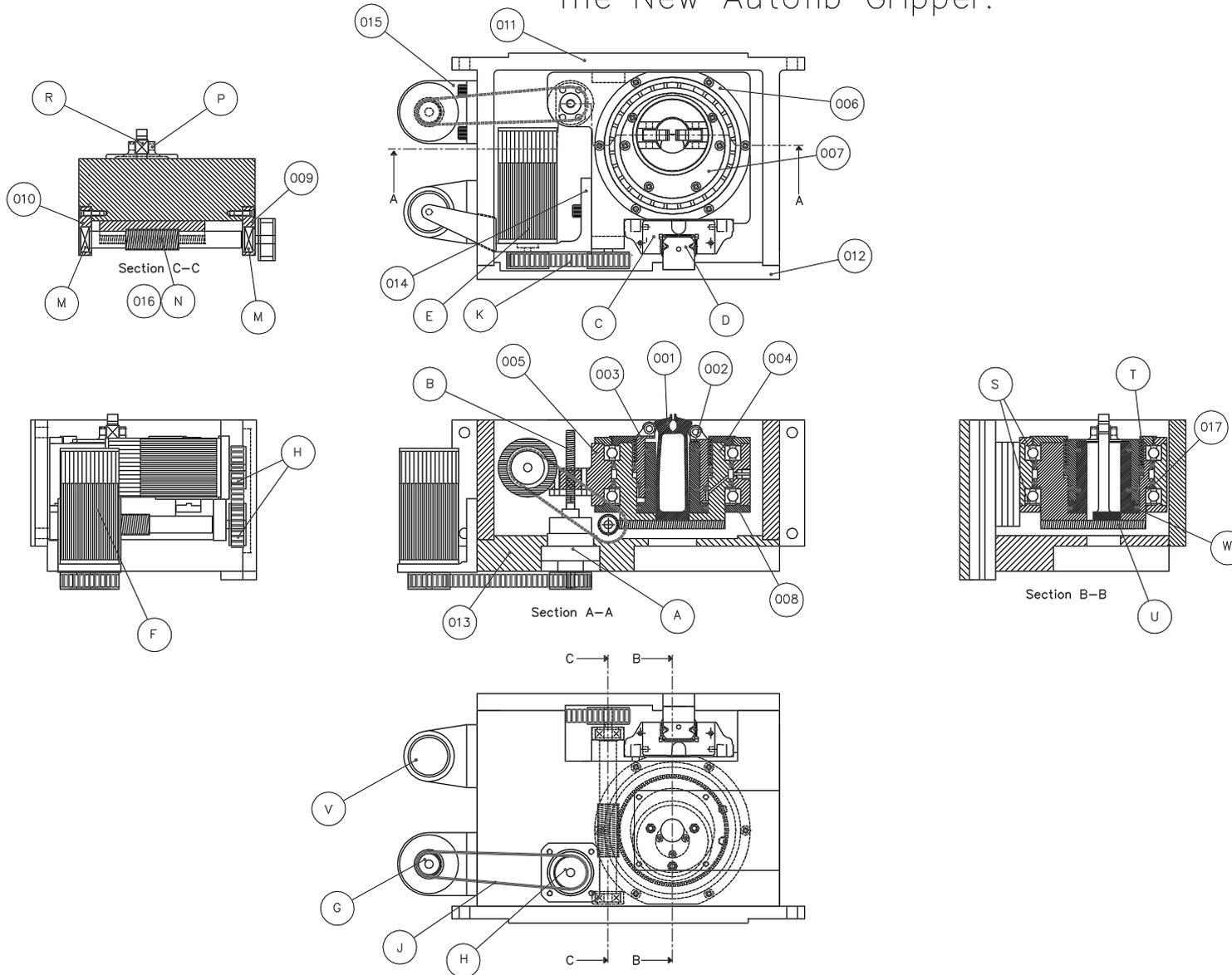


The New Autofib Gripper.



ITEM	DESCRIPTION	DRAWING NO	FILE
001	Gripper Forks	LP\AF2\GRP\001	GRP_001
002	Inner Cylinder	LP\AF2\GRP\002	GRP_002
003	Piston	LP\AF2\GRP\003	GRP_003
004	Inner bearing shaft	LP\AF2\GRP\004	GRP_004
005	Outer bearing block	LP\AF2\GRP\005	GRP_005
006	Top retaining plate 1	LP\AF2\GRP\006	GRP_006
007	Top retaining plate2	LP\AF2\GRP\007	GRP_007
008	Bot. retaining plate	LP\AF2\GRP\008	GRP_008
009	Worm shaft housing	LP\AF2\GRP\009	GRP_009
010	Worm shaft housingA	LP\AF2\GRP\010	GRP_010
011	Support Brkt. Back	LP\AF2\GRP\011	GRP_011
012	Support Brkt. Front	LP\AF2\GRP\012	GRP_012
013	Support Brkt. Base	LP\AF2\GRP\013	GRP_013
014	Theta Motor Bracket	LP\AF2\GRP\014	GRP_014
015	Z motion motor Brkt.	LP\AF2\GRP\014	GRP_014
016	Theta Worm shaft	LP\AF2\GRP\016	GRP_016
017	Piston PTFE washer	LP\AF2\GRP\003	GRP_003

PART	DESCRIPTION	Part Number	Supplier
A	Ball Screw support	WBK06-11	NSK
B	Ball Lead screw	W0400MA-1PYC3Z1	NSK
C	Linear Bearing	LAS15KLSZ	NSK
D	Linear guide rail	L1S15 076SZ	NSK
E	Theta drive Motor	28L28-416EBP144Y49	Escap
F	Z drive motor	As above	
G	Z Axis motor pulley	A15 T 2.5-8x1off	HPC
H	Z ball screw pulley	A20 T 2.5-8	HPC
H	Theta drive pulleys	A20 T 2.5-8x2off	HPC
J	Z timing belt	T 2.5/180	HPC
K	Theta timing belt	T 2.5/145	HPC
M	Theta bearings	61810 Y	SKF
N	Worm Shaft(Modified)	SW 0.4-1	HPC
P	Dowel pin	3mm diax12mm	
R	Gripper Action Bearings	BK 0306 TNA	SKF
S	Theta worm bearings	604	SKF
T	Piston Spring	LC-022A-8 SSx8	Lee spring
U	Theta worm gear.	PM 0.4-130/1	HPC
V	Z Linear encoder	MTN/UL --10	Monitran
W	Various "O" rings	see drawing details	

Notes  
 Existing electronic Components are to be fitted once the gripper has been assembled.  
 Details of fasteners and O rings are given on the detailed drawings.

TITLE: AF2 Gripper General Arrangement.		
MATERIAL:	Drawn By: K.Deer Date: 24/07/97	ISAAC NEWTON GROUP Santa Cruz La Palma Canary Islands
FINISH:	Checked: Date	
Scale:	Dimensions in mm	General Tolerance:
Dwg No.		LP\AF2\GRP\GRP_GA1









DRAWING NO. OR MAN. REF	PART NO.	QUANTITY	MATERIAL	DESCRIPTION	SUPPLIER	NOTES
FSM-01	1	1	AL	BASE PLATE		
FSM-02	2	1	AL	SADDLE PLATE		
FSM-03	3	2	AL	SUPPORT PLATE		
FSM-04	4	1	AL	GUSSET PLATE		
FSM-05	5	1	AL	BEARING BLOCK		
FSM-06	6	1	AL	BEARING BLOCK		
FSM-07	7	1	AL	BALL SCREW RETAINER BLOCK		
FSM-08	8	1	AL	MOTOR MOUNTING BRACKET		
FSM-09	9	1	AL	COVER PLATE		
FSM-10	10	2	AL	OPTO SWITCH BRACKET		
FSM-11	11	1	AL	OPTO SWITCH FLAG		
FSM-12	12	2		OPTO SWITCH PCB		
FSM-13	13	1	BRASS	TIMING PULLEY SPACER		
FSM-14	14	1	BRASS	BEARING SPACER		
HSR15TA1SS+2200L	15	1		THK LINEAR BEARING	UNIMATIC	
1530/2.8.245.270.G	16	1		BALL SCREW	STEINMEYER	
B14-106	17	2		ANGULAR CONTACT BEARING	RELIANCE	
Q626	18	1		RADIAL BALL BEARING	MECRO	
50T.2.5-10	19	1		TIMING PULLEY	HPC	
24T.2.5-10	20	1		TIMING PULLEY	HPC	
T2.5/180 6 WIDE	21	1		TIMING BELT	HPC	
34L11-219E B 120 Y	22	1		DC MOTOR / ENCODER	ESCAP	
304-560	23	2		OPTO SWITCH	RS COMPONENTS	
REF BS4168	24	4		SKT HEAD CAPSCREW M5 X 12 LG		
	25	14		SKT HEAD CAPSCREW M4 X 20 LG		
	26	8		SKT HEAD CAPSCREW M4 X 16 LG		
	27	2		SKT HEAD CAPSCREW M4 X 12 LG		
	28	2		SKT HEAD CAPSCREW M3 X 10 LG		
REF BS4183	29	7		CSK HEAD M/C SCREW M3 X 10 LG		
	30	14		PAN HD M/C SCREW M2.5 X 6 LG		
REF BS 3692	31	8		HEX LOCK NUT M2.5		
	32	1		SKY VIEW SYSTEM SUB ASSEMBLY		

DRG. TITLE: <b>PARTS LIST FOR FIXED FSM MECHANISM SUB ASSEMBLY</b>		ASTRONOMICAL INSTRUMENTATION GROUP DURHAM UNIVERSITY, PHYSICS DEPARTMENT SCIENCE LABS, SOUTH ROAD, DURHAM, DL1 3LE TEL. (091) 374 2107 & 2108			
		THIS DRAWING IS THE PROPERTY OF THE ASTRONOMICAL INSTRUMENTATION GROUP, DURHAM UNIVERSITY, PHYSICS DEPT IT MUST NOT BE COPIED OR LENT WITHOUT THE CONSENT OF THE INSTRUMENTATION GROUP			
DRAWN BY: GD	ASSEMBLY DRAWING No.	SHEET NO.	PARTS DRAWING No.		REV.
DATE 18/10/91	AF2\FSM-SA	1 OF 1	AF2\FSM-PTS		A







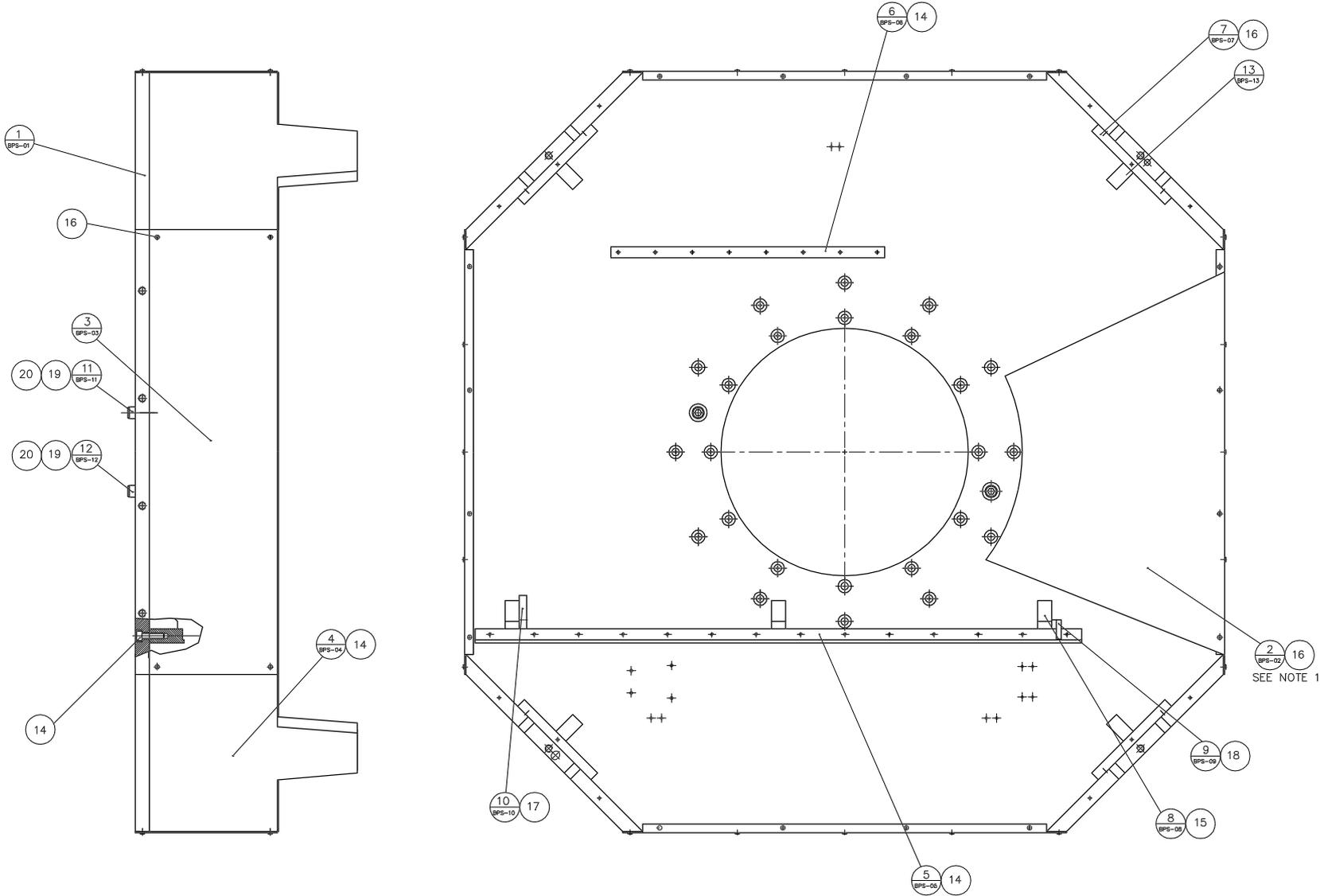
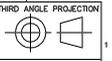








DO NOT SCALE



NOTES

- 1/ ON ASSEMBLY POSITION PART No 2 (TOP COVER)  
SPOT THRO ONTO PARTS 3 & 7 - DRILL & TAP  
PART No 7 M3 THRO (4 OFF), DRILL PART No 3  
(4 OFF) TO ACCEPT PART No 17 (THD INSERTS).
- 2/ SPOT THRO PART No 3 ONTO PART No 4, DRILL  
& TAP PART No 4 M3 x 10 DP 2 POSN (4 OFF).
- 3/ REFERENCE DRAWING :- AF2 - GA.

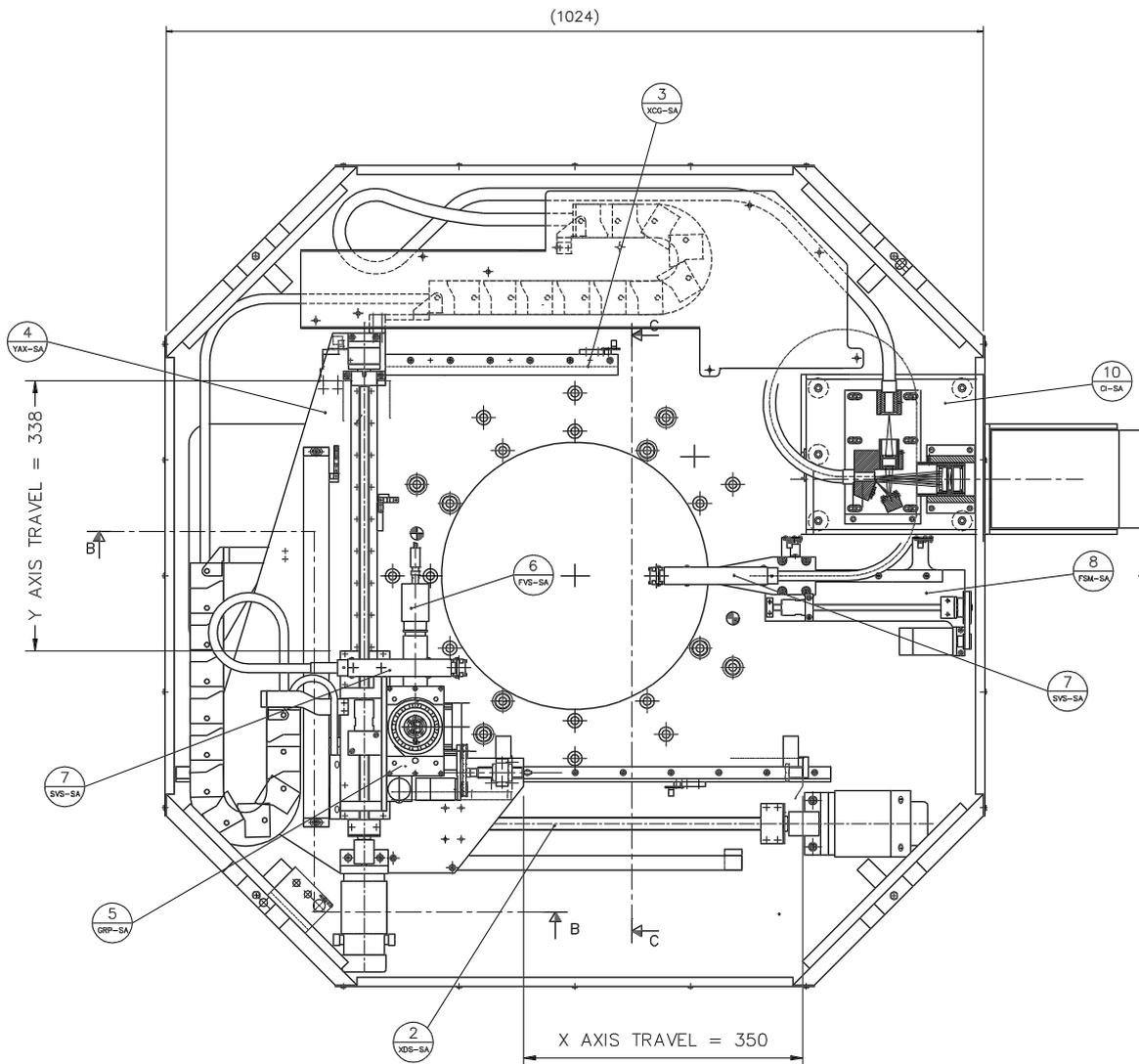
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SCALES:	1:2	ASTRONOMICAL INSTRUMENTATION GROUP DURHAM UNIVERSITY, PHYSICS DEPARTMENT SCIENCE LABS, SOUTH ROAD, DURHAM, ENGL SU2 TEL: (0191) 374 8107 x 2100	
ORG. TYPE:	SUB ASSEMBLY	THIS DRAWING IS THE PROPERTY OF THE ASTRONOMICAL INSTRUMENTATION GROUP, DURHAM UNIVERSITY, PHYSICS DEPT IT MUST NOT BE COPIED OR LENT WITHOUT THE CONSENT OF THE INSTRUMENTATION GROUP	
DRAWN BY:	AJ/GD	REL. NO:	A0
DATE:	20/04/91	DRAWING NO.:	AF2\BPS-SA
Quantity: 1 OFF		REV.:	A

ISSUE	REVISION	GRID	DRN	DATE	ISSUE	REVISION	GRID	DRN	DATE

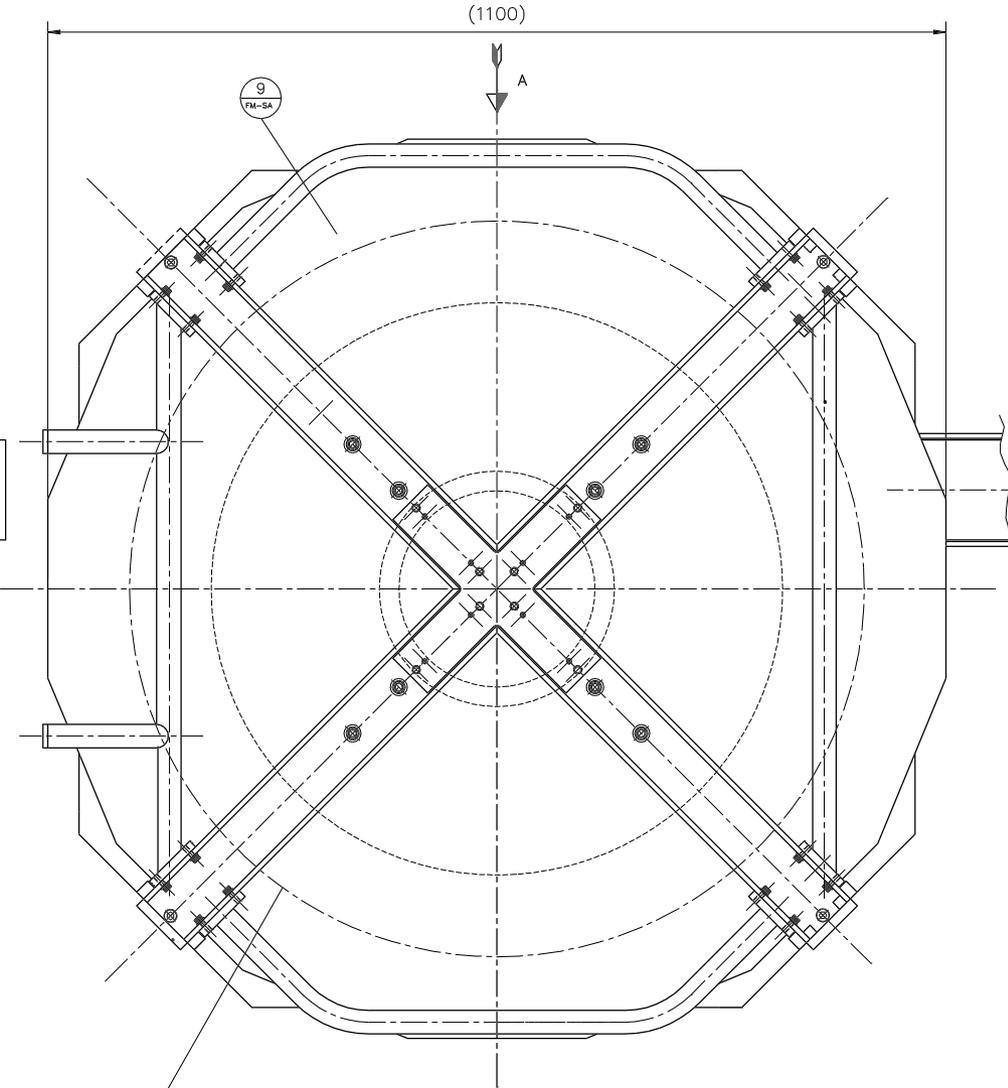
ALL DIMENSIONS IN MM UNLESS OTHERWISE STATED	
IMPLIED TOLERANCES	
X (OVER 100)	±0.20
X (UP TO 100)	±0.1
X.X	±0.10
X.XX	±0.05

Material:	
Quantity:	1 OFF





FIBRE MODULE & TOP COVER OMITTED FOR CLARITY



VIEW WITH TOP COVER & FIBRE MODULE IN POSITION

MAX SPACE ENVELOPE Ø900 X 150 FOR FIBRE STORAGE

XY carriage is shown up against bottom left end stops. In operation the limit switches should be activated 10mm before the endstops are reached. The software limits are 0.5mm inside the limit switches. The following extreme positions apply (measured from the instrument centre).

Gripper optical axis at endstops: -200,-189 bottom left  
150,149 top right

SVS optical axis at endstops: -145,-115 bottom left  
205,223 top right

Gripper optical axis at software limits: -189.5,-178.5 bottom left (fibre loading radius is 138)  
139.5,138.5 top right

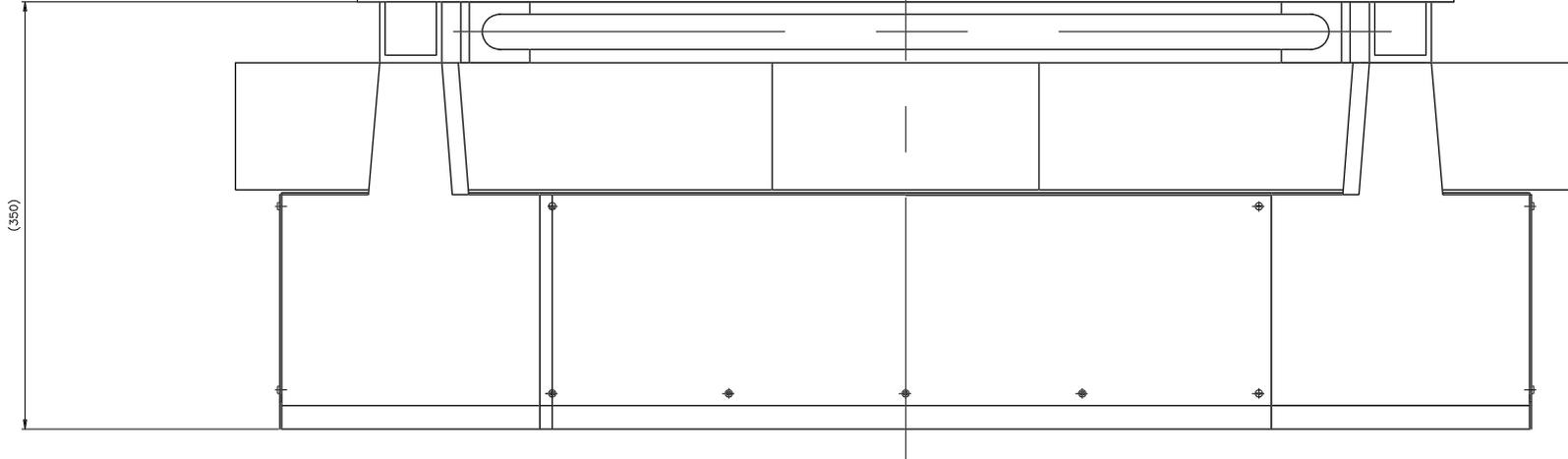
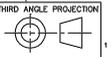
SVS optical axis at software limits: -134.5,-104.5 bottom left  
194.5,212.5 top left

The X travel between endstops is 350  
The Y travel between endstops is 338  
The gripper-SVS offset is 55 in X and 74 in Y

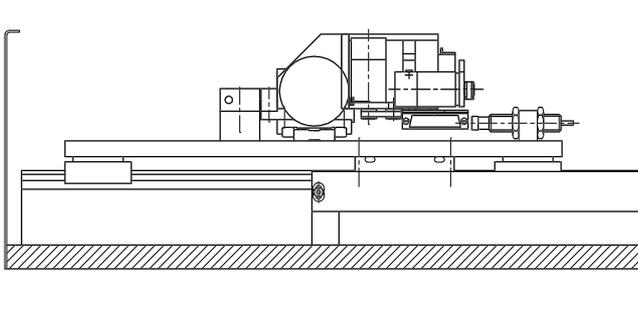
Field diameter = 204.2 (R = 102.1)  
Max parking radius = 130



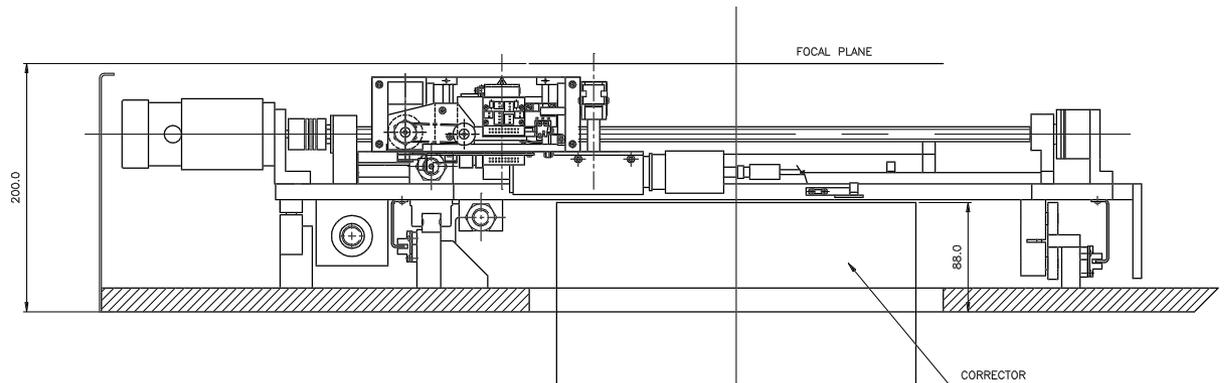
DO NOT SCALE



VIEW ON ARROW A



PART SECTION B-B



PART SECTION C-C

DRG. TITLE:		GENERAL ASSEMBLY OF AUTO FIB 2 (SHEET 2 OF 2)	
SCALES:	1:1.5	ASTRONOMICAL INSTRUMENTATION GROUP DURHAM UNIVERSITY, PHYSICS DEPARTMENT SCIENCE LABS, SOUTH BRAD, DURHAM, DH1 1TA TEL: (0191) 2754301 & 2108	
DRG. TYPE:	ASSEMBLY	THIS DRAWING IS THE PROPERTY OF THE ASTRONOMICAL INSTRUMENTATION GROUP, DURHAM UNIVERSITY, PHYSICS DEPT. IT MUST NOT BE LOANED OR LENT WITHOUT THE CONSENT OF THE INSTRUMENTATION GROUP. DRAWING NO.	
DRAWN BY:	IRP/G.C.D	REV. NO.	A0
DATE:	23/03/91	DRG. TITLE:	AF2-GA-2
		REV.:	B

ISSUE	REVISION	GRID	DRN	DATE	ISSUE	REVISION	GRID	DRN	DATE
B	GRIPPER MODIFIED	GD	8/7/92						

ALL DIMENSIONS IN MM UNLESS OTHERWISE STATED  
 IMPLIED TOLERANCES  
 X (OVER 100) ±0.20  
 X (UP TO 100) ±0.1  
 X.X ±0.10  
 X.XX ±0.05

Material:  
 Quantity:

Drawing Name	C.A.D. Status	Current plot available	Quantity required	Material			Date submitted to w/sh.	Date returned from w/s	Manufactured by
				Availability	Type	Size(mm)			
AF2-SA	Complete	Yes							
AF2-001	Complete	Yes							
AF2-002	Complete	Yes							
AF2-003	Complete	Yes							
AF2-004	Complete	Yes							
AF2-005	Complete	Yes							
AF2-006	Complete	Yes							
AF2-007	Complete	Yes							
AF2-008	Complete	Yes							
AF2-009	Complete	Yes							
AF2-010	Complete	Yes							
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AF2-012	Complete	Yes							
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AF2-036	Complete	Yes							
AF2-037	Complete	Yes							
AF2-038	Complete	Yes							
AF2-039	Complete	Yes							
AF2-040	Complete	Yes							

	TITLE	Drawn by: JW	Astronomical Instrumentation Group Durham University, Physics Dept, Science Labs, South Rd, Durham, DH1 3LE. Tel. (091) 374 2107/8/9/12
	PNEUMATIC GRIPPER DRAWINGS & PARTS LIST	Date: 29/04/91	
		Drawing #	