

# NEWALL

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## HARDINGE TOOL ROOM LATHE DRO PACKAGE P/N C8006M0520M05HL

### INSTALLATION MANUAL



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## **CROSS SLIDE AXIS INSTALLATION (X)**

### **Mounting the Reader Head Brackets**

On the rear portion of the carriage, using a 1/8" Allen Wrench, remove the two 10-32 Button Head Cap Screws from the tailstock side of the oil manifold cover.

Locate the "Bijur" nameplate/model tag located on the back right of the carriage, and remove this tag and pins.

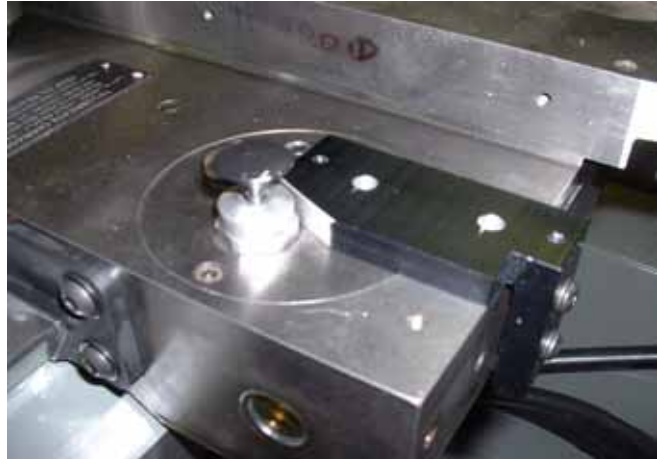
**NOTE:**     **THE TAG WILL NOT BE NECESSARY SHOULD A FACTORY REPLACEMENT NEED TO BE ORDERED IN THE FUTURE.**

**TIP:**       **SOMETIMES THE PINS CAN BE SHEARED OFF WITH A SHARP EDGE.**

**TIP:**       **THE COMPOUND SLIDE CAN BE SWIVELED OUT OF THE WAY, TO PROVIDE BETTER ACCESS.**

Clean any burrs and coolant buildup from this area.

Using the two 10-32 x 7/8" Socket Cap Screws (8) and two 10-32 Flat Washers (9), mount the Head Support Bracket (3) as shown on the assembly drawing. **(This bracket should sit directly and flush on top of the carriage –See photograph below.)**



The Microsyn Angle Bracket (4) can now be mounted loosely with the two ¼-20 UNC x 3/8 Socket Button Head Screws (7) and ¼ Flat Washers (6). **(See photograph below)**



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## **CROSS SLIDE AXIS INSTALLATION (X) (Continued)**

### **Installing the Single End Mounting Bracket**

The left side of the cross slide will require three drilled and tapped holes to attach the Single End Mounting Block and Scale Cover.

**TIP:**        **THE DRILL AND TAPS WILL NEED EXTENSIONS IN ORDER TO REACH THE CROSS SLIDE FROM THE RIGHT SIDE OF THE CARRIAGE.**

Mark the three holes. Drill and tap being careful not to drill more than a ½" into the area of the cross slide gib.

Install the four M3 x 8 Socket Grub Screws (17) into the Single End Mounting Block (5). The screws should protrude approximately .050" - .080" from the mounting block. It is recommended procedure to hold the mounting block onto a shim within the above range, and screw down the grub screws until evenly touching the surface. This will ensure the mounting block will sit level once mounted to the cross slide.

The Single End Mounting Block can now be fitted to the cross slide using the 10-32 x ¾ Socket Cap Screw (13) and 10-32 Flat Washer (14)

### **Installing the Microsyn Reader Head**

Mount the Microsyn Head (2) loosely to the Microsyn Angle Bracket (4) with the two M4 x 10 Socket Cap Screws (10) and the two M4 Flat Washers (11) *(See photograph below)*

**NOTE:**        **MAKE SURE THAT THE READER HEAD CABLE IS FACING THE REAR OF THE LATHE.**



### **Indicating and Aligning the Microsyn Reader Head**

With the reader head roughly even to the top of mounting bracket, tighten the screws and properly indicate the reader head from the top side direction first as follows;

1. Using a dial indicator, align the head parallel to the machine. The face and top of the head must be indicated to within .002" of the machine's travel. *(See illustrations below)*

**NOTE:**        **THE LINEAR ENCODER WILL NOT READ ACCURATELY IF IT IS NOT PROPERLY ALIGNED.**

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## **CROSS SLIDE AXIS INSTALLATION (X) (Continued)**

### **Indicating and Aligning the Microsyn Reader Head (Continued)**

2. Traverse the machine to its maximum position.

**NOTE:**        *THE READER HEAD SHOULD BE AS CLOSE TO THE SINGLE END MOUNTING BLOCK AS THE MACHINE WILL ALLOW.*

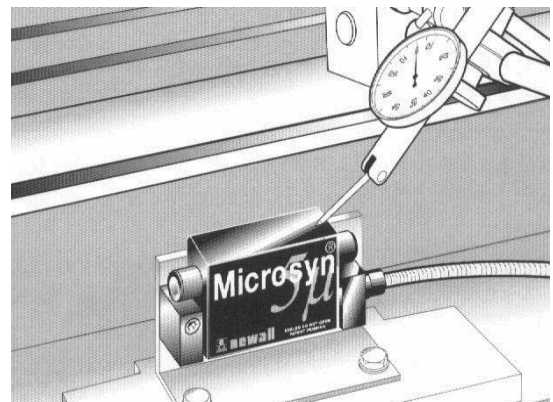
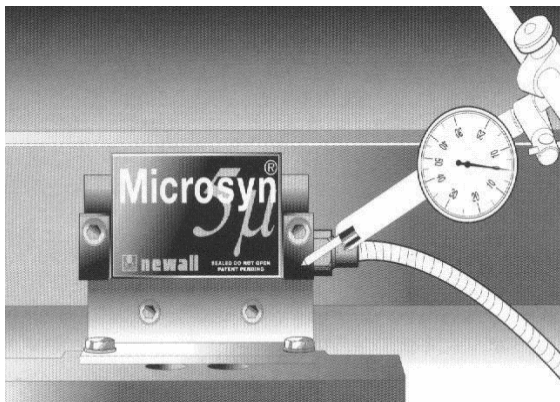
3. Using the set-up tube, align the reader head with the Single End Mounting Bracket. "Float" the Single End Mounting Block and reader head into alignment.

**NOTE:**        *THE SET-UP TUBE IS A ¼" SOLID STEEL TUBE THAT IS PROVIDED WITH THE MICROSYN READER HEAD AS A TOOL TO BE USED FOR ALIGNING THE SCALE.*

4. Check the alignment by gently sliding the set-up tube through the head and in and out of the Single End Mounting Block.

**NOTE:**        *THE SINGLE END MOUNTING BLOCK CAN BE LOOSENED SLIGHTLY FOR HEIGHT ADJUSTMENT OF THE READER HEAD.*

### **Reader Head Alignment Diagrams**



**TIP:**        *Check alignment of reader head from the side. It should be parallel to the cross slide. Once again double-check that the set-up tube will fit loosely and freely into the Single End Mounting Bracket.*

### **Installing the Microsyn Scale**

Once the Microsyn Head and the Single End Mounting Block have been aligned and all the brackets are tightened, install the Microsyn Scale (1), by gently sliding the scale through the head and into the Single End Mounting Block (5).

Insert the M3 Screw (15) and M3 Washer (16) through the Single End Mounting Block (5) and into the fixed end of the scale.

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## **CROSS SLIDE AXIS INSTALLATION (X) (Continued)**

### **Installing the Scale Cover**

Attach the Scale Cover (18) using the two 10-32 UNF x ¼ Socket CSK Screws (12).

**NOTE:** *BE SURE TO KEEP THE TOP EVEN OR SLIGHTLY LOWER THAN THE TOP OF THE CROSS SLIDE. MAKE SURE THERE IS NO INTERFERENCE WITH THE READER HEAD.*

Microsyn Head cables are to be routed and supported to relieve strain. If the taper attachment slide hardware is not used, the cables can be run inside the rear 'T' slot located on the rear of the bed. If taper attachment is utilized, check for proper clearances to the brackets just installed and route the cable appropriately.

## **CARRIAGE AXIS INSTALLATION (Z)**

### **Mounting the Reader Head Brackets**

Clean any build up or contaminants from lower portion of carriage apron assembly, specifically in the area below the clutch levers and to the left of the power feed motor casting.

Remove the lower center ¼-20 Allen Head Cap Screw from the apron. (This screw is located just to the left of the power feed motor casting.)

Attach the Reader Head Bracket (5) using the two ¼-20 x 1 ¼ Socket Cap Screw.

Transfer punch second mounting hole into the apron by drilling and tapping for ¼-20 thread.

**NOTE:** *THE HOLE CAN BE DRILLED THROUGH THE APRON PLATE IN THIS LOCATION DUE TO CLEARANCE IN THE CARRIAGE CASTING.*

With the same Reader Head Bracket removed, attach the Microsyn Angle Bracket (4) to the lower section of this Bracket (5) using the two ¼-20 x ½ Socket Button Screws (10) and ¼ Flat Washers (11). ***(See photograph below, which shows the front and back view of the assembly)***



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## **CARRIAGE AXIS INSTALLATION (Z) (Continued)**

### **Mounting the Reader Head**

Still with the Reader Head Bracket (5) removed and the Microsyn Angle Bracket (4) attached, mount the Microsyn Reader Head (3) with the cable exiting to the right of the assembly, using the two M4 x 10 Socket Cap Screws (8) and M4 Flat Washers (9).

At this point, the reader head can be aligned in both axes with the Reader Head Bracket (5). This can be pre-assembled off of the lathe. The reader head is to be aligned with the Reader Head Bracket (5), parallel in both directions.

Once aligned, mount the reader head bracket assembly onto the carriage using the two ¼-20 x 1 ¼ Socket Cap Screws (7). ***(See photograph below)***



***NOTE: START OFF WITH THE READER HEAD POSITIONED MID WAY ON SLOTS.***

***NOTE: WHEN FITTING ASSEMBLY TO CARRIAGE, HOLD TIGHT TO FRONT FACE AND BOTTOM OF APRON WHEN TIGHTENING SCREWS.***

### **Indicating and Aligning the Microsyn Reader Head**

1. Using a dial indicator, align the head parallel to the machine. The face and top of the head must be indicated within .002" of the machine's travel. See illustrations below.

***NOTE: THE LINEAR ENCODER WILL NOT READ ACCURATELY IF IT IS NOT PROPERLY ALIGNED.***

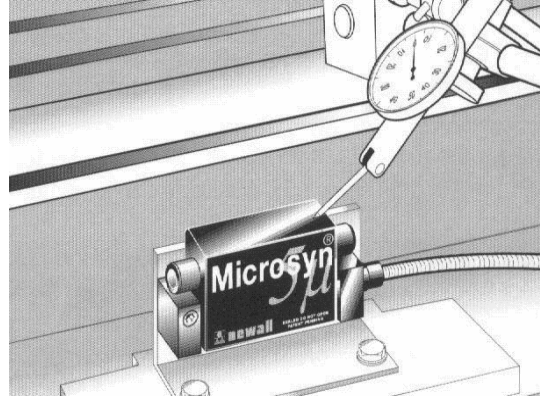
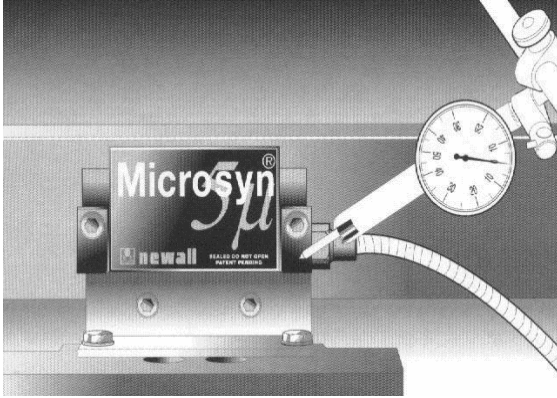
2. Traverse the machine to its maximum position. The reader head should be as close to the scale bracket as the machine will allow.
3. Slide the set-up tube through the scale brackets and reader head.
4. Tighten the scale brackets that are closest to the reader head. Do not tighten the brackets at the other end of the scale yet.
5. Traverse the machine to its maximum position in the other direction. Tighten the scale brackets at this end of the scale.

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## **CARRIAGE AXIS INSTALLATION (Z) (Continued)**

### **Indicating and Aligning the Microsyn Reader Head (Continued)**

#### **Reader Head Alignment Diagrams**



### **Installing the Microsyn Scale**

Traverse the machine to its maximum position toward the non-cable entry side of the Microsyn Head. Maximum position means all available travel, including hand winding past any electrical limits or trip dogs.

Carefully slide the set-up tube through the Microsyn Reader Head, allowing for a sufficient amount of the tube to project from the Microsyn Head in order to fit the scale support brackets.

Assemble the Scale Link (16) to the Scale End Support (19), leaving approximately 3mm (1/8") gap between the bottom of the scale support shoulder and the top of the link.

Slide the Scale Link(16)/Scale End Support (19) Assembly onto the set-up tube to approximately 5mm (0.2") away from the end of the Microsyn Head.

Transfer punch through the Scale Link (16) for ¼-20 tapped holes into the bed of the lathe. It is important that the Scale Link (16) be kept square to its mounting surface at all times.

Remove the Scale Link(16)/Scale End Support (19) Assembly and the set-up tube from the Microsyn Reader Head. Drill and tap ¼-20 holes into the bed of the lathe as marked by the transfer punch.

***NOTE: THE LEFT HOLE IS APPROXIMATELY 2 – 2 ½" FROM THE CASTING AND APPROXIMATELY 1 5/8" BELOW THE BOTTOM OF THE APRON. THE RIGHT SIDE IS APPROXIMATELY 1 ¾" FROM THE CENTER OF THE RUBBER GROMMET.***

Slide the Spacer Washer (18) on to the threaded stud of the Scale Support Pin (17). Fit the Scale Support Pin (17) to the machine casting. The Scale Support Pin shoulder fits square and flush to the machine surface.

Loosely fit the Scale Link (16)/Scale End Support Assembly (19) onto the pillar and pass the set-up tube through the Microsyn Reader Head and into the Scale Support Pin (17). While gently sliding the set-up tube forward and back (1–2") through the Scale End Support (19), carefully tighten the M3 x 12 Socket Cap Screws (13) on the Scale Link (16), ensuring that the set-up tube slides smoothly through the Microsyn Reader Head and into the

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## **CARRIAGE AXIS INSTALLATION (Z) (Continued)**

### **Installing the Microsyn Scale (Continued)**

Scale End Support (19). If any interference is detected, then fully loosen the Socket Cap Screws on the Scale Link (16) and repeat this step.

Remove the set-up tube from the Microsyn Reader Head and traverse the machine to its full extent in the opposite direction.

Assemble the Scale Link (16) to the Scale Support Mounting (20) leaving approximately 3mm (1/8") gap between the bottom of the mounting shoulder and the top of the link.

Slide the Scale Link (16)/Scale Support Mounting (20) Assembly onto the set-up tube, making certain that there is sufficient clearance between the Microsyn Reader Head and the Scale Link (16) to prevent damage to the reader head cable. ***Do not secure the support pin to the scale at this time.***

Transfer punch through the Support Link (16) and into the machine casting. It is important that the support link to be kept square to its mounting surface at all times.

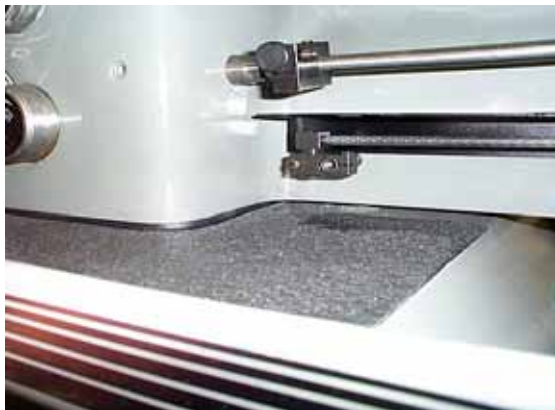
Remove the Scale Link (16)/Scale Support Mounting (20) assembly and the scale from the Microsyn Reader Head. Drill and tap ¼-20 holes into the bed of the lathe as marked by the transfer punch.

Slide the Spacer Washer (18) on to the threaded stud of the Scale Support Pin (17). Fit the Scale Support Pin (17) to the machine casting. The Scale Support Pin shoulder fits square and flush to the machine surface.

Loosely fit the Scale Link (16)/Scale Support Mounting (20) assembly onto the Scale Support Pin (17) and pass the scale set-up tube through the Microsyn Reader Head and into the Scale Support Pin (17). While gently sliding the set-up tube forward and back (1–2") through the Scale Support Mounting (20), carefully tighten the screws on the Scale Link, ensuring that the scale set-up tube slides smoothly through the Microsyn Reader Head and into the Scale Support Mounting. If any interference is detected, then fully loosen the screws on the Scale Link (16) and repeat this step.

Carefully slide the Microsyn Scale through the Scale Support Mounting (20), ensuring that the fixed end is inserted first, through the Microsyn Reader Head and into the Scale End Support (19).

Using the M3 x 16 Socket Cap Screw (15) and the M3 S/C Spring Washer (14), secure the scale to the Scale End Support (19). ***(See photographs below showing both sides of the scale installation)***



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## **CARRIAGE AXIS INSTALLATION (Z) (Continued)**

### **Installing the Microsyn Scale (Continued)**

Fit the M3 x 5 Nylon Grub Screw (21) to the Scale Support Mounting (20), making sure to only "pinch" it to the scale at the tensioner end.

***CAUTION: DO NOT OVER TIGHTEN THE NYLON SET SCREW ON THE SUPPORT PIN.***

### **Installing the Scale Cover**

Scale Cover (2) will need 2 holes drilled and tapped into the bed

Slide Scale Cover (2) in from the right side with larger side on top. The Scale Cover (2) should be able to rest on top of the Scale End Support and the Scale Support Mounting and give adequate clearance between the reader head and the bottom of the carriage.

Once the above has been verified, mark holes and drill and tap for 10-32 UNF X ¼ Socket Button Screw.

Install Scale Cover (2)

## **MOUNTING THE DISPLAY SUPPORT**

Located at the rear of the lathe headstock, remove the top and bottom socket head cap screws from the collet closer attaching bracket.

***NOTE: THIS BRACKET IS DOWELLED AND WILL NOT DISLODGE FROM THE HEADSTOCK***

Using the two Spacers (5) and the 5/16-18 UNC x 3" Socket Cap Head Screws (4), attach the Display Support (3) to the rear of the collet closer bracket.

Fit one of the balls from the Lathe Mount Adjustable Pivot Assembly (2) into the top of the Display Support (3) in the threaded hole provided.

Attach the second ball from the Lathe Mount Adjustable Pivot Assembly (2) into the threaded hole on the back of the C80 Display Unit (1)

Assemble clamps to support ball and display ball, then tighten and adjust as needed.

Once all the scales are fitted, cables can be run along the Display Support using cable ties to secure them. ***(See photograph below)***

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## **MOUNTING THE DISPLAY SUPPORT *(Continued)***



## **MOUNTING THE POWER SUPPLY**

Mount the Power Supply to the casting below the collet closer attaching bracket.

The Power Supply cable can be run in the same manner as the cables and power cord. *(See photograph below)*



*Some modification of this kit may be necessary during installation.*

*Should you have any questions regarding the installation of this kit, please contact our Technical Support Department at (800) 229-4376.*



SIZE DRAWING  
A3 NUMBER

REV  
ISS

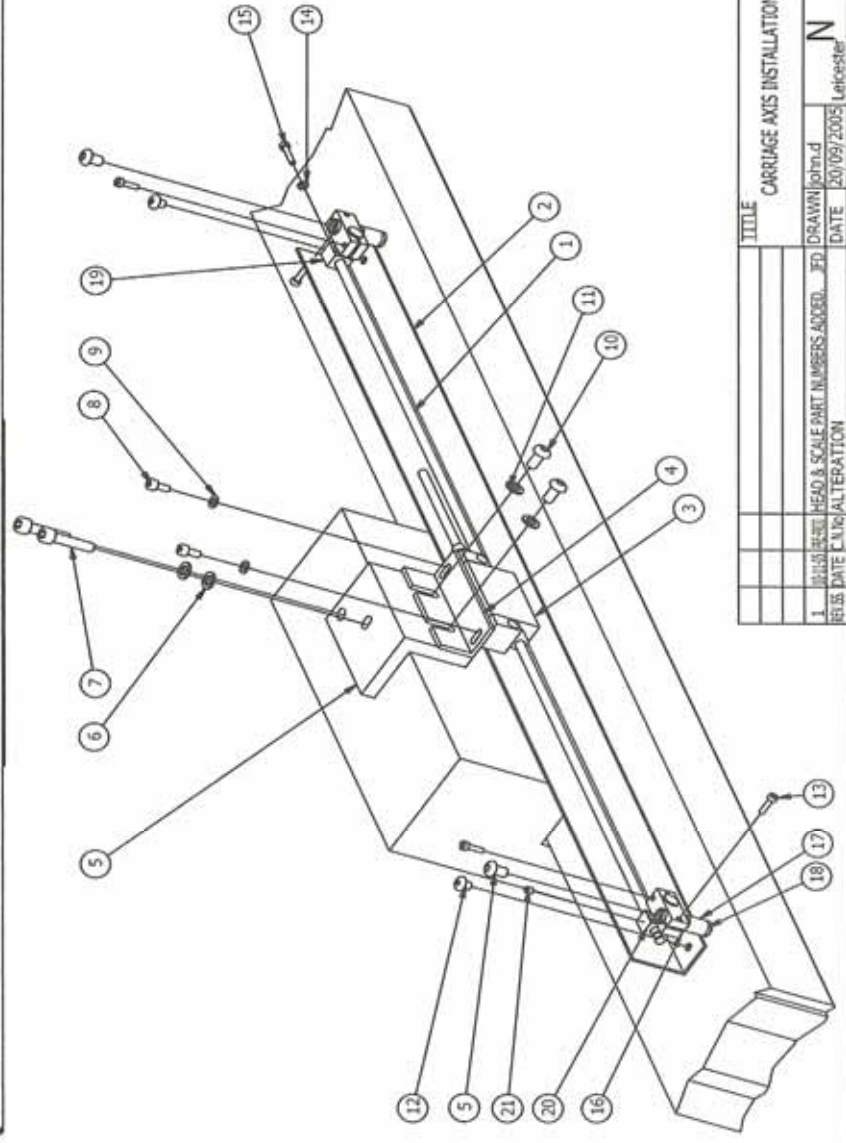
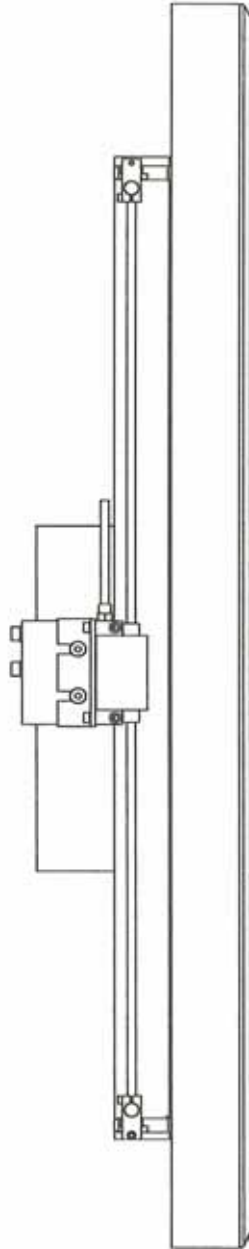
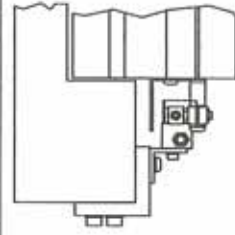
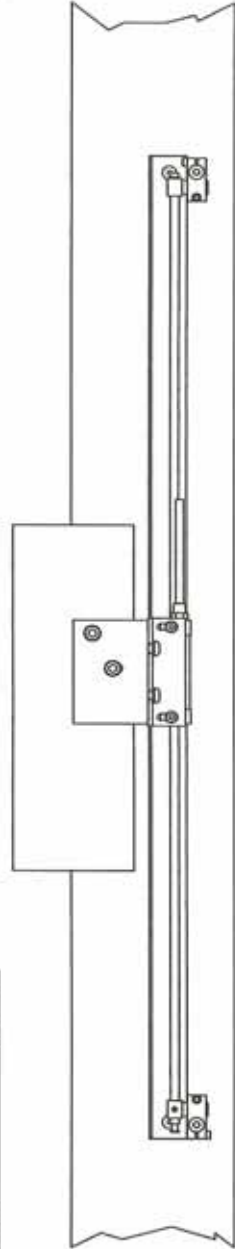
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DO NOT SCALE



THIRD ANGLE PROJECTION

IF IN DOUBT ASK



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	MS250510-C	MICROSYN SCALE
2	1	294-90000	SCALE COVER
3	1	MH2500090035	MICROSYN HEAD
4	1	294-35545	MICROSYN ANGLE BRACKET
5	1	294-36855	BRACKET
6	2	104-11410	1/4 FLAT WASHER
7	2	086-60390	1/4-20UNCx1-1/4 SOCKET CAP SCREW
8	2	086-14080	M4x10 SOCKET CAP SCREW
9	2	104-10110	M4 FLAT WASHER
10	2	086-14900	1/4x20UNCx1/2 SKT BUTTON SCREW
11	2	104-11410	1/4 FLAT WASHER
12	2	086-60290	10-32UNFx1/4 SKT BUTTON SCREW
13	4	086-14350	M3x12 SOCKET CAP SCREW
14	1	104-10070	M3 S/C SPRING WASHER
15	1	086-14870	M3x16 SOCKET CAP SCREW
16	2	294-34240	SCALE LINK
17	2	294-34990/ 294-35000	SCALE SUPPORT PIN
18	2	294-35610	SPACER WASHER
19	1	294-39380	SCALE END SUPPORT
20	1	294-39630	SCALE SUPPORT MOUNTING
21	1	086-14660	M3x5 GRUB SCREW NYLON

COMPONENTS Nos. 13-21 ARE SUPPLIED  
IN THE SCALE MOUNTING KIT Pt.No. 600-65330

TITLE  
CARRIAGE AXIS INSTALLATION DETAILS

DRAWN/John.d  
DATE 20/09/2005  
Leicester

REVISIONS  
1  
HEAD & SCALE PART NUMBERS ADDED  
DATE 20/09/2005  
Leicester

MATERIAL FINISH

SCALE

1 OF 1

316-82635

REV. 1

ISS

DRAWING NUMBER

316-82890

REV

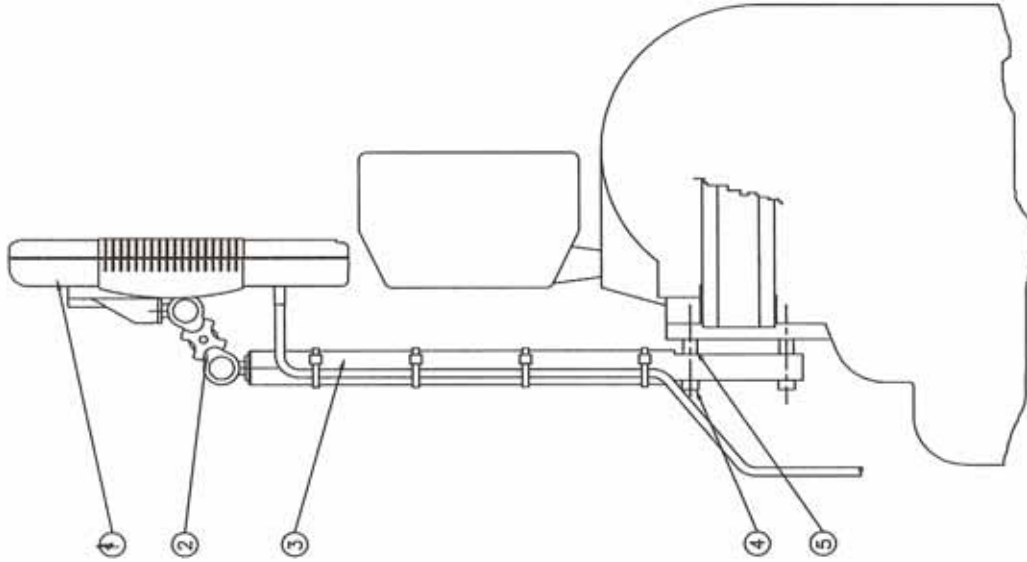
ISS

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DO NOT SCALE



THIRD ANGLE PROJECTION IN DOUBT ASK



Parts List

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	C802000	C80 2 AXIS DISPLAY READOUT UNIT
2	1	600-80280	LATHE MOUNT ADJUSTABLE PIVOT ASSEMBLY
3	1	294-89350	DISPLAY SUPPORT
4	2	086-80380	5/16-18UNC x 3" SOCKET CAP HEAD SCREW
5	2	294-89360	SPACER

MATERIAL FINISH

TITLE, DISPLAY MOUNTING INSTALLATION DETAILS

SCALE 1=1

UNLESS OTHERWISE STATED- DIMENSIONS ARE IN MM.

TOLERANCES- 0 DECIMAL PLACES ±0.5  
1 DECIMAL PLACE ±0.2  
2 DECIMAL PLACES ±0.1  
ANGULAR ±1°

DRAWN J. DRIVER 10-11-05

CHECKED APPROVED

Leicester

England

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SHEET 1 OF 1

DRAWING NUMBER 316-82890

REV 0

REV. ISS. DATE C. No. AL. T. ERATION