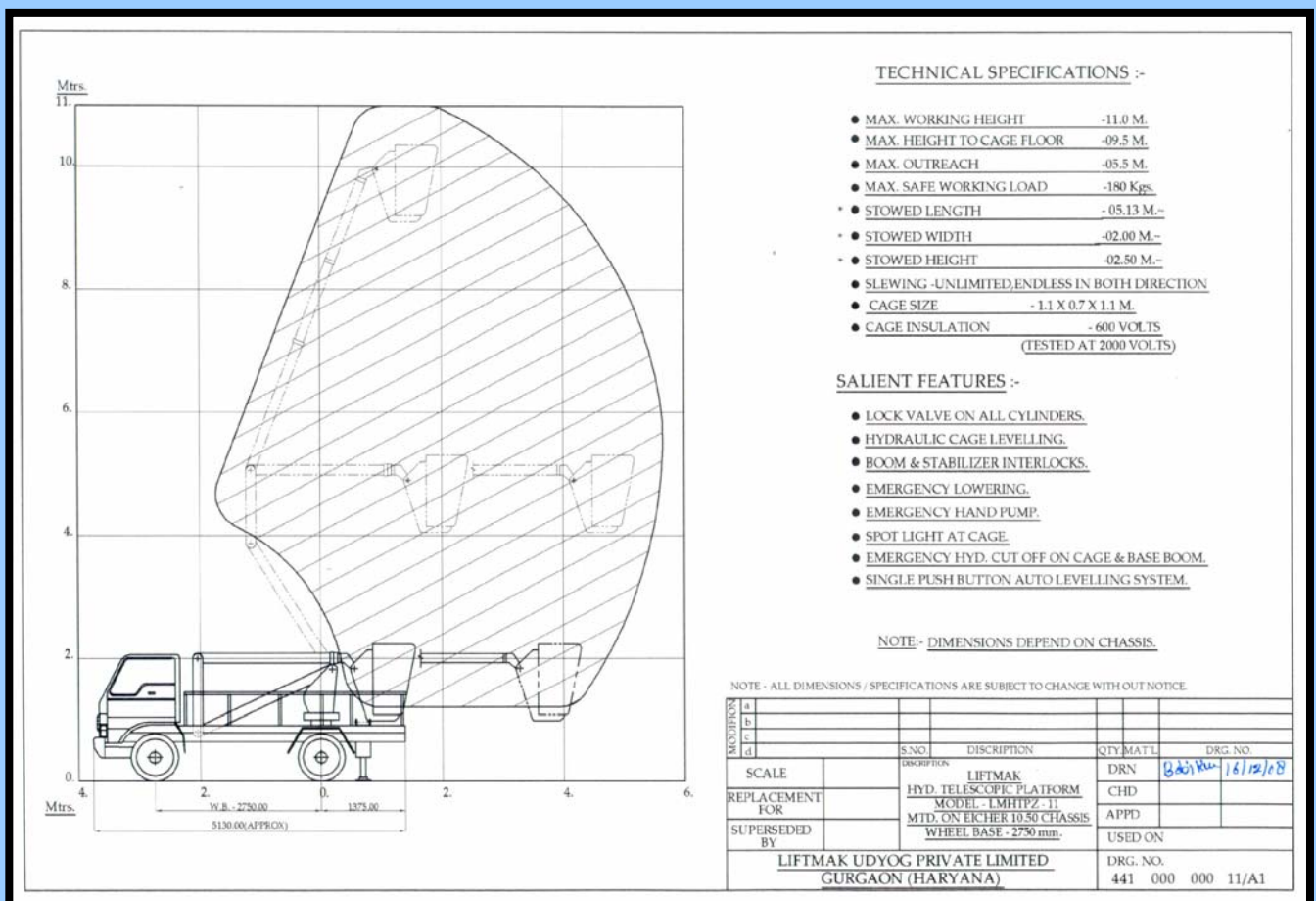
## 2. TRUCK CHASSIS

Liftmak models **LMTHPZ-10/11/15** telescopic platforms are mountable on any short wheel base chassis as per drawings enclosed

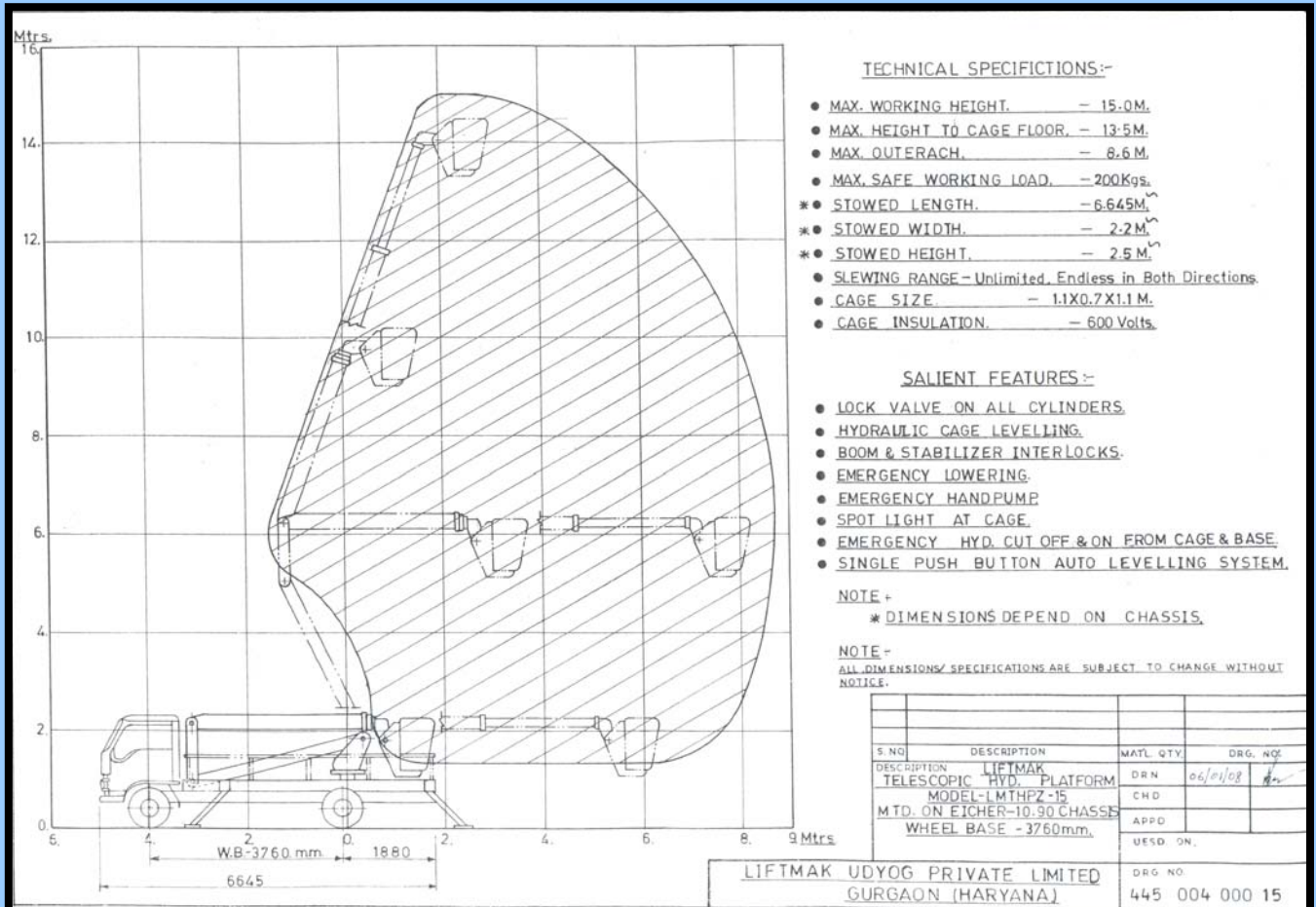
**LMTHPZ11** – 11m working height model can be mounted on 4-tyre LCV chassis of wheel base 2750mm or higher

**LMTHPZ15** – 15m working height model can be mounted on 6-tyre MMV chassis of wheel base 3760mm or higher

The drawing and range diagram of Liftmak **LMTHPZ-11** hydraulic platform is as under:



The drawing and range diagram of Liftmak **LMTHPZ-15** hydraulic platform is as under:



### 3. POWER SUPPLY

Power for the hydraulic platform is provided by a hydraulic pump driven from chassis power take off unit only. The pump is of ample and sufficient output for normal smooth operation of the platform with low engine speed.

Hydraulic reservoir is incorporated in the main frame and hydraulic circuit is fully protected by efficient filters.

Pump and motor is of reputed make such as Dowty, Vickers, Danfoss or equivalent

### 4. HYDRAULIC HOSES

The hydraulic hoses are located so that they do not interfere with the movement of the platform, booms etc. Make of hoses offered is Dunlop/Swastik/Superseal or equivalent.

## **5. STRUCTURE**

The booms are made from MS structural steel of good quality. Telescopic boom (as offered) sections are rigid, reinforced box section. All fabricated sections are rust inhibited from the inside while the exterior surfaces are pretreated and finished to give a glossy look.

## **6. STABILIZERS**

Four stabilizers, hydraulically powered, are provided, two at rear & two in front. Each of the stabilizers is operated independently, to allow levelling on uneven ground. Suitable level indicators are provided to check the level, both along the length as well as along the width of the chassis/vehicle.

When stowed, no part of the stabilizers protrude beyond the chassis

Suitable interlocks are provided to ensure that the stabilizers cannot be retracted until platform booms are stowed and also to ensure that booms cannot be operated until stabilizers are deployed.

As an option, a single push-button outrigger auto-levelling system is available, which automatically commands the outriggers to level the vehicle. The auto-levelling mechanism eliminates the possibility of human error in leveling the machine. Levelling of the vehicle before use is most important, to prevent the possibility of accident/toppling.

## **7. HYDRAULIC CYLINDERS**

All platform motions are performed either by double acting hydraulic cylinders or hydraulic motors with automatic brake.

- The cylinder tubes are of ST52, cold drawn seamless tubes conforming to DIN 2391, having H8 tolerance and surface roughness Ra0.2 microns
- The piston rods are of CK45, hard chrome plated and ground steel rods having minimum 20 microns hard chrome plating and surface roughness Ra0.2 microns and corrosion resistance NSS ISO 3768 & ASS/ISO3769
- Piston glands are from EN8
- Seals are of Bushak, Shamban
- U-cup seal are of Polyurethane
- Hoses are tested to twice rated pressure and the bursting pressure shall be at least four times the rated pressure.

## **8. SLEWING**

The hydraulic telescopic platform models **LMTHPZ-11/15** is designed for continuous slewing by a high torque, low speed motor, through reduction gear box up to and beyond 360° in either direction – continuous, unlimited. Slewing speed is precisely controlled by using fine restrictors in the circuit.

## **9. PERSONNEL CAGE**

A special designed reinforced fibre-glass basket of size (outer dimensions) 1.1x0.7x1.1M approx. is provided. All attachment points are bonded to withstand most arduous use. The non-slip floor with drain holes is provided to give the operator safe working condition. The basket is insulated to withstand 600 volts, even though the platform is not to be used on live line and hoses/links/controls are not be insulated. The basket is designed to carry a safe working load of 180 kgs. The hydraulic platform design is such that entry and exit into/from cage is easy.

## **10. CAGE LEVELLING**

The cage is level in all positions, achieved through a mechanical cum hydraulic levelling system.

Additional hydraulic control is provided in the cage to correct any leveling error, should it occur, thus providing the operator total safety and operational control

## **11. PLATFORM CONTROLS**

The hydraulic controls for all functions (except outriggers) are in cage. All control levers shall be self-centering and hooded for protection against accidental operations. A hand pump permitting lowering of the boom is provided at the base in case of vehicle engine/electrical system failure. The stabilizer controls are provided only at base, at rear of vehicle.

## **12. TRAVELLING DIMENSIONS**

No part of the hydraulic telescopic platform models **LMTHPZ-11/15** protrude beyond outrigger position, during operation. In other words, design is based on 'zero elbow' concept during operation to avoid accident/collision with road-side traffic.

### 13. SAFETY DEVICES

The hydraulic platform models **LMTHPZ-11/15** are incorporated with special overcenter valves in the hydraulic circuit to ensure that all boom movements are accurate and precise. In addition, these valves safeguard the operator in the event of hydraulic hose failure or engine/electrical system failure or leakage, by preventing creeping or collapsing of boom.

Pilot operated lock valves are incorporated in the stabilizer hydraulics, to prevent sinking of stabilizers while in operation.

Other safety features provided are -

- ◆ Automatic stops to prevent platform from reaching unstable areas of operation
- ◆ Interlocks to ensure that stabilizers are not retractable as long as boom is in elevated position and reciprocally to ensure that boom cannot be operated unless stabilizers are deployed
- ◆ Lock valves provided on all load bearing cylinders (overcenter valves on main lift and telescopic cylinder) to ensure that there is no mishap/boom/outrigger collapse in the event of hose failure
- ◆ Automatic overload protection
- ◆ Cage insulated to 600V – even though this platform is not a 'hotline' machine and is not recommended for use on live line
- ◆ Relief valve/ oil bye-pass system to bring down main boom, in event of hose failure during operation.
- ◆ Safety belt anchorage points at cage
- ◆ Optional single button outrigger auto-levelling mechanism to automatically command the outriggers to level the vehicle
- ◆ Optional intercom between cage and base control
- ◆ Optional independent cage slew of  $\pm 45^\circ$  to align cage to any surface

## 14. OPERATING DATA

## Model LMTHPZ-11/15

- Maximum height of cage floor from Ground level.....9.5M/13.5M
- Maximum working height ( taken as cage base +1.50M ) ..... 11.0M/15.0M
- Maximum outreach ..... 5.5M/8.6M
- Cage capacity (tested for stability at 50% overload) ..... 180 kgs./200kgs
- Outriggers (Hydraulically operated) .....4 Nos.
- "Zero-Elbow" of boom on opposite side of cage (within outrigger width) ..... 1.0M
- Levelling of cage.....Positive mechanical cum hydraulic
- Lock valves provided on all cylinders ..... Yes
- Slew (continuous & unlimited in both directions) ..... 360°+ endless
- Hydraulic pump drive through chassis PTO ..... Yes
- Cage insulation .....600 volts

### Other parameters :

- Boom to stabilizer and stabilizer to boom interlocks provided for safety
- Controls provided as follows –  
 Stabilizer controls on rear side of chassis,  
 Slew, boom elevation and boom telescoping controls at cage
- Emergency hand pump to stow platform in case of main system failure.

## OTHER SIMILAR PRODUCTS

