



ITI HYDRAULIK USA  
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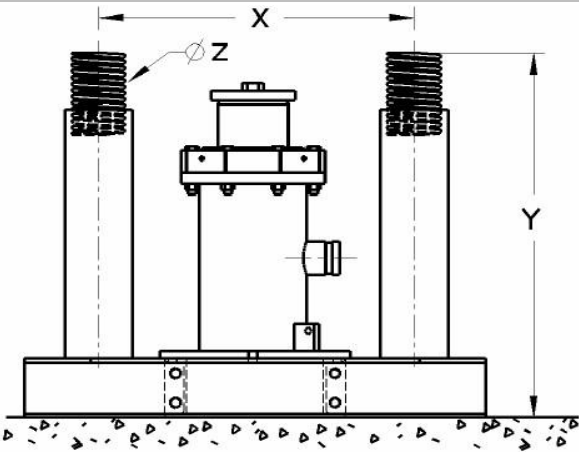
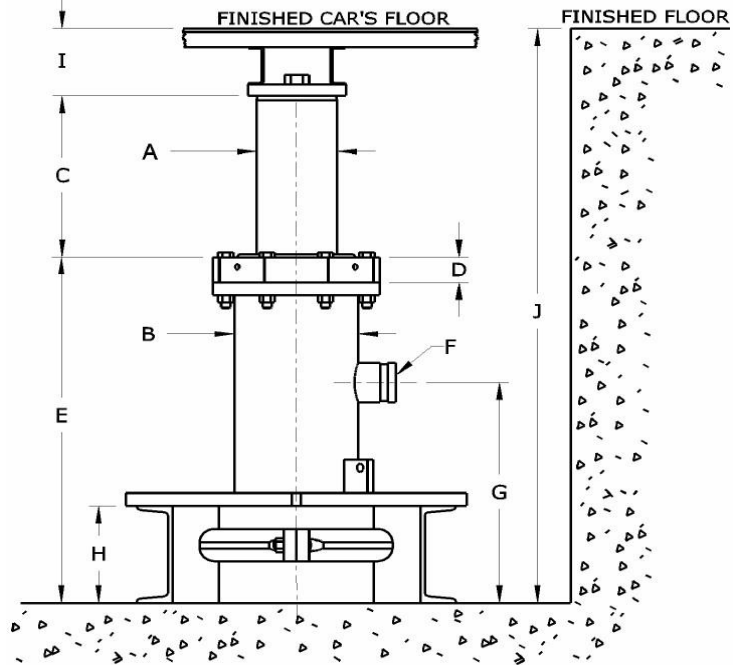
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### CYLINDER REPLACEMENT SURVEY SHEET

DATE: \_\_\_\_\_  
CUSTOMER: \_\_\_\_\_  
CONTACT: \_\_\_\_\_  
TEL.: \_\_\_\_\_ FAX: \_\_\_\_\_  
REFERENCE/PROJECT: \_\_\_\_\_

PISTON DIAMETER MUST BE MEASURED WITH MINIMUM 3 DIGITS  
(EX: 5,437)

- A Ø PISTON : \_\_\_\_\_
- B Ø CASING : \_\_\_\_\_
- C PISTON STICK OUT : \_\_\_\_\_  
(WHEN THE CAR IS ON THE FIRST FLOOR)
- D HEAD THICKNESS : \_\_\_\_\_
- E HEAD HEIGHT: \_\_\_\_\_  
(HEIGHT FROM TOP OF HEAD TO PIT FLOOR)
- F Ø OIL INLET : \_\_\_\_\_  
 VIC     NPT MALE     NPT FEMALE
- G OIL INLET HEIGHT: \_\_\_\_\_
- H PIT CHANNEL HEIGHT : \_\_\_\_\_
- I PLATFORM THICKNESS: \_\_\_\_\_  
(INCLUDING FINISH FLOOR, BOLSTER AND PLATEN PLATE)
- J PIT DEPTH: \_\_\_\_\_
- K PISTON PORTION REMAINING: \_\_\_\_\_  
INSIDE JACK FULLY EXTENDED
- L TOP OVER TRAVEL: \_\_\_\_\_



- X CENTERLINE : \_\_\_\_\_  
OF BUFFERS
- Y BUFFER HEIGHT: \_\_\_\_\_
- Z Ø SPRING: \_\_\_\_\_

NOTES: \_\_\_\_\_

- CAPACITY: \_\_\_\_\_
- CAR WEIGHT: \_\_\_\_\_
- GROSS LOAD: \_\_\_\_\_  
(INCLUDING CAPACITY)
- SPEED: \_\_\_\_\_ RPM
- TRAVEL: \_\_\_\_\_  
(FLOOR TO FLOOR)
- PISTON LENGHT: \_\_\_\_\_  
(PISTON LENGHT = C+TRAVEL + k +L)
- NUMBER OF PIECE(S): \_\_\_\_\_
- MAX PIECE LENGHT: \_\_\_\_\_

- THREADED WITH WELDING
- THREADED WITHOUT WELDING  
(ONLY AVAILABLE FOR Ø CAISING 6 5/8 AND 8 5/8)
- WELDED
- BOLTED

YES NO  
FOLLOWERS GUIDES

- ITEMS TO REPLACE
- |                  | YES                      | NO                       |
|------------------|--------------------------|--------------------------|
| BUFFER & SPRINGS | <input type="checkbox"/> | <input type="checkbox"/> |
| NEW PIT CHANNEL  | <input type="checkbox"/> | <input type="checkbox"/> |
| NEW HEAD         | <input type="checkbox"/> | <input type="checkbox"/> |
| NEW PISTON       | <input type="checkbox"/> | <input type="checkbox"/> |
| PVC _____        | <input type="checkbox"/> | <input type="checkbox"/> |
| TAPE COAT        |                          |                          |
| HEAD DOUBLE SEAL |                          |                          |

APPROVE: \_\_\_\_\_  
DATE: \_\_\_\_\_



# HOW TO FILL THE SURVEY SHEET

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It is important to complete the survey sheet with the most data as possible. Our ability to provide proper equipment depends upon the completeness and accuracy of the data that you furnish. The following is the dimension explanation to help you get good values. We strongly recommend reading it, at least once. Also, you will find suggested ways to proceed to fill the entire survey sheet. Of course, there are several ways to do it but here are simple and effective procedures to follow.

Major parts of measure to take are in the pit, when the car is on first floor. This way, it is possible to get all the measurements from A to K and X to Z.

## **Piston diameter (A)**

The best way to measure it, is with a diameter measuring tape, a micrometer or a calliper. Precision is very important here, this is why it is really not recommended to measure it with a usual measuring tape.

*Why: It is very important to get the diameter of the piston with a minimum of 3 decimal digits accuracy. Seal must be tight enough to avoid oil loss.*

## **Casing diameter (B)**

The way to measure the casing diameter is the same as previously stated for the piston. The diameter must be measured under the head.

## **Piston stick out (C)**

This measure is the height from the top of the head to the extremity of the piston **when the car is on first floor**. It should NOT be confused with the height when the car is on the buffer or completely closed.

*Why: This information is needed to get the "runby" and to calculate the complete piston length.*

## **Head thickness (D)**

This is the measure from the top of the head to the casing. There is a visible separation between the head and the larger top of the casing.

*Why: This value is needed to build a new head if necessary, to determine the right casing length and also to evaluate the remaining piston length (K).*

## **Head height (E)**

This is the height from the pit floor to the top of the head. It is the height of the visible casing part that is not in ground with the head. The measure must be from the pit floor, **NOT from the top of pit channel**.

*Why: This information is essential to fix the support at the right height and allow the same positions travel.*

## **Oil inlet diameter (F)**

There are three types of oil inlet available: VIC, NPT MALE and NPT FEMALE. Sometimes, the diameter value is written on the pipe.

*Why: This information is important to fit with the actual oil pipe line.*

### **Oil inlet height (G)**

This is the measure from the center of the inlet to the pit floor, **NOT the top of the pit channel.**

*Why: This measure is needed to fit with the actual oil pipe line.*

### **Pit channel height (H)**

This is the measure from the top of the pit channel to the pit floor. The support thickness is **NOT** included in the value.

*Why: This measure is important to fix the supports position and ensure the same travel positions of the piston.*

### **Platform thickness (I)**

This measure is the height from the top piston limit to the finished car's floor, normally containing the platen plate, the bolster and the finished car's floor. Sometimes, the measure isn't easily accessible. It's possible to calculate it by subtracting the head height and the piston stick out to the pit depth ( $I = J - E - C$ ). To verify the data, it is strongly suggested to measure it, not calculate it.

*Why: This value is important to calculate the stick out of the piston when it is completely closed (not supported on buffer) and the "runby".*

### **Pit depth (J)**

The pit depth is simply the height from the finished building's first floor to the pit floor.

*Why: This value is also important to identify the "runby" and verify that the other measures are consistent.*

### **Centerline of buffers (X)**

This is the distance between the centerline of buffers.

*Why: This information is important if a new pit channel is needed and to evaluate the support diameter.*

### **Buffer height (Y)**

This is the height from the top of the buffer to the pit floor, **NOT the top of the pit channel.** Be sure the buffers are **NOT** compressed.

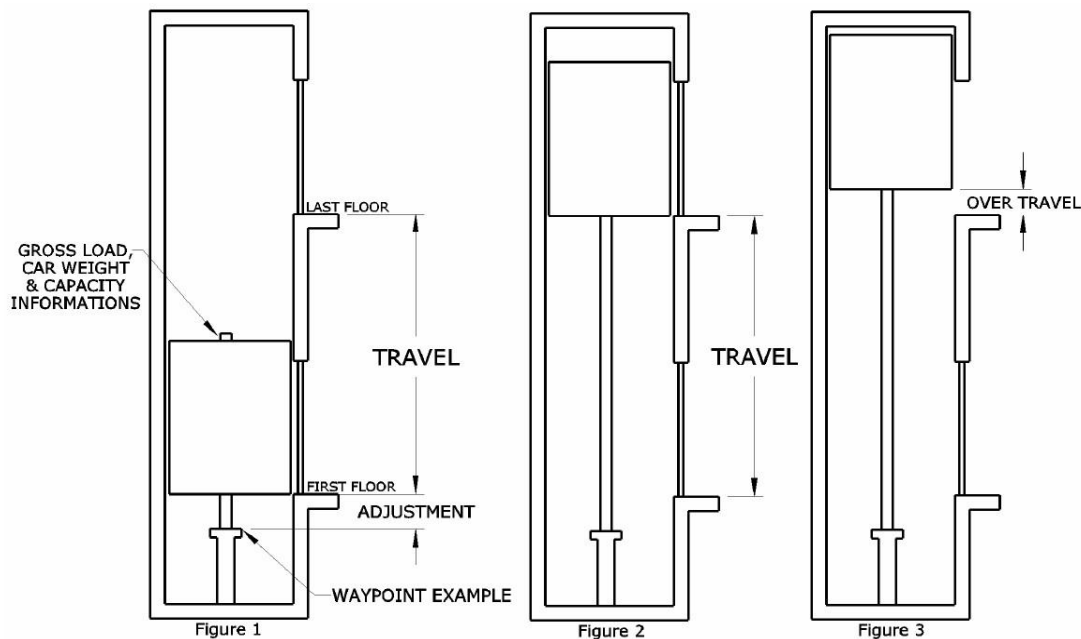
*Why: It is important to have the right value to respect code rules and calculate the "runby".*

### **Buffer diameter (Z)**

The buffer diameter can easily be taken on top of them.

*Why: this value is necessary only if new spring buffers are needed.*

## Capacity, car weight, speed and gross load



These values are usually written on the inside wall of the elevator or on the top beam over the elevator (see figure 1). The gross load must include the capacity.

*Why: These values are important to calculate the "runby", the buffers compression and the right wall thickness of casing and piston needed.*

### Travel

This is the entire elevation floor to floor like shown in the previous figure 1 and 2. To measure the rise, floor to floor, hook the tape under the car when it is on the first floor and make the elevator raise to the last floor. A good way to get te measure, is to take a waypoint, as seen in figure 1, which gives the adjustment for the first floor. With the measure at the same waypoint when the car is to the last building's floor, subtract the ajustment to it. That allows hooking the measuring tape anywhere under the car.

It can also be measured by travelling over the elevator where it can be controlled. It is suggested to start from the top and go down when hooking the measuring tape on the last floor. Usually, you can't access the first floor from the car's roof. The missing height must be measured and calculate from the travel.

*Why: The travel is important to calculate the piston lenght and determine the casing lenght.*

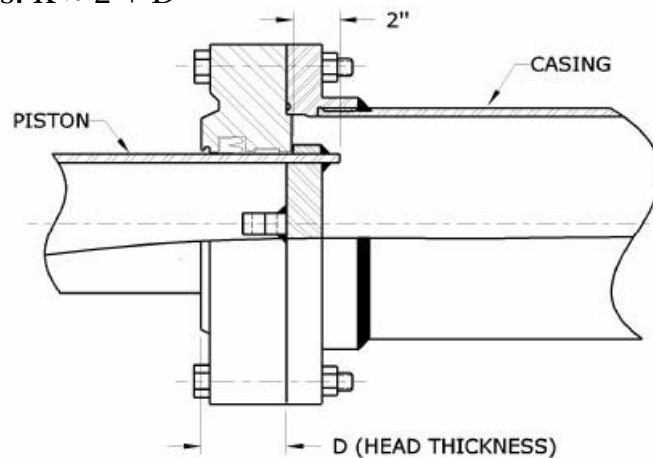
### Top over travel (L)

The over travel is the height from the finished last building's floor to the finished car's floor when the piston is fully extended. See figure 3.

*Why: This value is important to identify the piston lenght of the new casing.*

### **Piston portion remaining inside jack fully extended (K)**

This measure is the remaining length of the piston when it is fully extended. This part is not visible but it can be estimated with the thickness of the head, ITI Hydraulic models are built like the following figure and the remained piston length is approximately 2 inches plus the head thickness.  $K \approx 2 + D$



*Why: This value is important to get the exact piston length.*

### **Piston length**

The piston length contains Piston stick out (C), Travel (floor to floor), top over travel (L) and the portion remaining inside the jack fully extended (K).

There are several ways to get the piston length. However, we strongly suggest obtaining it by two different ways. It can be easily calculated with previous values already measured ( $C + \text{Travel} + K + L = \text{Piston length}$ ) It is also possible to fully measure it in one operation by hooking the tape under the car and let the car go until top over travel. The measure must be read approximately 2 inches under the head of the piston portion remaining inside the jack (K). If the measuring tape is hooked somewhere on the car's platform, this height has to be removed to get the top piston limit.

Another good way is to disassembled the entire piston and measure all parts of the piston. It is longer in time, but much more precise even if the piston portion remaining inside the jack (K) is unknown.

### **Maximum piece length**

This value must be evaluated to know how long the casing part can be to bring them to the elevator place without problem. By determining the best path to carry the casing, the smallest space is the maximum allowable length by the building. Worse places are usually in corridor's corner or close doors.

### **Number of piece(s)**

This value depends on the maximum piece length allowable in the building. The piston's complete length divided by the maximum piece length will give the number of piece(s). It is important to round the integer up to the next number.

### **Joint type**

There are 4 types of joints: Threaded with or without welding, welded only, and bolted. Threaded with welding is only available for casing diameter 6 5/8 and 8 5/8.

*Why: This information is only needed if the casing is not built in one piece.*