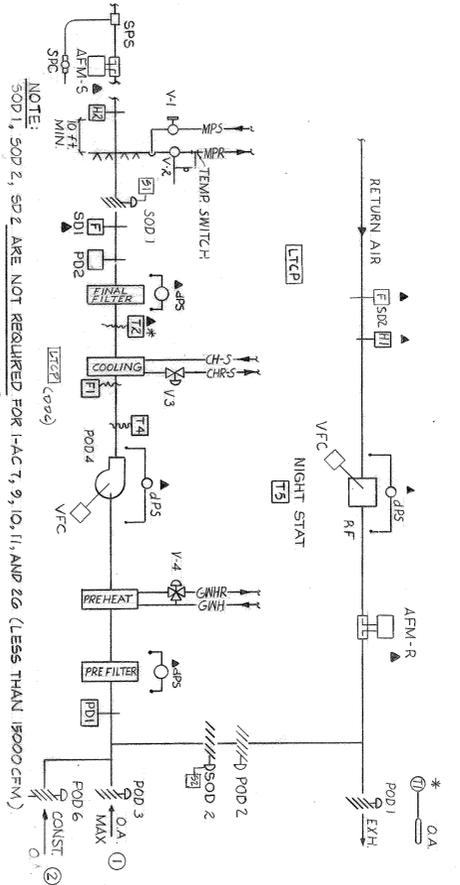


- NOTES:
1. SEE AC UNIT SCHEDULE FOR WHICH UNITS HAVE 54°F. OR 57°F. SUPPLY AIR TEMPERATURE.
 2. SEE FLOOR DIAGRAM FOR UNITS THAT HAVE 3-WAY V-3 VALVES.

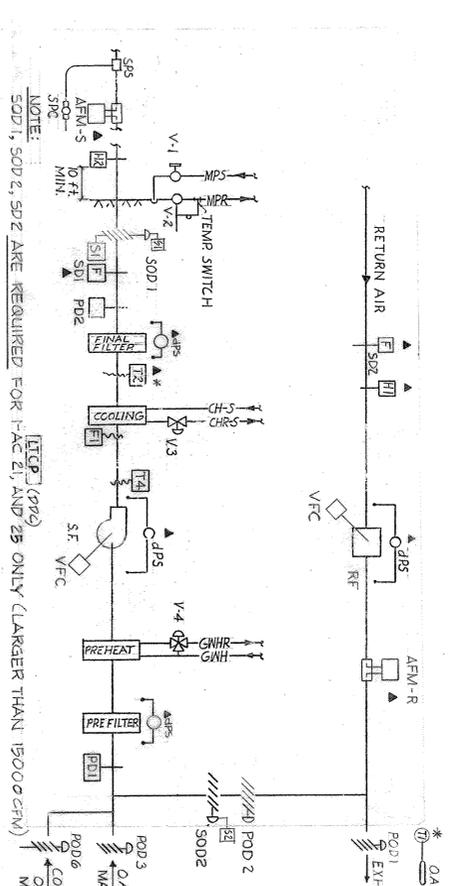


TYPICAL MEDIUM PRESSURE RETURN AIR SYSTEM
24-HOUR OPERATION
CONSTANT VOLUME, VARIABLE VOLUME SERVING MULTIPLE ROOM AREAS

TYPICAL FOR 1-ACT 7, 8, 9, 10, 11, 13, 14, 18, 26, 29, 30, 31

- OPERATING SEQUENCE**
1. SYSTEM IS STARTED AND STOPPED FROM THE ECC. OCCUPIED & UNOCCUPIED CYCLES ARE DETERMINED FROM THE ECC.
 1. FOR 1-ACT 7, 8, 9, 10, 11, 13, 14, 18, 26, 29, 30, 31: WHEN STARTED, SOD1 AND SOD2 OPEN, P001 OPENS TO MINIMUM POSITION, P002 REMAINS OPEN. WHEN STOPPED, SF AND SF START, P006 OPENS, P001 OPENS TO MINIMUM POSITION, P002 REMAINS OPEN.
 2. FOR 1-ACT 9, 10, 11, 26: WHEN STARTED, SF AND SF START, P006 OPENS, P001 OPENS TO MINIMUM POSITION, P002 REMAINS OPEN. WHEN STOPPED, SF AND SF ARE STOPPED, P001, P003 AND P006 CLOSE, P002 REMAINS OPEN.
 3. WHEN ON AT T-1 IS BELOW 68°F, T-2 MODULATES V-4, THEN P001, P002 AND P003 AND T-2 MODULATES V-3, ALL IN SEQUENCE. DURING OPERATION WHEN ON AT T-1 IS BELOW 68°F, PNEUMATIC FREEZESTAT T-4 OVERRIDES T-2 TO LIMIT MIXED AIR TO 40°F, MINIMUM.
 4. WHEN ON AT T-1 IS ABOVE 68°F, P003 CLOSSES, P006 OPENS, P001 OPENS, AND P002 CLOSSES TO MINIMUM. T-2 MODULATES V-3 TO MAINTAIN 54°F/57°F. T-1 CLOSSES V-4 TO COIL.
 5. ELECTRIC FREEZESTAT F1 STOPS SF WHENEVER TEMPERATURE IS BELOW 36°F.
- UNOCCUPIED (0600 TO 0600 AND MESSAGES)**
1. FOR 1-ACT 7, 8, 9, 10, 11, 13, 14, 18, 26, 29, 30, 31: WHEN SF AND SF ARE STOPPED, P001, P003 AND P006 CLOSE. AFTER 2-MINUTE DELAY (ADJUSTABLE 0-5 MINUTES), SOD1 AND SOD2 CLOSE, P002 REMAINS OPEN.
 2. FOR 1-ACT 9, 10, 11, 26: WHEN STOPPED, SF AND SF ARE STOPPED, P001, P003 AND P006 CLOSE, P002 REMAINS OPEN.
 3. WHEN ON AT T-1 IS BELOW 50°F, NIGHT STAT T-5 CLOSSES SF AND SF WITH P001 CLOSED AND P006 OPEN. SOD1 OPENS, P002 OPENS, SOD2 OPENS TO MAINTAIN 72°F.
- STARTING AND STOPPING**
1. WHEN SYSTEM OPERATION IS STARTED FROM ECC, PRESSURE SWITCH P01 STOPS SUPPLY FAN SHOULD MIXING PLENUM PRESSURE FALL BELOW MINUS 2" W.G. PRESSURE SWITCH P02 STOPS SF SHOULD PRESSURE RISE ABOVE 4" W.G.
 1. FAN CAPACITY CONTROL (SEE DRAWING 1-1093)
- HUMIDITY CONTROL**
1. 0.4 THERMOSTAT T-1 SHALL CLOSE ON-OFF TWO-WAY CONTROL VALVE V-1 WHEN OUTSIDE AIR RISES ABOVE 70°F, AND OPEN VALVE V-1 WHEN OUTSIDE AIR DROPS BELOW 70°F.
 1. DUCT HUMIDITY SENSOR H-1 SHALL MODULATE VALVE V-2 TO MAINTAIN THE DESIRED RELATIVE HUMIDITY (30% RH) SUBJECT TO ITS MODULATING TYPE HIGH LIMIT DUCT HUMIDITY SENSOR H-2 SET AT 80% RELATIVE HUMIDITY. VALVE V-2 SHALL CLOSE WHENEVER SUPPLY FAN IS OFF. VALVE V-2 SHALL BE INTERLOCKED WITH TEMPERATURE SWITCH TO KEEP HUMIDIFIER OFF UNTIL CONDENSATE APPROXIMATES STEAM TEMPERATURE.
 3. V-1 AND V-2 ARE TYPICAL FOR TWO HUMIDIFIERS WHERE INDICATED FOR EACH UNIT. HUMIDIFIERS SHALL OPERATE IN UNISON.
- SMOKE CONTROL**
1. WHEN SMOKE IS SENSED AT S01 OR S02, SF AND SF STOP, P001, P003, P006, S001 AND S002 ALL CLOSE. P002 IS OPEN.

- NOTES:
1. SEE AC UNIT SCHEDULE FOR WHICH UNITS HAVE 54°F. OR 57°F. SUPPLY AIR TEMPERATURE.

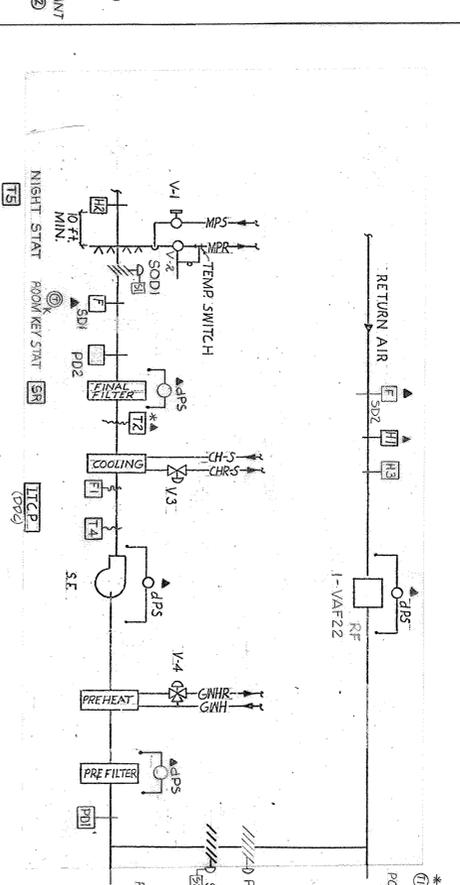


TYPICAL MEDIUM PRESSURE RETURN AIR SYSTEM
24-HOUR OPERATION
CONSTANT VOLUME, VARIABLE VOLUME SERVING MULTIPLE ROOM AREAS

TYPICAL FOR 1-ACT 15, 16, 19, 20, 21, 23, 24, 25, 27 AND 28

- OPERATING SEQUENCE**
1. FOR 1-ACT 15 AND 28: SYSTEM OPERATION IS STARTED FROM THE ECC AND RUNS CONTINUOUSLY. SYSTEM CAN BE STOPPED FROM THE ECC. WHEN STOPPED, SOD1 AND SOD2 OPEN, P001 OPENS TO MINIMUM POSITION, P002 REMAINS OPEN. WHEN STOPPED, SF AND SF ARE STOPPED, P001, P003 AND P006 CLOSE. AFTER 2-MINUTE DELAY (ADJUSTABLE 0-5 MINUTES), SOD1 AND SOD2 CLOSE, P002 REMAINS OPEN.
 2. FOR 1-ACT 16, 19, 20, 21, 23, 24, 25, 27 AND 28: SYSTEM IS STARTED FROM THE ECC AND RUNS CONTINUOUSLY. SYSTEM CAN BE STOPPED FROM THE ECC. WHEN STOPPED, SF AND SF ARE STOPPED, P001, P003, P006 CLOSE, P002 REMAINS OPEN. WHEN STOPPED, SF AND SF ARE STOPPED, P001, P003 AND P006 CLOSE, P002 REMAINS OPEN.
 3. DURING OPERATION WHEN ON AT T-1 IS BELOW 68°F, T-2 MODULATES V-4, THEN P001, P002 AND P003 AND T-2 MODULATE V-3, ALL IN SEQUENCE. ON TEMPERATURE RISE TO MAINTAIN 54°F/57°F, PNEUMATIC FREEZESTAT T-4 OVERRIDES T-2 TO LIMIT MIXED AIR TO 40°F, MINIMUM.
 4. DURING OPERATION WHEN ON AT T-1 IS ABOVE 68°F, P003 CLOSSES, P006 OPENS, P001 OPENS, P002 CLOSSES TO MINIMUM. T-2 MODULATES V-3 TO MAINTAIN 54°F/57°F. T-1 CLOSSES V-4 TO COIL.
 5. ELECTRIC FREEZESTAT F1 STOPS SF WHENEVER TEMPERATURE IS BELOW 36°F.
- STARTING AND STOPPING**
1. WHEN SYSTEM OPERATION IS STARTED FROM ECC, PRESSURE SWITCH P01 STOPS SUPPLY FAN SHOULD MIXING PLENUM PRESSURE FALL BELOW MINUS 2" W.G. PRESSURE SWITCH P02 STOPS SF SHOULD PRESSURE RISE ABOVE 4" W.G.
 1. FAN CAPACITY CONTROL: SEE DRAWING 1-1093.
- HUMIDITY CONTROL**
1. 0.4 THERMOSTAT T1 SHALL CLOSE ON-OFF TWO-WAY CONTROL VALVE V-1 WHEN OUTSIDE AIR RISES ABOVE 70°F, AND OPEN VALVE V-1 WHEN OUTSIDE AIR DROPS BELOW 70°F.
 2. DUCT HUMIDITY SENSOR H1 SHALL MODULATE VALVE V2 TO MAINTAIN THE DESIRED RELATIVE HUMIDITY (30% RH) SUBJECT TO ITS MODULATING TYPE HIGH LIMIT DUCT HUMIDITY SENSOR H2 SET AT 80% RELATIVE HUMIDITY. VALVE V2 SHALL CLOSE WHENEVER SUPPLY FAN IS OFF. VALVE V2 SHALL BE INTERLOCKED WITH TEMPERATURE SWITCH TO KEEP HUMIDIFIER OFF UNTIL CONDENSATE APPROXIMATES STEAM TEMPERATURE.
 3. V-1 AND V-2 ARE TYPICAL FOR 2 HUMIDIFIERS WHERE INDICATED FOR EACH UNIT. HUMIDIFIERS SHALL OPERATE IN UNISON.
- SMOKE CONTROL**
1. WHEN SMOKE IS SENSED AT S01 OR S02, SF AND SF STOP, P001, P003, P006, S001, AND S002 CLOSE. P002 IS OPEN.
 2. TWO SIZES ARE REQUIRED FOR 1-ACT 19, 23, 27, 28. WHEN SMOKE IS SENSED AT EITHER SMOKE DETECTOR, FANS STOP AND DAMPERS CLOSE (SEE FLOOR PLANS FOR LOCATION).

- NOTES:
1. SEE AC UNIT SCHEDULE FOR WHICH UNITS HAVE 54°F. OR 57°F. SUPPLY AIR TEMPERATURE.

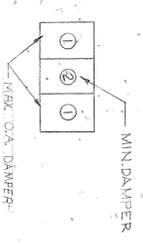


MEDIUM PRESSURE, CONSTANT VOLUME, RETURN AIR SYSTEM
1-ACT 22 (LAB)

- OPERATING SEQUENCE**
1. SYSTEM OPERATION IS STARTED AND STOPPED FROM THE ECC. COMMANDS FROM ECC ARE ALL VIA DDC PANEL.
 2. DURING OPERATION WHEN ON AT T-1 IS BELOW 68°F, T-2 MODULATES V-4, THEN P001, P002 AND P003 AND T-2 MODULATES V-3, ALL IN SEQUENCE. ON TEMPERATURE RISE TO MAINTAIN 54°F, PNEUMATIC FREEZESTAT T-4 OVERRIDES T-2 TO LIMIT MIXED AIR TO 40°F, MINIMUM. (SEE SUPPLY AIR TEMPERATURE RESET BELOW.)
 3. DURING OPERATION WHEN ON AT T-1 IS ABOVE 68°F, T-1 CLOSSES P001 AND P003 TO MINIMUM POSITION AND T-2 MODULATES V-3 TO MAINTAIN 54°F. T-1 CLOSSES V-4 TO COIL.
- STARTING AND STOPPING**
1. WHEN STARTED, SOD1 AND SOD2 OPEN, P001 AND P003 OPEN TO MINIMUM POSITION, P002 REMAINS OPEN. WHEN STOPPED, SF AND SF ARE STOPPED, P001, P003 AND P006 CLOSE, P002 REMAINS OPEN.
 2. AFTER 2-MINUTE DELAY (ADJUSTABLE 0-5 MINUTES), SOD1 AND SOD2 CLOSE, P002 REMAINS OPEN.
 3. WHEN SYSTEM OPERATION IS STARTED, PRESSURE SWITCH P01 STOPS SUPPLY FAN SHOULD MIXING PLENUM PRESSURE FALL BELOW MINUS 2" W.G. PRESSURE SWITCH P02 STOPS SF SHOULD PRESSURE RISE ABOVE 4" W.G.
 3. ELECTRIC FREEZESTAT F1 STOPS SF WHENEVER TEMPERATURE IS BELOW 36°F.
- HUMIDITY CONTROL**
1. 0.4 THERMOSTAT T1 SHALL CLOSE ON-OFF TWO-WAY CONTROL VALVE V-1 WHEN OUTSIDE AIR RISES ABOVE 70°F, AND OPEN VALVE V-1 WHEN OUTSIDE AIR DROPS BELOW 70°F.
 2. DUCT HUMIDITY SENSOR H1 SHALL MODULATE VALVE V2 TO MAINTAIN THE DESIRED RELATIVE HUMIDITY (30% RH) SUBJECT TO ITS MODULATING TYPE HIGH LIMIT DUCT HUMIDITY SENSOR H2 SET AT 80% RELATIVE HUMIDITY. VALVE V2 SHALL CLOSE WHENEVER SUPPLY FAN IS OFF. VALVE V2 SHALL BE INTERLOCKED WITH TEMPERATURE SWITCH TO KEEP HUMIDIFIER OFF UNTIL CONDENSATE APPROXIMATES STEAM TEMPERATURE.
- SMOKE CONTROL**
1. WHEN SMOKE IS SENSED AT S01 OR S02, SF AND SF STOP, P001, P003, S001, AND S002 ALL CLOSE. P002 IS OPEN.

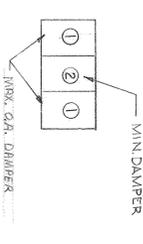
OUTDOOR AIR DAMPER SIZES

AC#	①	②
1	(2) 12 X 30	12 X 30
7	(2) 26 X 24	14 X 24
8	(2) 28 X 36	16 X 36
9	(2) 12 X 30	6 X 30
10	(2) 22 X 24	10 X 24
11	(2) 24 X 24	12 X 24
13	(2) 18 X 18	12 X 18
14	(2) 18 X 18	36 X 18
18	(2) 24 X 30	24 X 30
26	(2) 16 X 18	10 X 18
29	(2) 28 X 36	10 X 36
30	(2) 30 X 30	12 X 30
31	(2) 34 X 36	28 X 36



OUTDOOR AIR DAMPER SIZES

AC#	①	②
15	(2) 12 X 24	24 X 24
16	(2) 14 X 24	26 X 24
19	(2) 16 X 24	22 X 24
20	(2) 14 X 24	26 X 24
21	(2) 24 X 30	24 X 30
23	(2) 18 X 24	24 X 24
24	(2) 14 X 24	26 X 24
25	(2) 28 X 24	16 X 24
27	(2) 22 X 24	16 X 24
28	(2) 22 X 24	16 X 24



RECORD DRAWING
CORRECTED ON BASIS OF DATA
FURNISHED BY THE RESIDENT ENGINEER

RTKL/CSD/HENRY ADAMS (L.V.)
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BALTIMORE, MD 21202

Project Title
324 - BED
REPLACEMENT
HOSPITAL - PHASE II

Location
VAMC - BALTIMORE, MD.

Date
9/1/88

Project No.
511-001D

Drawing No.
1H92

Scale
NONE

Checked
NONE

Approved Project Director
[Signature]

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H.A. JOB NO. V0022A0