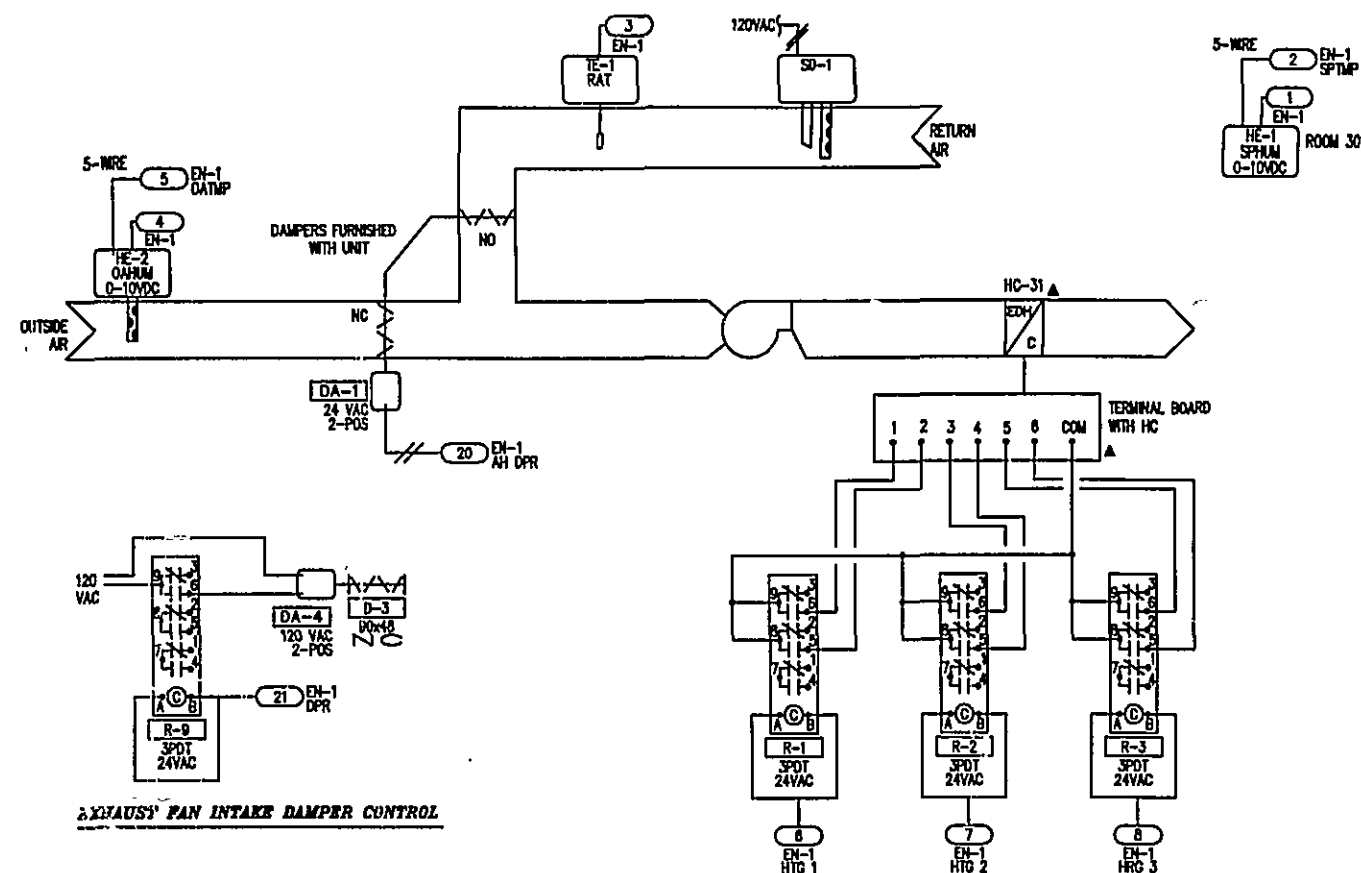
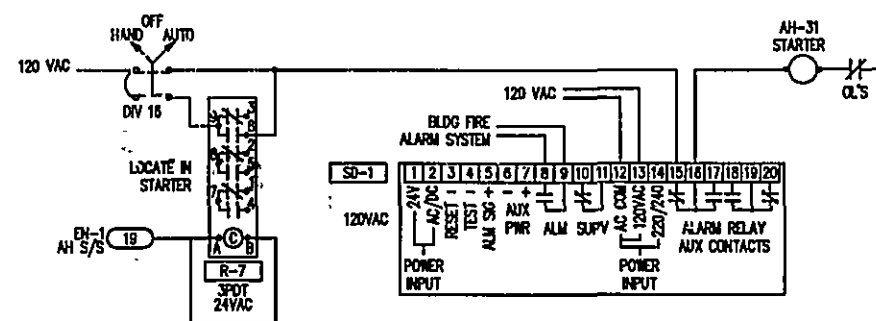


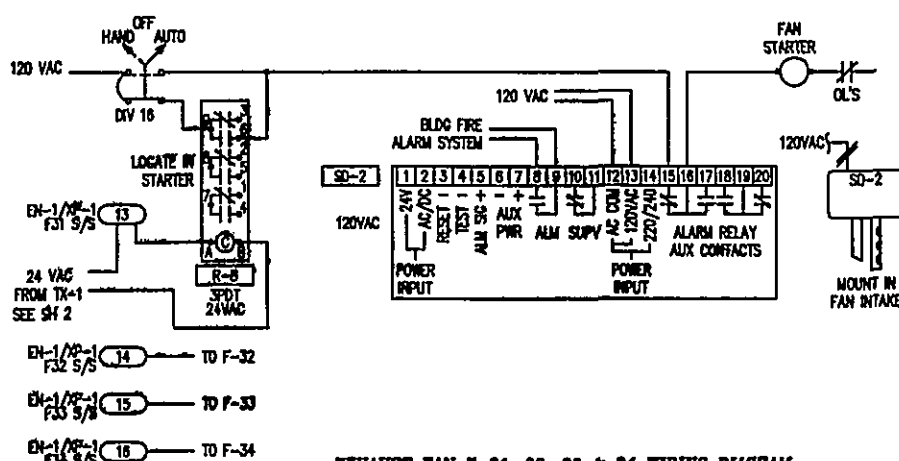


EXHAUST FAN INTAKE DAMPER CONTROL

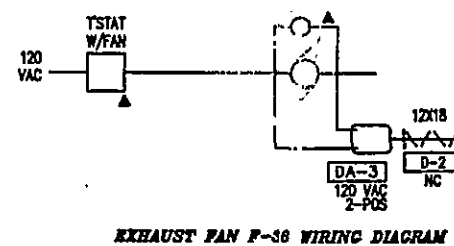
AH-31 CONTROL



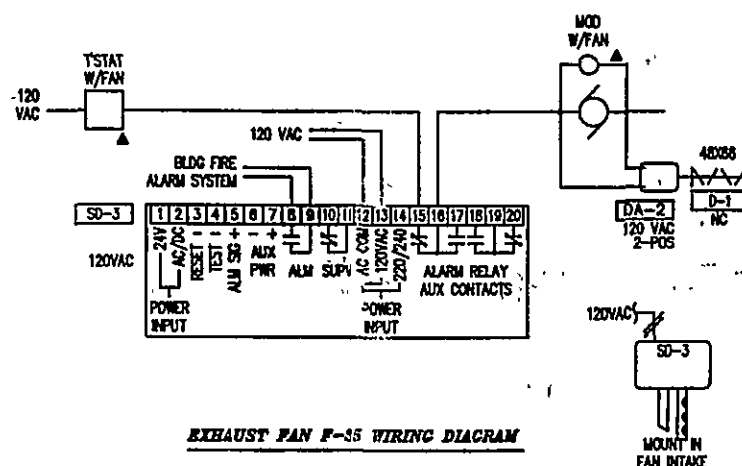
AH-31 WIRING DIAGRAM



EXHAUST FAN F-31, 32, 33 & 34 WIRING DIAGRAM



EXHAUST FAN F-36 WIRING DIAGRAM



EXHAUST FAN F-35 WIRING DIAGRAM

FIELD MATERIAL

DEVICE TAG	QTY	CODE NUMBER	DESCRIPTION
D-1-D-3	3	AF24	SEE DAMPER SCHEDULE
DA-1	1	AF120	ELEC ACTUATOR-BELIMO
DA-2-DA-4	3	AF120	ELEC ACTUATOR-BELIMO
HE-1	1	HE-6310-2	TRANS RH/TEMP/VALL 0/100%
HE-2	1	HE-6310-2	TRANS RH/TEMP/VALL 0/100%
R-1	1	PD-109-21	RELAY, PLUG IN SPDT
R-2	1	PD-109-21	RELAY, PLUG IN SPDT
R-3	1	PD-109-21	RELAY, PLUG IN SPDT
R-4	1	PD-109-21	RELAY, PLUG IN SPDT
R-5	1	PD-109-21	RELAY, PLUG IN SPDT
R-6	1	PD-109-21	RELAY, PLUG IN SPDT
R-7	1	PD-109-21	RELAY, PLUG IN SPDT
R-8	1	PD-109-21	RELAY, PLUG IN SPDT
R-9	1	PD-109-21	RELAY, PLUG IN SPDT
SD-1	1	SD-109-21	RELAY, PLUG IN SPDT
SD-2	1	SD-109-21	RELAY, PLUG IN SPDT
SD-3	1	SD-109-21	RELAY, PLUG IN SPDT
TE-1	1	TE-6311P-1	TEMP SENSOR, 1000 OHM, NI

SEQUENCE OF OPERATION

AH-31 CONTROL:

RETURN AIR THERMOSTAT TE-1 WILL CONTROL THRU THE DX-9100 TO START THE AH FAN AND ENERGIZE THE FIRST STAGE OF ELECTRIC HEAT (HC-31) WHEN TEMPERATURE FALLS BELOW SETPOINT. ON CONTINUED FALLS IN TEMPERATURE BELOW SETPOINT HEATING STAGES 2 & 3 WILL BE ENERGIZED IN SEQUENCE. THE OUTSIDE AIR DAMPER WILL BE CLOSED. ON A RISE IN SPACE TEMPERATURE ABOVE HE-1 SETPOINT, AND IF THE OUTSIDE AIR TEMPERATURE AS SENSED THRU HE-2 IS LESS THAN THE SPACE TEMPERATURE HE-1, THEN AH FAN AND EXH FANS F-33 & 34 WILL BE ENERGIZED. THE AH UNIT OUTSIDE AIR DAMPER WILL OPEN. ON A CONTINUED RISE IN SPACE TEMPERATURE THE AH FAN AND EXH FANS F-33 & 34 WILL BE DEENERGIZED AND THE AH UNIT OUTSIDE AIR DAMPER WILL CLOSE. THEN EXH FAN F-32 WILL BE ENERGIZED AND EXH FAN INTAKE DAMPER THRU R-9 WILL OPEN. ON A FURTHER INCREASE IN SPACE TEMPERATURE EXH FAN F-31 WILL BE ENERGIZED.

IF SPACE HUMIDITY EXCEEDS SETPOINT (HE-1), AND IF THE ENTHALPY OF THE OUTSIDE AIR AS SENSED THRU HE-2 IS LESS THAN THE INDOOR ENTHALPY, THEN AH UNIT AND EXH FAN CONTROL IS THE SAME AS FOR THE TEMPERATURE CONTROL AS OUTLINED ABOVE.

F-35 & 36 CONTROL:

IF THE SPACE TEMPERATURE RISES ABOVE SETPOINT OF THE T-STAT (FURNISHED WITH FAN), THEN THE EXH FAN WILL BE ENERGIZED, ITS MOTOR OPERATED DAMPER WILL OPEN (FURNISHED WITH FAN), AND THE INTAKE DAMPER WILL OPEN THRU DA-2 (DA-3 FOR F-36).

SAFETIES:

DUCT SMOKE DETECTOR WILL DEENERGIZE ITS ASSOCIATED FAN AND CLOSE THEIR ASSOCIATED DAMPERS AND SIGNAL THE BUILDING FIRE ALARM SYSTEM IF PRODUCTS OF COMBUSTION ARE SENSED IN THE FAN'S INTAKE AIR.

DRAWING TITLE AH-31 CONTROL GAC BUILDING		FILE: 1	
PROJECT ROANOKE COUNTY WATER TREATMENT FACILITY		CONTRACT NUMBER 95066-0013	
JOHNSON CONTROLS Systems & Services Division		DRAWING NUMBER 1 OF 14	
SALES ENGINEER RC		DATE 04/25/85	
APPROVED DATE		DATE	
REVISION-LOCATION		REVISION-LOCATION	
NO. REV.		NO. REV.	
BY		BY	
DATE		DATE	