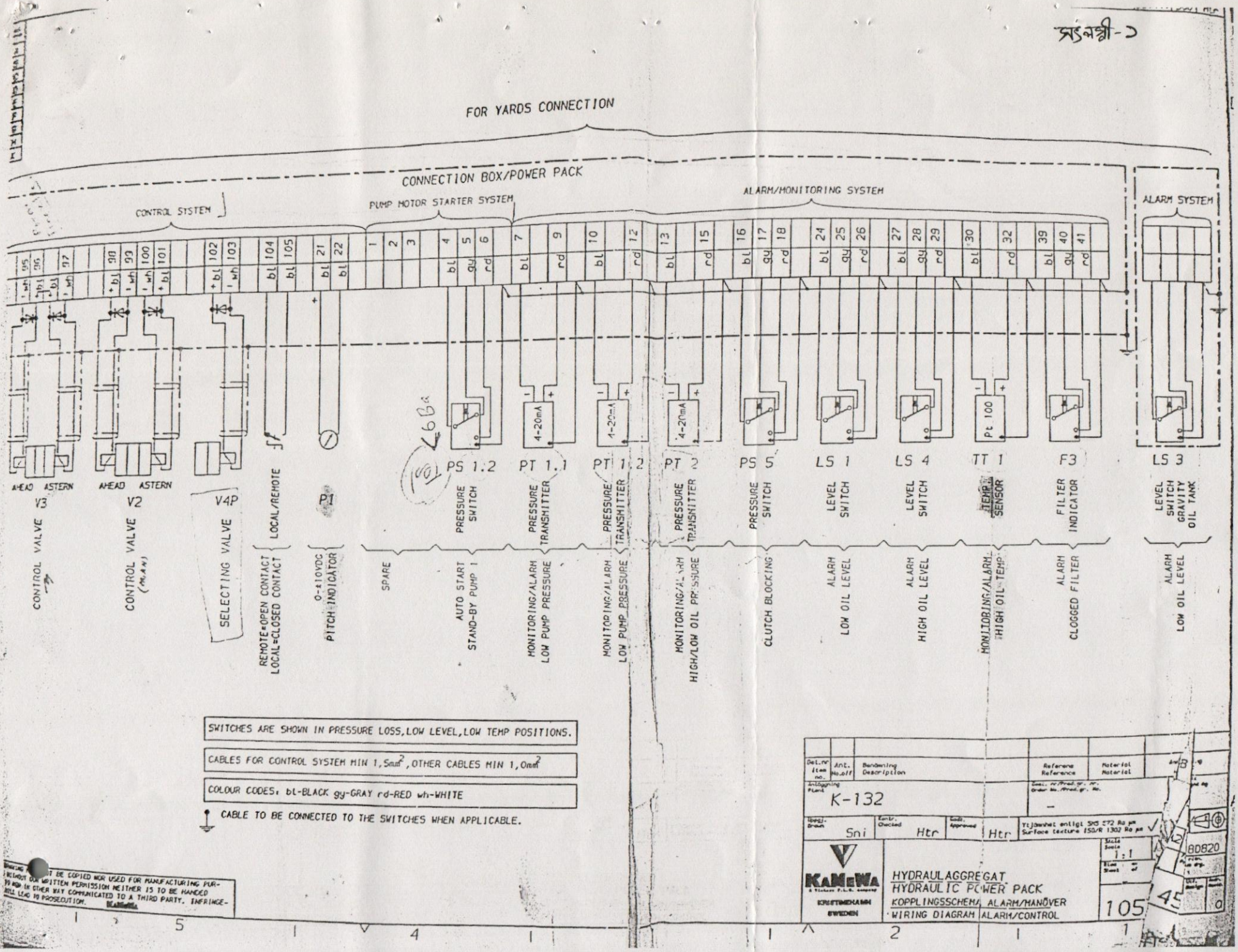
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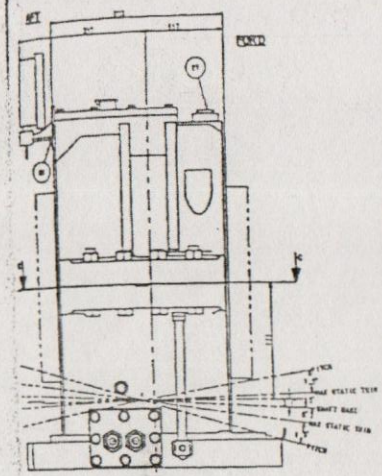


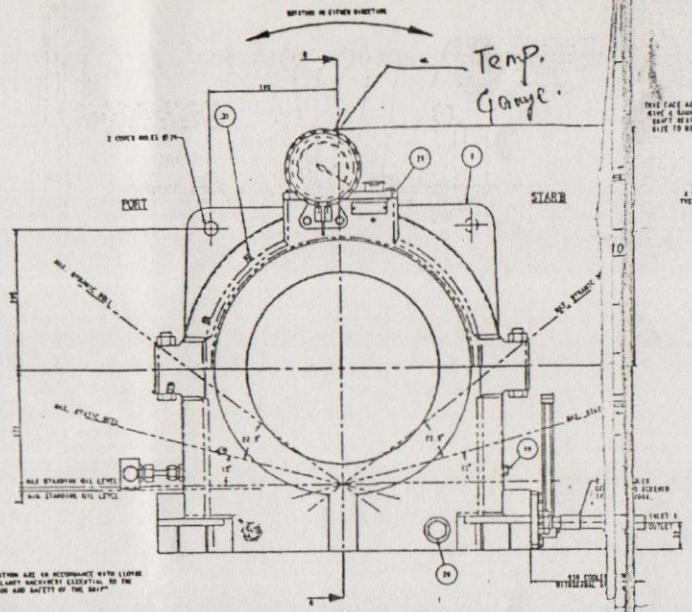
...T BE COPIED NOR USED FOR MANUFACTURING PURPOSES WITHOUT OUR WRITTEN PERMISSION NEITHER IS TO BE HANDED OVER OR IN OTHER WAY COMMUNICATED TO A THIRD PARTY. INFRINGEMENT WILL LEAD TO PROSECUTION. KAMEWA

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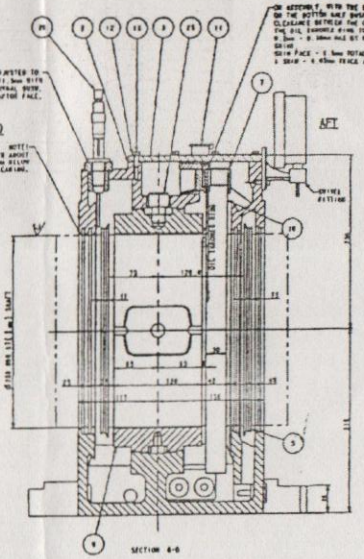
DRAWING No. MS/0/201279

DIMENSIONS IN MM UNLESS OTHERWISE STATED
DO NOT SCALE

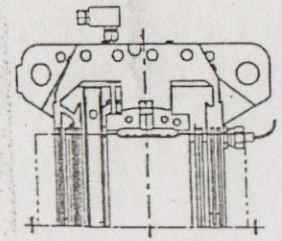




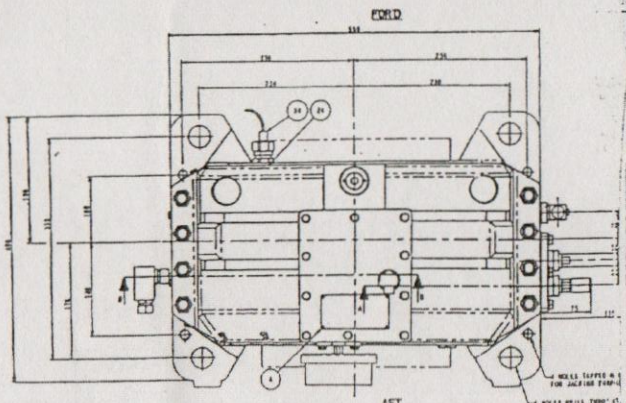
BEARING TO BE SUPPORTED OVER FULL AREA OF BASE

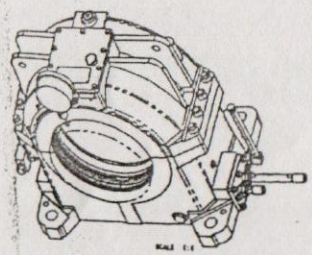


SECTION A-A

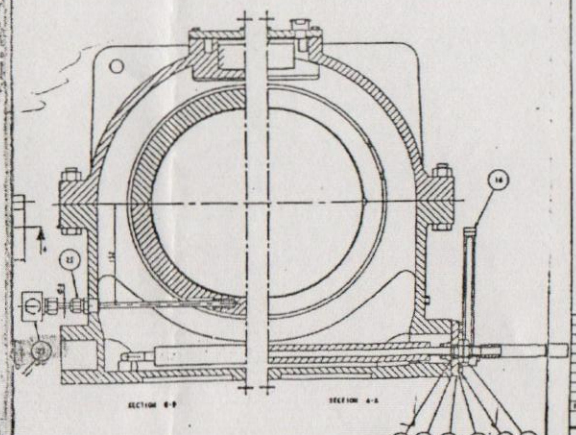


SECTION C-C





SCALE 1:2



SECTION B-B SECTION A-A

NO	BEARING No	PART NAME	QTY	MATERIAL	UNIT MASS kgs	REMARKS
1	MS/0/201-279	CASTING ASSEMBLY	1	SG IRON	1.0 TON	
-	MS/0/201-279/1	CASTING BOTTOM HALF/A	1	SG IRON	0.4 TON	
-	MS/0/201-279/2	CASTING TOP - HALF/A	1	SG IRON	0.6 TON	
-	MS/0/201-279/3	NUT M48	8	STEEL	0.060	
-	MS/0/201-279/4	FITTED BOLT	4	STEEL	0.060	AS PER T/PLG
-	MS/0/201-279/5	NUT M8 NYLOC	4	STEEL	0.009	
-	MS/0/201-279/6	WASHER	4	BRASS	0.008	
-	MS/0/201-279/7	NUT SET SCREW	2	STEEL	0.060	
2	MS/0/201-279/8	JOINT	1	REINFORCED	0.400	
3	MS/0/201-279/9	INSPECTION DOOR	1	STEEL	1.400	
4	MS/0/201-279/10	NAME PLATE	1	ST STEEL	0.010	
5	MS/0/201-279/11	OIL SPLASH RING	2	BRONZE	0.400	
-	MS/0/201-279/12	SPLASH RING	1	DO AS/WITH	0.400	
-	MS/0/201-279/13	SPRING	2	STAINLESS STEEL	0.010	
-	MS/0/201-279/14	JOINT WASHER	1	STAINLESS STEEL	0.010	
6	MS/0/201-279/15	JOINT	1	STAINLESS	0.010	
7	MS/0/201-279/16	WIPER ASSEMBLY	1	PLASTIC & STEEL	0.250	
-	MS/0/201-279/17	OIL WIPER	1	PLASTIC	0.200	
-	MS/0/201-279/18	OIL	1	OIL	0.400	
-	MS/0/201-279/19	BOSS	1	BRASS	0.400	
-	MS/0/201-279/20	BOSS	1	STEEL	0.250	
-	MS/0/201-279/21	NUT SOCKET CAP M20X2.5	3	STEEL	0.060	
8	MS/0/201-279/22	COOLER DOOR	1	STEEL	0.400	
9	MS/0/201-279/23	JOURNAL BUSH ASSEMBLY	1	STEEL	27.000	
-	MS/0/201-279/24	OIL BUSH TOP HALF	1	STEEL	13.500	
-	MS/0/201-279/25	OIL BUSH BOTTOM HALF	1	STEEL	13.500	
-	MS/0/201-279/26	BOSS, FORM B	2	STEEL	0.400	
-	MS/0/201-279/27	CAP HD SCREW	6	STEEL	0.060	
10	MS/0/201-279/28	OIL THROWER RING ASSY	1	BRONZE	1.250	
-	MS/0/201-279/29	OIL THROWER RING HALF	2	BRONZE	0.600	
11	MS/0/201-279/30	FITTED BOLT	2	STEEL	0.009	AS PER T/PLG
-	MS/0/201-279/31	SPEC LOCKING NUT	2	STEEL	0.060	
12	MS/0/201-279/32	OIL FILLER CAP	1	STEEL #1	0.060	
13	MS/0/201-279/33	GASKET	1	STEEL	0.060	
14	MS/0/201-279/34	PIPE HD SCREW	10	STEEL	0.009	
15	MS/0/201-279/35	BONDED SEAL	2	STEEL/ALUMINIUM	0.060	
16	MS/0/201-279/36	NUT DATUM	4	COPPER ALLOY	0.060	
17	MS/0/201-279/37	GASKET	4	STEEL	0.060	
18	MS/0/201-279/38	NUT HD SCREW	4	STEEL	0.060	
19	MS/0/201-279/39	OIL LEVEL GAUGE	2	BRASS	0.060	
20	MS/0/201-279/40	NUT HD SCREW	2	STEEL	0.060	
21	MS/0/201-279/41	HEX HD PLUG	1	STEEL	0.060	
22	MS/0/201-279/42	MAGNETIC DRAIN PLUG	1	ALUMINIUM	0.060	
23	MS/0/201-279/43	COPPER WASHER	2	COPPER	0.060	
24	MS/0/201-279/44	COMPRESSION FITTING	1	BRASS	0.060	
25	MS/0/201-279/45	PIPE FITTING ELBOW 90°	1		0.060	
26	MS/0/201-279/46	COOLER ASSEMBLY	1	COPPER	4.000	
-	MS/0/201-279/47	TUBE COIL	1	COPPER	4.000	
-	MS/0/201-279/48	CONNECTOR	1	COPPER	0.060	
-	MS/0/201-279/49	CAP	1	COPPER	0.060	
-	MS/0/201-279/50	CONNECTOR	1	COPPER	0.060	
27	MS/0/201-279/51	CAP HD SCREW	1	STEEL	0.060	
28	MS/0/201-279/52	RESISTANCE THERMOMETER	1	ATEX	0.060	
29	MS/0/201-279/53	NUT SET SCREW	1	ST STEEL	0.060	
30	MS/0/201-279/54	NAME PLATE	1	ST STEEL	0.060	
31	MS/0/201-279/55	THERMOMETER	1	STAINLESS STEEL	0.060	
32	MS/0/201-279/56	CABLE CLIP	1	NYLON	0.060	
33	MS/0/201-279/57	BUTTON SCREW	6	ST STEEL	0.060	

NO 1 WEARDEX PERIMETER SUPPLIED PER SKW

DUTY		A	B	C	D
SHAFT DIA	mm	254 H7			
SPEED (NORMAL/MAX)	RPM	[764/1146]			
JOURNAL LOAD	kN	46			
JOURNAL PRESSURE	MPa	3.6			
JOURNAL PRESSURE	BAR	36.08			
JOURNAL DIAMETRIC CLEARANCE (MIN/MAX)	MM	0.324/0.429			
OIL VISCOSITY GRADE	150 VG	100			
POWER LOSS (NORMAL SPEED)	KW	8.51			
COOLING WATER QUANTITY (MIN/MAX)	L/M	376/3.8			
COOLING WATER INLET TEMP	°C	32			
AMBIENT AIR TEMPERATURE	°C	45			

APPROX. OIL CAPACITY OF BRG = 0.8 Litres

APPROX. WET WEIGHT OF BRG. = 1.09 KN - TOP HALF CASING = 0.38 KN
BOTTOM HALF CASING = 0.48 KN
STUDS ASSEMBLY = 0.05 KN
OIL THROWER RING = 0.10 KN

1. SHAFT SURFACE TO BE [illegible] RA OR BETTER OF JOURNAL BORE.
2. ON INITIAL FILL AND SUBSEQUENT REFILLS OF THE BEARING THE LUBRICATING OIL IS TO BE FILTERED TO EXCLUDE PARTICLES OF 25 MICRONS OR BETTER.
3. BEARING ACCEPTABLE DYNAMIC MISALIGNMENT IS 400 RAD WITH A JOURNAL LOAD OF 0.4 N/m AND A SPEED OF 400 RPM.

BEARING IS CAPABLE OF WITHSTANDING SHOCK LOADS TO 2.0N SHOCK FOR 11MS.

NOTE THAT THE MAX. PERMISSIBLE RESIDUAL STRESS UNDER SHOCK LOADING IS THE YIELD OR 0.2% PROOF STRESS OF THE MATERIAL.

IF THE POSSIBILITY EXISTS OF ICE FORMING WITHIN THE COOLER ASSEMBLY, THEN THE SHAFT MUST BE STOPPED, THE COOLING WATER SHOULD BE SWITCHED OFF AND THE COOLER EMPTIED.
ONCE THE THREAT OF ICE FORMATION HAS PASSED THEN THE COOLING WATER TO THE BEARING CAN BE SWITCHED ON, ONLY THEN CAN THE SHAFT BE ROTATED.

ALL SCREWED FASTENERS TO BE SECURED WITH LOCTITE 220

DATE	ORDER No	CUSTOMER	QTY	ISSUE	REMARKS
28/11/96	24744	RANKIN AB	1	A	

MICHELL BEARINGS
A TECHPRO COMPANY
8 WYNYARD ROAD
NEWCASTLE UPON TYNE NE3 1LL

MICHELL AXIAL FLOWMETER BEARING

REF:- MSA274 - WATER COOLED

DRAWN BY	DATE	SCALE	DRAWING NUMBER
CHECKED BY	28.8.96	2:3	MS/0/201279

PORT BEARING DRAWN SEE DRAWING MS/0/201655 FOR STBD BEARING

NO	DESCRIPTION	DATE
2	BASE THICK REVISED THROUGH HOLE PART No. OF NUT AND NOT LOCATION ASSEMBLY CHANGED BEARING BORE CHANGED TO BEARING MICROMETER.	
1	NOTE TABLE AND GENERAL NOTES UPDATED.	

DRAWING No. MS/0/201279

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PARTS LIST FOR BEARING 201271

REF	DRAWING No	PART NAME	QTY	MATERIAL	UNIT WEIGHT (KG)	REMARKS
1	MC/Z/201269	CASING ASSEMBLY	1	SG IRON	132.199	
-	CB/B/201281	CASING BOTTOM-MSA274	1	SG IRON	84.284	
-	CT/B/201282	CASING TOP - MSA274	1	SG IRON	47.749	
-	NU/X/100093	HEX NUT	8	STEEL	0.000	M16
-	BT/X/100075	FITTED BOLT	4	STEEL	0.000	M16X85 FITTED
-	BT/X/201295	HEX HD BOLT	4	STEEL	0.000	M16X90
-	IR/4/201318	ADAPTOR	1	NAVAL BRASS	0.166	
-	SB/X/100040	HEX SKT SCREW	2	STEEL		M6 X 8
2	GS/4/201278	JOINT	1	SENTINEL	0.000	
3	DR/3/201268	INSPECTION DOOR	1	STEEL	2.493	
4	NP/X/100411	NAME PLATE	1	ST.STEEL	0.000	
5	OS/3/201271	OIL SPLASH RING	2	RUBBER	0.000	
-	OS/X/201282	SPLASH RING	1	NBR RUBBER	0.000	
-	SI/X/201281	SPRING	1	STAINLESS STEEL	0.000	
-	OS/X/201280	JOINT INSERT	1	STAINLESS STEEL	0.000	
6	GS/4/201269	JOINT	1	SENTINEL	0.000	
7	OD/Z/201272	SCRAPER ASSEMBLY	1	PLASTIC & STEEL	0.224	
-	OD/Z/201276	OIL SCRAPER	1	PLASTIC	0.000	
-	LI/4/201275	SHIM	1	BRASS	0.000	
-	DR/4/105238	DOOR	1	STEEL	0.224	
-	SR/X/100048	HEX. SOCKET CSK SCREW	3	STEEL	0.000	M4X10
8	DR/3/201267	COOLER DOOR	1	STEEL	0.667	
9	BU/1/201150	JOURNAL BUSH ASSEMBLY	1	STEEL	31.885	WM LINED
-	BU/X/201151	JNL BUSH TOP HALF	1	STEEL	15.687	
-	BU/X/201152	JNL BUSH BOTTOM HALF	1	STEEL	16.198	
-	DO/X/100031	DOWEL FORM B	2	STEEL	0.000	DIA10X25
-	SR/X/100022	CAP HD SCREW	4	STEEL	0.000	M10X45
10	TR/2/201244	OIL THROWER RING ASSY	1	SG IRON	7.424	
-	TR/X/201250	OIL THROWER RING HALF	2	SG IRON	3.713	PATTERN No. 15190/2
-	BT/X/100071	FITTED BOLT	2	STEEL	0.000	M12X45 FITTED
-	NU/X/100101	SELF LOCKING NUT	2	STEEL	0.000	M12
11	CU/X/105178	OIL FILLER CUP	1	STEEL-NI	0.000	ADAMS
12	WA/X/100031	WASHER	12	STEEL	0.000	M6
13	BR/X/100057	HEX HD SCREW	10	STEEL	0.000	M8X20
14	WA/X/100434	BONDED SEAL	3	STEEL/NITRILE	0.000	G1/2
15	NU/X/100104	HEX BACK NUT	4	COPPER ALLOY	0.000	G1/2
16	WA/X/100032	WASHER	8	STEEL	0.000	M8
17	BR/X/100060	HEX HD SCREW	8	STEEL	0.000	M8X20
18	OG/X/100419	OIL LEVEL GAUGE	1	BRASS	0.000	SEAL WITH LOCTITE 51
19	PG/X/100440	HEX HD PLUG	1	STEEL	0.000	R1/2
20	PG/X/100940	MAGNETIC DRAIN PLUG	1	AL/ALLOY	0.000	1/2' BSP
21	WA/X/100826	COPPER WASHER	2	COPPER	0.000	G1/2
22	IN/X/201421	COMPRESSION FITTING	1	BRASS	0.000	GB2-BOW
23	IN/4/201422	RTD PT100 CLASS B	1		0.000	
24	CO/2/201203	COOLER ASSEMBLY	1	CU-NI	0.856	
-	CO/2/201206	TUBE COIL	1	CN107	0.000	
-	CO/4/201265	CONNECTION	1	CN107	0.000	
-	CO/4/201264	TUBE SUPPORT	1	STEEL	0.856	
-	CO/4/201301	CONNECTION	1	CN107	0.000	
25	SR/X/201305	CAP HD SCREW	1	STEEL	0.000	M20X24
26	IN/3/201310	WEARDOWN MICROMETER	1	STEEL	0.165	
27	PG/X/100440	HEX SKT PLUG	1	STEEL	0.000	G1/2
28	SB/X/100056	HEX HD SCREW	2	STEEL	0.000	M8X10
29	NP/X/100410	NAME PLATE	1	ST.STEEL	0.000	
30	IN/3/201400	DIAL THERMOMETER	1	STAINLESS STEEL	0.000	
31	BK/4/104645	CABLE CLIP	7	NYLON	0.000	
32	SR/X/100036	BUTTON SCREW	7	STEEL	0.000	M3X8

* 1 WEARDOWN MICROMETER SUPPLIED PER SHIP

	SUPERVISION OF	LOCATION	TO LOW	TO HIGH	TYPE	FUNCTION	SIGNAL TO	SIGNAL FROM	SIGNAL RANGE	SETTING POINT	DELAY SEC	NOTE
2	Control failure alarm	CU			R	Control failure, Computer error, Power supply failure						NC
3	Pitch indicator	PP				Actual pitch		Control system	+/- 10V			
4	Pitch indicator	Aft eng.room				Actual pitch		Control system	+/- 10V			
5	Unloading valve V1	PTO-pump			V	Unloading one pump-section at high RPM		RPM-signal	ON-OFF 24VDC 30W	On< 150rpm, Off >165rpm		
6	Control valve V2 "booster v."	PP			V	Pitch setting High speed		Control system	ON-OFF 24VDC 30W			
7	Controlvalve V3 "servo valve"	PP			V	Pitch setting Low and High speed		Control system	Prop. 0-800 mA			
8	Selecting valve V4P	PP			V	Selecting High /Low pitch setting speed		Control system	ON-OFF 24VDC 30W			
10	El. motor pumpunit 1	PP				Pump 1		Starter	415V 50Hz 11,5kW			
11	Starter pump P3	Closed to PP				Pump 3		Starter	415V 50Hz 2,2kW			
12												
13	Pressure transmitter PT2	PP	X		A	Monitoring /Alarm High/Low oil pressure			0-16MPa 4-20mA	1,08/0,8 MPa	10	
14	Pressure transmitter PT1.1	PP	X		A	Monitoring /Alarm low pump pressure			0-16MPa 4-20mA	0,8 MPa	10	
15	Pressure transmitter PT1.2	PP	X		A	Monitoring /Alarm low pump pressure			0-16MPa 4-20mA	0,8 MPa	10	
16	Pressure switch PS1.2	PP	X		P	Autostart of pump P1			ON-OFF	0,5 MPa	10	NO
18	Pressure switch PS 5	PP	X		P	Clutch blocking			ON-OFF	0,8 MPa	10	
19												
20	Temp.transmitter TT1	PP		X	A	Monitoring /Alarm High oil temp			0-100°C 4-20mA	65°C	10	
21	Level switch LS1	FP	X		L	Alarm low oil level			ON-OFF	Alarm 240 mm	10	NO or NC
22	Level switch LS4	PP		X	L	Alarm high oil level			ON-OFF	Alarm 100 mm	10	NO or NC
23	Level switch LS3	GT	X		L	Alarm low oil level			ON-OFF	Alarm 320 mm	10	NO or NC
24	Pressure switch F3	PP		X	P	Alarm clogged filter F3			ON-OFF	0,34 MPa	10	NO or NC
25	Feed back transmitter	O.D.Box			A	Actual pitch - Full Ahead to Full Astern, Ind. system	STN		within 4-20mA			
26	Feed back transmitter	O.D.Box			A	Actual pitch - Full Ahead to Full Astern, Contr. syst.	STN		within 4-20mA			
27	Feed back transmitter	O.D.Box			A	Actual pitch - Kamewa pitch indicator			within 4-20mA			
28	Zero pitch switch	O.D.Box			E	Zero pitch	STN		ON-OFF	Zero pitch		
29	Temp sensor	Shaft bearing		X	S	Monitoring/ Alarm High bearing temperature	STN		Pt-100	See sep. specification		
30	Feeding to Kamewa pitch ind.	PP						DHI	24VDC 1 Amp			

Rev. a: line 18, pressure switch PS5 added 981117 Htr Rev.b line 2,added 990113 FRR

TYPE:
P=Pressure switch
R=Relay, voltage free contact
L=Level switch
A=Analogic transmitter
T=Temperature switch
E=El. switch
D=Differantial pressure switch
S=Temp. sensor
NC=Normally closed
NO=Normally open
M= Electric motor
V= Hydraulic valve

LOCATION:
CU=Central unit Closed loop
SL=Shaft line
PP=Hydraulik Power Pack
DOT=Drain oil tank
GT=Gravity tank
JCU=Joystick central unit

KAMEWA Group
EXCELLENCE IN PROPULSION

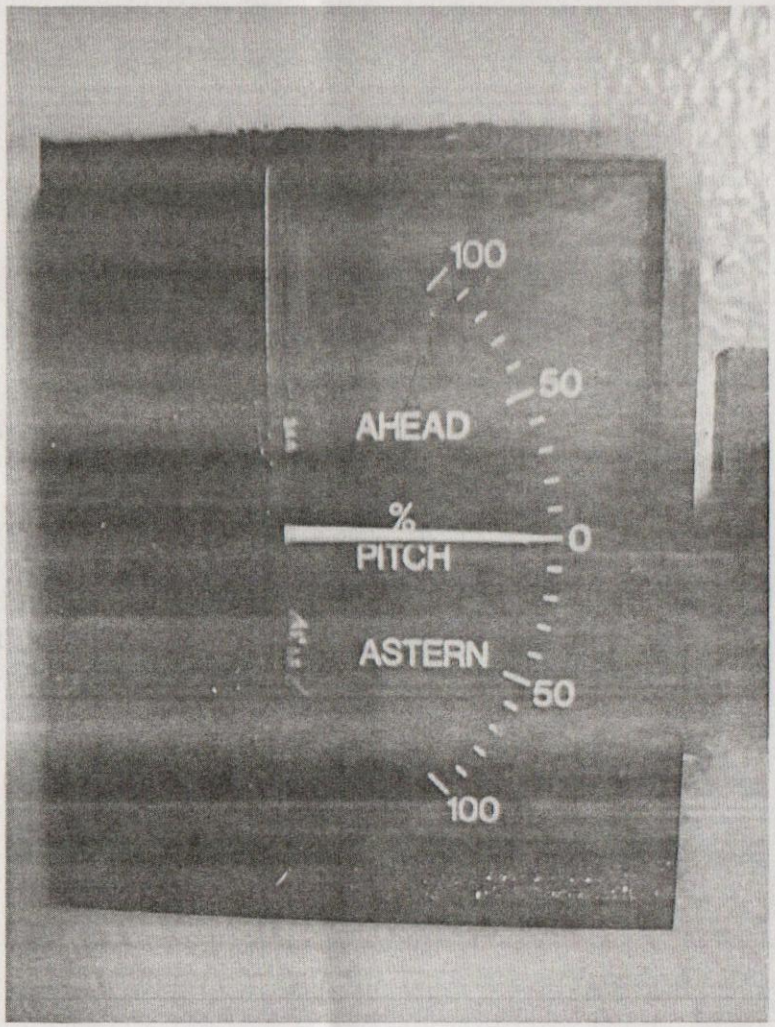
MAIN PROPELLER
REMOTE SUPERVISION AND INTERFACE LIST K-132

Drawn	Checked	Approved	Scale	Form
Htr	FRR	FRR		A3
Datum 980827	Previous dwg.		Sheet 1	of 1
105149			Design -	Revis. b

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CPP এর আইটেমসমূহের পূর্ণাঙ্গ চিত্র



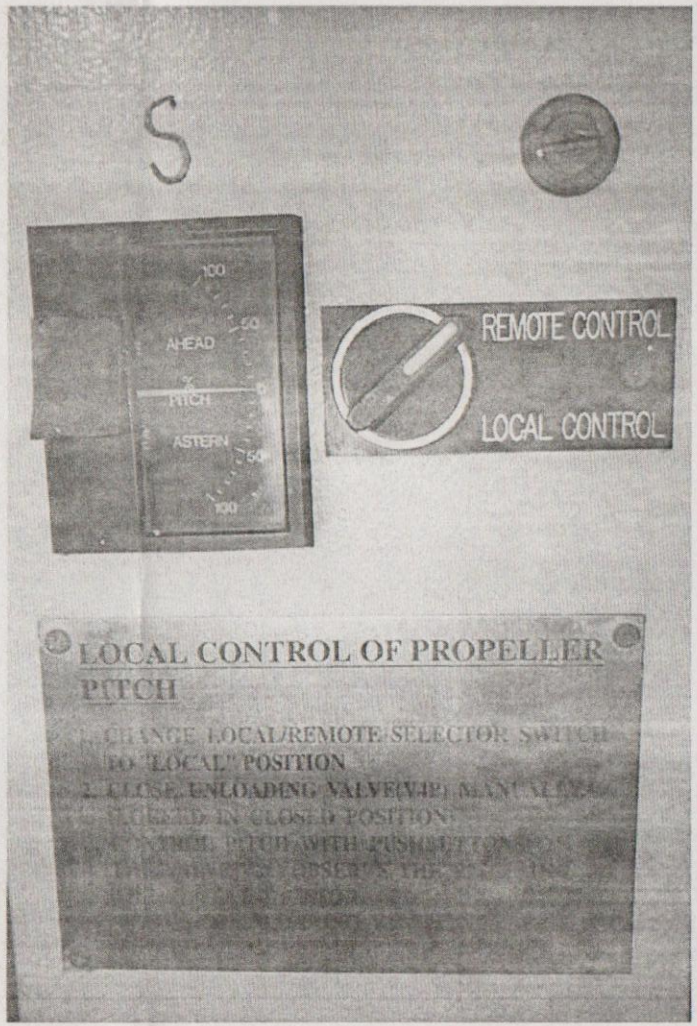


Figure: Pitch Indicator ±10V DC

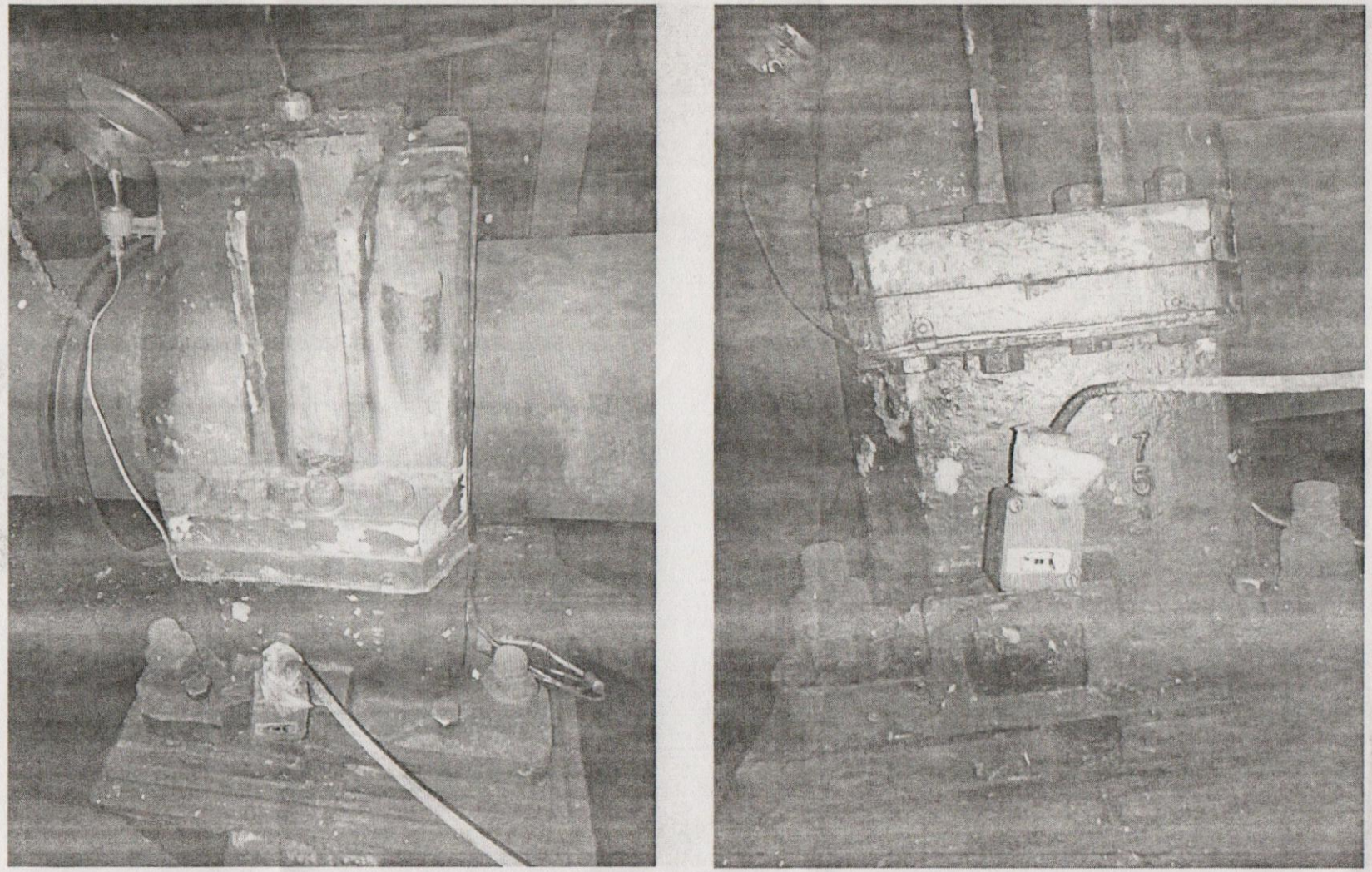


Figure: Shaft Bearing Temperature Sensor

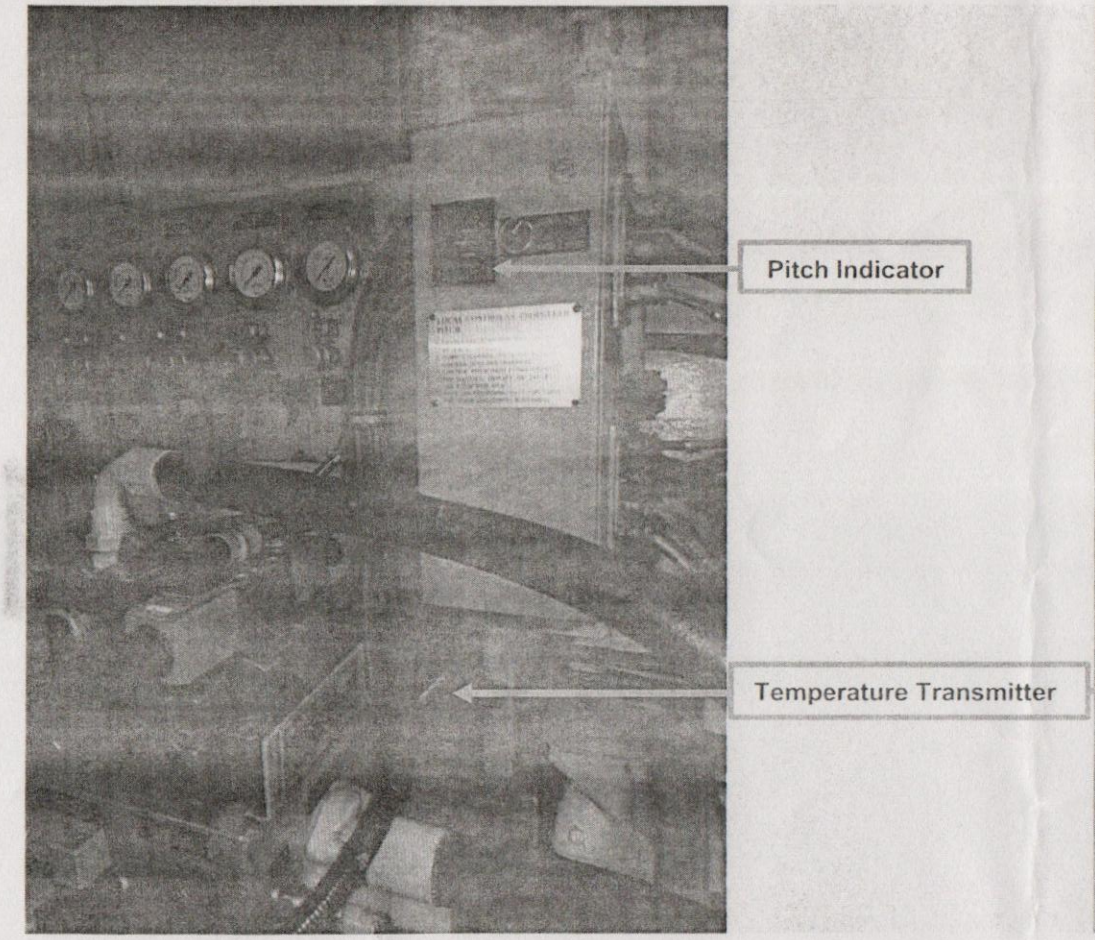


Figure: CPP Hydraulic Power Pack

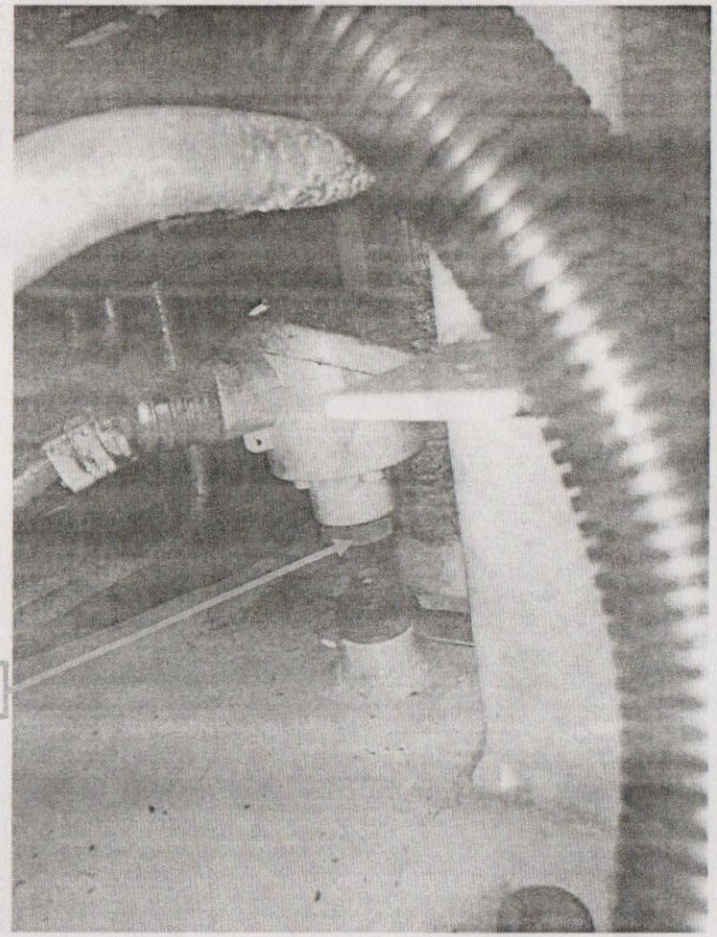


Figure: Temperature Transmitter PT-100