

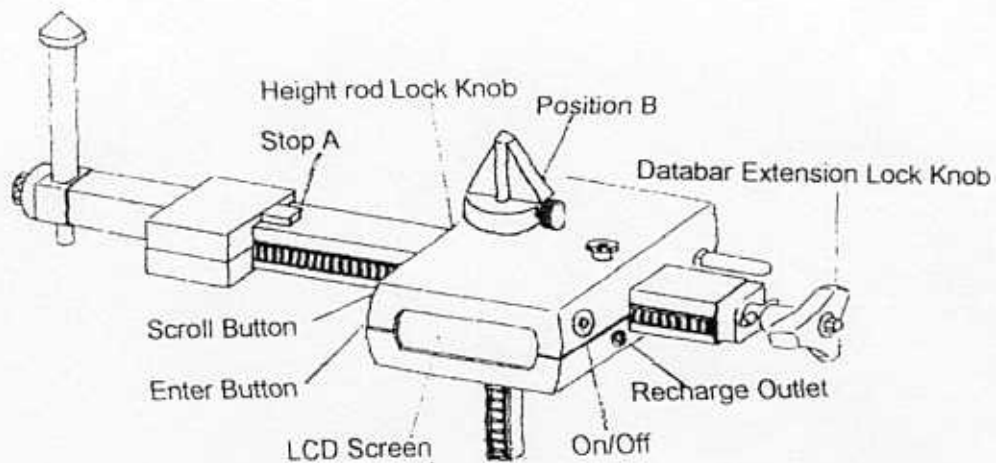


Electronic Measuring

User Guide

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Turning on/off the **JMA** databar

Press **white** button on the side of the black box.
The words **CLC Measure** will appear on the LCD screen.
Press again to turn off

Set databar to zero position

With the Box turned on. Move it to **Stop A** and the Height Rod to **Position B**
Press **Green** Button to scroll
Length and height will be displayed and indicates
Self calibration has occurred

Manual Measurement Mode

This mode is for using **JMA** as a regular digital tram.
Length and height measurements are simultaneously given on
the LCD screen
To select **Frames** press **Orange** button

Orange / Enter Button

This transfers measurements from the black box to the
computer when measuring to data
When in mechanical mode pressing **Orange** button initiates
frames function "F" will appear before Length and Height

Green / Scroll Button

This allows movement between the different measuring options
on the LCD display

Transferring data from computer to the black box

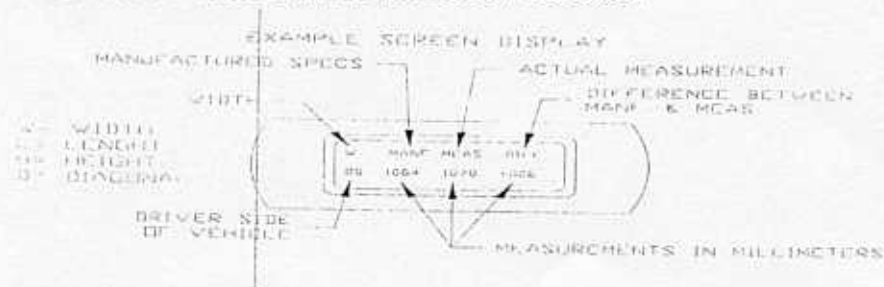
- On the job file click "Start Recording" button
- Or on the black box press the "Orange" button

Charging the CLC battery

- Plug the 9v DC 1000mA regulated adaptor into a wall outlet
- The other end into the recharge outlet on the side of the black box
- 80% charge in two hours
- Overnite charging is recommended

LCD Display

- Use **Green** scroll button to select different measurement function screens on the LCD display
- 'F' denotes **Frames** mode has been selected

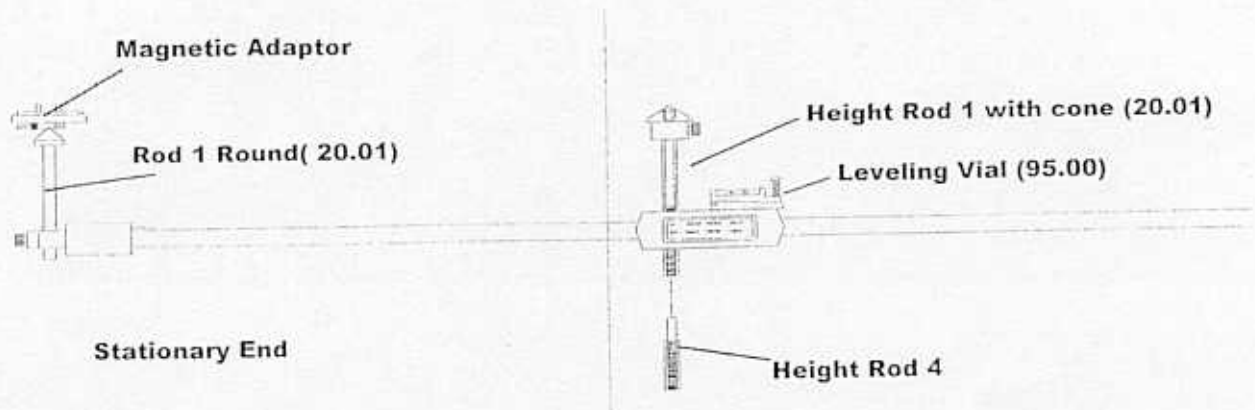


Extending databar length

- Rotate the black knob 1/3 of a turn and pull the opposite end
- When the desired length is reached rotate the knob to the original position ensuring end locks in place
- There are four extension positions
- Black box must be turned on for length measurements to adjust

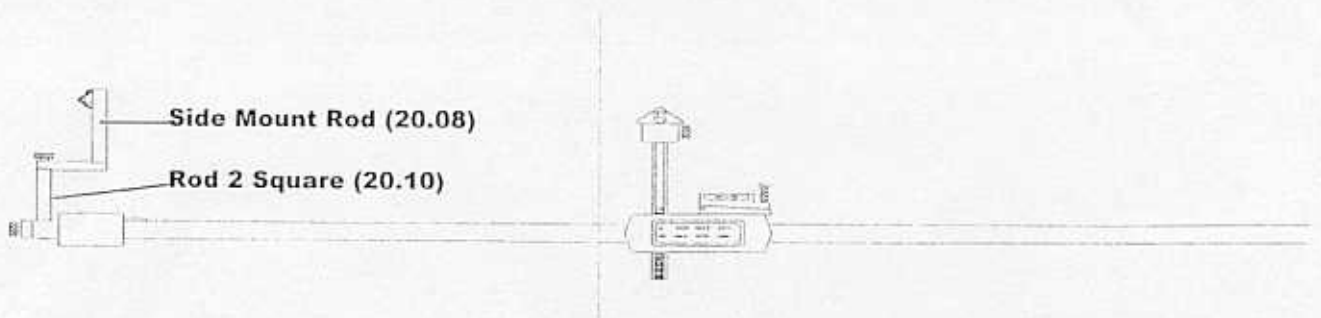
Set Up For Measuring Underbody

Use Rod 1 — round [20.06] with Steel Cone [20.07] attached
Place height rod 1 — 215mm [20.01] in the black box
If extra height is needed use height rods 2,3 or 4
If **Frames** is selected 20.18 sq rod 112mm must be attached to the round rod



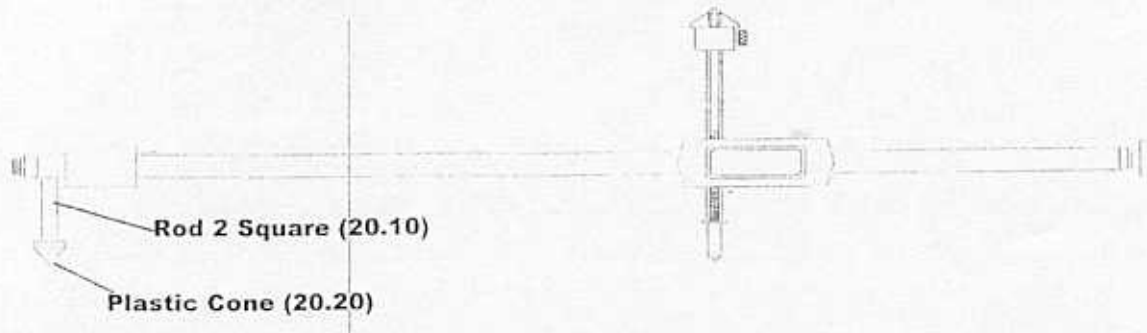
Set up for 90 degree measuring

When measuring from a point 90 degree to the point of measure assemble the side measuring kit as see below and attach steel cone [20.07]



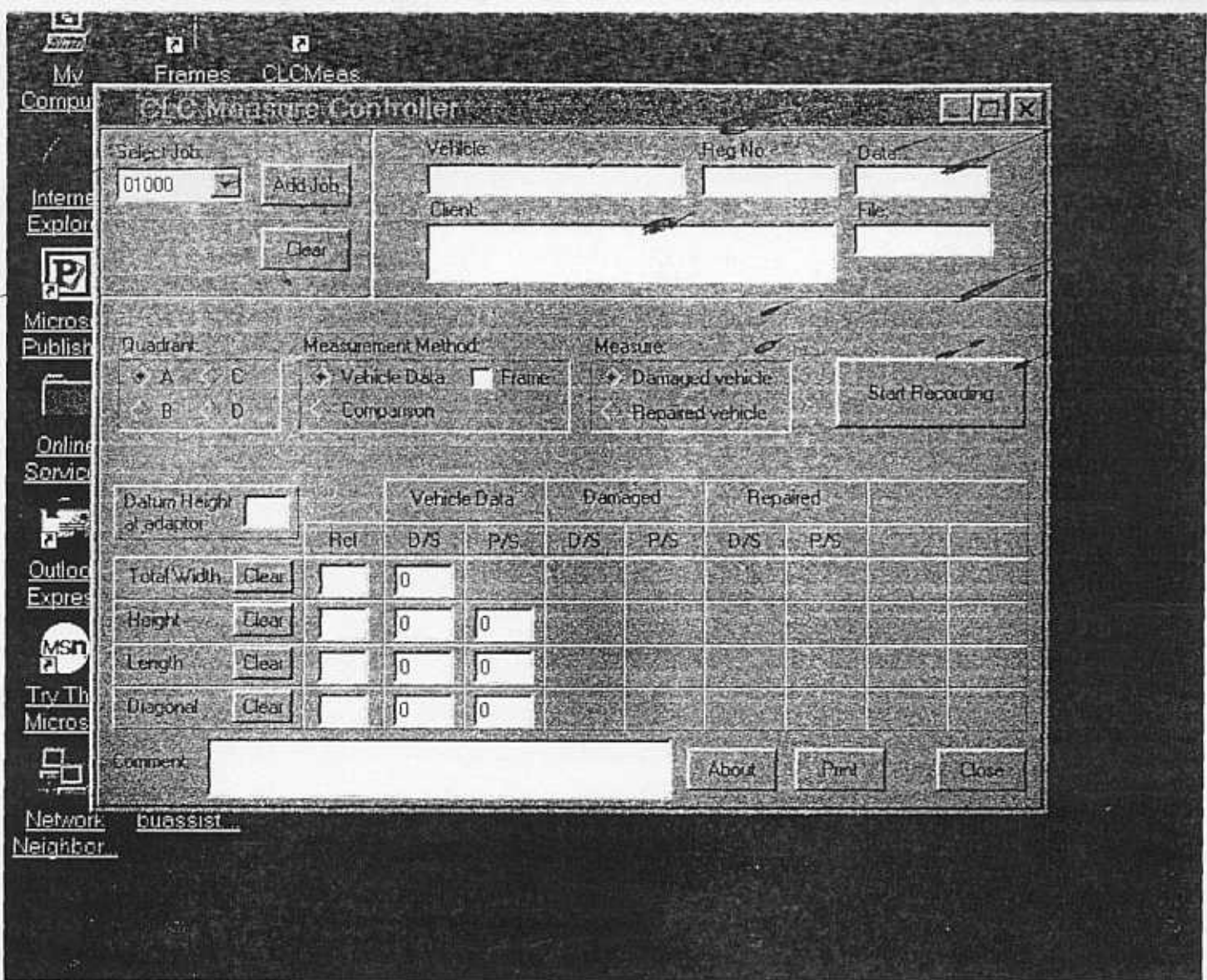
Set Up For Measuring Comparative and Upperbody

Use Rod 2 [20.10] with Plastic Cone [20.20] attached
Place Height Rod 1[20.01] in the black box with
Magnetic Pointer [20.17] attached
lock height rod at 152mm For equal pointers



This set up creates equal pointers and can be used for:

1. All upper body measurements : Engine Compartment, Door Openings Windshields Deck Lid, Pillars and Tailgates
2. Standard tram measurements with or without computer
3. Comparative Measuring



STEP 1 Open CLC program by clicking on CLC icon

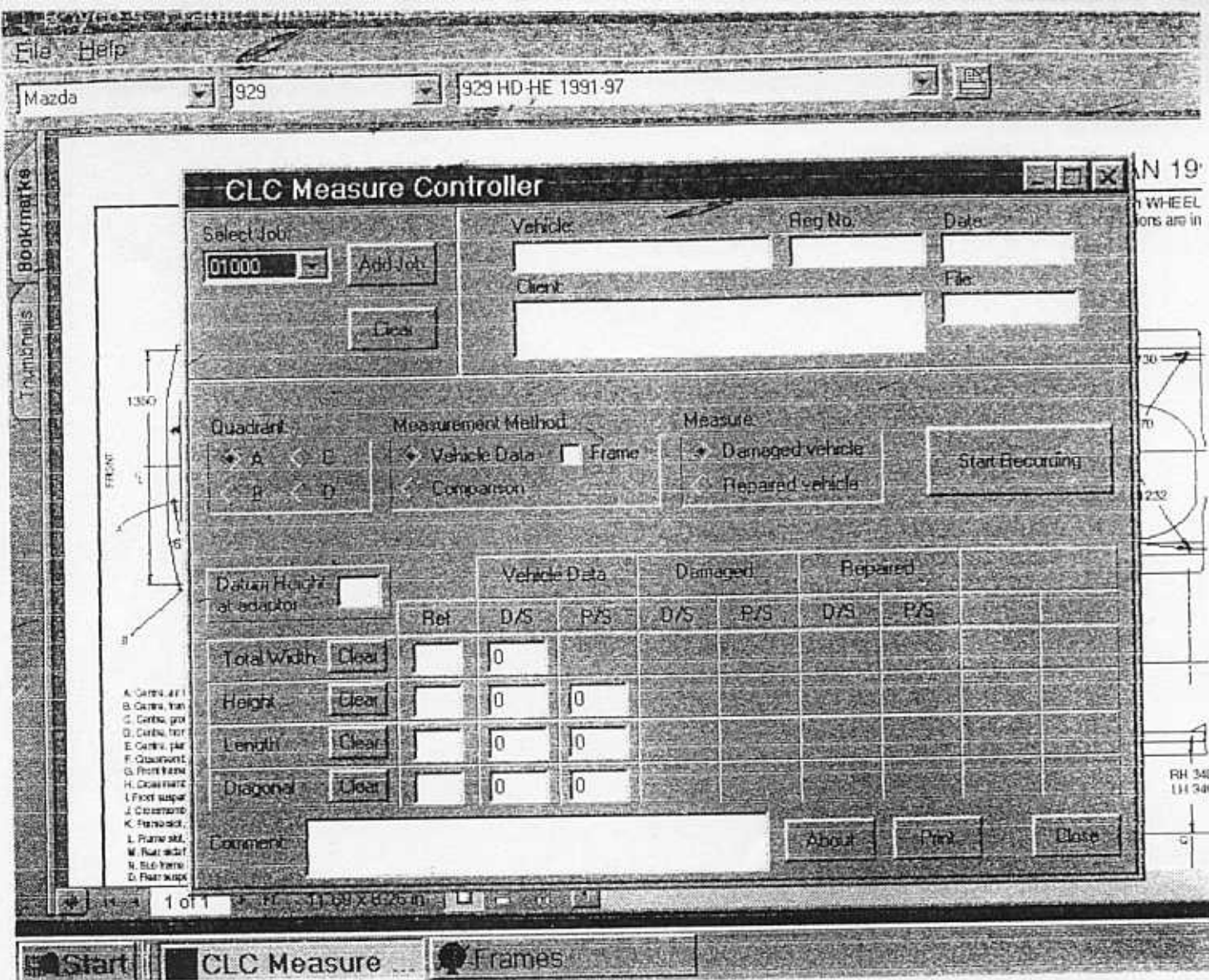
Allocate job number customer name and vehicle details
Place CLC program on the taskbar by using the minimize button
NOTE this must be done before viewing a datasheet

Step 2 Open Boyce data

Select by make model and series the vehicle you wish to repair
minimize the datasheet onto the taskbar

Step 3 On the taskbar click onto the Boyce icon then onto CLC

This will place the job file over the datasheet with both files active
By pressing and holding **alt** then pressing **tab** the datasheet is brought to the front of the screen
Repeat this process as required to complete the recording of the data



**STEP 4 Select area of the vehicle to be measured
Quadrants**

This refers to areas of the vehicle to be measured and repaired
The whole vehicle need not be measured only the quadrants where repairs are needed

- Quadrant A — The front end of the vehicle
- Quadrant B — The middle section of the vehicle
- Quadrant C — The rear end
- Quadrant D — The engine compartment

Multiple quadrants

When a quadrant has been measured return to job file
DO NOT CLEAR
Click into next quadrant and proceed as before

STEP 5 Select measuring method [select one only]

- Vehicle Data** — Refers to dimensions taken from data sheet
- Frames** — Provides extra datum height when databar does not have clearance for operation
- Comparison** — Used when no data exists or operator wants to create his own data

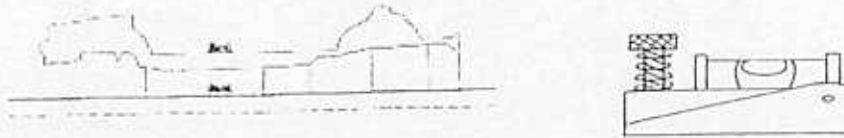
- STEP 6 **Select damaged or repaired vehicle**
- STEP 7 **Select control point**
On the vehicle locate an undamaged point near the damaged point you wish to measure
Place a magnetic adaptor at this position
- STEP 8 **Enter Datum Height**
in the **Datum height at adaptor** box enter the height from the datasheet at the control point where the adaptor was positioned
- STEP 9 **Enter the Width**
Record the full width into the vehicle data box on the job file
Enter that point in the ref column on the job file.
- STEP 10 **Enter the Height**
Record the height at the point which you are measuring to in the D/S and P/S columns and the related point in the ref column
- STEP 11 **Enter the Length**
D/S and P/S measurements from the datasheet
- STEP 12 **Enter diagonal data**

ALL DATA REQUIRED HAS NOW BEEN ENTERED INTO THE CLC PROGRAM

STEP13

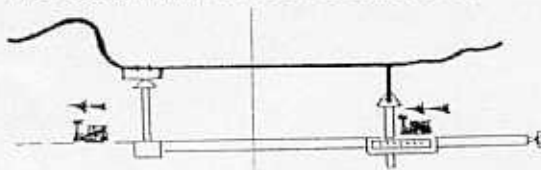
Creating a Datum Line

Datum refers to an imaginary straight line below the vehicle to which all height dimensions are referenced to:



Establishing the datum line with CLC

1. Mount the vial on the CLC black box
Allocate a job number to be used only for creating datum lines
2. Enter the datum height at the adaptor Step 8
Enter the height at an undamaged point Step 10. This undamaged point should be in the vehicles torque box area
3. Set Databar to zero position Step 15. Turn black box on
4. Send the data that has just been entered to the black box by clicking the 'Start recording' button Step16
5. Set the height rod until the 'diff' column on the lcd reads zero.
lock this height by tightening the height set screw 10.08. Extend the databar to the point to measure. Touch the tip of the height rod to the surface beside the hole when measuring to a hole or slot.
Touch the tip of the bolt head when measuring to a bolt
6. When the databar is positioned adjust vial until it becomes level
The datum line is now established



NOTE: It is important to remember which direction [front or rear] the thumbscrew on the vial is facing when creating a datum line
ALWAYS keep this direction when measuring

STEP 14 Measure Height

Press **Green** button and scroll to 'H' D/S or P/S

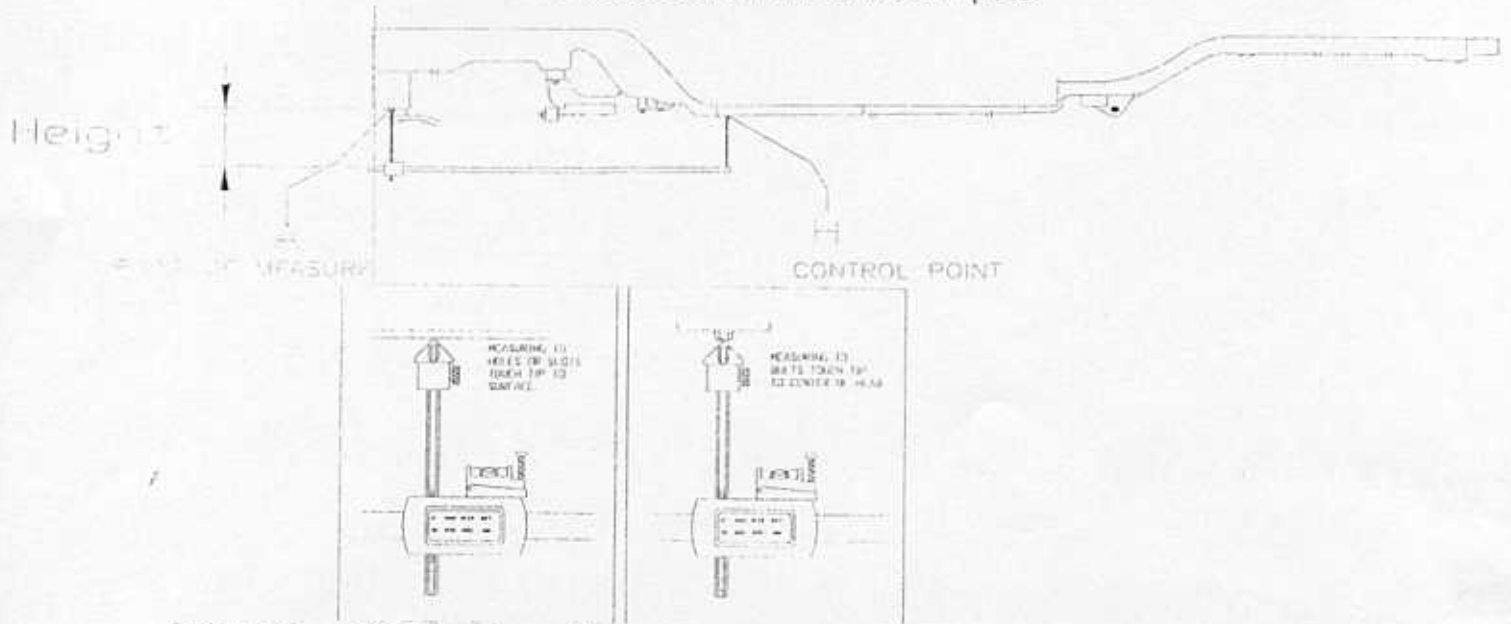
Position the cone rod into the magnetic adaptor which has been positioned at the control point

Extend the databar to the point to be measured

Extend the height rod to the surface next to the hole or slot or to the centre of a bolt head until the **bubble in the vial is level**

Tighten locking knob and press **Orange** button.

This will transmit measurement to the computer



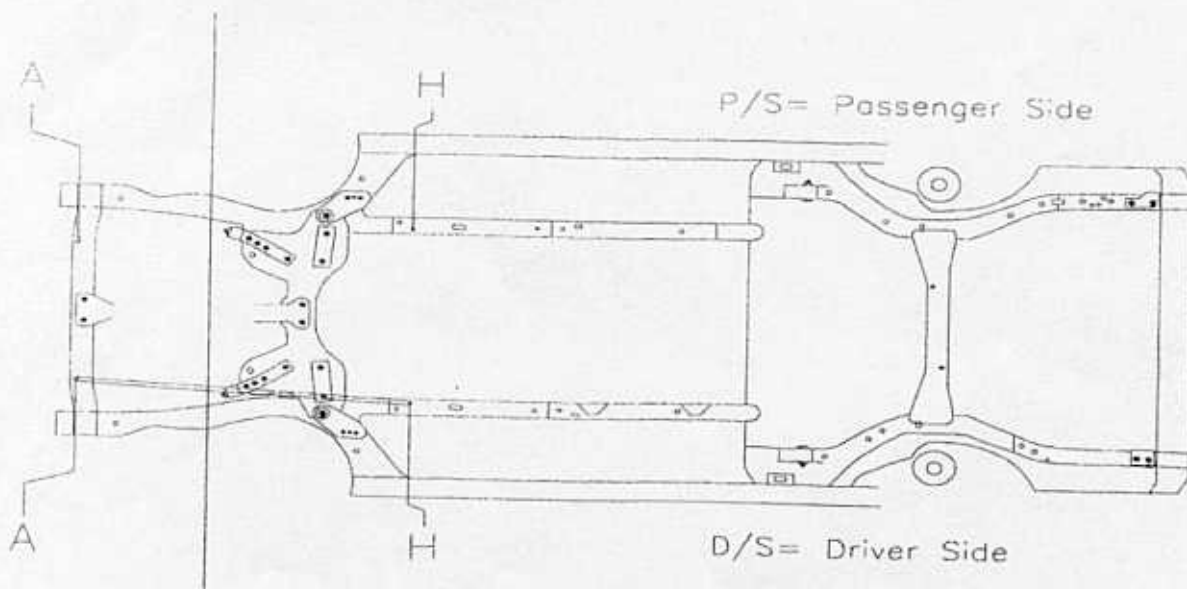
STEP 15 Measure Length

With the databar still in position after taking height measurement

Press the **Green** button and scroll to "L" for D/S or P/S

Extend databar to desired length hold in position with locking lever 10.09

Press the **orange** button to send data to pc



STEP 16 Measure Diagonal

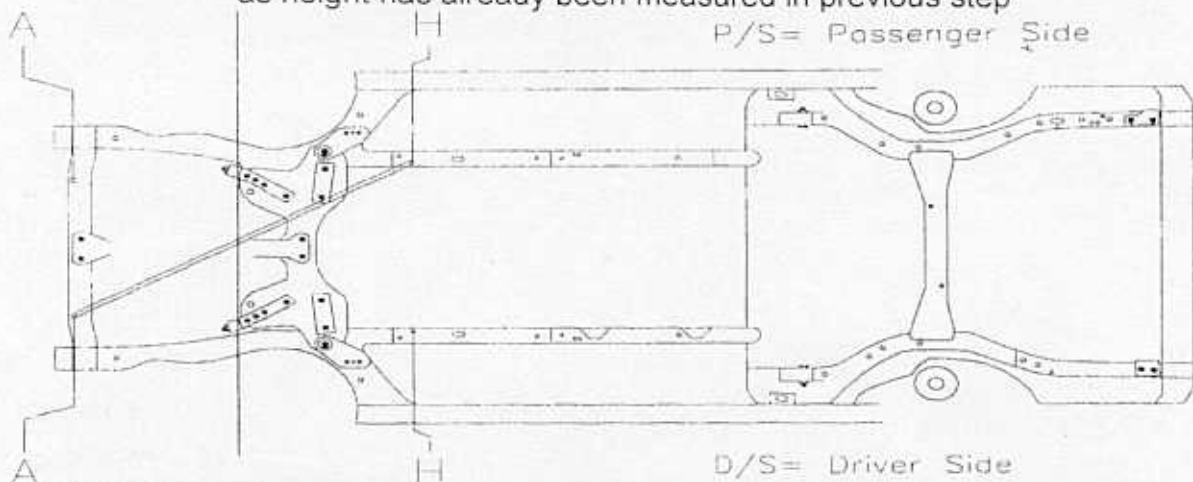
Move the cone rod to a magnetic adaptor positioned on the opposite side from which the LAST Height and Length measurements were taken

Ensure that the height rod is still locked in position after completing step 17

Press the green button and scroll to "D" for the side that is diagonal from the control point

Extend the databar to the desired length secure with 10.09 locking lever and transmit using the orange button

NOTE: Adjustable level is not used in diagonal measurements as height has already been measured in previous step



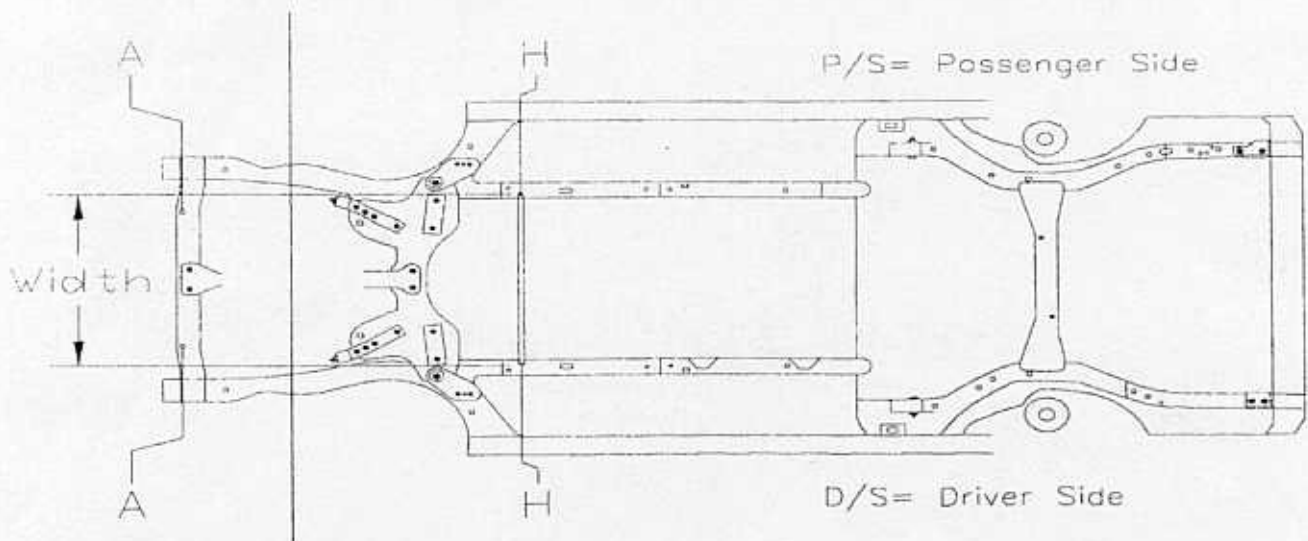
STEP 17 Measure Width

Leave cone rod in position at the control point

Move height rod to 152mm and lock into position

Press **Green** button and scroll to "W"

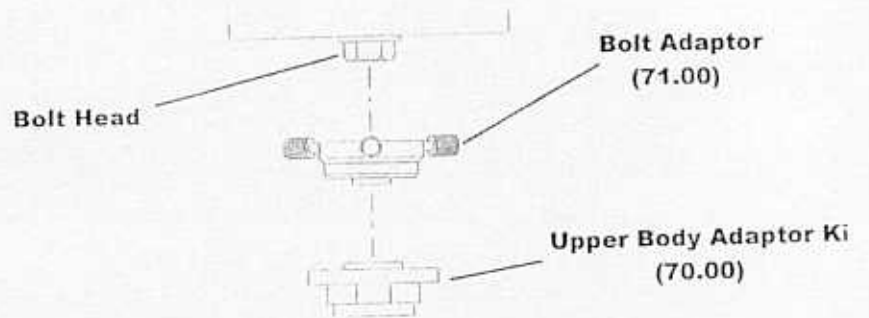
Measure directly across from the control point secure black box and transmit measurement using Orange button



Magnetic Adaptors — Underbody

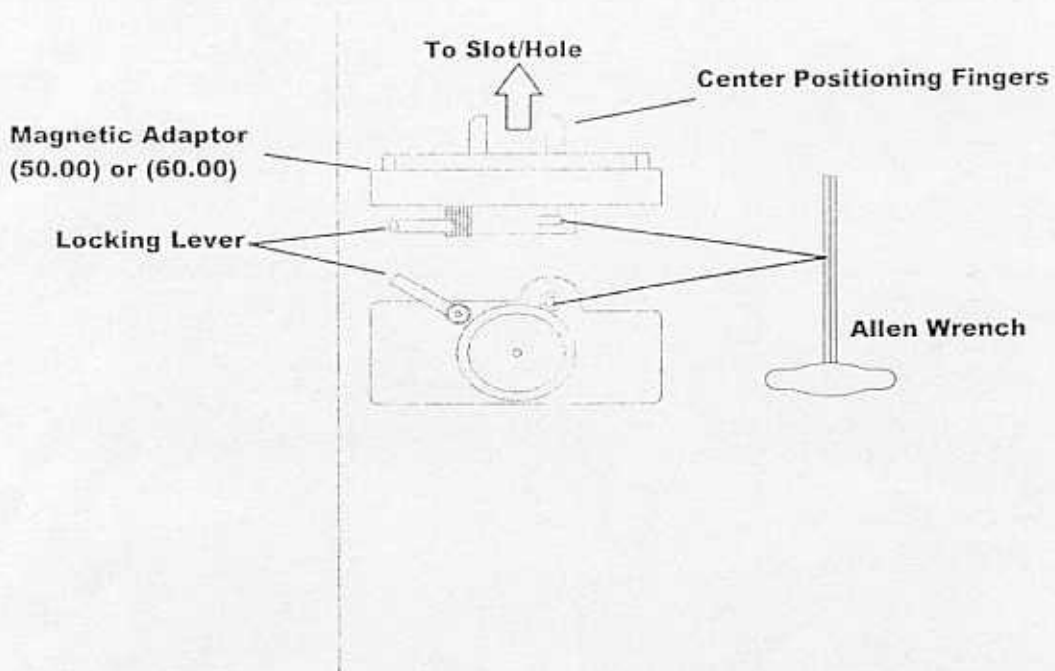
First centre the bolt adaptor [71.00] on the head of the bolt
by adjusting the three set screws
Place the adaptor kit [70.00] into the bolt adaptor

**NOTE: DO NOT USE THE
NYLON SPACER(70.04)
BETWEEN THE BOLT
ADAPT. & THE UPPER
BODY ADAPTOR WHEN
MEASURING UNDERBODY**



Measuring to Holes and Slots

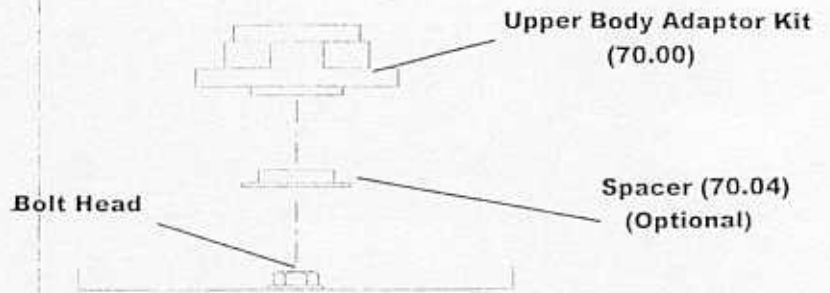
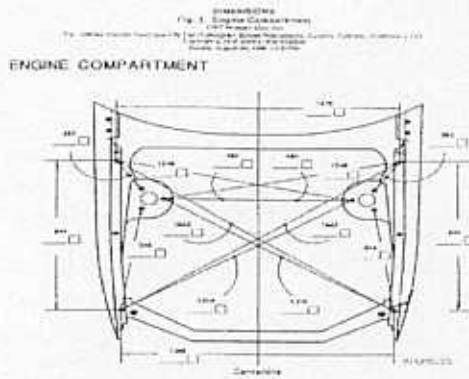
Place the magnetic adaptor large or small at the hole or slot
Use the allen key to adjust the positioning fingers
When centred rotate locking lever to lock in position



Magnetic Adaptors — Upperbody Measuring to Bolt Heads

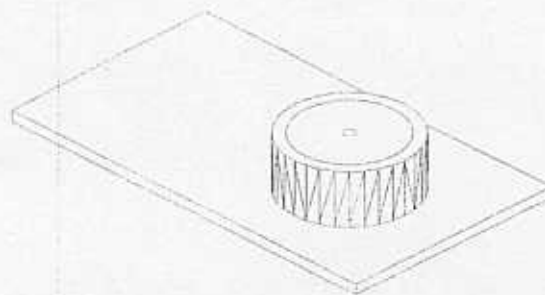
Place Upperbody kit on head of bolt

If the bolt is small use nylon spacer 70.04



Measuring upperbody [comparative]

Place the magnetic plastic 75.01 then Side Measuring Kit on a door opening boot opening etc



Comparative Measurements

Select Comparison mode in the measurement method field
Datum height is not entered in comparative mode
Decide which side will become the basis or data for repairs to the damaged side
Take these measurements and transmit
These will appear in the damaged column on the D/S
Enter the damaged side measurements
These will appear in the P/S column with the difference or required rectification showing in the comparison column

Proceed to repair and then repeat the measurement.
The good side appearing in the D/S and the repaired side measurements in the P/S

Note: The operator must transmit the same measurements to the D/S column as in the damaged mode , the difference appears in the comparison column and indicates the success of the repair

Report Sheets and Error Corrections

Reports

The operator can select from the following reports to be printed for client/insurance co

Damaged Report

This shows the variance to data in each of the damaged fields

Select

Data

Damaged

Print

All quadrants will be printed

Note: the system will not print if in transmit mode

Repaired Report

This show the results of the repair as variances expressed in the repair column fields

Select

Data

Repaired

Print.

Comparison Report — Damaged

This shows the difference as a variance between the good side and the bad side in the comparison column

Select

Comparison

Damaged

Print

Comparison Report — Repaired

This shows the differences as variances after repairs are made

Select

Comparison

Repaired

Print

Error Corrections

Errors can be corrected by using the clear button on the top part of the job file.

This will clear all data inputs for that job number including customer details

However if only one entry in the data column is wrong just use the curser and 'del' to correct the error

If the errors are in the damaged and repaired fields use the clear button for that line

This will clear the reading but not effect the data column or any other information

JMA warrants its manufactured products to be free from defects in material and workmanship for a period of 2 years to the original buyer of the product. Products not manufactured by JMA are not warranted by JMA. Any warranties on products distributed by JMA which are not manufactured by JMA are those offered by the product manufacturer. Any alleged defective product must be returned to JMA freight prepaid. In the event a product is found defective JMA will, at its option, repair or replace the defective product at its expense or refund the amount of the purchase price. If the product is repaired, it will be returned, freight prepaid by JMA.

The above warranty is the warranty made by JMA and is in lieu of any other warranty. All other warranties, express or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, are disclaimed. Agents of JMA have no authority to make representations of any sort beyond those contained herein and any representations or promises inconsistent with or in addition with or in addition to this warranty are unauthorized and shall not be binding upon JMA.

The warranty does not extend to any product that was subjected, in JMA judgment, to misuse, alteration, neglect, accident, or repair by others when the product has been altered or defaced.

JMA's liability whether in contract, in tort, under any contract provision, warranty, in negligence or otherwise shall not exceed the return of the amount of the purchase price paid by purchaser and under no circumstances shall JMA's be liable for special, indirect, incidental or consequential damages. The buyer expressly agrees that the remedies of repair, replacement or refund of purchase price are the buyer's sole remedies.

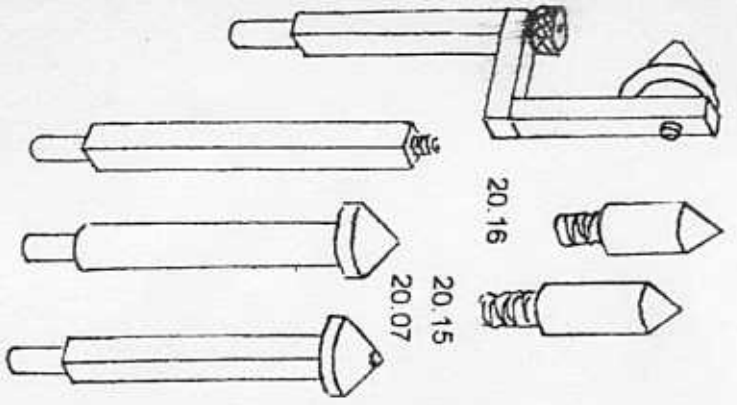
JMA reserves the right to alter product specifications and components without notice.

Questions regarding this limited warranty may be directed to our Customer Service Department.

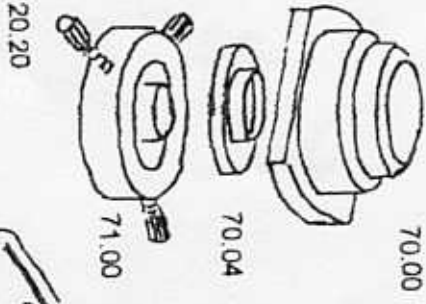
Return Procedure for warranty

Please attach your name, address, telephone number, a description of the problem and a copy of a bill of sale being the appropriate JMA serial numbers as proof of date of original retail purchase, to each product returned for warranty service.

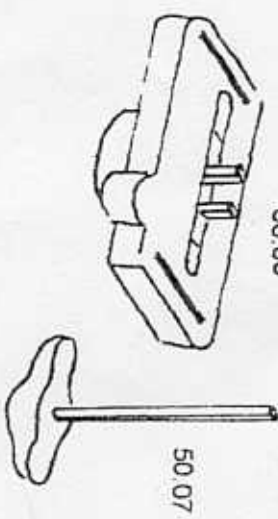
20.08



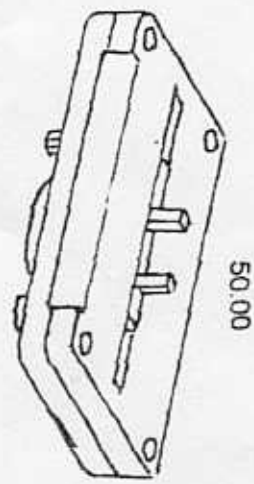
20.18 20.06 20.10



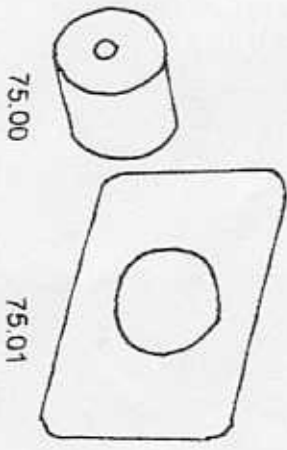
60.00



50.07

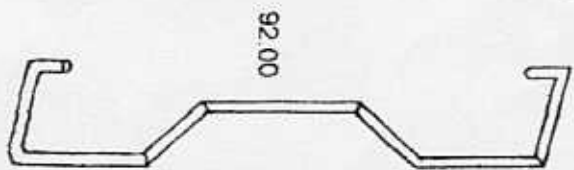


50.00



75.00

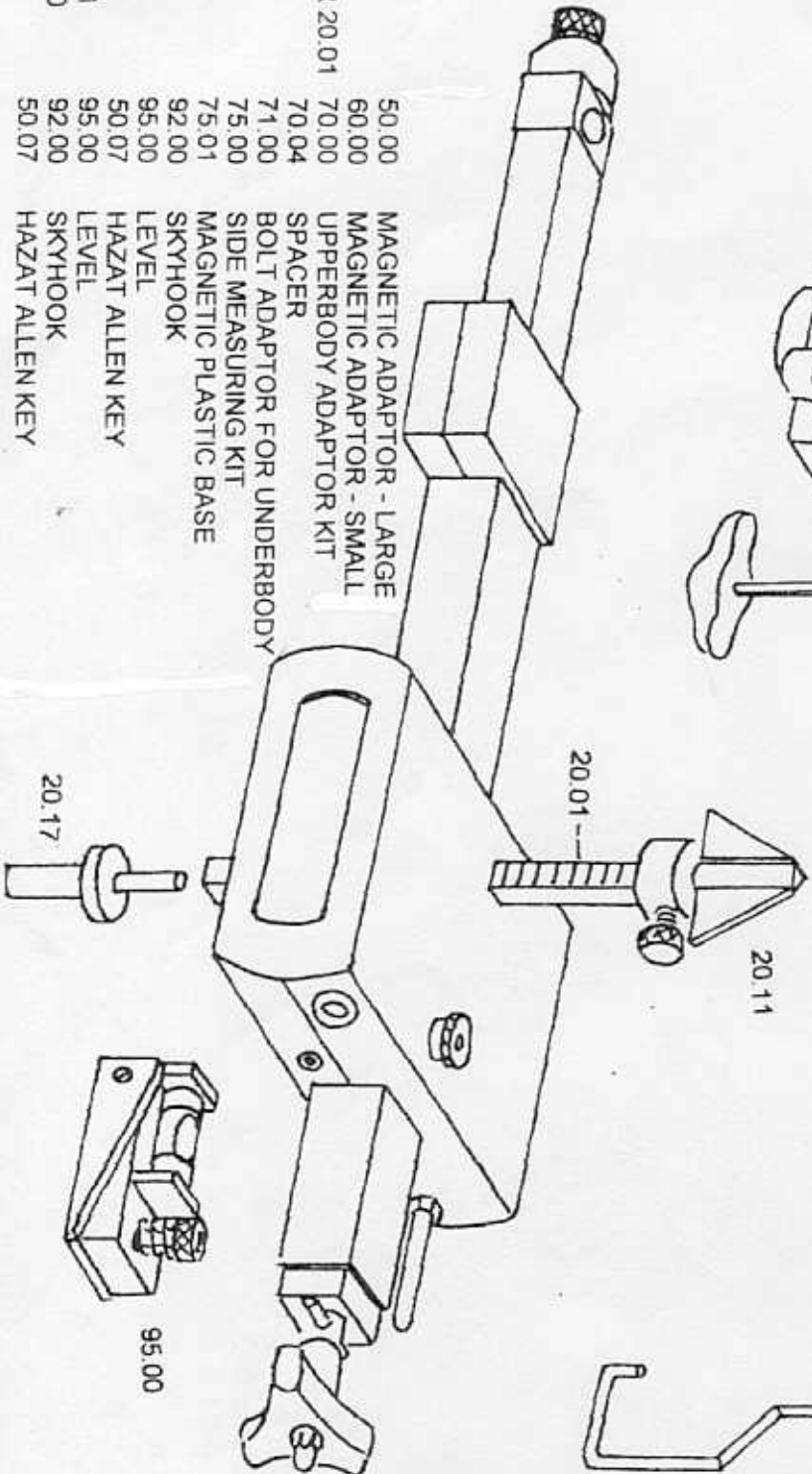
75.01



92.00

P/NO	DESC
20.01	HEIGHT ROD 1 - 215MM
20.02	HEIGHT ROD 2 - 250MM
20.03	HEIGHT ROD 3 - 125MM
20.04	HEIGHT ROD 4 - 62.5MM
20.17	MAGNETIC POINTER FOR 20.01
20.15	POINTER - 40MM
20.16	POINTER - 22MM
20.06	ROD 1 ROUND --153MM
20.10	ROD 2 SQUARE --65MM
20.08	ROD 3 SIDE MOUNTED
20.18	ROD 4 SQUARE 112MM
20.07	STEEL CONE FOR 20.06
20.11	PLASTIC CONE FOR 20.01
20.20	PLASTIC CONE FOR 20.10

50.00	MAGNETIC ADAPTOR - LARGE
60.00	MAGNETIC ADAPTOR - SMALL
70.00	UPPERBODY ADAPTOR KIT
70.04	SPACER
71.00	BOLT ADAPTOR FOR UNDERBODY
75.00	SIDE MEASURING KIT
75.01	MAGNETIC PLASTIC BASE
92.00	SKYHOOK
95.00	LEVEL
50.07	HAZAT ALLEN KEY
95.00	LEVEL
92.00	SKYHOOK
50.07	HAZAT ALLEN KEY



20.01

20.11

20.17

95.00

System Requirements



Transmitter:

Attach serial port connection lead from the correct serial port on the computer to the transmitter box
Plug in to power source 9v DC regulated transformer and connect to transmitter

