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A project of Volunteers in Asia

Set of Construction Drawings for 12PU350 and
12PU500 Windmills

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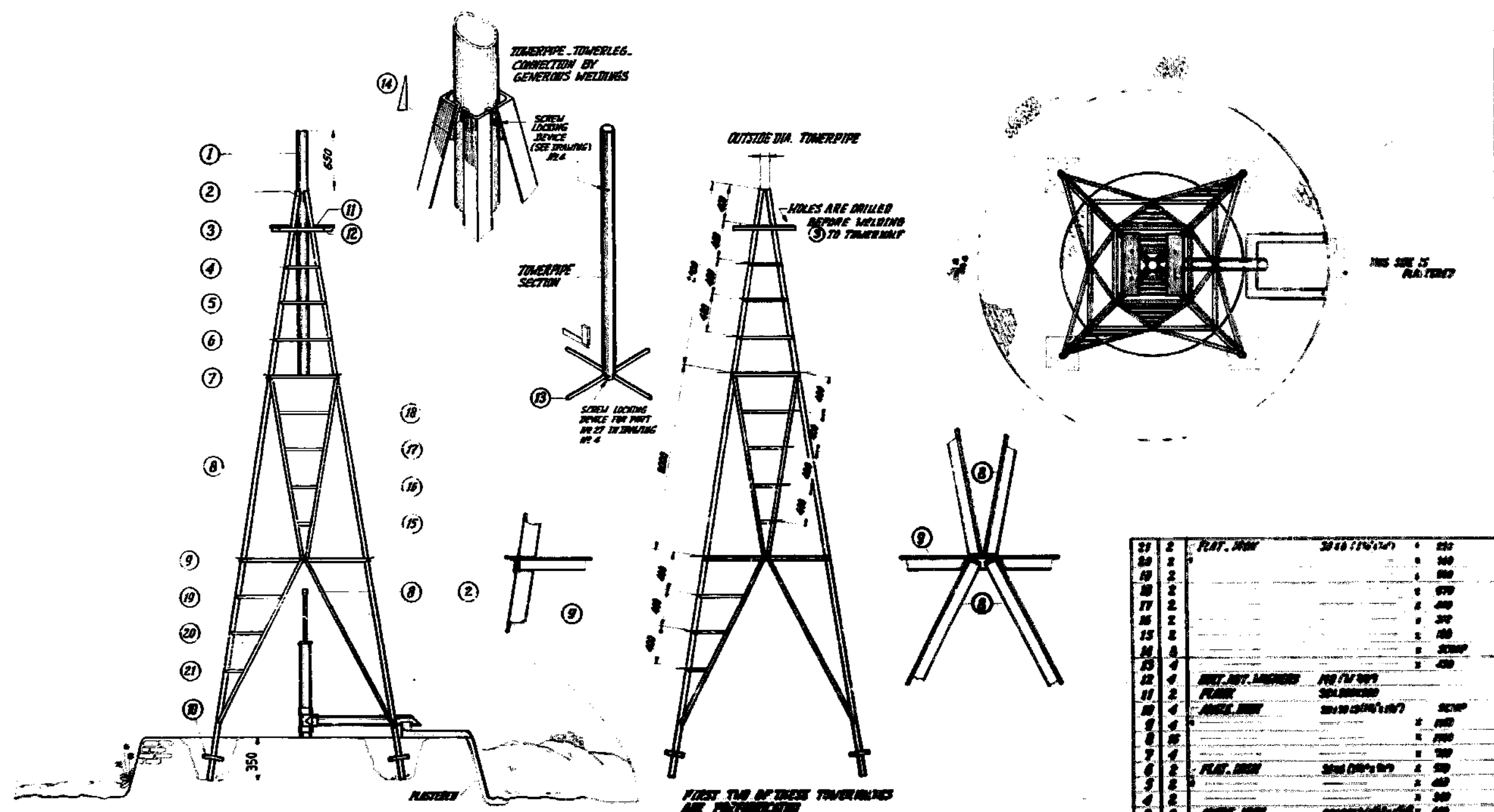
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WALL THICKNESS TOWERPIPE NOT LESS THAN 3.5 MM.

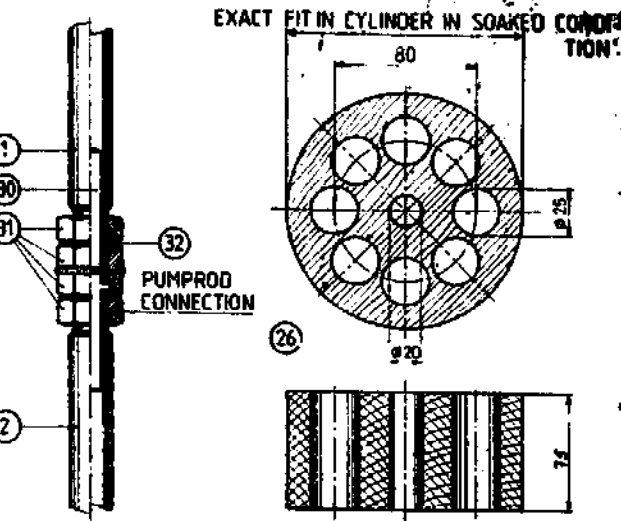
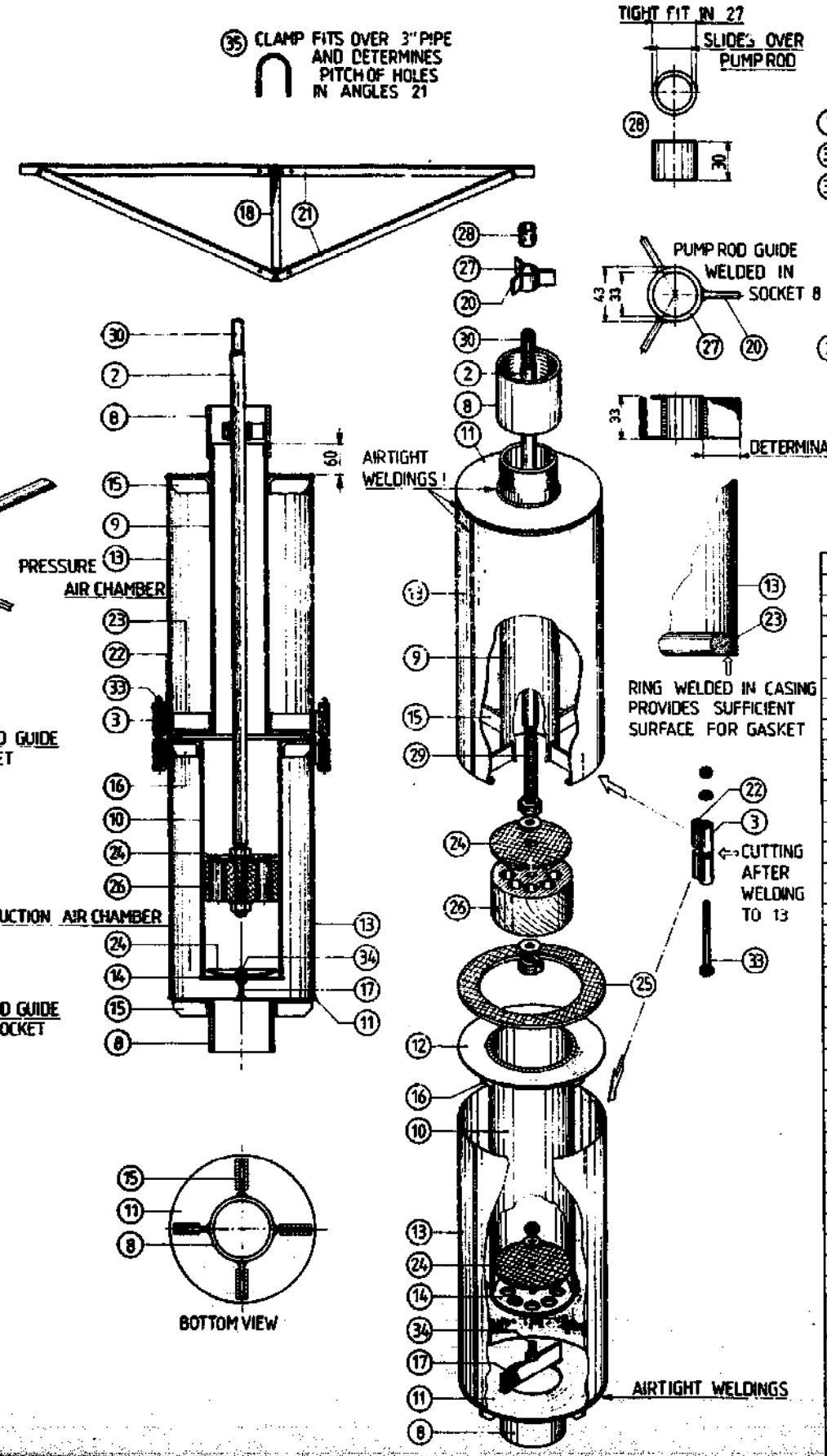
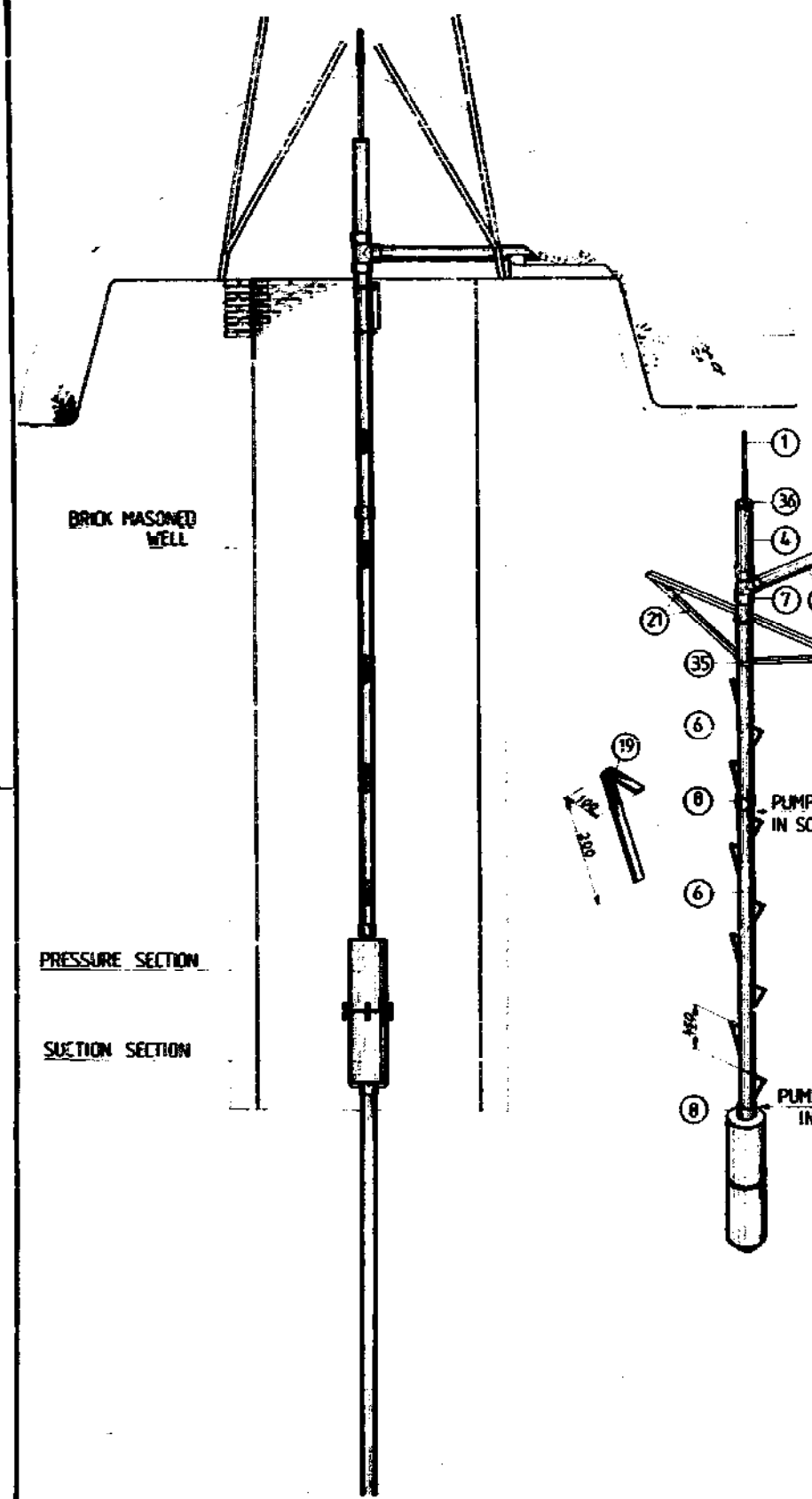


IF DESIRED THE LATTICE MEMBERS CAN BE PORTIONED AND WELDED INSIDE THE TOWER LEGS RESULTING IN A MORE ATTRACTIVE APPEARANCE OF THE TOWER. HOWEVER THE FLANGES AT THE END OF THE ANGLE IRON MEMBERS NO. 7 AND NO. 9 SHOULD BE CUT AT ANGLES OF 45 DEGREES.

FIRST TWO OF THESE TOWERPIPERIES ARE FABRICATED IN ONE PIECE AND BOTH HALVES ARE COMPOUND AND THE TOWERPIPE SECTION IS SHIPPED IN AND A COMPLETE TOWER BUILT UP

23	2	FLAT. IRON	30 x 150 x 1.5	2	250
24	2				250
25	2				250
26	2				250
27	2				250
28	2				250
29	2				250
30	2				250
31	2				250
32	2				250
33	2				250
34	2				250
35	2				250
36	2				250
37	2				250
38	2				250
39	2				250
40	2				250
41	2				250
42	2				250
43	2				250
44	2				250
45	2				250
46	2				250
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48	2				250
49	2				250
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86	2				250
87	2				250
88	2				250
89	2				250
90	2				250
91	2				250
92	2				250
93	2				250
94	2				250
95	2				250
96	2				250
97	2				250
98	2				250
99	2				250
100	2				250

12 PUSID-TOWER CONSTRUCTION
FOR INFORMATION:

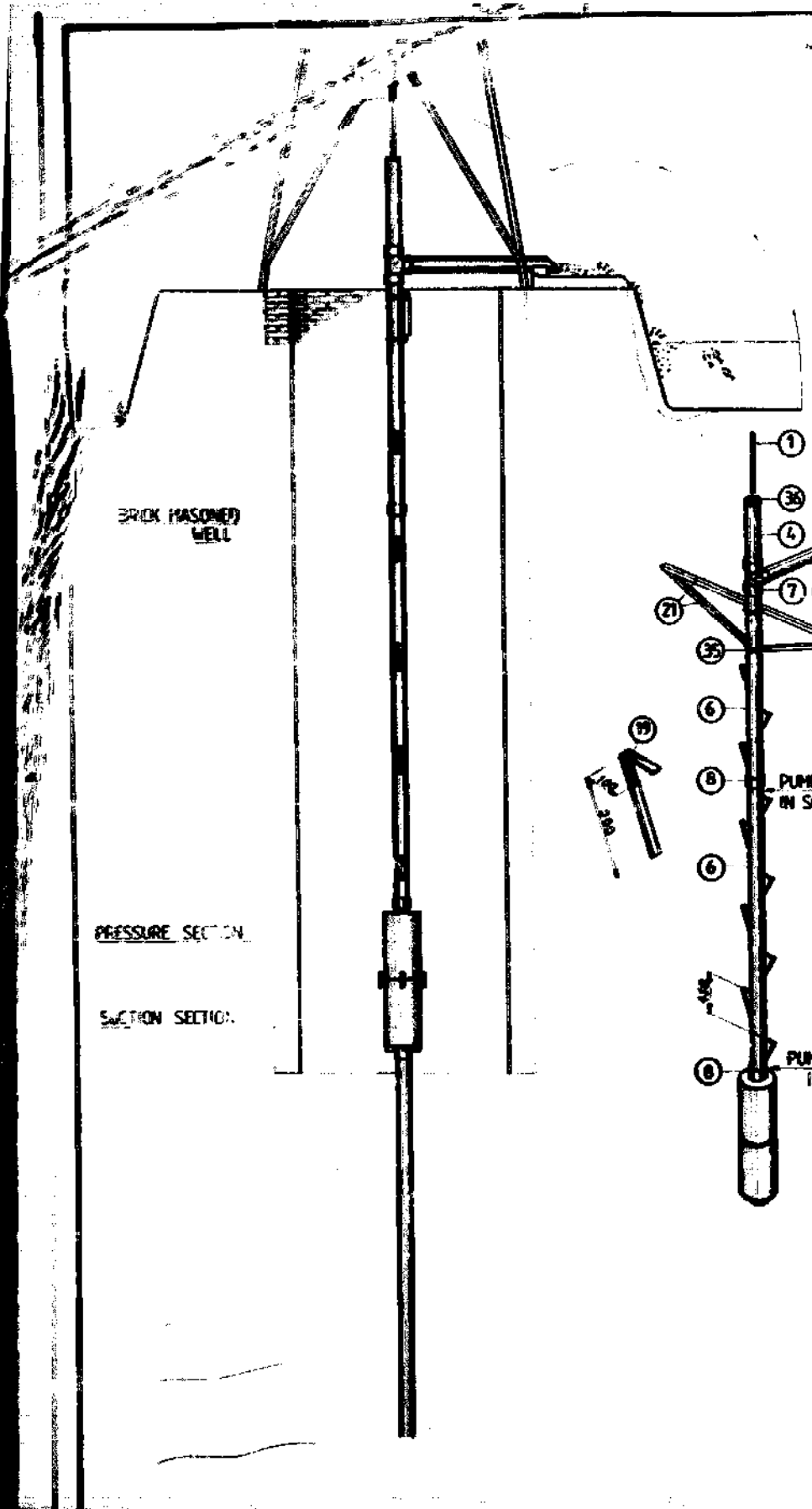


* AMOUNT OR SIZE DEPEND ON CIRCUMSTANCES

36	1	WOODEN PUMPROD GUIDE : 27 IN DRAWING NO 4
35	2	CLAMP ROD ϕ 12 (1/2") x 300
34	1	BOLT - NUT - WASHER M12 x 20 (W 1/2" x 3/4")
33	4	BOLT NUT WASHER M12 x 125 (W 1/2" x 5")
32	*	SPRING WASHERS M24 (W 3/4")
31	*	NUTS M24 (W 3/4")
30	*	THREAD STUD M24 x 100 (W 3/4" x 4")
29	1	THREAD STUD M24 x 150 (W 3/4" x 6")
28	*	GUN METAL BUSH ϕ 33 x 30
27	*	STEEL BUSH ϕ 43 x 33
26	1	PISTON TEAKWOOD
25	1	GASKET SOLE LEATHER ϕ 250 x 6
24	2	VALVE ϕ 125 x 6
23	1	RING ROD ϕ 8 (3/8") x 74.5
22	8	FILLING PIECE x 40
21	2	ANGLE IRON 40 x 40 x 4 (1 1/2" x 1 1/2") x "
20	3	FLAT IRON 30 x 6 (1 1/8" x 3/4") x "
19	*	x 300
18	1	x 450
17	1	x 155
16	4	x 50
15	12	x 75
14	1	FOOT VALVE 2 mm SHEET ϕ 145
13	2	CASING 500 x 775
12	1	CASING FLANGE ϕ 250
11	2	CASING FLANGE ϕ 250
10	1	CYLINDER SEAMLESS 5" GASPIPE x 460
9	1	DELIVERY PIPE 3" x 560
8	*	SOCKET FOR 3"
7	1	T - SOCKET 3"
6	*	DELIVERY PIPE (EXTENSION) 3" x "
5	1	EXHAUST PIPE 3" x "
4	1	TOPPIPE 3" x 750
3	4	PIPE 1/2" x 100
2	1	PUMPROD 3/4" x 950
1	1	PUMPROD EXTENSION 3/4" x "
NO	NUM	MATERIAL / NAME / REMARKS / MEASUREMENTS
6	OF	7
5"		PISTON PUMP FOR 12 PU 500

FOR INFORMATION :

THESE WELDED JOINTS MUST BE MADE BY A QUALIFIED WELDER



CLAMP FITS OVER 4" PIPE AND DETERMINES POSITION HOLES IN ANGLES 27

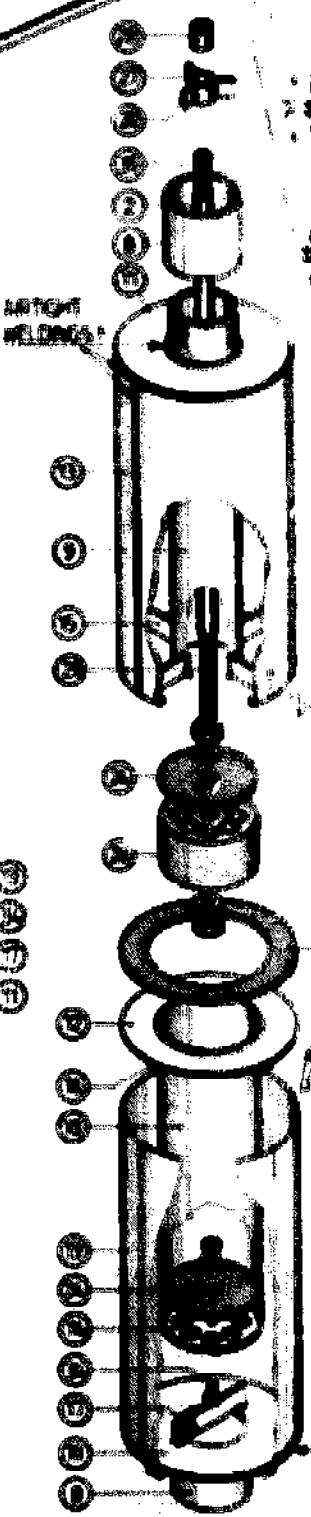
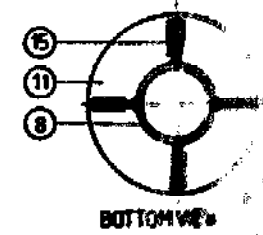
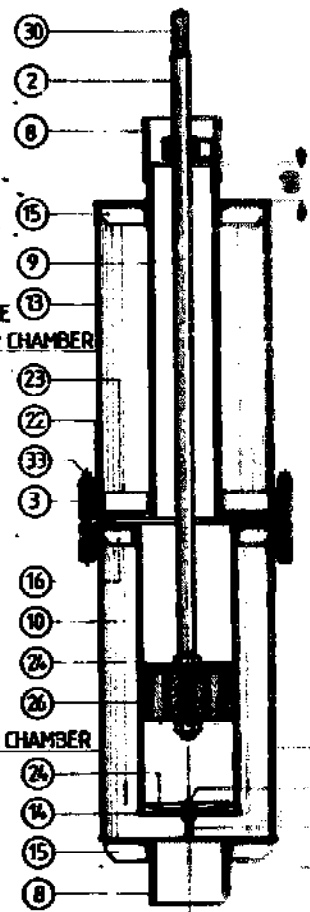
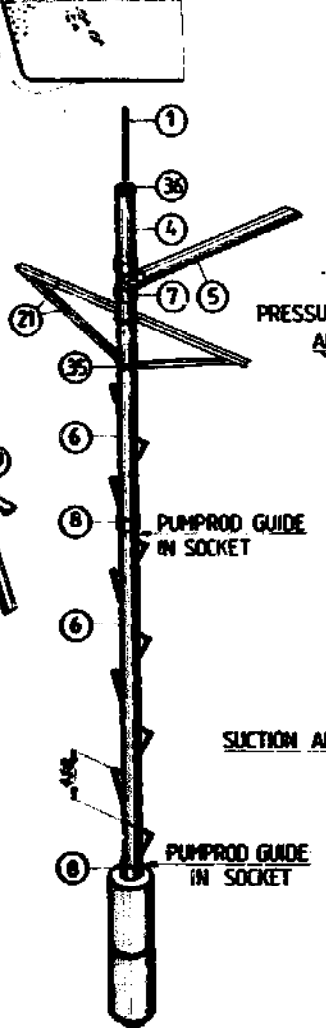
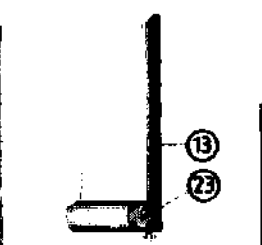
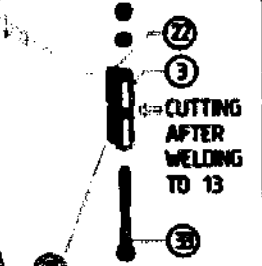


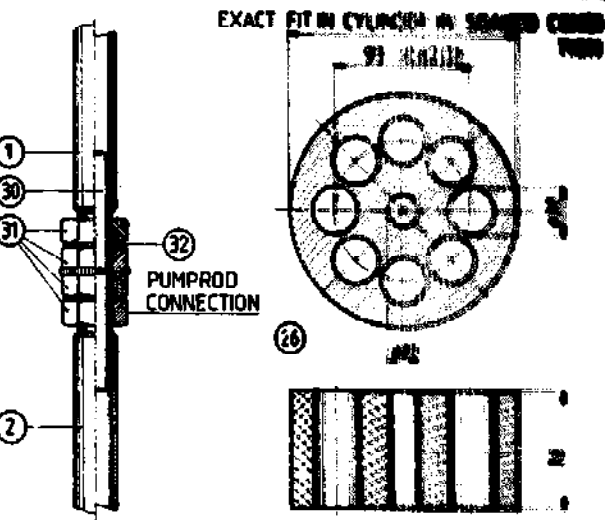
FIG. FIT IN 27 SLIDES OVER PUMPROD



RING WELDED IN CASING PROVIDES SUFFICIENT SURFACE FOR GASKET



RIGHT WELDINGS

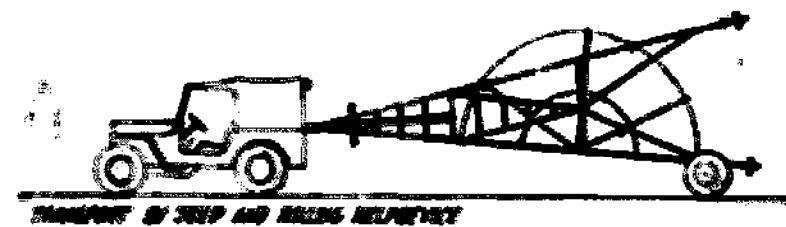
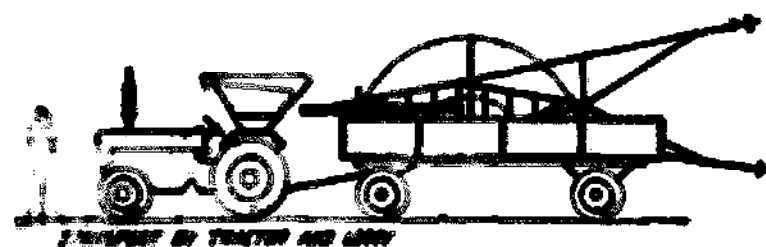
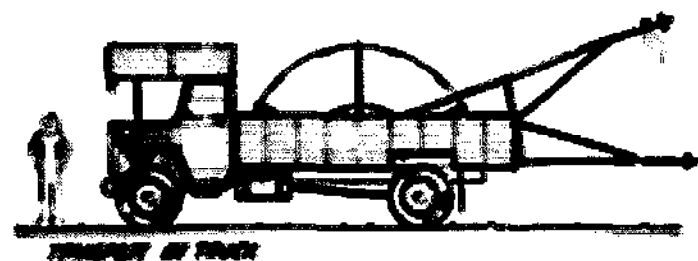


* AMOUNT OR SIZE DEPEND ON THE INSTANCES

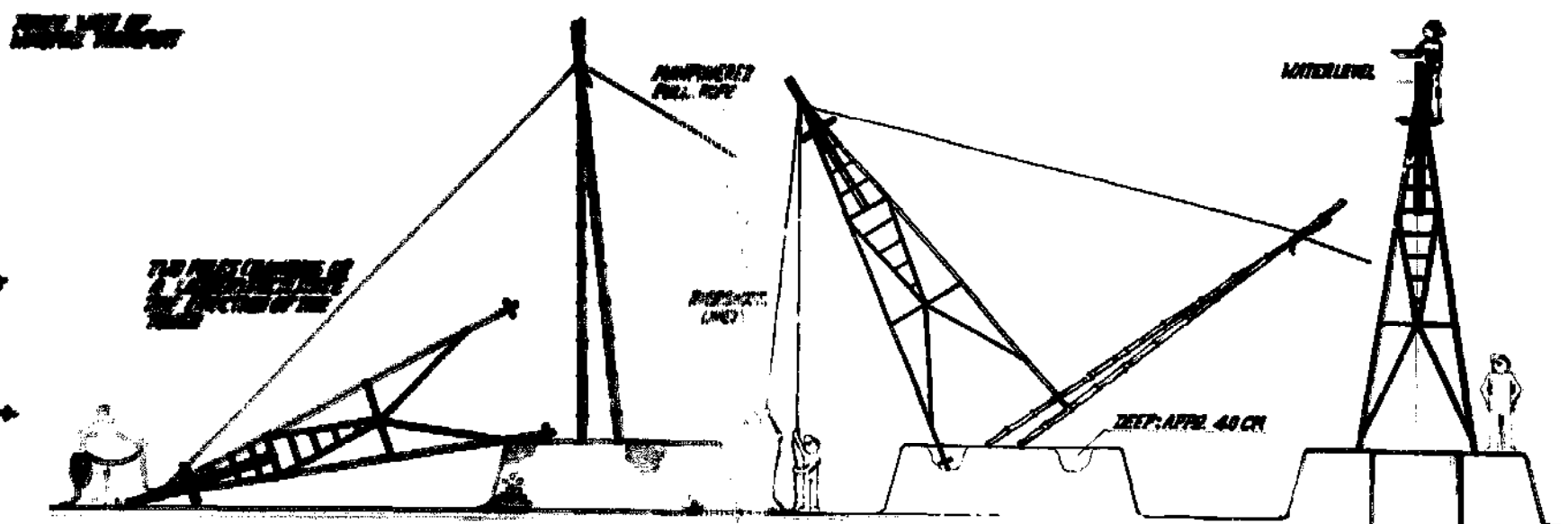
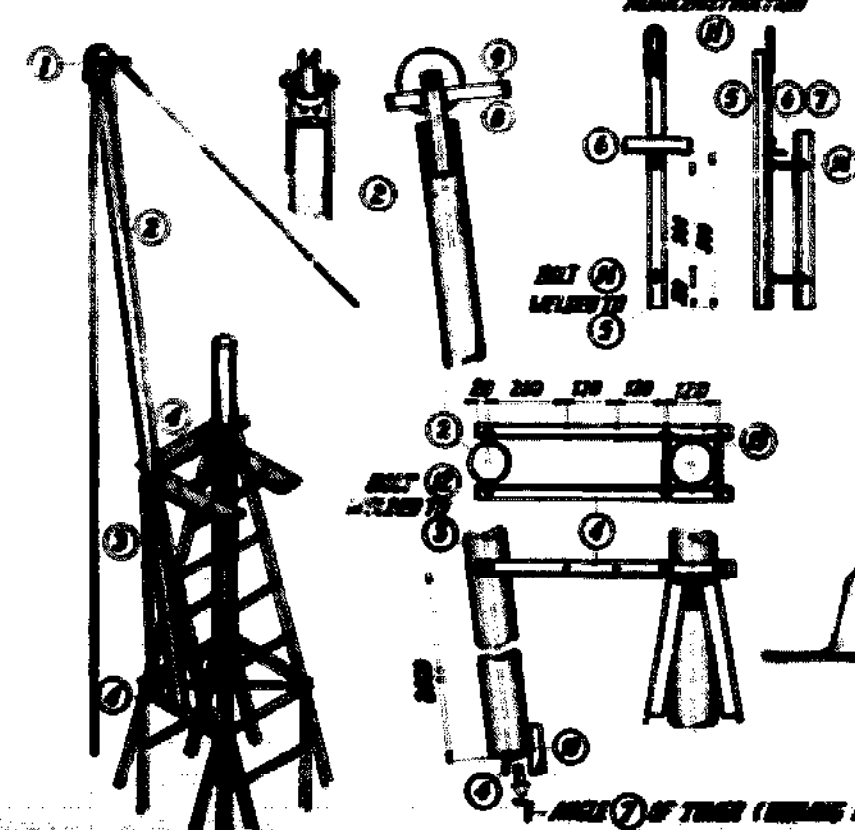
36	1	WOODEN PUMPROD GUIDE	27 IN. SQUARE	1.00
35	2	CLAMP	ROD 4" DIA.	0.75
34	1	BOLT - NUT - WASHER	M 1/2" x 2 1/2"	0.40
33	4	BOLT - NUT - WASHER	M 1/2" x 2 1/2"	0.50
32	4	SPRING WASHERS	M 1/2"	0.40
31	4	NUTS	M 1/2"	0.40
30	4	THREAD STUD	M 1/2" x 1 1/2"	0.40
29	1	THREAD STUD	M 1/2" x 1 1/2"	0.40
28	4	GUN METAL BUSH	1/2" DIA.	0.40
27	4	STEEL BUSH	1/2" DIA.	0.40
26	1	PISTON	TEAR 1/2"	0.40
25	1	GASKET	SOLE LEATHER 4" DIA.	0.40
24	2	VALVE	ROD 1/2" DIA.	0.40
23	1	RING	ROD 1/2" DIA.	0.40
22	8	FILLING PIECE		0.40
21	2	ANGLE IRON	3" x 3"	0.40
20	3	FLAT IRON	3" x 3"	0.40
19	4			0.40
18	1			0.40
17	1			0.40
16	4			0.40
15	12			0.40
14	1	FOOT VALVE	2" DIA. SHEET	0.40
13	2	CASING		0.40
12	1	CASING FLANGE		0.40
11	2	CASING FLANGE		0.40
10	1	CYLINDER SEAMLESS	6" GAS PIPE	0.40
9	1	DELIVERY PIPE	6"	0.40
8	4	SOCKET	FOR 4"	0.40
7	1	T - SOCKET		0.40
6	4	DELIVERY PIPE (EXTENSION)	4"	0.40
5	1	EXHAUST PIPE	4"	0.40
4	1	TOP PIPE	4"	0.40
3	4	PIPE	4"	0.40
2	1	PUMPROD		0.40
1	4	PUMPROD EXTENSION		0.40

NO. 6 OF 7
PISTON PUMP FOR 12 PUSON LINDY

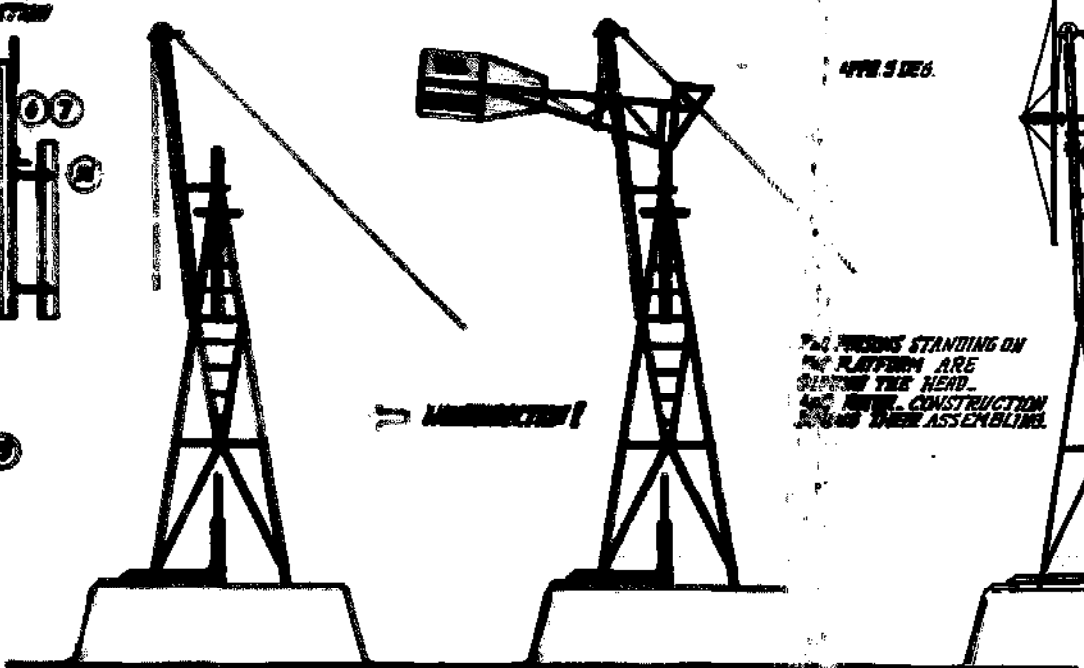
FOR INFORMATION:
 Workshop on Developmental Technology
 F. H. Taylor - Project 132
 P. O. Box 317
 The Netherlands



THE LIFTING HELPER



GENERAL: AFTER PLACING THE TOWER THE TOWER IS POURED IN WITH CONCRETE AND AFTER APPROX 5 DAYS THE HEAD AND ROTOR CONSTRUCTION CAN BE BUILT SIDE AND BACK BY MEANS OF LIFTING DEVICES. DURING THE DEVELOPMENT OF THE CONCRETE FOUNDATION THE PISTON PUMP IS USED AND THE MILL ACCORDING TO THE SPECIFICATIONS!

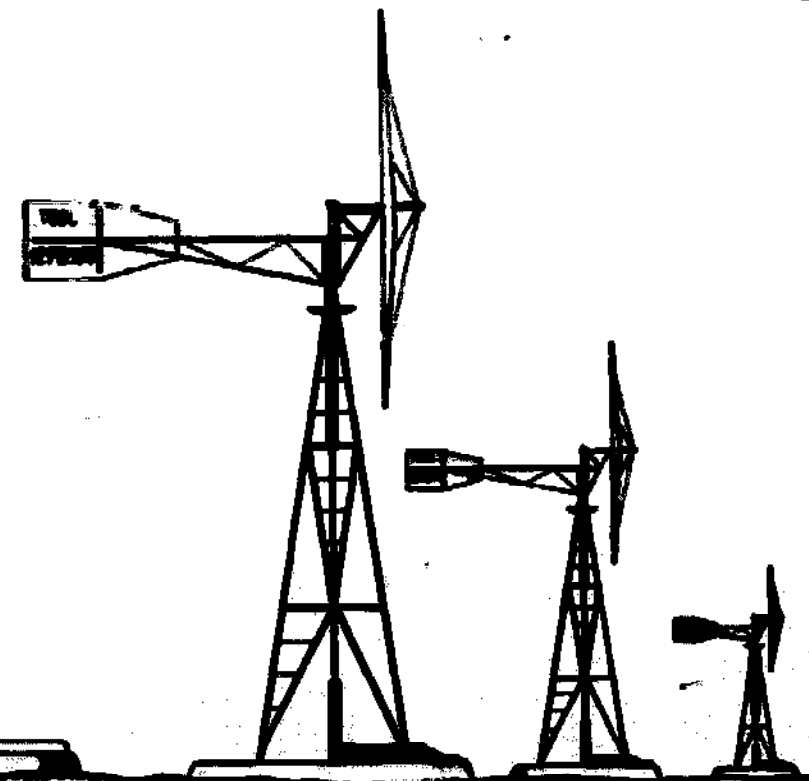
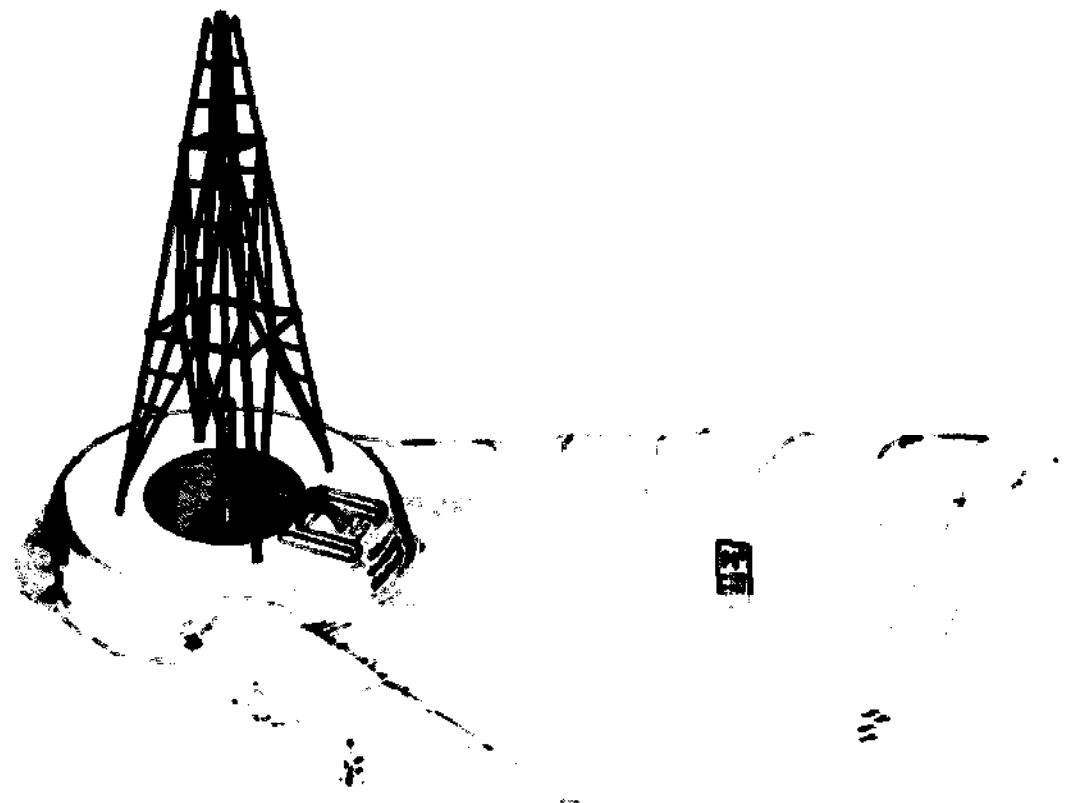
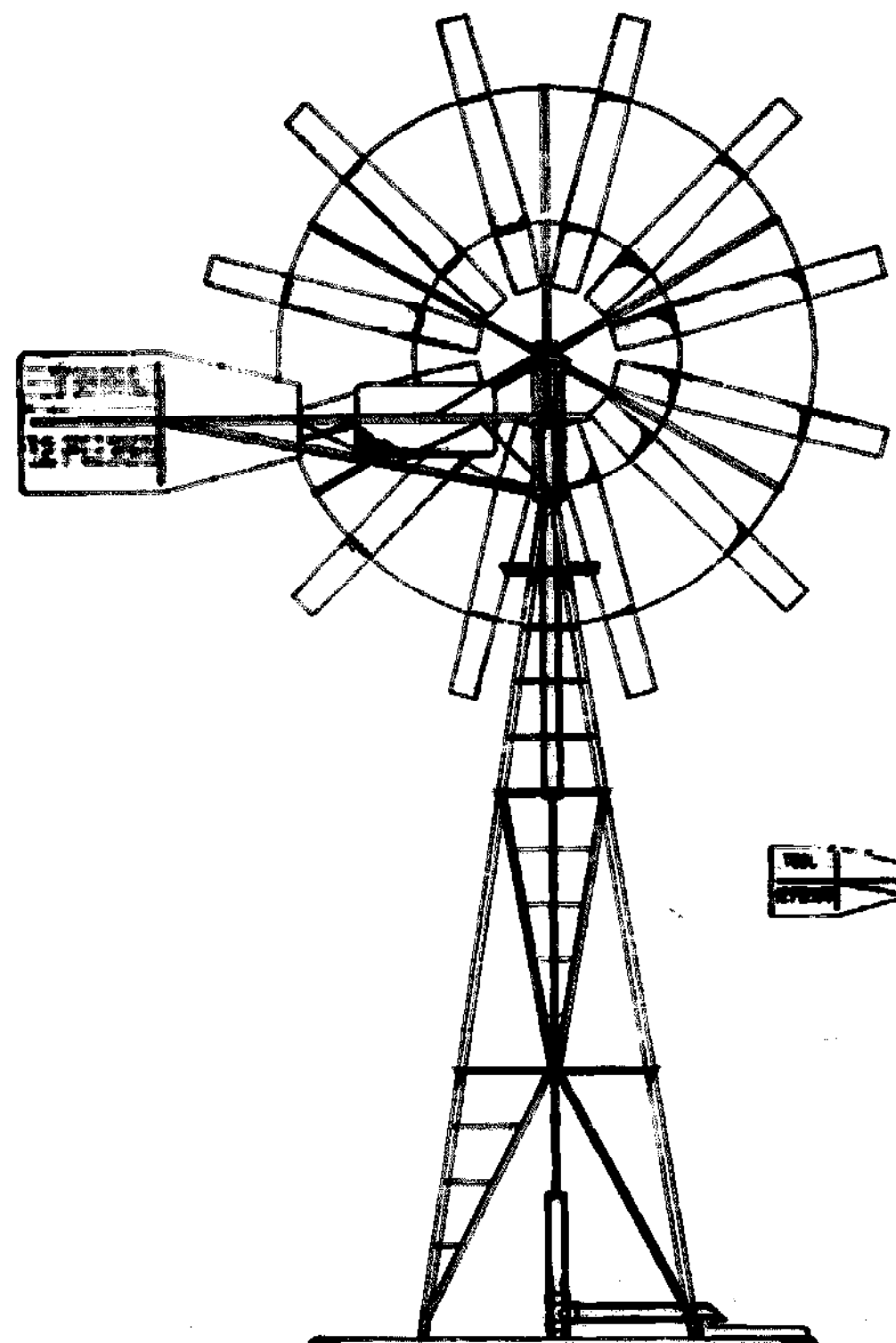


14	2	BOLT NUT WASHER	M 12 (M 12) 5'
13	2		M 12 (M 12) 10'
12	2		M 12 (M 12) 15'
11	1	ROD	Ø 20 (M 12) 10'
10	1	FLAT	30x40x10x100
9	1		1.000
8	2		1.000
7	1	ANGLE IRON	40x40x10x10x100
6	1		1.000
5	1		1.000
4	3		1.000
3	2		1.000
2	1	GAS PIPE	Ø 2" 1.000
1	1	PULLEY SHUNT AND RIGGING HELPER (100)	
NO	NO	MATERIAL / NOTE / REMARKS / INSPECTIONS	

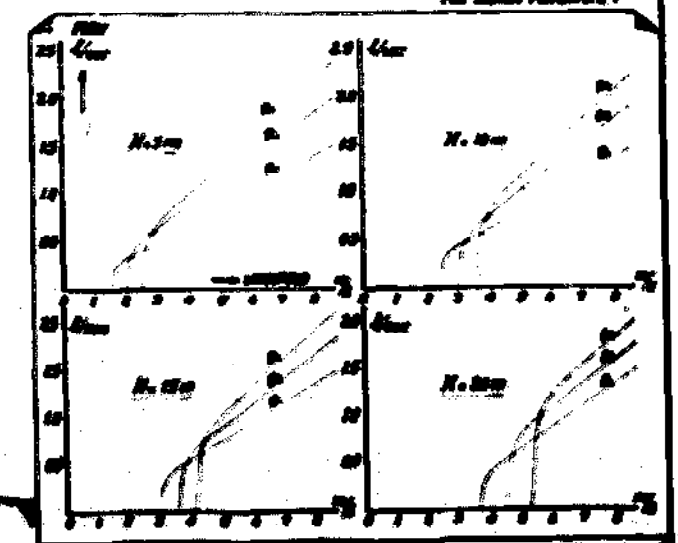
SINCE THE CENTRE OF GRAVITY OF THE HEAD CONSTRUCTION IS SHIFTER ABOVE THE POINT THE HEAD A SPECIAL MEASURE IS REQUIRED. A SHUNT SLING AND THE TOWERING IS ADJUSTED TO THE POINT IS OUT OF BALANCE APPROX 5 DEG.

SHUNT IS LIFTED WITH THE SHUNT COMPLETE WITH SHUNT TIED IN THE ROTOR HUB IN ITS ORIGINAL POSITION (CENTRE POINTS!) AND HERE IN THE HEAD CONSTRUCTION. NOW THE SHUNT REMOVED AND THE SHUNT SAFETY DEVICE AND MOVING PARTS ARE ASSEMBLED.

7 OF 7 INSTALLING THE WINDMILL - 12 PAGES - FOR INFORMATION:

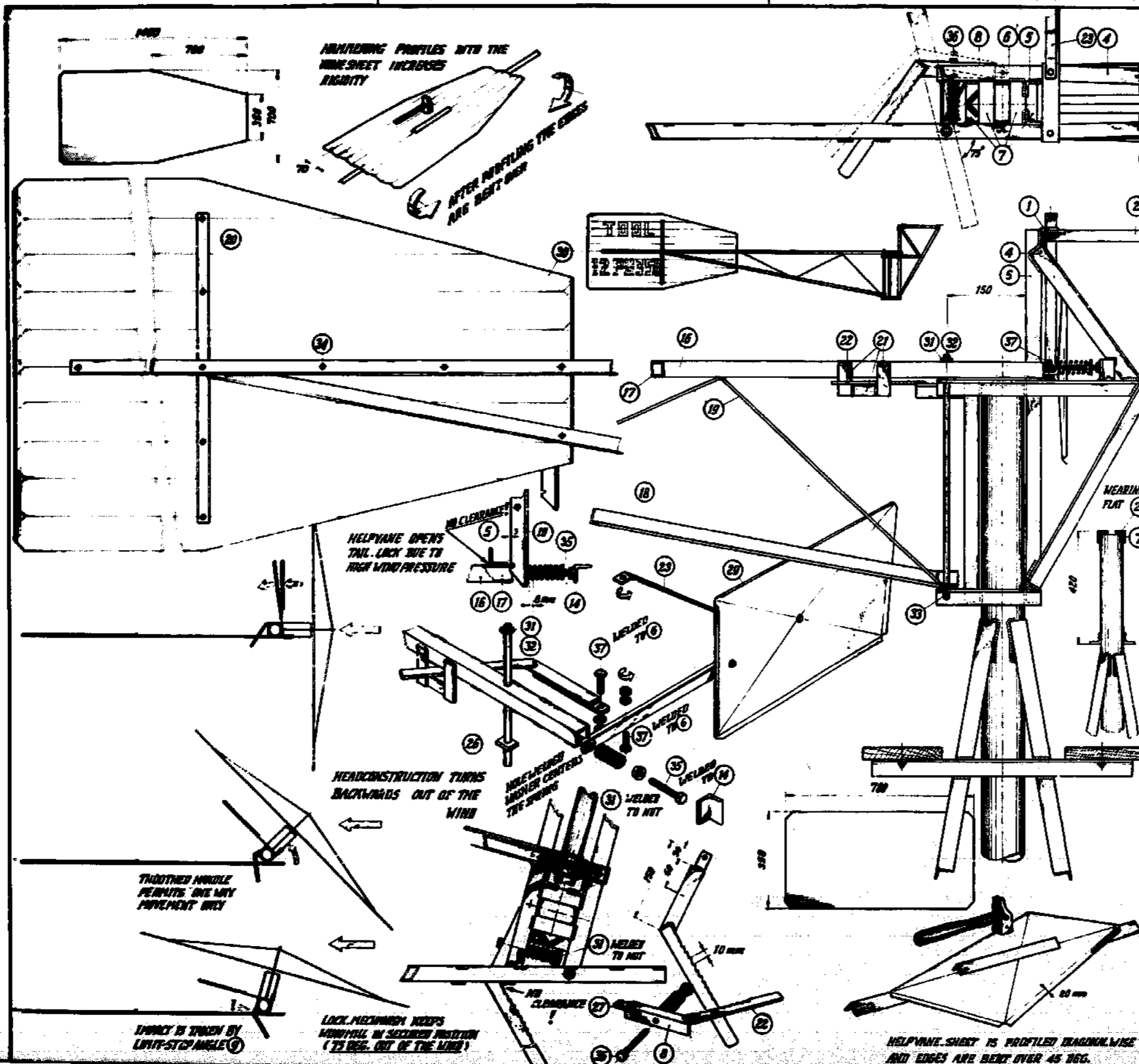


1. 40 mm
 2. 45 mm
 3. 50 mm
 4. 55 mm
 FOR OTHER FEATURES:



12 PAGES MANUAL FOR IRRIGATION

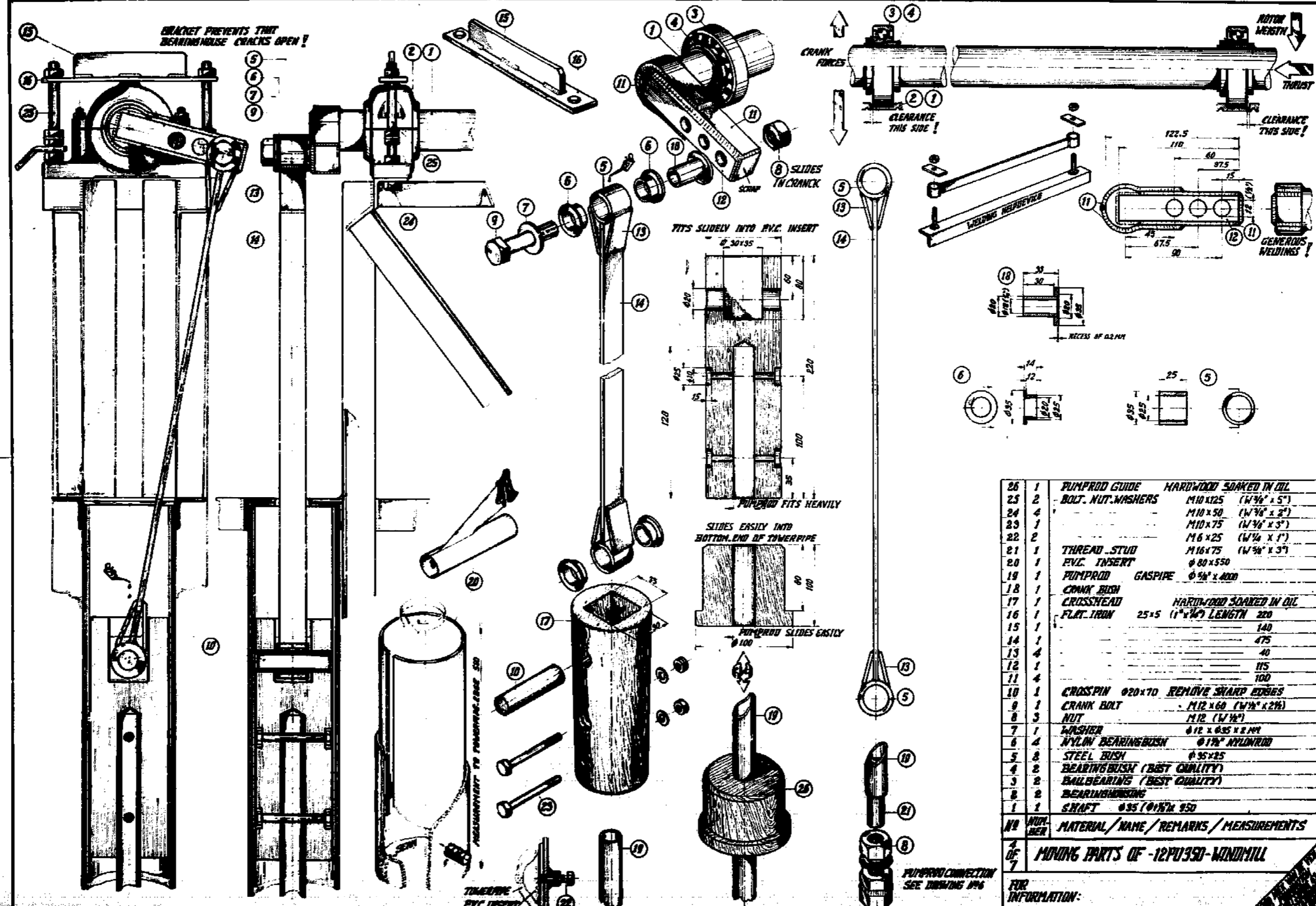
FOR INFORMATION:



37	2	BOLT, NUT, WASHER	M10 x 30	(1/4" x 1 1/2")
36	1	---	M10 x 120	(1/4" x 5")
35	1	---	M10 x 100	(1/4" x 4")
34	12	---	M6 x 15	(1/4" x 1/2")
33	1	SPLIT PIN	Ø 6	(Ø 1/4")
32	1	ROD	Ø 12 x 470	(Ø 1/2" x 17')
31	9	WASHER	INSIDE Ø 12 (1/2")	
30	1	TAILVANE	1mm SHEET	1400 x 700
29	1	HELPVANE		700 x 350
28	2	SPRING	APPR. Ø 30 x 100 x Ø 4	
27	1	FLAT IRON 25x5 (1" x 1/4")	LENGTH 70	
26	2		30	
25	1		100	
24	1		90+95	
23	1		650	
22	1		300	
21	5		70	
20	1		600	
19	3		525	
18	1	ANGLE IRON 30x30x3 (1 1/4" x 1 1/4")	LENGTH 2800	
17	1		2800	
16	1		1100	
15	1		95	
14	1		60	
13	1		100	
12	1		150	
11	1		415	
10	1		700	
9	1		35	
8	1		100	
7	4		TOWER PIPE DIA.	
6	2		300	
5	2		700	
4	2		520	
3	2		760	
2	1		350	
1	2	ANGLE IRON 40x40x4 (1 1/2" x 1 1/2")	220	

NO	QTY	MATERIAL/NAME/REMARKS/MEASUREMENTS
3	1	HEAD CONSTRUCTION - 12 P/350 - WINDMILL

FOR INFORMATION:



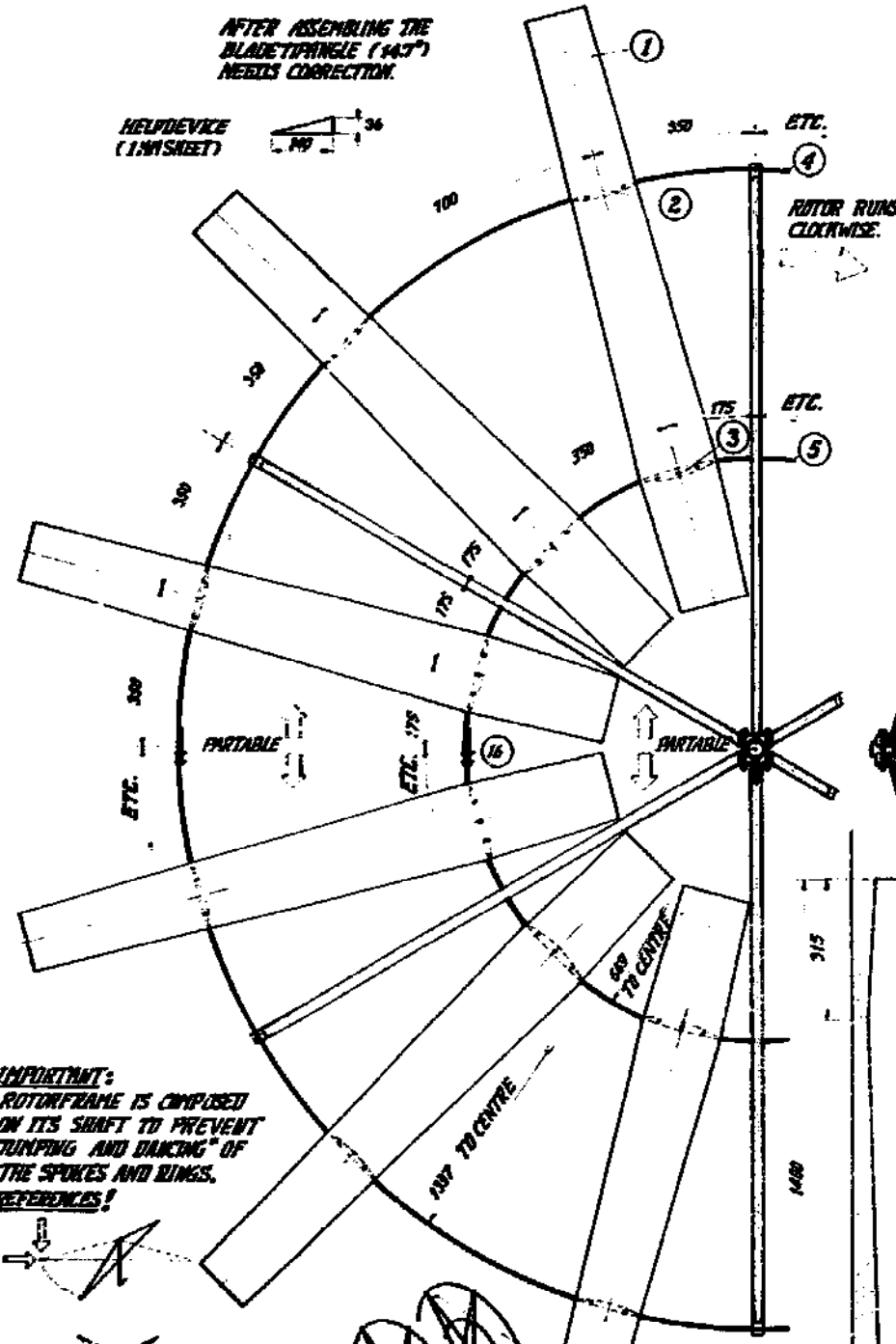
26	1	PUMP ROD GUIDE	HARDWOOD SOAKED IN OIL
25	2	BOLT, NUT, WASHERS	M10 x125 (W 3/8" x 5")
24	4		M10 x 50 (W 3/8" x 2")
23	1		M10 x 75 (W 3/8" x 3")
22	2		M6 x 25 (W 1/4" x 1")
21	1	THREAD STUD	M16 x 75 (W 3/4" x 3")
20	1	P.V.C. INSERT	Ø 80 x 550
19	1	PUMP ROD	GAS PIPE Ø 3/4" x 4000
18	1	CRANK BUSH	
17	1	CROSSHEAD	HARDWOOD SOAKED IN OIL
16	1	FLAT IRON	25 x 5 (1" x 1/4") LENGTH 220
15	1		140
14	1		475
13	4		40
12	1		115
11	4		100
10	1	CROSS PIN Ø 20 x 70	REMOVE SHARP EDGES
9	1	CRANK BOLT	M12 x 60 (W 1/2" x 2 1/4")
8	3	NUT	M12 (W 1/2")
7	1	WASHER	Ø 12 x Ø 35 x 2 MM
6	4	NYLON BEARING BUSH	Ø 1 1/8" NYLON ROD
5	2	STEEL BUSH	Ø 35 x 25
4	2	BEARING BUSH (BEST QUALITY)	
3	2	BALL BEARING (BEST QUALITY)	
2	2	BEARING HOUSING	
1	1	SHAFT	Ø 35 (Ø 1 1/8" x 950)

NO. 4 OF 7 MATERIAL / NAME / REMARKS / MEASUREMENTS

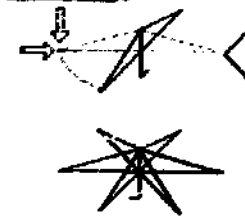
MOVING PARTS OF -12PU350-WINDMILL

FOR INFORMATION:

PUMP ROD CONNECTION SEE DRAWING 096



IMPORTANT:
ROTOR FRAME IS COMPILED
ON ITS SHAFT TO PREVENT
"JUMPING AND BALKING" OF
THE SPOKES AND RINGS.
REFERENCES!

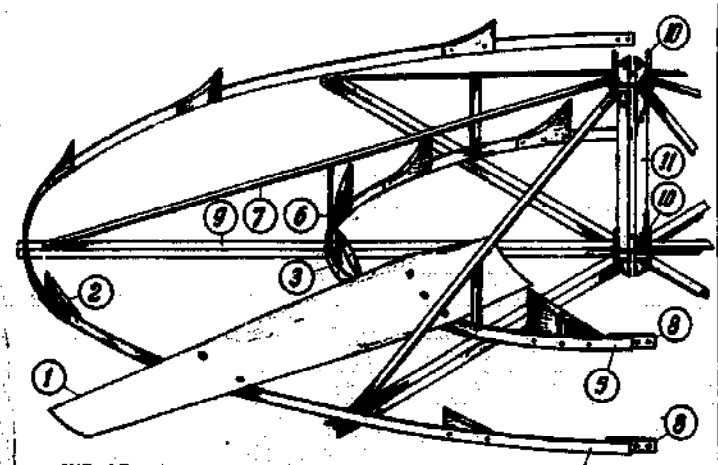
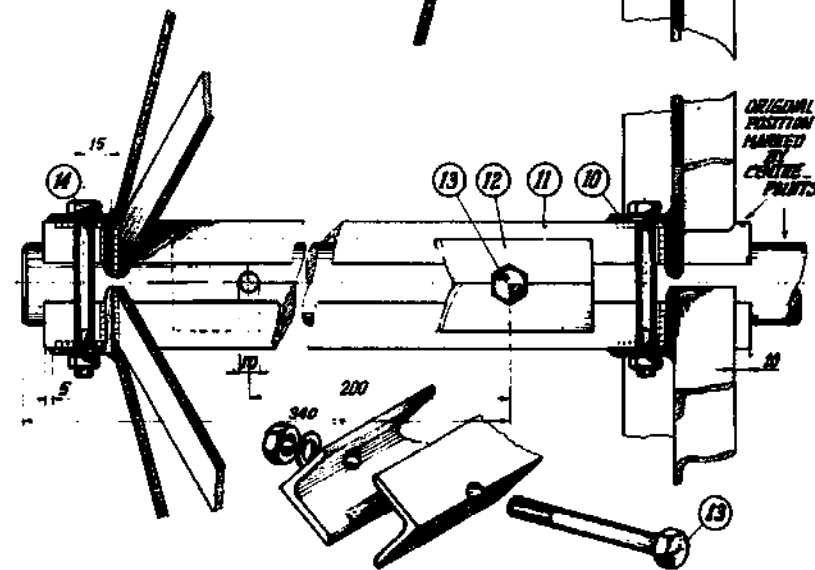
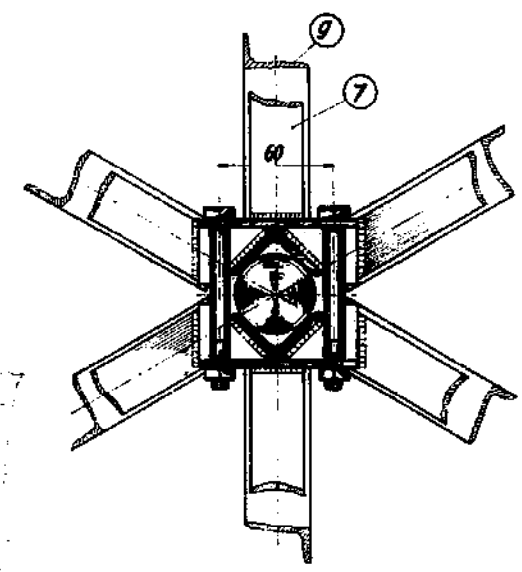
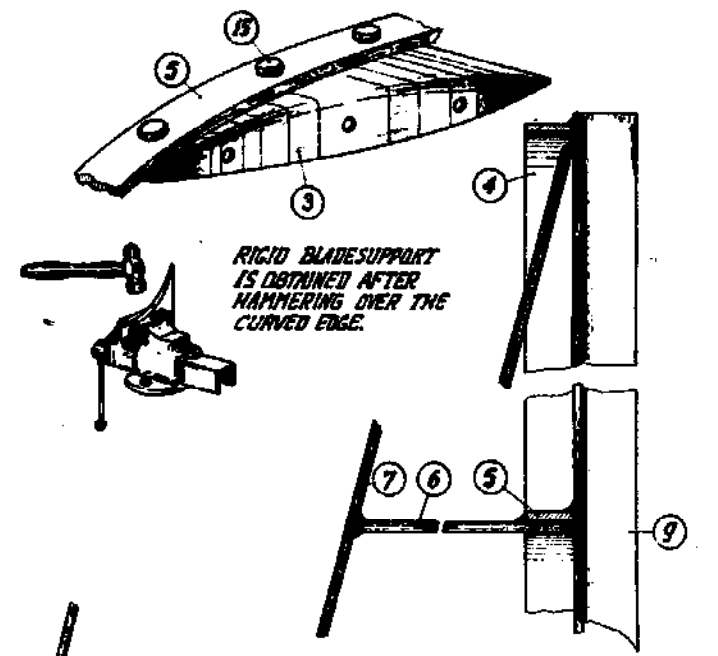
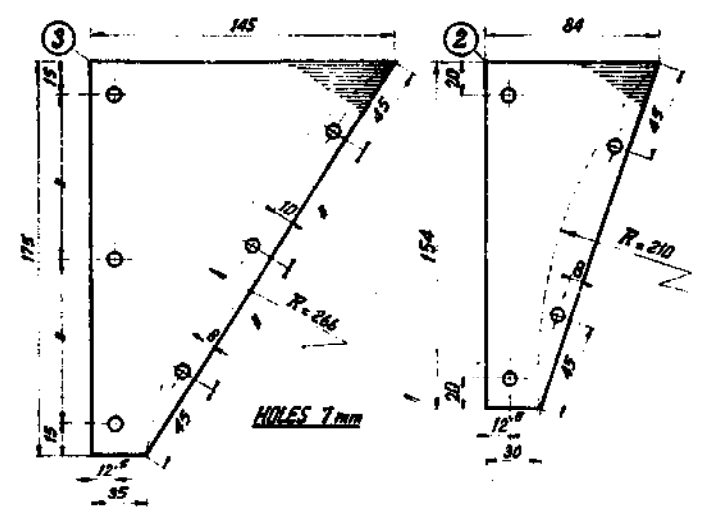


RINGS ARE POSITIONED,
CENTERED AND WELDED.

SHAFT AND
TWO ROTOR
RINGS BELONG
TOGETHER!



SHEET IS ROLLED
IN A BENDING -
RADIUS OF APPX.
200 mm
AFTER CUTTING
THE RADIUS IS
CORRECTED SO THAT
10% CURVED AIRFOILS
WILL RESIST

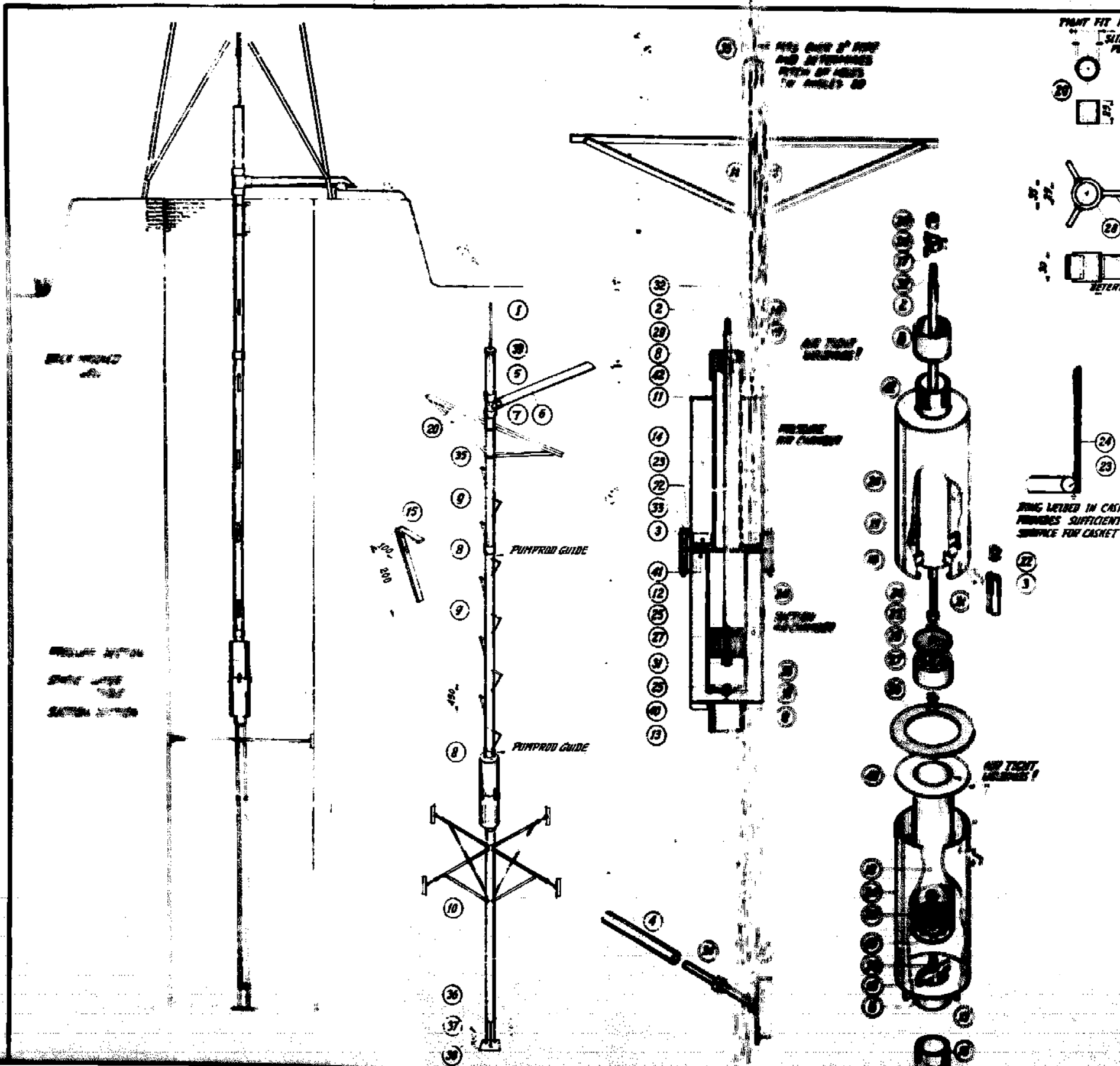


ONE OF THE BLADES IS MOUNTED
ON A WELL POSITIONED SET OF SUPPORTS
(AVERAGE MEASUREMENTS!) AND IS USED
AS A DRILLING MOULD FOR THE OTHER
11 BLADES.

16	8	BOLT NUT WASHER	M10x25 (W3/8"x1")
15	120		M6x15 (W1/8"x1/2")
14	4		M10x100 (W3/8"x4")
13	2		M10x100 (W3/8"x4")
12	2	ANGLE IRON	30x30x3 (1 1/4"x1 1/4"x3/8")
11	2		x465
10	4		x100
9	6		x1330
8	4	FLAT IRON	25x5 (1"x1/4")
7	6		x1330
6	6		x190
5	1		2 x 2100
4	1		2 x 4200
3	12	BLADE SUPPORT	1mm SHEET
2	12		
1	12	BLADE	1mm SHEET

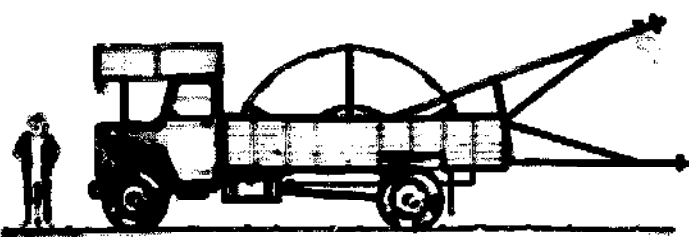
NO. 5 OF 7
MATERIAL/NAME/REMARKS/MEASUREMENTS

ROTOR FOR - 12 PUS50 - WINDMILL (A-2)
FOR INFORMATION:

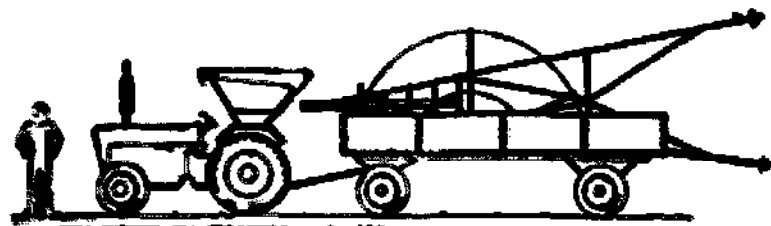


42	2	CASING - FLANGE	2mm SHEET 0.30
41	1	FOOT VALVE	(CLAMP TYPE 05-41)
40	1	WOODEN PUMP ROD GUIDE	21 IN DIAMETER 1/2 IN
39	1	BOTTOM SHEET	2mm SHEET 0.30
37	1	MESH	0.30
36	3	FOOT BAR	1/2 IN 0.125 IN DIA
35	2	CLAMP	1/2 IN 0.125 IN DIA
34	4	BOLT - NUT	1/4 IN DIA (1/4 IN x 1/2 IN)
33	5	BOLT - NUT WASHER	1/4 IN DIA (1/4 IN x 1/2 IN)
32	*	THREAD STUD	1/4 IN DIA (1/4 IN x 1/2 IN)
31	1	NUTS	1/4 IN (1/4 IN)
30	*	NUTS	1/4 IN (1/4 IN)
29	1	BRONZE BRUSH	0.125 IN
28	1	STEEL BRUSH	0.125 IN
27	2	PISTON / FOOTVALVE	TEARDROP
26	1	GASKET	SOLE LEATHER 6 IN DIA
25	2	VALVE	0.125 IN DIA
24	2	CASING	2mm SHEET 0.30
23	1	RING	1/2 IN 0.125 IN DIA
22	4	FILLING PIECE	1/2 IN 0.125 IN DIA
21	4	ANGLE IRON	3/4 IN DIA
20	2		
19	4		
18	1	FLAT IRON	1/2 IN DIA
17	3		
16	1		
15	*		
14	4		
13	4		
12	1	CYLINDER	SEMI-FINISH 4 IN DIA 1.20
11	1	DELIVERY PIPE	3 IN 1.00
10	1	SUCTION PIPE	3 IN 1.00
9	1	DELIVERY PIPE (EXTENSION)	3 IN 1.00
8	*	SOCKET	FOR 3 IN
7	1	T-SOCKET	
6	1	EXHAUST PIPE	3 IN 1.00
5	1	TOP PIPE	3 IN 1.00
4	4	FIXING PIPE	3 IN 1.00
3	4	PIPE	3 IN 1.00
2	1	PUMP ROD	3 IN 1.00
1	*	PUMP ROD EXTENSION	3 IN 1.00
NO	NO	MATERIAL / MAKE / DIMENSIONS / WEIGHTS	

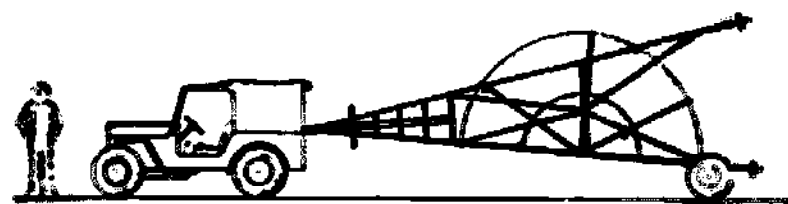
6 OF 7
6" PISTON PUMP FOR 12 PRESS MINORILL
 FOR INFORMATION:



TRANSPORT BY TRUCK

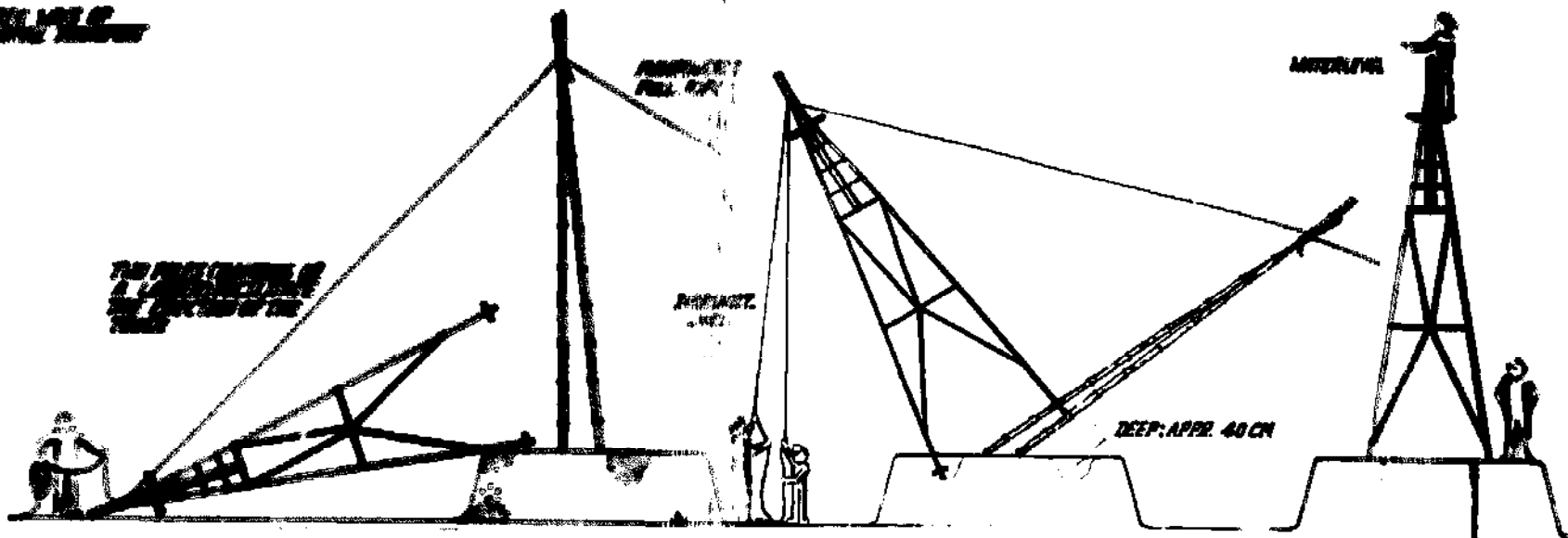


TRANSPORT BY TRACTOR AND LOWBY



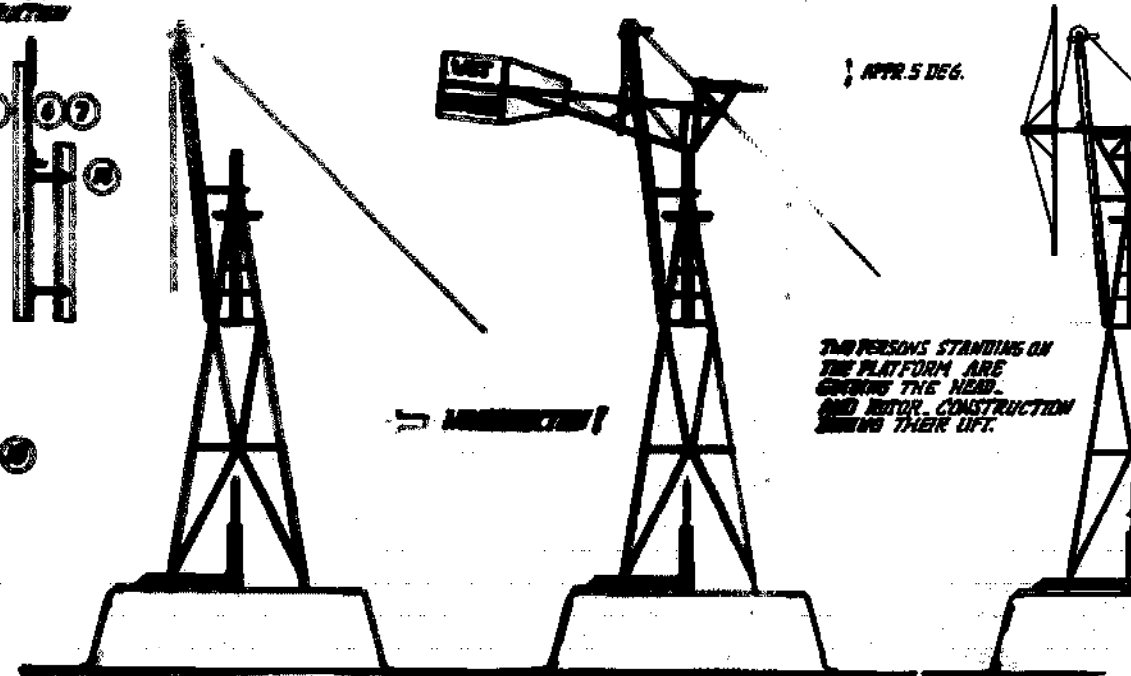
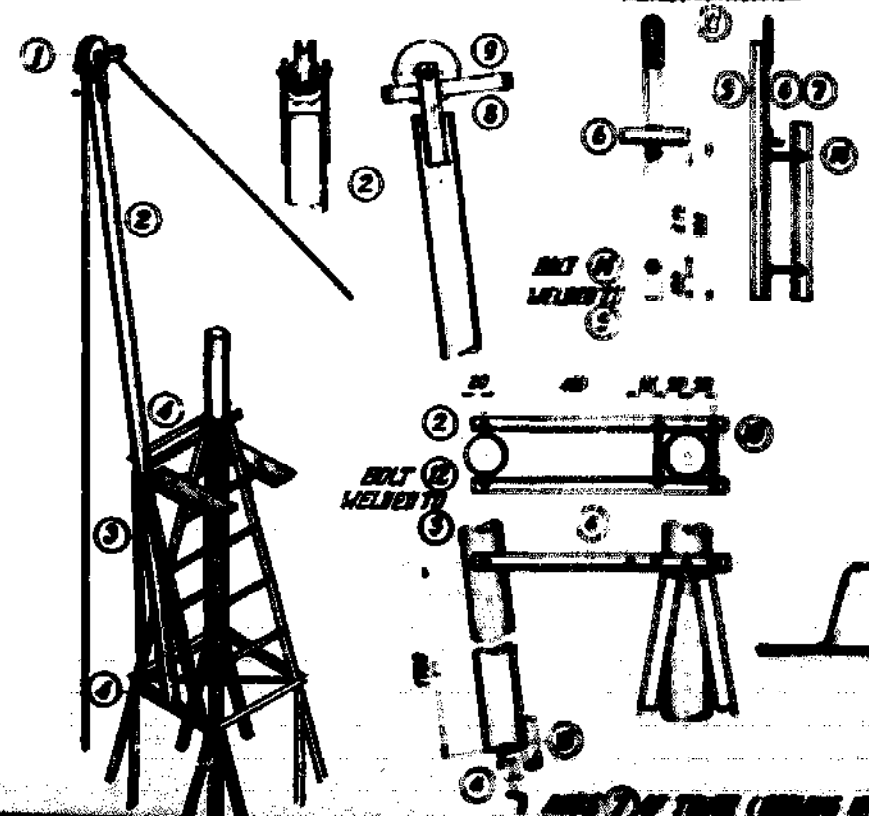
TRANSPORT BY JEEP AND ROLLING HELFDEVICE

INSTALLATION



REMARKS: AFTER PLACING THE TOWER THE TOWERS ARE FLOORED IN WITH CONCRETE AND AFTER APPROX 5 DAYS THE HEAD AND ROTOR CONSTRUCTION CAN BE RAISED SAFE AND SOUND BY MEANS OF LIFTING DEVICES. BEHIND THE RAISING OF THE CONCRETE FOUNDATION THE PISTON PUMP IS PUMPED INTO THE WELL ACCORDING TO THE SPECIFICATIONS!

THE LIFTING HELFDEVICE



THE PERSONS STANDING ON THE PLATFORM ARE GUIDING THE HEAD AND ROTOR CONSTRUCTION DURING THEIR LIFT.

SINCE THE CENTER OF GRAVITY OF THE HEAD CONSTRUCTION IS SHIFTED ABOVE THE HOOK THE HOOK A SPECIAL EXPANSION IS REQUIRED A SHORT SLING AND THE TOWER IS ADJUSTED IF THE HOOK IS OUT OF BALANCE AFTER 5 DAYS.

ROTOR IS LIFTED AND POSITIONED AT THE TOP OF ITS SHAFT AND SHIPPED IN ITS ORIGINAL POSITION (CENTRE POINTS) AND PUMP. NOW THE TOWER CAN BE REMOVED AND THE SLING SAFETY DEVICE AND FIXING PARTS ARE REMOVED.

14	2	BOLT NUT WASHER	M16x30 (17x15x3)
13	1		M16x25 (17x15x2)
12	2		M16x20 (17x15x1)
11	1	ROD	Ø20x100x1.00
10	1	FLAT	25x3 1/2x1.00
9	1		1.00
8	2		1.00
7	1	ANGLE IRON	30x30 (17x17x1.00)
6	1		1.00
5	1		1.00
4	3		1.00
3	2		1.00
2	1	GAS PIPE	Ø 7 x 1.00
1	1	PILE SHEET AND PIPE OR SIMILAR COIL	
NO	NO	MATERIAL / WGT / REMAINS / REMARKS	

INSTALLING THE MOTOR - R.P.W.S. -
FOR INFORMATION: