Electronic Records & Operating System (EROS) Demonstration

Welcome to the EROS Demo. Here, we aim to show the level of interactivity that can be achieved with our electronic manuals. Simply follow the on-screen instructions.

Mechanical Services Operating & Maintenance Manual

How to Use the Manual
Contractual & Legal Guides
Overall Purpose
System Descriptions (2)
Equipment Schedules
Parts Identification &
Recommended Spares
Spares Policy
Test & Commissioning Data

Operating Procedures
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SECTION FOUR

SYSTEM DESCRIPTIONS

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4.1 LTHW HEATING INSTALLATION

4.1.1 System Description

The heating system comprises of two gas fired atmospheric boilers (Ref. **B1** and **B2**) located in the Basement Plantroom.

From each boiler a twin wall stainless steel flue rises to discharge through the First Floor roof level via the service duct.

From the boilers a pipework distribution system, variable temperature circuits serve the various aspects of the new and existing building.

The circuits run to serve new radiators and finned tube elements in the new extension and to connect to the existing heating circuits in the retained existing areas.

The primary circuit is fitted with duplicate pumps to operate as run and standby, the secondary heating circuits are fitted with single head pumps for duty operation only.

(a) P1A - Primary Constant Temperature



- (b) P1B Primary Constant Temperature
- (c) **P2** Variable Temperature North/East
- (d) **P3** Variable Temperature West
- (e) **P4** Underfloor Heating
- (f) **P5** Variable Temperature South/Lecture Theatre

The heating system is of the sealed type system via an automatic pressurisation unit (Ref. **PU1**) with expansion vessel to maintain a constant system pressure.

Generally the heating pipework is concealed with ceiling voids or ducts.

All pipework is thermally insulated where not being used as a useful heating medium.

Each radiator, finned tube element is fitted with a thermostatic radiator valve on the flow and Lockshield isolation on the return.

The lower and upper Mezzanine/stair area has been fitted with an underfloor heating system.

The manifold for the heating pipework is located at Ground Floor level at the top of the stairs which go down into the Basement. The underfloor heating is fed from a dedicated circuit on the heating system via the underfloor heating manifolds.



PRIMARY LTHW PUMPS P1A & P1B

EQUIPMENT SCHEDULE
COMMISSIONING RESULTS
SCHEMATIC

BACK TO SYSTEM DESCRIPTION



5.3 CIRCULATION PUMPS

	CIRCL	JLAT	ION P	UMP S	CHEDU	LE				
Manufacturer:				Pump Manufacturers Ltd						
				Factory No 1,Random Industrial Estate						
				Hometown, Countyshire						
				ZZ14 2WJ						
Telep	Telephone:				01111 123456					
Fax:	Fax:				54					
Locat	Location:				Basement Plantroom					
Ref	Circuit	Flow (L/s)	P/Drop (kPa)	Connection (mm)	Motor (kW)	Model				
P1A	Primary CT	5	94	65	415/3/50 1.1	TOP-S 65/13				
P1B	Primary CT	5	94	65	415/3/50 1.1	TOP-S 65/13				
P2	North/East VT	1.04	80	40	240/1/50 0.35	TOP-E 40/1- 10				
P3	West VT	1.66	90	50	240/1/50 0.45	TOP-E 50/1- 10				
P4	Underfloor Htg	0.30	56	25	240/1/50 0.49	TOP-E 25/1-7				
P5	South/Lecture Theatre VT	1.68	80	50	240/1/50 0.45	TOP-E 50/1- 10				
	Refer to manufacturer's literature, Section 16, Sub-section				16.7					

Note: (1) All pumps complete with plug in modules for BMS interface.

(2) All pumps complete with flexible connections.

		i
Project: Random Building No.	1	:

Sheet No W3/ 1 of 1 Authorized by: Issue No....2.....Dated....18/01/94...

Dumn Tast Shoot

Pump Test Sheet											
Pump Details											
Manufacturer	Manufacturer PUMP MANUFACTURERS				Type CENTRIFUG/			JGAI			
Model	Model TOP-S/65-13			Serial Number			OD5211B63		0075-2401		
Motor Details						OD521	1B63 C	068-	1801		
Manufacturer PUMP MANUFACTURERS			Serial No 81902608								
Rating	2.2	Frame Size			LARGE						
Speed	1415	rpm	Full Load Current				5.0		amps		
Starter Type	D.O.L		Electrical Supply			415	V/	3	ph		
Fuse Size	C.O.C.B	amps	Overload Range				4.5-6.3	3	amps		
Timer Setting	N/A	s	Overload Setting				5.0		amps		
Drive Details DIRECT DRIVE											
Pump Pulley	-	mm dia	Motor	Pulley			-	I	mm dia		
Pump Taperlock	- mm shaft		Motor Taperlock			- mm shaft					
Belt Size	-		Number of Belts			-					
Test Data											
	Design		Pump No 1			Pump No 2					
			R	4.15	amps	s R	4.4		amps		
Running Current			Υ	4.6	amps	s Y	4.6		amps		
			В	4.3	amps	s B	4.5		amps		
Suction Head				N/M	kPa	а	N/M	1	kPa		
Delivery Head				N/M	kPa	а	N/M	1	kPa		
Pump Head	65	kPa		54	kPa	а	54		kPa		
Motor Speed	1415	WID 100		1438		n	143	5	rpm		
·	1419	rpm		1430	rpn	'					
Pump Speed	1420	rpm		1438	rpn		143	5	rpm		
		-				า			rpm I/s		
Pump Speed	1420	rpm		1438	rpn	n S	143)	-		
Pump Speed Flow Rate	1420 24.0	rpm	C.O	1438 24.0	rpm	n S	143: 24.0 100)	l/s %		
Pump Speed Flow Rate % Design Flow Rate	1420 24.0	rpm		1438 24.0 100	rpm	n S	143: 24.0 100)	l/s %		
Pump Speed Flow Rate % Design Flow Rate *Flowrate derived by: C	1420 24.0 CS1	rpm I/s	Witne	1438 24.0 100 .C.B= Comb	rpm I/s % ined O	n s 6	143: 24.0 100 /Circuit B) reak	l/s % er		

COMMISSIONING ENGINEERS LIMITED

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SAFETY VALVE BOILER SCHEDULE STRAINFR NON RETURN VALVE 2No. BORAC REMENA 350 8-SECTION DIMENSIONS 1040W x 1180H x 1080D CONNECTIONS 50mm FLOW & RETURN, 32mm GAS & 250mm FLUE FLEXIBLE COUPLING AUTOMATIC AIR VENT PRESSURISATION UNIT (T) TEMPERATURE GAUGE Pressmain type spillback sa 10/42-5 Fully Packaged Run/Standby Pump **(P**) PRESSURE GAUGE NORTH EAST WEATHER COMPENSATED SOUTH / LECTURE THEATRE WEATHER COMPENSATED MEZZANINE UNDERFLOOR HEATING WEST WEATHER COMPENSATED ON BASE PLATE.

SIZE 63DW x 1DCOL x 1310 OVERALL

CONNECTIONS 15mm BSP TO BALLVALVE & 20mm BSP TO SYSTEM ⅎ TEMPERATURE SENSOR ALL INMERSION POCKETS -CIRCUIT CRCUIT P PRESSURE SENSOR EXISTING FAST FACE & LECTURE
THEATRE MOTORISED CONTROL VALVE 15 DV 15 DV 15 DV 15 DV ALL TEMPERATURE GAUGES -1000 BACK OR BOTTON ENTRY, 150 POCKETS. (1.10L/S) FACE 32R 32RV CS\$ DV (0.5BL/S) CS (D.3L/S) CS {1.66L/S} CS (1.04L/5) CS {1.68L/S} ALL COMMISSIONING VALVES TO HAVE 5 x DIAMETER UP-STREAM & 2 x DIAMETER DOWN-STREAM THERNAL LINK KNOCK OFF THERMAL LINK BEFORE FITTINGS (MINIMUM). -THERMAL UNKS POSITIONED ABOVE EACH BOILER KNOCK-OFF BUTTON BUTTON PO3 P05 TOPE 50/1-10 TOPE 25/1-7 TOPE 50/1-10 TOPE 40/1-10 LOCATED ADJACENT DOOR. Broag remena 350 B-Section Boiler Number 2 BROAC REMENA 350 8-SECTION BOILER NUMBER 1 25 DRV DRV DRV 25 25 DRV. ALL 3-PORT CONTROL VALVES -€V5) 50¢ €V4) 25¢ €V3) 50¢ (CV2) 4Dø 50 ARE LINE SIZE. 25DRV 25N -50 GAS REDUCES TO 32 AT BOILER. 65 F&R REDUCES TO 50 AT BOILER. ALL HEADERS 900mm LONG-PREFABRICATED TO SUIT. BODIA HEADER 80DIA HEADER 50DIA HEADER 85DIA HEADER DRV [2.5L/S] 40 (1.04L/5) 15 DV 401V 50GAS 15 DV 15 DV 15 DV NRV NRV PRIMARY PUMP SET GOODWATER SIZE 3 CHEMICAL DOSING POT 50 DRV RV P TP-01/B TF P N
T 0 cs STR V T0/5 65/13 C/W TUNDISH & VALVE (0.49L/S) 15 N (WALL MOUNTED) (5.0L/S) DV 65GAS LSV **↓**AAV 32 END BY-PASS NOTE 65 GAS SOLENOID VALVE TO BE WITH DRV. 15 CONN PUMP DIFF PRESSURE SWITCHES GAS SOLENDID VALVE 15 RPT VALVE TO TO DOSING POT. LINKED TO FIRE ALARM SYSTEM MOUNTED WITH VALVE HEAD IN EITHER VERTICAL OR HORIZONTAL (1 PER PUNP WITH 10mm CONNS) NINIMUN 2m HIGH 20 ANTI-GRAVITY LOOP 50 litre 65 MAIN GAS INCOMING MAINS WATER SUPPLY Pressure Unit EXPANSION (UN-INSULATED). ISOLATION VALVE VESSEL LSV SA10/42-5 - 90# MDPE GAS MAIN (BY OTHERS) CHANGE TO 65mm STEEL GAS PIPE. -15 MCWS TO PRESSURISATION UNIT 20 PRESS UNIT OVERFLOW-- 25 REDUCE TO 20

ULE

LEGEND

‡_{DV}

N SOLATING VALVE

LOCKSHIELD VALVE

REGULATING VALVE
DOUBLE REGULATING VALVE
COMMISSIONING SET

TEST POINT

DRAIN VALVE

GAS VALVE

P01/A&B - TYPE TOP-S 85/13
CONNECTIONS 65mm FLANGED PN 6
PD2 - TYPE TOP-E 4D/1-10
CONNECTIONS 40mm FLANGED PN 6

PD3 - TYPE TOP-E 5D/1-10
CONNECTIONS 50mm FLANGED PN 6

PU3 - IYPE IOP-E 50/1-10
CONNECTIONS 50mm FLANGED PN
PD4 - TYPE TOP-E 25/1-7
CONNECTIONS 25mm 40mm BSP

PD5 - TYPE TOP-E 5D/1-10 CONNECTIONS 50mm FLANGED PN 6

NOTE - ALL PUMPS WITH FLEXIBLE CONNECTIONS AND 1/2" BSP SELF SEAL TEST PLUGS MOUNTED ON PUMPS.

AS INSTALLED