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JOY
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OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

JOY

NUCLEAR CONTAINMENT

AXIVANE FAN

OPERATORS HANDBOOK

CUSTOMER ORDER NO'S. 25-1351-1 & 25-1351-2

ALABAMA POWER COMPANY

FARLEY NUCLEAR PLANT #1

COLUMBIA (HOUSTON COUNTY), ALABAMA 36301

JOY MANUFACTURING COMPANY ORDERS NPX-63330 & NPX-63330A
FAN SERIAL NO'S. GF-17241 THRU GF-17250

JOY MANUFACTURING CO.
GENERAL PRODUCTS DIVISION
NEW PHILADELPHIA, OHIO

9207310151 920518
PDR ADOCK 05000348
G PDR

Revision

071251

ALABAMA POWER COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT #1

COLUMBIA (HOUSTON COUNTY), ALABAMA 36301

ENVIRONMENTALLY QUALIFIED COMPONENTS LIST

| <u>EQUIPMENT</u> | <u>COMPONENT TPNS</u> | <u>MODEL</u> | <u>DESCRIPTION</u> |
|------------------|-----------------------|--------------|--------------------|
| Q2E12H001A-A | Q2E12H001A-A | M/YE | Ctmt Cooler 2A |
| Q2E12H001B-A | Q2E12H001B-A | M/YE | Ctmt Cooler 2B |
| Q2E12H001C-B | Q2E12H001C-B | M/YE | Ctmt Cooler 2C |
| Q2E12H001D-B | Q2E12H001D-B | M/YE | Ctmt Cooler 2D |

For further information on environmentally qualified components, see the Unit 2 E.Q. Masterlist, U-416798 (latest revision).

For replacement/maintenance schedule of environmentally qualified components, See U-416800 (latest revision) "Component, Maintenance and Replacement Schedule."

Environmentally Qualified Splices are required for field cable to motor lead terminations.

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|---|------------------------|
| GENERAL DESCRIPTION | JOY AXIVANE FAN |
| ORDERING SPARE PARTS | JOY AXIVANE FAN |
| SALES ORDERS | GF-17241 THRU GF-17250 |
| WITNESS PERFORMANCE TEST | X-463 (PG. 1 & 2) |
| FAN PERFORMANCE CURVES | X-463 (PG. 3-14) |
| FAN UNIT DRAWING | 500722-103 |
| FINAL ASSEMBLY | FF-13361 |
| FINAL ASSEMBLY | FF-13907 |
| FAN UNIT BILL OF MATERIAL | 500722-103 |
| MOTOR DATA REPORTS & CURVES | SK-50800-216 |
| RELIANCE CONNECTION DIAGRAM | 1764 (SHEET 1) |
| JOY CONNECTION DIAGRAM | 600287-4 |
| RELIANCE MOTOR DRAWING | 89372-10 |
| ELECTRIC MOTOR BILL OF MATERIAL | 600287-4 |
| RELIANCE INSTRUCTION MANUAL | B-3620-5 |
| FAN STORAGE INSTRUCTIONS | FF-13310 |
| INSTALLATION & MAINTENANCE MANUAL | BULLETIN NO. NP-403 |

GENERAL DESCRIPTION

The fan units are manufactured by JCY Manufacturing Company, New Philadelphia, Ohio 44663.

The general fan design consists of one (1) multi-bladed rotor assembly mounted directly on the motor shaft. The motor is supported by a bulk-head in an inner fairing and by motor cable conduit tubes.

Motor grease leads are extended to the outside of the fan casing with grease fittings attached. See attached motor manufacturer's instruction manual for motor maintenance and lubrication recommendations.

The fan rotor is of the adjustable pitch type which provides a method of changing the blade pitch when the fan is not in motion. This is accomplished by removing the Nose (Fan Rotor) and loosening the nut under each blade. After the blade setting has been made, each nut must be retightened and the nose reinstalled.

Inspect fan for cause if excessive vibration is encountered. Re-balance fan if the cause of unbalance cannot be located. Observe fan closely for several weeks after restarting.

ORDERING SPARE PARTS

The following information should be given when ordering spare parts to insure prompt and efficient service:

- 1) Give serial number of the fan. This number can be found on the fan nameplate attached to the outside of the fan casing.
- 2) Give part number and name of part. Part numbers can be found on drawings and bills of material, furnished with this manual.

JOY

JOY MANUFACTURING COMPANY

071256

NAL 2-20-74

 CL
 BRAN
 OFF
CUSTOMER'S ORDER NO.
25-1351-2*

DATE

REQ. NO.

MKT.

DATE

AT REC. POINT

CONTRACT

BRANCH

SHIP PT.

STATE

IND.

TAX

AREA

DATE

AT SHIP POINT

100%

97

08

01

96

203

2

2-20-74

NPX-63330A

PAGE 2 OF 2

01533
SOLD
TO
 AMERICAN AIR FILTER
 215 CENTRAL AVE.
 LOUISVILLE, KY. 40208

 GF-17241 THRU
 GF-17245

INVOICE NO.

INVOICE DATE

DATE SHIPPED

SHIPPED VIA

3264
SHIP
TO
 ALABAMA POWER COMPANY
 C/O W.A. LINDSTROM
 C/O DANIEL CONST. CO.
 JOSEPH M. FARLEY NUCLEAR PLANT #1
 COLUMBIA (HOUSTON COUNTY), ALABAMA 36301*

MARKS

 25-1351-2
 AND AS NOTED
REQ
ROUTING
 FOB NPO
 B/W/SURF/ALLOWED

FROM NEW PHILADELPHIA, O.

| ITEM NO. | ORIGINAL QUANTITY ORDERED | QUANTITY SHIPPED | QUANTITY BACK ORDERED | PART NUMBER | DESCRIPTION | SALES CODE | UNIT PRICE | AMOUNT |
|----------|---------------------------|------------------|-----------------------|----------------|--|------------|------------|--------|
| 5 | | | | 500722-102 | SERIES 2000 JOY FAN MODEL | | | |
| | | | | 54-26-1170/870 | NUCLEAR | | | |
| | | | | | CONTAINMENT-(VERTICAL MOUNTING) | | | |
| | | | | 1. 505543-87** | STEEL ROTOR (A/P) | | | |
| | | | | 1. 600287-4 | MOTOR 125/125 HP. 1200/900 RPM. | | | |
| | | | | | 550/3/60AC. 2SP-2WOL. FRAME 500B. RELIANCE ELEC. | | | |
| | | | | 1. 600279-1 | VIBRASWITCH | | | |
| | | | | 1. 74262 | NAMEPLATE (STN'L ST.) STAMP DUTY ETC. | | | |
| | | | | | NOTE: STENCIL FAN WEIGHT ON FAN IN 3" LETTERS | | | |
| | | | | | AFTER PAINTING | | | |
| 5 | | | | 505549-2509 | INLET BELL (STEEL) | | | |
| | | | | | NOTE: STENCIL INLET BELL WEIGHT ON BELL IN 3" | | | |
| | | | | | LETTERS AFTER PAINTING. | | | |
| 5 | | | | 505550-1871 | INLET BELL FLAT STEEL SCREEN(1" MESH) | | | |
| 5 | | | | 3386635-99 | DISCHARGE CONE | | | |
| **CHANGE | 1-22-75 | | | | NOTE: STENCIL CONE WEIGHT ON CONE IN 3" LETTERS | | | |

CHANGE 3-5-74

(CONTINUED)

JOY

JOY MANUFACTURING COMPANY

071257

OLD
10

AMERICAN AIR FILTER

PAGE NO. 2

GF-17241 THRU GF-17245

OUR
ORDER
NO.

AT REC. POINT

AT SHIP POINT

NPX-63330A

| ITEM NO. | ORIGINAL QUANTITY ORDERED | QUANTITY SHIPPED | QUANTITY BACK ORDERED | PART NUMBER | DESCRIPTION | SALES CODE | UNIT PRICE | AMOUNT |
|----------|---------------------------|------------------|-----------------------|-------------|---|------------|------------|--------|
| | | | | | AFTER PAINTING. | | | |
| | | | | | FAN ARRANGEMENT PER DWG. #FF-13361 FF-13907 | | | |
| | 5 | | | | 1388852-15 FABREEKA RING | | | |
| | 5 | | | | 700109-405 ERECTION HDW. (REF DWG. FF-13361) &FF-13907 | | | |
| | | | | | PAINT SPECS: SURFACE PREPARATION PER FF-12144 | | | |
| | | | | | 700150-321 CARBOZINC #11 PRIMER | | | |
| | | | | | (BASE GREEN) (1 COAT - 3 MILS DRY) | | | |
| | | | | | 700150-322 PHENOLINE #305 FINISH | | | |
| | | | | | (CREAM #808) (1 COAT - 1 MILS DRY) | | | |
| | | | | | *BLADE SETTINGS: | | | |
| | | | | | FACT. 24 $\frac{1}{2}$ °, #1.5 SETTING. MIN #6-2° MAX #1-27° | | | |
| | | | | | TIP DIA. 53.80 IN. CAUTION EMBLEM 190458-1 | | | |
| | | | | | SPECIAL REQUIREMENT SHEET ATTACHED. | | | |
| | 1 | | | | AMCA PERFORMANCE & SOUND | | | |
| | | | | | 6 COPIES & 2 SEPIAS TEST (WITNESS-NOTIFY AAF - 2 WKS PRIOR TO TEST.) PERFORMANCE & SOUND | | | |
| | | | | | TEST REPORT REQ'D - 2 SEPIAS & 6 COPIES | | | |
| | | | | | TEST ON ONE UNIT ONLY | | | |
| | 1 | | | | SEISMIC ANALYSIS | | | |
| | | | | | 2 SEPIAS - 6 COPIES | | | |
| | 21 | | | | INSTRUCTION MANUALS | | | |
| | | | | | <u>DATA REQUIRED ON MOTORS</u> | | | |
| | | | | | 1 SEPIA & 4 PRINTS-MOTOR OUTLINE DRAWINGS | | | |
| | | | | | 1 SEPIA & 4 PRINTS-MOTOR DATA SHEETS | | | |
| | | | | | 1 SEPIA & 4 PRINTS-MOTOR TEST DATA ANSIC-50.20-7 | | | |
| | | | | | PRIOR TO DELIVERY CERTIFIED TYPICAL TEST | | | |

(CONTINUED)

JOY

JOY MANUFACTURING COMPANY

071258

SOLD

TO

AMERICAN AIR FILTER

PAGE NO. 3 GF-17241 THRU GF-17245

OUR
ORDER
NO.

AT REC. POINT

AT SHIP POINT

NPX-63330

| ITEM NO. | ORIGINAL QUANTITY ORDERED | QUANTITY SHIPPED | QUANTITY BACK ORDERED | PART NUMBER | DESCRIPTION | SALES CODE | UNIT PRICE | AMOUNT |
|-------------|---------------------------------|---------------------|-----------------------------|-------------|---|---------------|------------|--------|
| | | | | | DATA IS ACCEPTABLE | | | |
| | | | | | 1 SEPIA & 4 PRINTS-SPEED TORQUE CURVE @ RATED VOLTAGE SUPERIMPOSED ON FAN TORQUE CURVE-PRIOR TO DELIVERY. | | | |
| | | | | | 1 SEPIA & 4 PRINTS-SPEED VS TIME FOR ACCELERATION OF SPECIFIED LOAD-PRIOR TO DELIVERY. | | | |
| | | | | | 1 SEPIA & 4 PRINTS-CURRENT VS SPEED-PRIOR TO DELIVERY. | | | |
| | | | | | 1 SEPIA & 4 PRINTS-SPEED VS POWER FACTOR-PRIOR TO DELIVERY. | | | |
| | | | | | NOTE: ALL CURVES AT 100% AND 75% RATED VOLTAGE. | | | |
| | | | | | 1 SEPIA & 4 PRINTS-CERTIFICATION OF SEISMIC QUALIFICATION OF MOTOR PER APPENDIX 1.0 PARA 2.0 (6) OF MOTOR SPEC. | | | |
| | | | | | SPECIAL REQUIREMENTS (QUALITY CONTROL) | | | |
| | | | | | MATERIAL CERTIFICATION | | | |
| | | | | | CERT. OF CONFORMANCE (BECHTEL FORM) | | | |
| | | | | | CERT. OF COMPLIANCE | | | |
| | | | | | MILL TEST REPORTS | | | |
| | | | | | BALANCE TEST REPORT | | | |
| | | | | | LIQUID PENETRANT TEST REPORT (ROTOR-AFTER WHIRL TEST) | | | |
| | | | | | INSPECTION CHECK LIST | | | |
| | | | | | WHIRL TEST REPORT | | | |
| | | | | | MOTOR SUPPLIER CERT. OF COMPLIANCE | | | |
| | | | | | NOTE: 4 COPIES OF EACH TO BE SHIPPED WITH EACH FAN | | | |

(CONTINUED)

JOY

JOY MANUFACTURING COMPANY

071260

FINAL 2-15-74

| | | | | | | | | | | | |
|-----------------------------------|--|------------------|----------------|-------------|------------|-----------|-------------|-----------------|----------------------------|---------------|--|
| CUSTOMER'S ORDER NO. 25-1351-1 | | DATE 11-19-73 | | REQ. NO. | | MKT. 3 | | DATE 2-20-73 | | AT REC. POINT | |
| CONTRACT | | BRANCH 100% | SHIP FT. 97 | STATE 08 | IND. 01 | TAX 96 | AREA 203 | DATE 2-15-74 | AT SHIP POINT NPX-53330 | | |

 COPIES
 C
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 OF

PAGE 1 OF 2

01533
SOLD
TO
 AMERICAN AIR FILTER
 215 CENTRAL AVE.
 LOUISVILLE, KY. 40208
GF-17246 THRU
172503264
SHIP
TO
 ALABAMA POWER COMPANY
 C/O W.A. LINDSTROM
 C/O DANIEL CONST. CO.
 JOSEPH M. FARLEY NUCLEAR PLANT #1
 COLUMBIA (HOUSTON COUNTY), ALABAMA

INVOICE NO.

INVOICE DATE

DATE SHIPPED

SHIPPED VIA

REQ
ROUTING
 FOB NPO
 B/W/SURF/ALLOWED

 MARKS 25-1351-1
 AND AS NOTED

FROM NEW PHILADELPHIA, O.

| ITEM NO. | ORIGINAL QUANTITY ORDERED | QUANTITY SHIPPED | QUANTITY BACK ORDERED | PART NUMBER | DESCRIPTION | SALES CODE | UNIT PRICE | AMOUNT |
|----------|---------------------------|------------------|-----------------------|----------------|---|------------|------------|--------|
| 5 | | | | 500722-103 | SERIES 2000 JOY FAN MODEL | | | |
| | | | | 54-26-1170/870 | NUCLEAR | | | |
| | | | | | CONTAINMENT-(VERTICAL MOUNTING) | | | |
| | | | | 1. 505543-87* | STEEL ROTOR (A/P) | | | |
| | | | | 1. 600287-4 | MOTOR, 125/125 HP, 1200/900 RPM, | | | |
| | | | | | 550/3/60 AC, 2SP-2WDG, FRAME 5008, RELIANCE ELEC. | | | |
| | | | | 1. 600279-1 | VIBRASWITCH | | | |
| | | | | 1. 74262 | NAMEPLATE (STNL ST.) STAMP DUTY ETC. | | | |
| | | | | | NOTE: STENCIL FAN WEIGHT ON FAN IN 3" LETTERS | | | |
| | | | | | AFTER PAINTING | | | |
| 5 | | | | 505549-2509 | INLET BELL (STEEL) | | | |
| | | | | | NOTE: STENCIL INLET BELL WEIGHT ON BELL IN 3" | | | |
| | | | | | LETTERS AFTER PAINTING. | | | |
| 5 | | | | 505550-1871 | INLET BELL FLAT STEEL SCREEN (1" MESH) | | | |
| 5 | | | | 3386635-99 | DISCHARGE CONE | | | |
| *CHANGE | 1-22-75 | | | | NOTE: STENCIL CONE WEIGHT ON CONE IN 3" LETTERS | | | |
| | | | | | AFTER PAINTING | | | |

JOY

JOY MANUFACTURING COMPANY

071261

SOLD

C

AMERICAN AIR FILTER

PAGE NO. 2 GF-17246 THRU 17250

OUR
ORDER
NO.

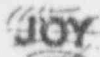
AT REC. POINT

AT SHIP POINT

NPX-63330

| ITEM NO. | ORIGINAL QUANTITY ORDERED | QUANTITY SHIPPED | QUANTITY BACK ORDERED | PART NUMBER | DESCRIPTION | SALES CODE | UNIT PRICE | AMOUNT |
|-------------|---------------------------------|---------------------|-----------------------------|-------------|--|---------------|------------|--------|
| | | | | | FAN ARRANGEMENT PER DWG. #FF-13361 | | | |
| | | | | | FF-13907 | | | |
| 5 | | | | 1388852-15 | FABREEKA RING | | | |
| 5 | | | | 700109-405 | ERECTION HDW. (REF DWG. FF-13361) & FF-13907 | | | |
| | | | | | PAINT SPECS: SURFACE PREPARATION PER FF-12144 | | | |
| | | | | 700150-321 | CARBOZINC #11 PRIMER BASE GREEN) | | | |
| | | | | | (1 COAT - 3 MILS DRY) | | | |
| | | | | 700150-322 | PHENOLINE #305 FINISH (CREAM #808) | | | |
| | | | | | (1 COAT-4 MILS DRY) | | | |
| | | | | | *BLADE SETTINGS: MIN #6-2° | | | |
| | | | | | FACT. 24½°, #1.5 SETTING. MAX #1-27° | | | |
| | | | | | TIP DIA. 53.80 IN. CAUTION EMBLEM 190458-11 | | | |
| | | | | | SPECIAL REQUIREMENT SHEET ATTACHED. | | | |
| 1 | | | | | AMCA PERFORMANCE & SOUND | | | |
| | | | | | 6 COPIES TEST (WITNESS-NOTIFY AAF-2 WKS PRIOR | | | |
| | 2 | SEPIA | | | TO TEST.) PERFORMANCE & SOUND | | | |
| | | | | | T-TEST REPORT REQ'D - 2 SEPIAS & 6 COPIES | | | |
| | | | | | TEST ON ONE UNIT ONLY | | | |
| 1 | | | | | SEISMIC ANALYSIS | | | |
| | | | | | 2 SEPIAS - 6 COPIES | | | |
| 21 | | | | | INSTRUCTION MANUALS | | | |
| | | | | | DATA REQUIRED ON MOTORS | | | |
| | | | | | 1 SEPIA & 4 PRINTS-MOTOR OUTLINE DRAWINGS | | | |
| | | | | | 1 SEPIA & 4 PRINTS-MOTOR DATA SHEETS | | | |
| | | | | | 1 SEPIA & 4 PRINTS-MOTOR TEST DATA ANSIC-50.20-7 | | | |
| | | | | | PRIOR TO DELIVERY CERTIFIED TYPICAL TEST | | | |

(CONT.)



JOY MANUFACTURING COMPANY

071262

SOLD
TO

AMERICAN AIR FILTER

PAGE NO. 3

GF-17246 THRU 17250

OUR
ORDER
NO.


AT REC. POINT

AT SHIP POINT

NPX-63330

| ITEM NO. | ORIGINAL QUANTITY ORDERED | QUANTITY SHIPPED | QUANTITY BACK ORDERED | PART NUMBER | DESCRIPTION | SALES CODE | UNIT PRICE | AMOUNT |
|-------------|---------------------------------|---------------------|-----------------------------|-------------|--|---------------|------------|--------|
| | | | | | DATA IS ACCEPTABLE. | | | |
| | | | | | 1 SEPIA & 4 PRINTS-SPEED TORQUE CURVE @ RATED VOLTAGE SUPERIMPOSED ON FAN TORQUE CURVE- PRIOR TO DELIVERY. | | | |
| | | | | | 1 SEPIA & 4 PRINTS-SPEED VS TIME FOR ACCELERATION OF SPECIFIED LOAD - PRIOR TO DELIVERY. | | | |
| | | | | | 1 SEPIA & 4 PRINTS-CURRENT VS SPEED-PRIOR TO DELIVERY. | | | |
| | | | | | 1 SEPIA & 4 PRINTS-SPEED VS POWER FACTOR-PRIOR TO DELIVERY. | | | |
| | | | | | NOTE: ALL CURVES AT 100% AND 75% RATED VOLTAGE. | | | |
| | | | | | 1 SEPIA & 4 PRINTS-CERTIFICATION OF SEISMIC QUALIFICATION OF MOTOR PER APPENDIX 1.0 PARA. 2.0 (6) OF MOTOR SPEC. | | | |
| | | | | | <u>SPECIAL REQUIREMENTS (QUALITY CONTROL)</u> | | | |
| | | | | | MATERIAL CERTIFICATION | | | |
| | | | | | CERT. OF CONFORMANCE (BECHTEL FORM) | | | |
| | | | | | CERT. OF COMPLIANCE | | | |
| | | | | | MILL TEST REPORTS | | | |
| | | | | | BALANCE TEST REPORT | | | |
| | | | | | LIQUID PENETRANT TEST REPORT (ROTOR AFTER WHIRL TEST) | | | |
| | | | | | INSPECTION CHECK LIST | | | |
| | | | | | WHIRL TEST REPORT | | | |
| | | | | | MOTOR SUPPLIER CERT. OF COMPLIANCE | | | |
| | | | | | NOTE: 4 COPIES OF EACH TO BE SHIPPED WITH EACH FAN 1 COPY OF EACH TO CENTRAL FILE | | | |

(CONT.)



LD

PAGE NO. 4 GF-17241 THRU GF-17245

OUR
ORDER
NO.

AT REC. POINT

AT SHIP POINT

NPX-63330

[illegible]

071264

REPORT NO. X-463

DATE February 11, 1975

JOY MANUFACTURING CO.

NEW PHILADELPHIA, OHIO

WITNESS TEST REPORT

ON

JOY SERIES 2000 AXIVANE FAN

FAN MODEL: 54-26-1170/870
FAN UNIT NO.: 500722-103
FAN SERIAL NOS.: GF-17246 THROUGH GF-17250
JOY PURCHASE ORDER NO.: WPX-63330 & WPX-63330/

SOLD TO: AMERICAN AIR FILTER
215 CENTRAL AVENUE
LOUISVILLE, KENTUCKY 40208

INSTALLATION: JOSEPH M. FARLEY NUCLEAR PLANT #1
COLUMBIA (HOUSTON COUNTY), ALABAMA

PREPARED BY T.E. Frank *T.E. Frank*

CHECKED BY R.M. Jorgensen *R. Jorgensen*

APPROVED BY T.A. Bissett *T.A. Bissett*

REVISIONS

| DATE | PAGES AFFECTED | REMARKS |
|------|----------------|---------|
| | | |
| | | |
| | | |
| | | |
| | | |

071265

JOY MANUFACTURING COMPANY
NEW PHILADELPHIA, OHIO 44663DATE: February 11, 1975
PAGE 1 OF 14
REPORT NO. X-463

TEST CERTIFICATION SUMMARY

PURCHASER American Air Filter MFGRS. ORDER NO. NFX-63336 & NFX-63330A
213 Central Avenue PURCHASE ORDER NO. 25-1351-1
Louisville, Kentucky 40208

DESCRIPTION OF FAN:

TYPE Axial UNIT 500722-103 MODEL 54-26-1170/870
CFM 76763 PRESSURE 4.57" F_t DENSITY 0.0750/CU.FT.
SERIAL NO. GF-17246 through GF-17250*

DESCRIPTION OF MOTOR:

MFR. Reliance PART NO. 600287-4 TYPE TEAO FRAME 5008
SERIAL NO. HP 125/125 RPM 1200/900 VOLTAGE 550
AMP 132/138 PHASE 3 CYCLE 60 RISE Spcl.
JOY PART NO. 600287-4 SERVICE FACTOR 1.0

TIME AND PLACE OF TESTING:

Joy Manufacturing Co. Test Laboratory, New Philadelphia, OhioMonday through Friday, February 3 through February 7, 1975WITNESSES: Mr. W. T. Fox, Bechtel Corp.

* Fan S/N GF-17250 was not tested at this time. The performance curve (page 12)
and sound levels will be added to this report upon completion of testing.

SEE NEXT PAGE FOR TESTS CONDUCTED, RESULTS, AND SUMMARY.

JOY MANUFACTURING COMPANY
NEW PHILADELPHIA, OHIO 44663

071266

DATE February 11, 1975

PAGE 2 OF 14

REPORT NO. X-463

TEST CERTIFICATION SUMMARY

TESTS CONDUCTED:

TEST RESULTS:

Performance tests were conducted per AMCA Bulletin 210-67, Figure 1.1. Test results are given on pages 3 through 12 for normal operation. Curve No. C-6294, page 13, shows fan operation at leak test and refueling conditions. C-6295, page 14, shows the fan operation at accident condition.

Sound power tests were also conducted. The results are given below.

| FAN SERIAL NO. | STATIC PRESSURE INCHES W.G. | SOUND POWER LEVEL - DB re 10^{-12} WATTS | | | | | | | |
|----------------------|-----------------------------------|--|-----|-----|-----|-----|-----|----|----|
| | | OCTAVE BAND | | | | | | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| GF-17241 | 3.24 | 99 | 103 | 106 | 107 | 105 | 100 | 94 | 89 |
| GF-17242 | 3.15 | 98 | 106 | 109 | 107 | 106 | 102 | 94 | 90 |
| GF-17243 | 3.02 | 101 | 103 | 107 | 108 | 108 | 103 | 96 | 90 |
| GF-17244 | 3.20 | 99 | 103 | 109 | 109 | 106 | 101 | 94 | 89 |
| GF-17245 | 3.21 | 100 | 103 | 106 | 107 | 106 | 102 | 96 | 92 |
| GF-17246 | 3.03 | 100 | 101 | 108 | 108 | 107 | 102 | 96 | 90 |
| GF-17247 | 3.10 | 99 | 103 | 105 | 108 | 107 | 103 | 96 | 90 |
| GF-17248 | 3.22 | 100 | 102 | 106 | 107 | 103 | 99 | 95 | 89 |
| GF-17249 | 3.06 | 101 | 102 | 106 | 109 | 107 | 103 | 96 | 92 |
| GF-17250 | | | | | | | | | |

DATE OF CERTIFICATION

JOT MANUFACTURING COMPANY
NEW PHILADELPHIA, OHIO
FEBRUARY 11, 1975 WPM/mb

WITNESS TEST PERFORMANCE AT NORMAL CONDITION

FAN MODEL: 54-26-1170/870

LOW SERIES 2000 AIRFRAME FAN

UNIT NO. 1 300722-103

FAN SERIAL NO.: GP-17241

MOTOR: 125/125 HP; 1200/900 RPM;

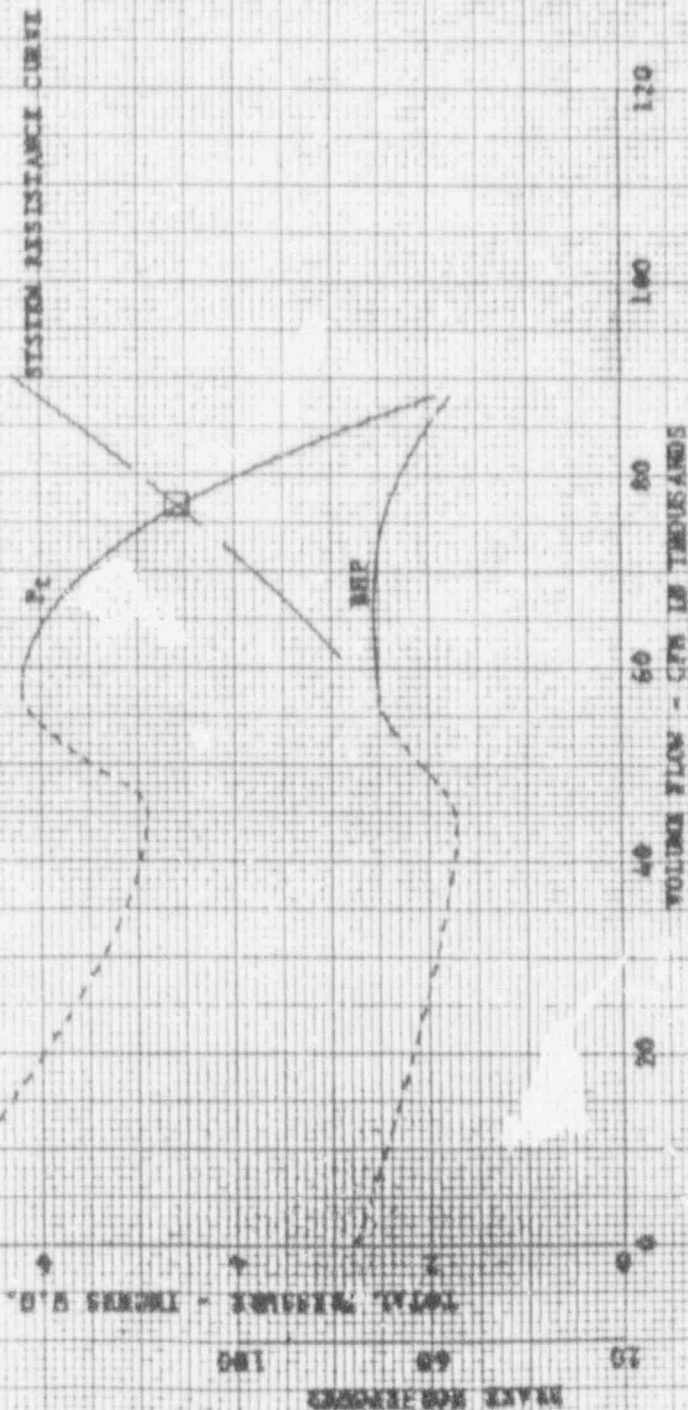
550/3/80; 132/138 AMPS

AIR DENSITY: 0.0754/CG.FT.

FAN TESTED BLOWING INTO A 54" DIA. DUCT

TESTED PER AMCA BULLETIN 210-87, FIGURE 1.1

NORMAL CONDITION: 76763 CFM @ 4.57" P_t @ 1170 RPM @ 0.0754/CG.FT.



JOE MARWACHTLING COMPANY
NEW PHILADELPHIA, OHIO
FEBRUARY 11, 1975 TT/mb

WITNESS TEST PERFORMANCE AT NORMAL CONDITION

FAN MODEL: 34-26-1170/870

FAN SERIES 2000 AXIYANK FAN

UNIT NO.: 530727-103

FAN SERIAL NO.: GF-37242

MOTOR: 125/125 HP; 1200/900 RPM;

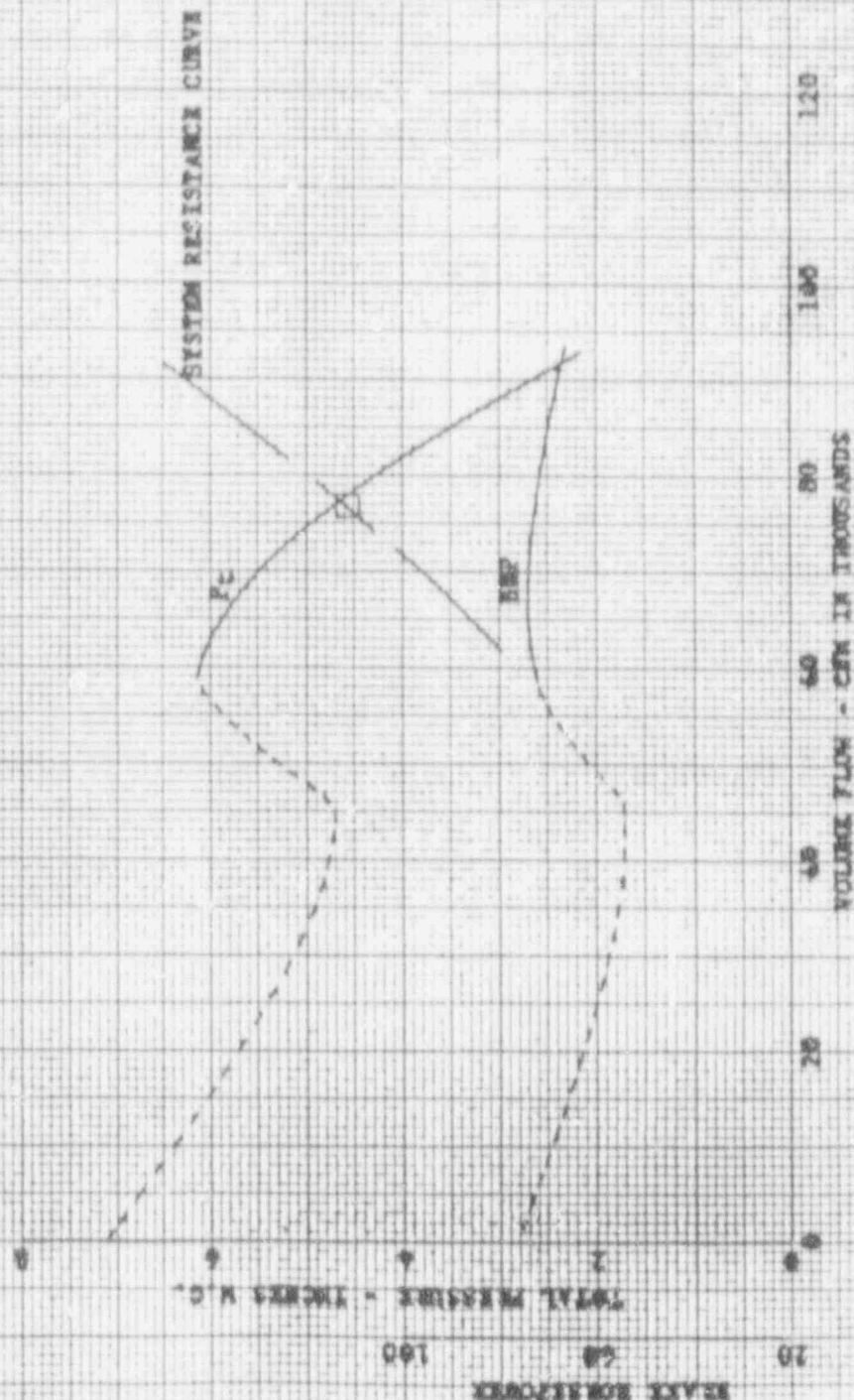
550/3760; 132/138 AMPS

AIR RESISTANCE: 0.0750/10.0 FT.

FAN TESTED BLOWING INTO A 24" DIA. DUCT

TESTED PER AMCA BULLETIN 210-67, FIGURE 1.1

NORMAL CONDITION: 76763 CFM @ 4.57" Pt @ 1170 RPM @ 0.0750/CU.FT.



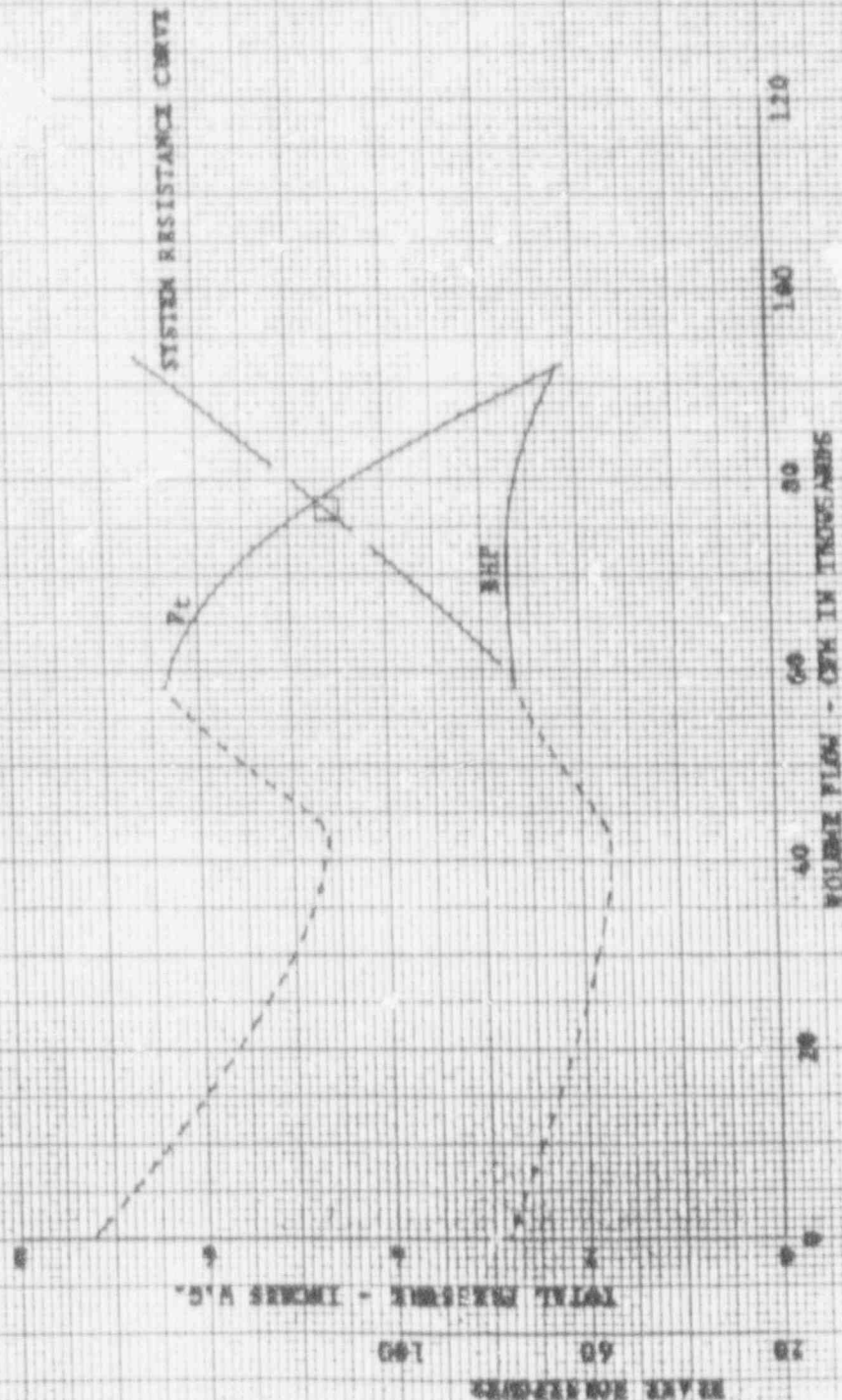
0-4293-2

WITNESS TEST PERFORMANCE AT NORMAL CONDITION

FAN MODEL: 34-28-1176/870
 FAN SERIES: 2000 AXIALLY FAN
 UNIT NO.: 509722-103
 FAN SERIAL NO.: CF-17243
 MOTOR: 125/125 HP; 1200/900 RPM;
 550/3/60; 132/238 AMPS
 AIR DENSITY: 0.0754/CU.FT.
 FAN TESTED BLowing INTO A 54" DIA. DUCT
 TESTED FOR ASCA BULLETIN 218-67, P. 1-2

NORMAL CONDITION: 76763 CFM @ 9.0 INCHES W.C. 1170 RPM @ 0.0754/CU.FT.

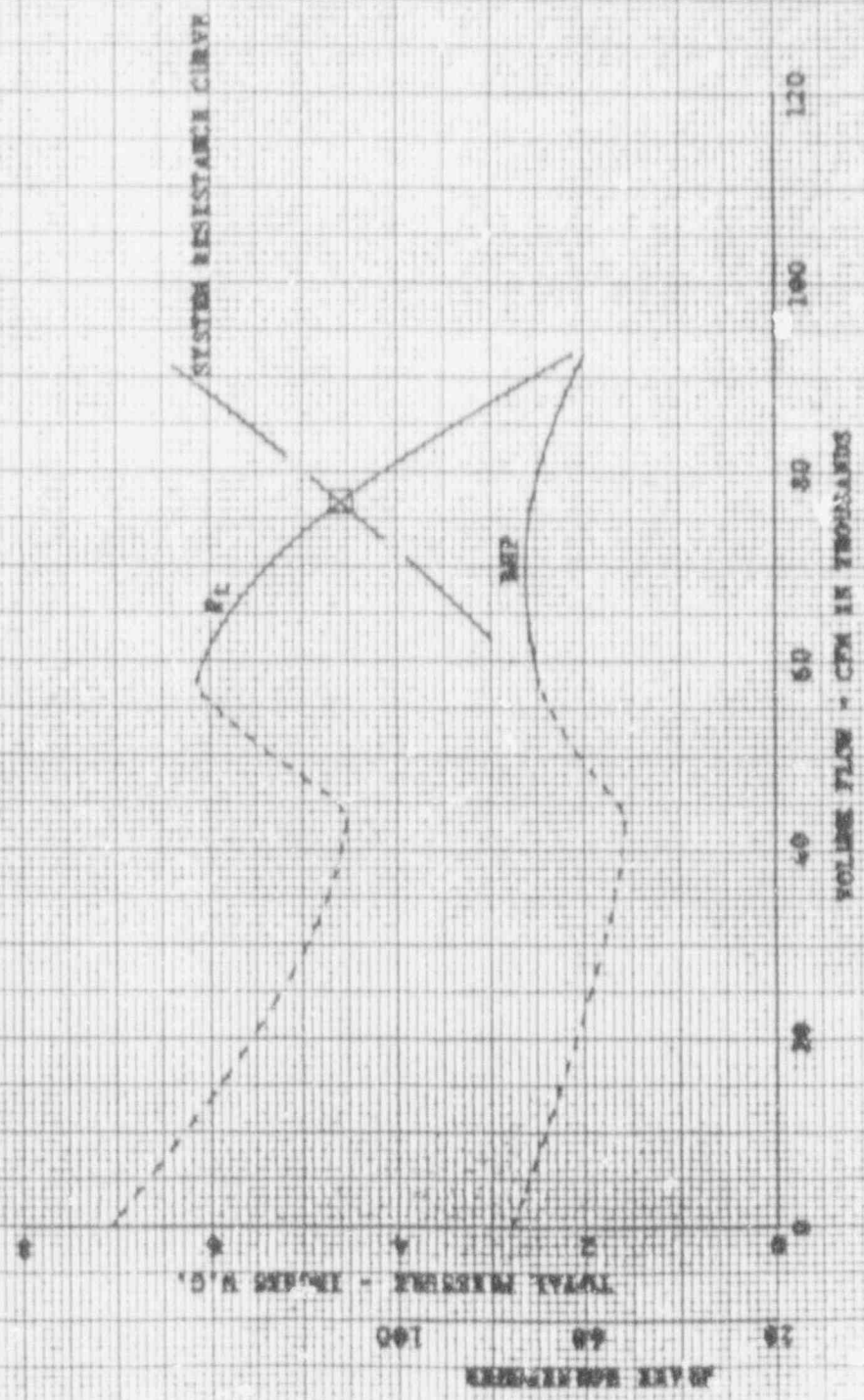
JOY MANUFACTURING COMPANY
 NEW PHILADELPHIA, OHIO
 FEBRUARY 11, 1975 TF/mk



JOHN MANUFACTURING COMPANY
NEW PHILADELPHIA, OHIO
FEBRUARY 11, 1975 TR/ma

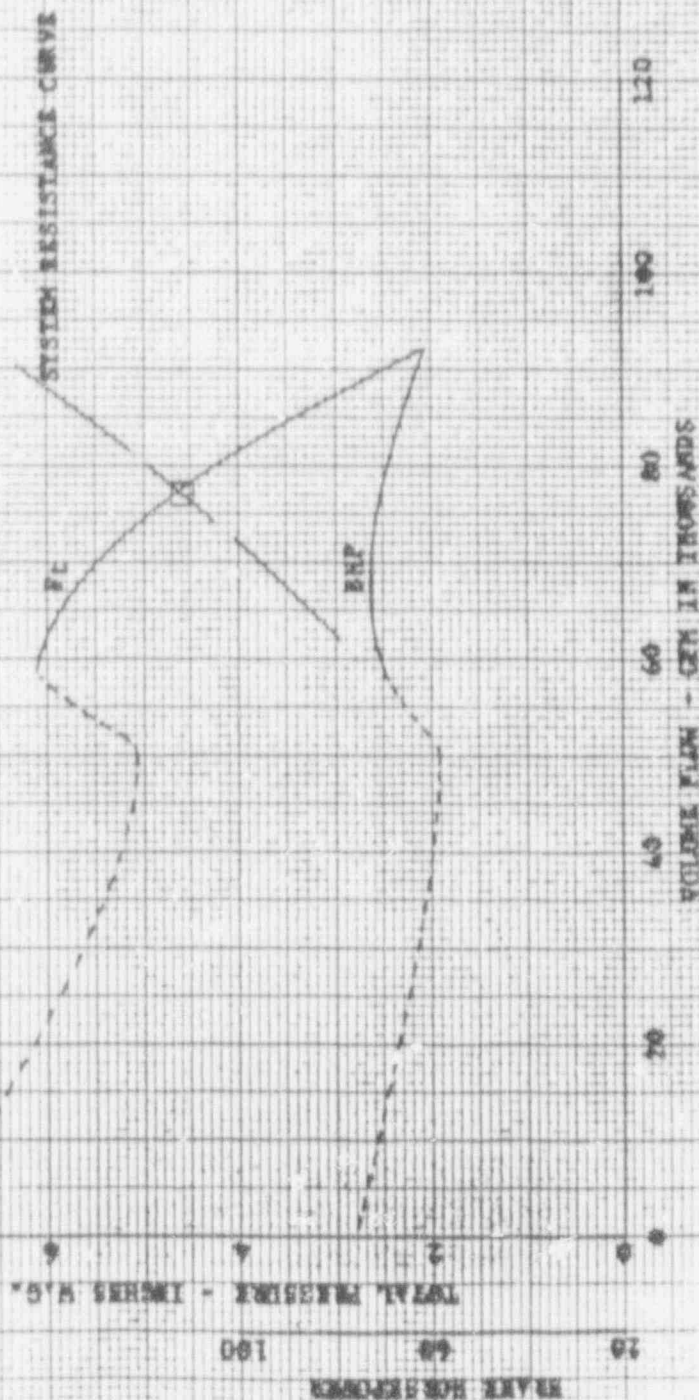
WITNESS TEST PERFORMANCE AT NORMAL CONDITION
FAN MODEL: 3A-26-1170/870
JOY SERIES 2000 AXIAXIAL FAN
UNIT NO.: 500722-103
FAN SERIAL NO.: CF-172AA
MOTOR: 125/125 HP; 1200/900 RPM;
550/3/60; 132/138 AMPS
AIR DENSITY: 0.0754/CU.FT.
FAN TESTED BLOWING INTO A 54" DIA. DUCT
TESTED PER AMCA METHOD 210-67, FIGURE 1.1
NORMAL CONDITION: 7663 CFM @ 4.57" P_t @ 1170 RPM @ 0.0754/CU.FT.

C-4293-3



JOE MANUFACTURING COMPANY
NEW PHILADELPHIA, OHIO
FEBRUARY 11, 1975 TP/ack

WITNESS TEST PERFORMANCE AT NORMAL CONDITION
FAN MODEL: 54-56-1170/870
JOY SERIES 2000 ALLVANE FAN
UNIT NO.: 500722-103
FAN SERIAL NO.: GF-17245
MOTOR: 125/125 HP; 1200/900 RPM;
550/3/60; 192/138 AMPS
AIR DENSITY: 0.075#/CU.FT.
FAN TESTED BLASTING INTO A 54" DIA. DUCT
TESTED PER AMCA BULLETIN 210-67, FIGURE 1.1
NORMAL CONDITION: 76763 CFM @ 4.57" P_t @ 1170 RPM @ 0.075#/CU.FT.

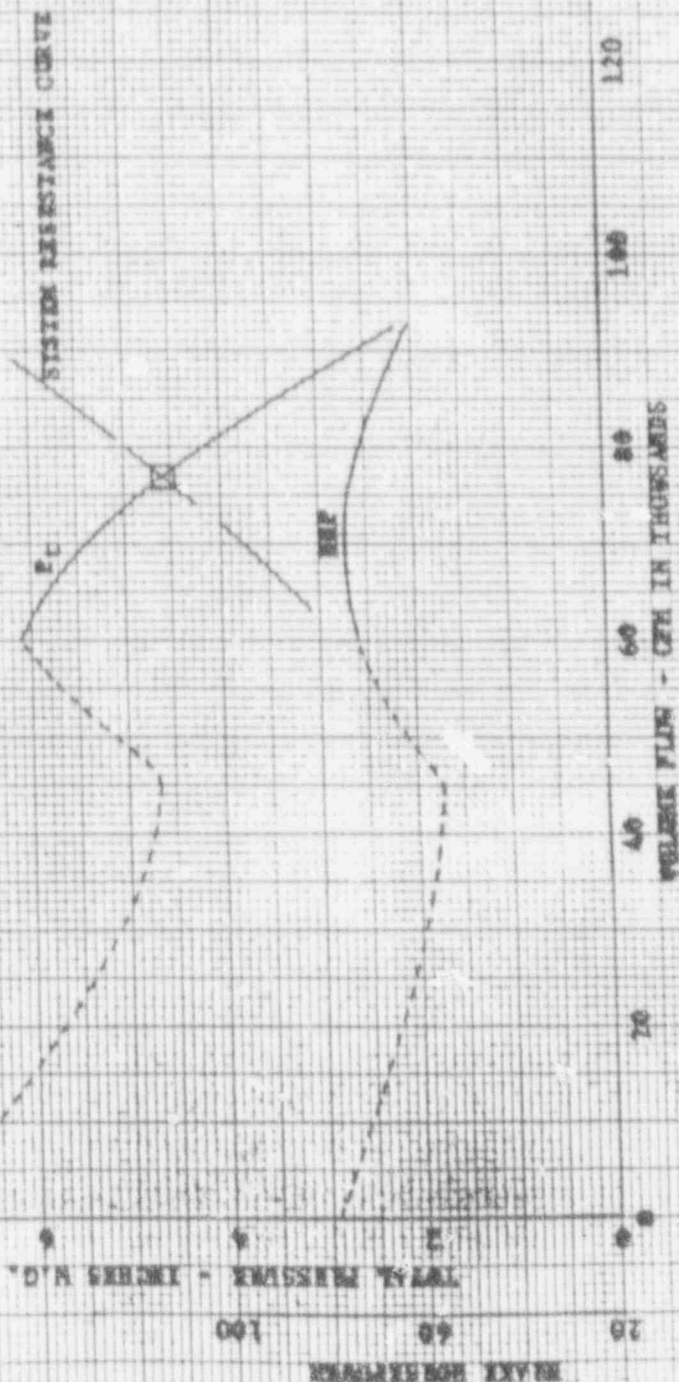


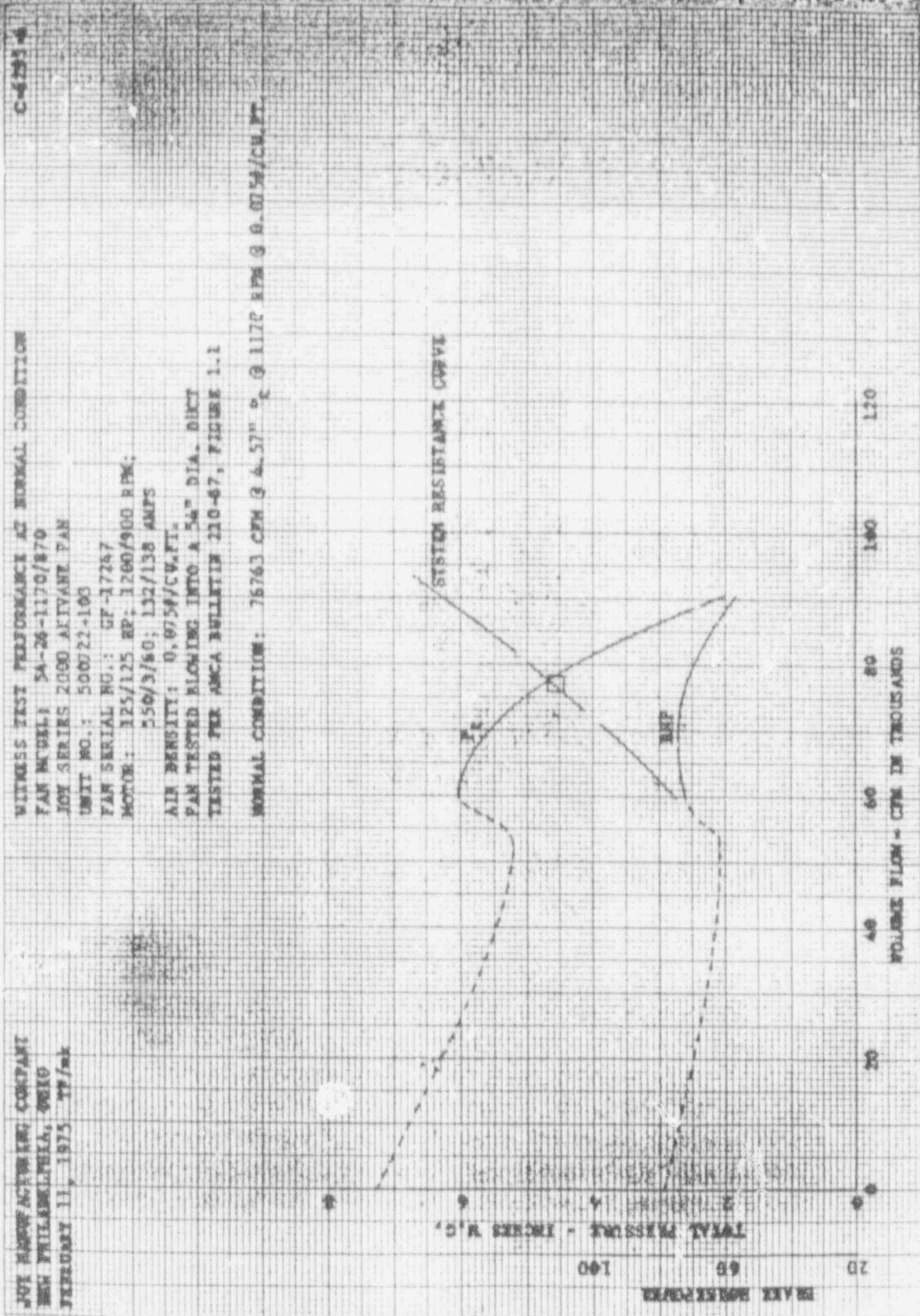
G-4293-3

JAN. MANUFACTURING COMPANY
 NEW PHILADELPHIA, OHIO
 FEBRUARY 11, 1975 17/mb

WILFRESH TEST PERFORMANCE AT NORMAL CONDITION

FAN MODEL: 54-26-1170/870
 JOT SERIES 2000 AXIAXIAL FAN
 UNIT NO.: 500122-103
 FAN SERIAL NO.: GP-17246
 MOTOR: 125/125 HP; 1200/900 RPM;
 550/3/60; 132/138 AMPS
 AIR DENSITY: 0.0756/CU.FT.
 FAN TESTED BLOWING INTO A 54" DIA. DUCT
 TESTED PER AMCA BULLETIN 210-67, FIGURE 1.1
 NORMAL CONDITION: 78763 CFM @ 4.37" P_t @ 1170 RPM @ 0.0756/CU.FT.





071273

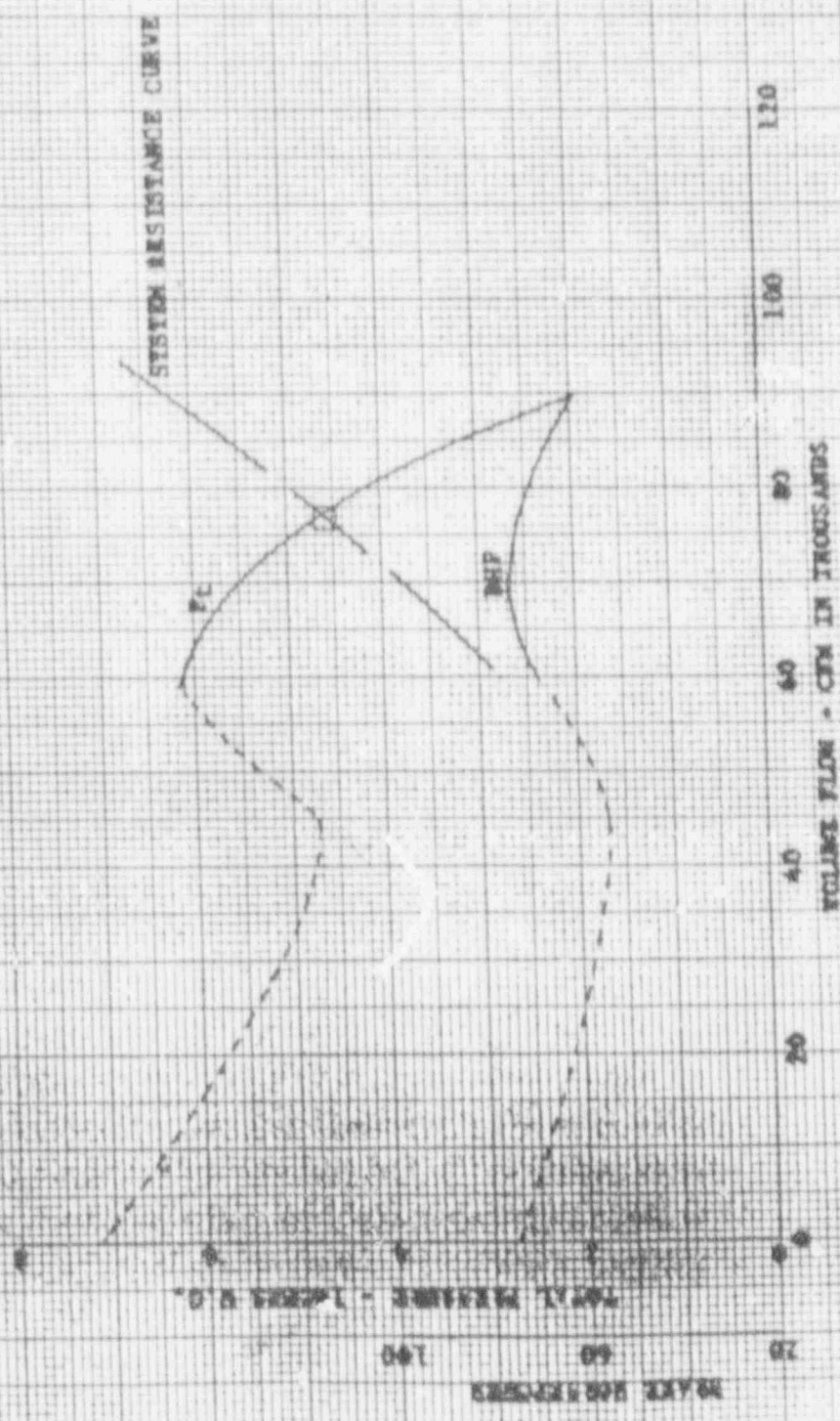
K-E 10 X 10 TO 1/4 INCH 46 1323
7 X 10 INCHES
KIEFFEL & ERBER CO.

C-6295-7

JOVE MANUFACTURING COMPANY
1801 PHILADELPHIA, OHIO
FEBRUARY 11, 1975 YP/mk

WITNESS TEST PERFORMANCE AT NORMAL CONDITION

FAN MODEL: 54-26-1170/S70
JOM SERIES 2000 AXIAXIAL FAN
UNIT NO.: 500722-103
FAN SERIAL NO.: GF-17248
MOTOR: 125/125 HP; 1200/900 RPM;
550/3760; 132/138 AMPS
AIR DENSITY: 0.075#/CU.FT.
FAN TESTED BLAZING INTO A 54" DIA. DUCT
TESTED PER AMCA BULLETIN 210-67, FIGURE 1.1
NORMAL CONDITION: 76763 CFM @ 4.57" P_t @ 1170 RPM @ 0.075#/CU.FT.



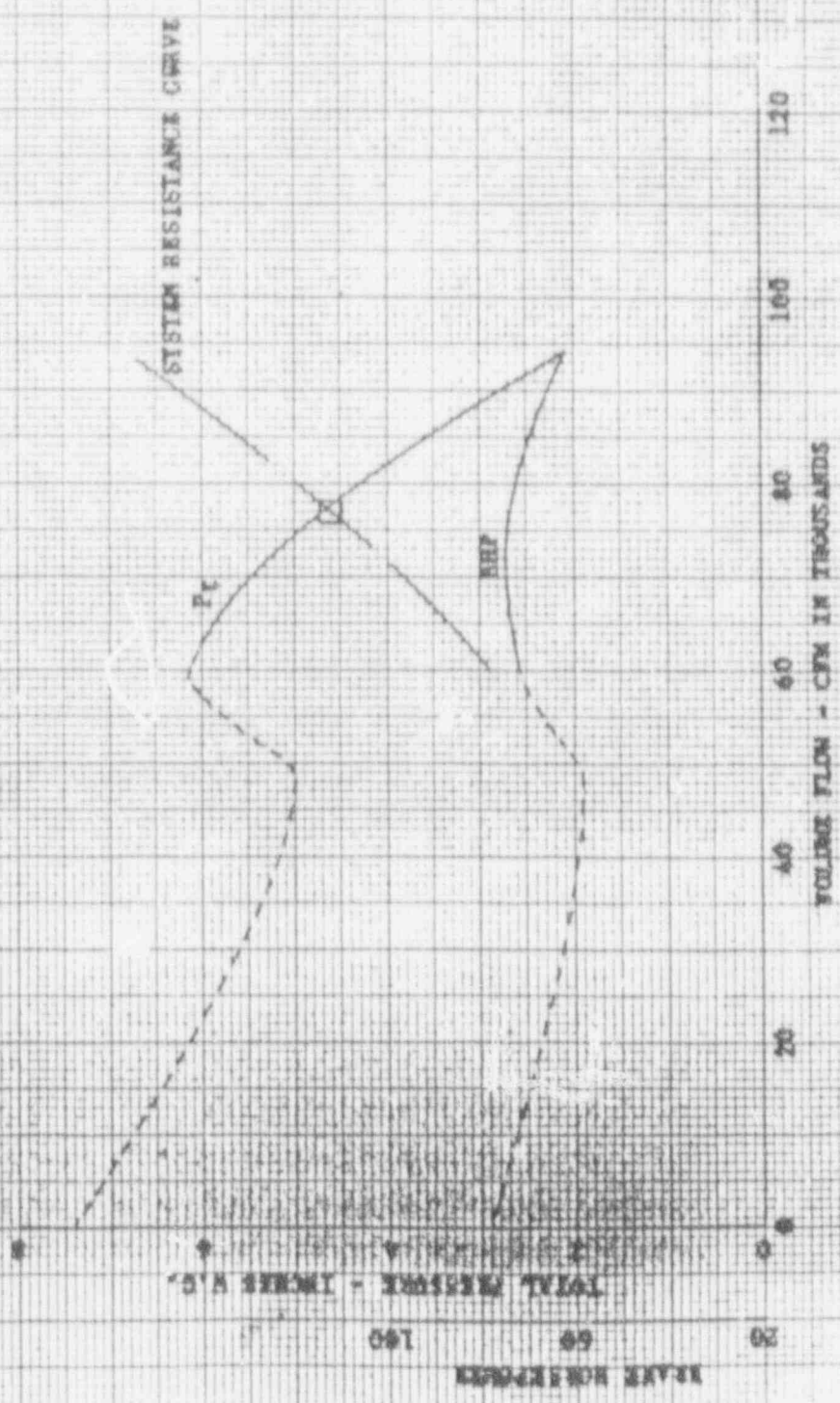
071274

JHE MANUFACTURING COMPANY
257 PHILADELPHIA, OHIO
FEBRUARY 11, 1975 TP/ada

WITNESS TEST PERFORMANCE AT NORMAL CONDITION

FAN MODEL: 54-26-1170/870
JOY SERIES 2009 AIRWAY FAN
UNIT NO.: 500722-103
FAN SERIAL NO.: 07-17249
MOTOR: 125/125 HP; 1200/900 RPM;
550/3/60; 132/138 AMPS
AIR DENSITY: 0.0754/CM³.FT.
FAN TESTED BLASTED INTO A 54" DIA. DUCT
TESTED PER AMCA BULLETIN E10-07, FIGURE 1.1
NORMAL CONDITION: 76763 CFM @ 4.57" P_t @ 1170 RPM @ 0.0754/CM³.FT.

C-4195-4



JOY VALVE ACTUATING COMPANY
NEW PHILADELPHIA, OHIO
FEBRUARY 11, 1976 TH/mk

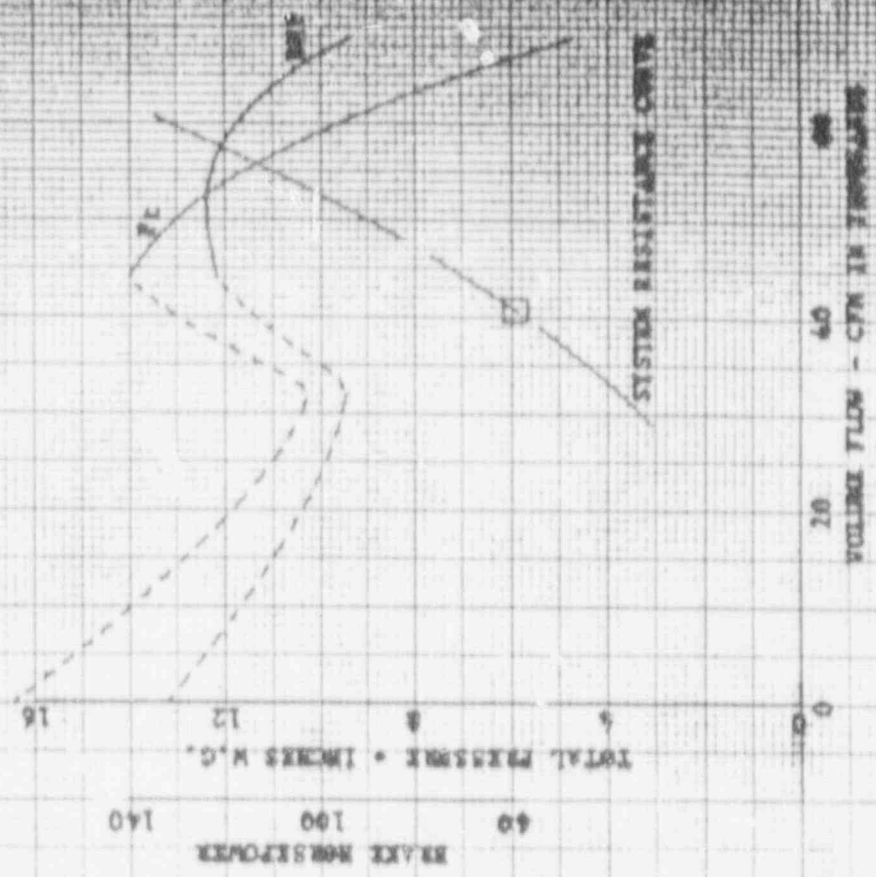
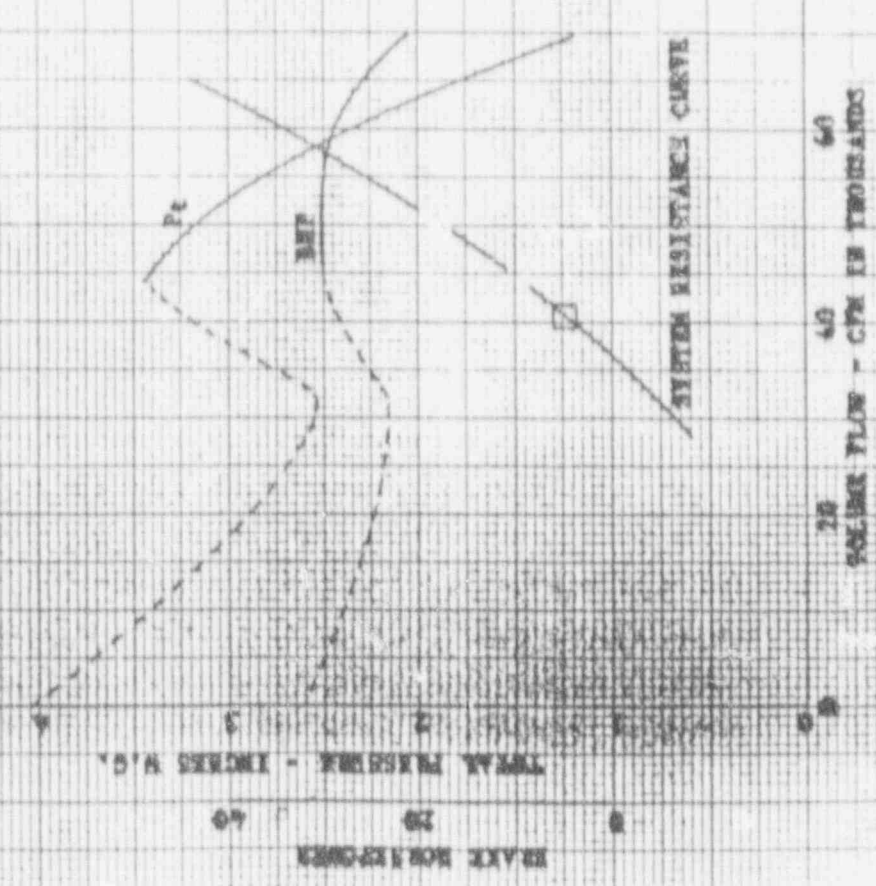
FAN MODEL: 54-26-1170/870
JOY SERIES 2000 AIRVANE FAN
UNIT NO.: 500722-103

1, 2 SERIAL NO.: GF-17244
MOTOR: 125/125 HP; 1209/990 RPM;
550/3/60; 132/138 AMPS

AIR PRESSURE: STATED BELOW
FAN BLOWING INTO A 54" DIA. DUCT

REPERMUTATION CONDITION (TESTED):
40669 CFM @ 1.23" P_t @ 870 RPM @ 0.0754/CU.FT.

LEAK TEST CONDITION:
40396 CFM @ 5.93" P_t @ 870 RPM @ 0.3064/CU.FT.



VOLUME FLOW - CFM IN THOUSANDS

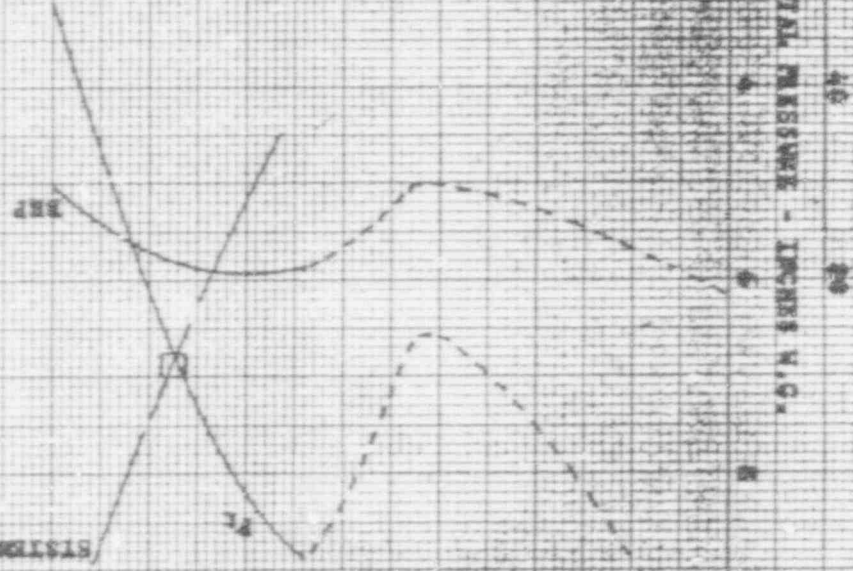
VOLUME FLOW - CFM IN THOUSANDS

JOE MANNING INC COMPANY
NEW PHILADELPHIA, OHIO
FEBRUARY 11, 1975 75/ok

PAN MODEL: 5A-26-1170/870
JOE SERIES 2000 XTIVAR PAN
UNIT NO.: 500722-103
PAN SERIAL NO.: 07-17246
MOTOR: 125/125 HP; 1200/900 RPM;
550/3/60; 132/138 AMPS
AIR DENSITY: 0.1944/CU.FT.
PAN FLOWING INTO A 54" DIA. PWT

ACCIDENT CONDITION: 37845 CFM @ 6.84" P_r @ 870 RPM @ 8.144/CU.FT.

STATION RESISTANCE CURVE



VOLUME FLOW - CFM IN THOUSANDS

120

100

80

60

40

20

0

STATION RESISTANCE
TOTAL PRESSURE - INCHES H₂O

40

20

0

071277

Same drawing as in U258759

DWG. No. FCC-13361

071278

071279

DWG. No. FF-13907

See U258759

071280

DWG. No. 500722-103

JOY MANUFACTURING CO.

BILL OF MATERIAL

DRAWING NO. 071291

BILL OF MAT. NO.

SHEET NO. 1 OF 3

500722-103 (4)
PF-13361 (3)
PF-14027 (3)

50C/22-103

NAME Joy Axivane Fan

ORDER NO. T.G.K.

Model 54-26 1/2-1170/870

| ISSUED: | H.A.B. | NBT148 | 1-16-74 |
|---------|--------|--------|---------|
| NBU651 | | | |
| NBU697 | | | |

| QUANTITY | | PART NUMBER | NAME OF PART | COST PER PIECE | TOTAL AMOUNT |
|-----------|----------|--------------------------|--|----------------|--------------|
| PER ORDER | PER UNIT | | | | |
| | 1 | 505543-86 ⁻⁸⁷ | Rotor Assembly | | |
| | 2 | 505549-1639 | Breather Drain | | |
| | 1 | 505549-2717 | Casing Assembly | | |
| | 1 | 505549-2720 | Motor Support | | |
| | 1 | 600279-1 | Vibra-Switch | | |
| | 1 | 600287-4 | Motor FRM. 5008 | | |
| | 1 | 1383393-76 | Motor Support Disc | | |
| | 1 | 1383113-2 | Nose | | |
| | 1 | 1387348-2 | Washer | | |
| | 1 | 1387348-5 | Washer | | |
| | 1 | 1388789 | Flange Adapter | | |
| | 1 | 1388790 | Flange Adapter | | |
| | 4 | 900258-13 | #6 x 1/4" Rd. Hd. Drive Screw | | |
| | 12 | 900026-390 | 1/4-20 x 5/8 Hex Hd. Capscrew Dr. Hd. (Stainless Steel) | | |
| | 4 | 900037-21 | 1/4-20 x 1 1/4 Hex Hd. Capscrew | | |
| | 4 | 900037-395 | 1/4-20 x 3/8 Hex Hd. Capscrew | | |
| | 10 | 900037-24 | 1/2-13 x 1 1/4 Hex Hd. Capscrew | | |
| | 8 | 900026-35 | 5/8-11 x 1 1/2 Hex Hd. Capscrew Dr. Hd. (Stainless Steel) | | |
| | A/R | 76857-7 | Safety Wire (Stainless Steel) | | |
| | 8 | 900026-05 | 5/8-11 x 1 1/2 Hex Hd. Capscrew Dr. Hd. (Stainless Steel) | | |

SHEET NO. 2 OF 3

ORDER NO.

| QUANTITY | | PART NUMBER | NAME OF PART | COST PER PIECE | TOTAL AMOUNT | |
|--------------|-------------|--------------------------------|---|----------------------|-----------------|--|
| PER ORDER | PER UNIT | | | | | |
| | 12 | 900303-1 | 1/4 Spring Lockwasher (Stain. Stl.) | | | |
| | 8 | 900305-1 | 1/4 Spring Lockwasher | | | |
| | 10 | 900305-4 | 1/2 Spring Lockwasher | | | |
| | 16 | 900303-5 | 5/8 Spring Lockwasher (Stain. Stl.) | | | |
| | 4 | 901285-2 | 1/4" Pipe Coupling | | | |
| | 1 | 901285-8 | 1 1/2" Pipe Coupling | | | |
| | 1 | 902469-359 | 1 1/2" x 14 1/2" Pipe Nipple | | | |
| | 1 | 902469-1533 | 3" x 16 1/2" Pipe Nipple | | | |
| | | GREASE INLET FITTINGS - MOTOR | | | | |
| | 2 | 901261-1 | 1/8" Grease Fittings | | | |
| | 2 | 901160-1 | 1/4" x 1/8" Pipe Bushing | | | |
| | 2 | 907235-54 | Adapter - 5/16 O.D. Flare Tube To 1/4" Female Pipe | | | |
| A/R | | 901509-788 | 5/16 O.D. Stain. Stl. Tubing (Trim To Lg.) | | | |
| | 4 | 907465-5 | Tube Nut - 37° Flare - 5/16" O.D. Tube | | | |
| | 4 | 907475-5 | Tube Sleeve - 37° Flare - 5/16" O.D. Tube | | | |
| | 1 | 907235-52 | Adapter - 5/16 O.D. Flare Tube To 1/8" Female Pipe | | | |
| | 1 | 907256-52 | 90 Elbow 5/16 O.D. Flare Tube To 1/8" Female Pipe | | | |
| | | GREASE OUTLET FITTINGS - MOTOR | | | | |
| | 2 | 903103-1 | 1/8" Grease Relief Fitting - 1 to 5 PSI | | | |
| | 2 | 903160-1 | 1/4 x 1/8 Pipe Bushing | | | |

071284

RELIANCE ELECTRIC COMPANY



24701 Euclid Avenue, Cleveland, Ohio 441.7

REPORT OF ROUTINE TESTS

Page 1 of 2

Induction Motor

Pur. ser

Date of Test

JOY MANUFACTURING CO.

Manufacturer's

Order No. 8-328261

Purchaser's

Order No. 117-2964

NAMEPLATE DATA

| Hp | Service Factor | Rpm | Phase | Hertz | Volts | Amperes |
|---------|----------------|-------------------------------|-----------------------------------|---------------|---------------|-------------------------------|
| 125/125 | 1.0 | 1190/899 | 3 | 60 | 550/550 | 137/133 |
| Type | Frame | Temp Rise by Method Indicated | Ambient Temp and Insulation Class | Time Rating | Design Letter | Code Letter for Locked Kva/Hp |
| B | DC5008 | Spcl. | Spcl. II | Cont. 60 Min. | Spcl. | II |

TEST CHARACTERISTICS

| Serial Number | No Load | | | | Locked Rotor (Single Phase) (Three Phase) | | | | Wound Rotor Open Circuit Volt. | High potential Test Voltage |
|---------------|---------|-------|------|---------|---|-------|---------|--|--------------------------------|-----------------------------|
| | Volts | Hertz | Rpm | Amperes | Volts | Hertz | Amperes | | | |
| A1 | 550 | 60 | 1199 | 61 | 275 | 60 | 414 | | - | 2000 |
| A1 | 550 | 60 | 899 | 79 | 275 | 60 | 354 | | - | 2000 |
| A2 | 550 | 60 | 1199 | 60 | 275 | 60 | 413 | | - | 2000 |
| A2 | 550 | 60 | 899 | 79 | 275 | 50 | 346 | | - | 2000 |
| A3 | 550 | 60 | 1199 | 61 | 300 | 60 | 460 | | - | 2000 |
| A3 | 550 | 60 | 899 | 69 | 300 | 60 | 384 | | - | 2000 |
| A4 | 550 | 60 | 1199 | 61 | 275 | 60 | 433 | | - | 2000 |
| A4 | 550 | 60 | 899 | 79 | 275 | 60 | 342 | | - | 2000 |
| A5 | 550 | 60 | 1199 | 61 | 275 | 60 | 448 | | - | 2000 |
| A5 | 550 | 60 | 899 | 69 | 275 | 60 | 366 | | - | 2000 |

Notes: - - for 1 min.

Data on test from: these rotor.
(this or duplicate)

Approved by

Date

12-5-74

RELIANCE ELECTRIC COMPANY

24701 Euclid Avenue, Cleveland, Ohio 44117

REPORT OF ROUTINE TESTS

Page 2 of 2

Induction Motor

Purchaser

Date of Test

JOY MANUFACTURING CO.

Manufacturer's
Order No. X-328261Purchaser's
Order No. NV-2964

NAMEPLATE DATA

| Hp | Service Factor | Rpm | Phase | Hertz | Volts | Ampere |
|---------|----------------|---------------------------------|-------------------------------------|------------------|---------------|-------------------------------|
| 125/125 | 1.0 | 1190/890 | 3 | 60 | 550/550 | 132/138 |
| Type | Frame | (Temp Rise by Method Indicated) | (Ambient Temp and Insulation Class) | Time Rating | Design Letter | Code Letter for Locked Kva/Hp |
| M | DC5008 | Spcl. | Spcl. II | Cont. 60 Min. | Spcl. | II |

TEST CHARACTERISTICS

| Serial Number | No Load | | | | Locked Rotor (Single-Phase) (Three Phase) | | | | Wound Rotor Open Circuit Volt. | High-potential Test Voltage |
|---------------|---------|-------|------|------|--|-------|------|--|-----------------------------------|--------------------------------|
| | Volts | Hertz | Rpm | Amps | Volts | Hertz | Amps | | | |
| A6 | 550 | 60 | 1199 | 61 | 275 | 60 | 422 | | - | 2000 @ |
| A6 | 550 | 60 | 899 | 70 | 275 | 60 | 349 | | - | 2000 @ |
| A7 | 550 | 60 | 1199 | 61 | 275 | 60 | 420 | | - | 2000 @ |
| A7 | 550 | 60 | 899 | 80 | 275 | 60 | 338 | | - | 2000 @ |
| A8 | 550 | 60 | 1199 | 61 | 300 | 60 | 466 | | - | 2000 @ |
| A8 | 550 | 60 | 899 | 68 | 300 | 60 | 387 | | - | 2000 @ |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Notes: - for 1 min.

Data on test from these motor.
(this or duplicate)

Approved by

(Engineer)

Date 12-5-74

24701 Euclid Avenue, Cleveland, Ohio 44117

JAN 24 1975

Pg. 3 of 3

REPORT OF ROUTINE TESTS

Induction Motor

Purchaser

Date of Test 12-6-74

JOY MANUFACTURING CO.

Manufacturer's
Order No. X-328201

Purchaser's NV-2264
Order No.

NAMEPLATE DATA

| Hp | Service Factor | Rpm | Phase | Hertz | Volts | Amperes |
|---------|-------------------|----------|-------|-------|---------|---------|
| 125/125 | 1.0 | 1190/890 | 3 | 60 | 550/550 | 132/138 |

| Type | Frame | Temp Rise by Method Indicated | Ambient Temp and Insulation Class | Time Rating | Design Letter | Code Letter for Locked Kva/Hp |
|------|--------|-------------------------------------|---|------------------|------------------|-------------------------------------|
| M | DC5008 | Spcl | Spcl. H | Cont. 60 Min. | Spcl. | H |

TEST CHARACTERISTICS

[illegible]

Notes: (a) - for 1 min.

Data on test from . . . these . . . motor?
(this or duplicate)

Approved by _____

George B. Smith
[Engineer]

Date 1-21-75

24701 Euclid Avenue, Cleveland, Ohio 44117

Induction Motor

Purchaser

Date of Test . . . 4-1-74 . . .

JOY MANUFACTURING CO.

Manufacturer's Order No. XF-329600

Purchaser's
Order No. NV-2704

NAMEPLATE DATA

| Hp | Service Factor | Rpm | Phase | Hertz | Volts | Amperes |
|---------|----------------|----------|-------|-------|-------|---------|
| 125/125 | 1.0 | 1190/890 | 3 | 60 | 550 | 132/138 |

| Type | Frame | (Temp Rise by Method Indicated) | (Ambient Temp and Insulation Class) | Time Rating | Design Letter | Code Letter for Locked Kva/Hp |
|------|--------|---------------------------------------|---|----------------|------------------|-------------------------------------|
| M | DC5008 | Spcl. | Spcl. H | Cont. | Spcl. | H |

TEST CHARACTERISTICS

[illegible]

Notes: @ for 1 min.

Data on test from this motor.
(this or duplicate)

Approved by

(Engineer)
G. Braidich

Date 11-6-74

DWG

071288

Duty Master
Arkivanc Fan Motor - Vertical Mount
:

Dimension Sheet

89372-10

PERFORMANCE DATA SHEET
INDUCTION MOTOR

NAMEPLATE DATA

| FRAME | HP | TYPE FORM | PHASE HERTZ | RPM | VOLTS | AMPERES | DUTY | TEMP. RISE °C | DESIGN LETTER | CODE LETTER | ENCL. |
|-------|---------|--------------|----------------|--------------|-------|---------|------------------|---------------------|------------------|----------------|-------|
| 05008 | 125/125 | M/YF | 3/60 | 1190/ 890 | 550 | 132/138 | Cont. 60 Min. | Amp. Spcl. | - | H | TEA0 |

DESIGN DATA

| E/S | ROTOR | DESIGN NUMBER | TEST ON SALES ORDER | TEST DATE | STATOR RESISTANCE AT 25°C (BETWEEN LINES) OHMS |
|--------|-----------|------------------|------------------------|--------------|---|
| 525330 | 67817-7RD | 27169 | A6 | 8-31-74 | .118/.0885 |

PERFORMANCE

| LOAD | HP | AMPERES | RPM | % POWER FACTOR | % EFFICIENCY | KW INPUT |
|---------|------|---------|----------|-------------------|-----------------|----------|
| NO LOAD | 0 | 61/70 | 1199/899 | - | - | 3.6/3.2 |
| 1/4 | 31.3 | 69/77 | 1198/898 | 39/36 | 91/89 | 26/26 |
| 2/4 | 62.5 | 84/92 | 1197/897 | 62/57 | 93/93 | 50/50 |
| 3/4 | 93.7 | 106/114 | 1196/896 | 78/67 | 94/95 | 74/73 |
| 4/4 | 125 | 132/138 | 1195/894 | 80/77 | 93/93 | 99/100 |
| 5/4 | 156 | 149/170 | 1193/892 | 87/79 | 93/92 | 124/127 |

SPEED TORQUE

| | RPM | TORQUE % FULL LOAD | TORQUE LB. FT. | AMPERES |
|--------------|----------|-----------------------|-------------------|---------|
| LOCKED ROTOR | 0 | 175/166 | 790/1009 | 936/779 |
| PULL UP | - | - | - | - |
| BREAKDOWN | 1165/868 | 348/273 | 1899/2003 | 525/442 |
| FULL LOAD | 1195/894 | - | 546/735 | 122/138 |

ALL DATA ON 550 VOLTAGE CONNECTION. AMPERES AT OTHER NAMEPLATE VOLTAGES WILL VARY INVERSELY WITH THE VOLTAGE.

REMARKS:

APPROVED BY Harold N. Finkbeiner DATE 12-9-74

RELIANCE ELECTRIC AND ENGINEERING COMPANY

General Offices • 74701 Euclid Ave., Cleveland 17, Ohio • U. S. A.



071290

REPORT OF TEST

INDUCTION MOTOR

Purchaser

JOY MANUFACTURING CO.

Date of Test 6-31-74
Purchaser's
Order No. NV-2964

NAMEPLATE RATING

| Hp Output | Syn. Speed Rpm | Full-Load Speed—Rpm | Phase | Cycles | Volts | Ampere Full Load | Type | Frame Number |
|-----------|-------------------|------------------------|-------|--------|---------|---------------------|------|-----------------|
| 125/125 | 1200/900 | 1190/890 | 3 | 60 | 550/550 | 132/138 | M | DC5008 |

TEMPERATURE RISE

| Conditions of Test | | | | Temperature Rise—Deg C | | | | | |
|--------------------|---------------|----------------|-------------------------|---|---|---|---|----------------------|--------------------|
| Hours Run | Line Volts | Line Ampere | Cooling Air Deg C | Stator | | Rotor | | Cemeter- tor Bars | Collector Rings |
| | | | | Cores By Therm- ometer Method | Windings (Cross Out One) By Resistance Method By Therm- ometer Method | Cores By Therm- ometer Method | Windings (Cross Out One) By Resistance Method By Therm- ometer Method | | |
| - | - | - | - | - | - | - | - | - | - |

CHARACTERISTICS Test

| Slip—Per Cent | Ampere Running Light | Secondary Volts at Standstill | Secondary Ampere per Kilowatt at Full Load | Resistance at 25 C (between lines) Ohms |
|---------------|-------------------------|----------------------------------|---|--|
| .42 / .67 | 61 / 70 | - | - | .118/.0885 |

TORQUE AND STARTING CURRENT

| Break-Down Torque Lbs at 1 ft radius | Locked-Rotor Torque Lbs at 1 ft radius with 50 % volts applied | Starting Current Ampere (locked rotor) with 50 % volts applied |
|---|--|--|
| 1899/2003 | 152/194 | 347/347 |

DIELECTRIC TESTS

| Volts A-c for 60 Sec. | |
|-----------------------|-------|
| Stator | Rotor |
| 2000 V. | — |

EFFICIENCIES AND POWER FACTOR

| Efficiency, Per Cent | | | Power Factor, Per Cent | | |
|----------------------|-----------|-----------|------------------------|-----------|-----------|
| Full Load | 1/2 Load | 1/4 Load | Full Load | 1/2 Load | 1/4 Load |
| 93.5/92.8 | 94.0/95.5 | 93.2/93.1 | 73.0/76.7 | 62.2/67.1 | 39.0/57.1 |

Notes:

Data from test on this motor.
(this or duplicate)

Approved by *George H. F. Smith* Date Dec. 6, 1974
(Designing Engineer)

A-C MOTOR PERFORMANCE CURVES

DRAWING NUMBER
SK-50800-216
Test
Pg. 2 of 5

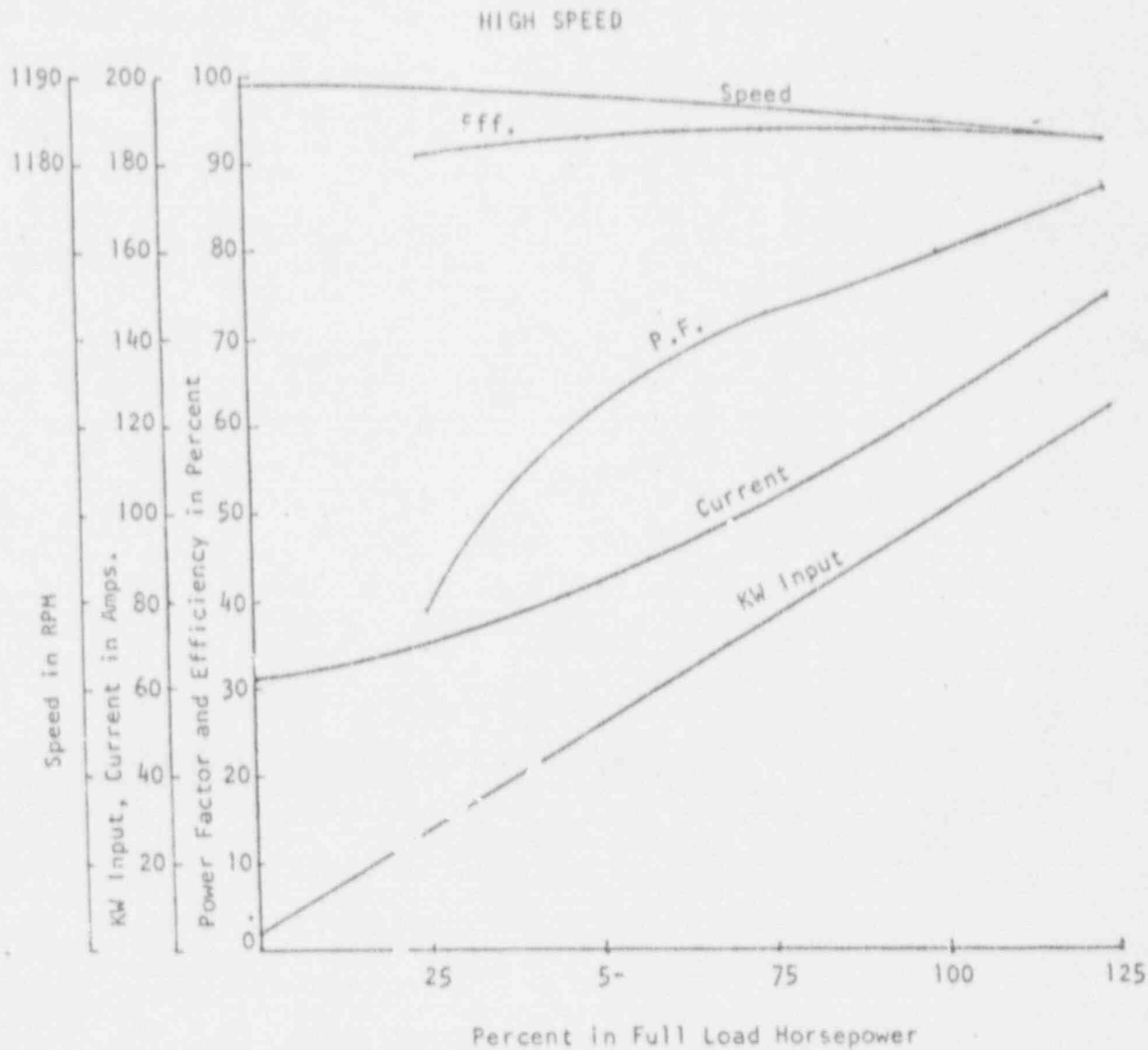
SPECIFICATION DATA:

E/S 525330
ROTOR 67817-7RD
TEST S.O. X-328261-A6
TEST DATE 8-31-74
RES.
AT 25°C .118/0885

NAMEPLATE DATA:

FRAME 05008 H.P. 125/125
DUTY Cont/60 Min. RPM 1190/890
PHASE 3 VOLTS 550/550
TYPE/FORM M/YF AMPS 132/130

CYCLES 60
CODE H
TEMP. RISE Spcl.
NEMA DESIGN -
ENCLOSURE TEAO



A-C MOTOR PERFORMANCE CURVES

SPECIFICATION DATA:

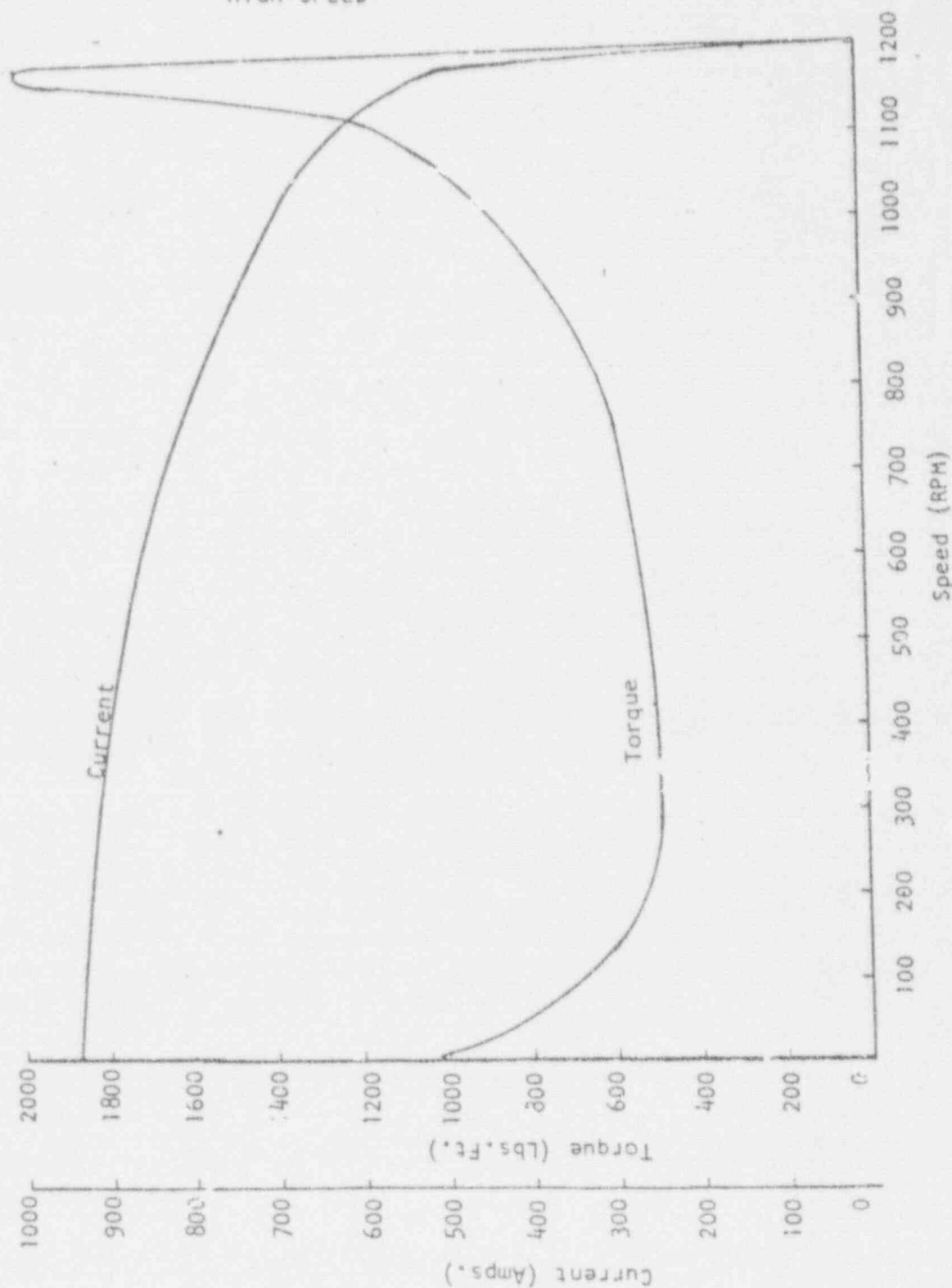
E/S 525330
 ROTOR 67817-7RD
 TEST S.O. X-328261-AE
 TEST DATE 8-31-74
 RES.
 AT SC .118/.0885

NAMEPLATE DATA:

FRAME 05008 H.P. 125/125
 DUTY Cont/60 Min. RPM 1190/890
 PHASE 3 VOLTS 550/550
 TYPE/FORM M/YF AMPS 132/138

CYCLES 60
 CODE H
 TEMP. RISE Spcl.
 NEMA DESIGN -
 ENCLOSURE TEAO

HIGH SPEED



A-C MOTOR PERFORMANCE CURVES

DRAWING NUMBER

SK-50800-216

Test

Pg. 4 of 5

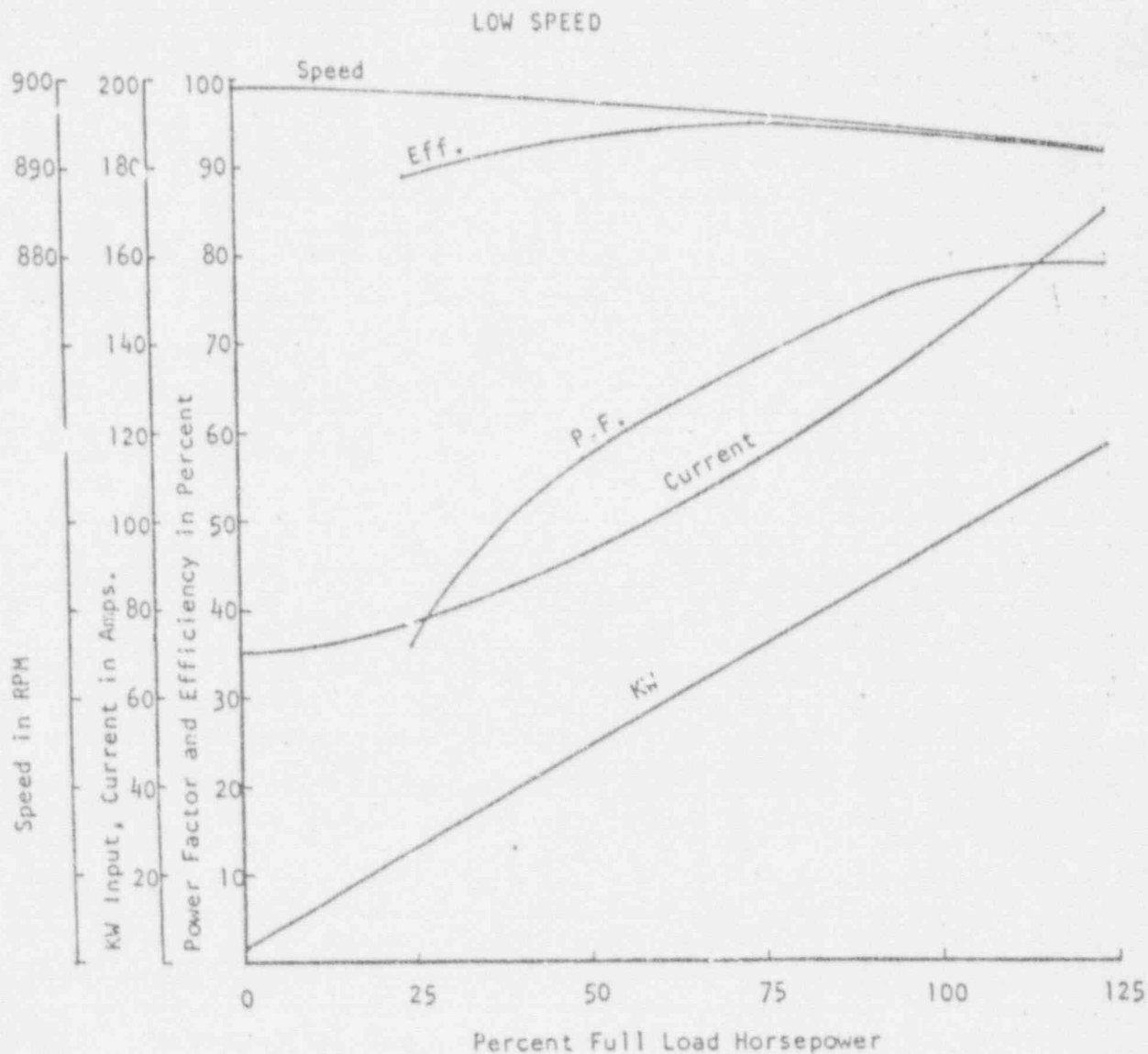
SPECIFICATION DATA:

E/S 525330
MOTOR 67817-7RD
TEST SQ. X-328261-A6
TEST DATE 8-31-74
RES.
AT 25C .118/.0885

NAMEPLATE DATA:

FRAME 05008 H.P. 7.5/25
DUTY Cont./Min. RPM 1200/30
PHASE 3 VOLTS 50/50
TYPE/FORM M/YF AMPS 12.38

CYCLES 60
CODE H
TEMP. RISE Spcl.
NEMA DESIGN -
ENCLOSURE TEAO



A-C MOTOR PERFORMANCE CURVES

DRAWING NUMBER
 SK-50800-216
 Test
 Pg. 5 of 5

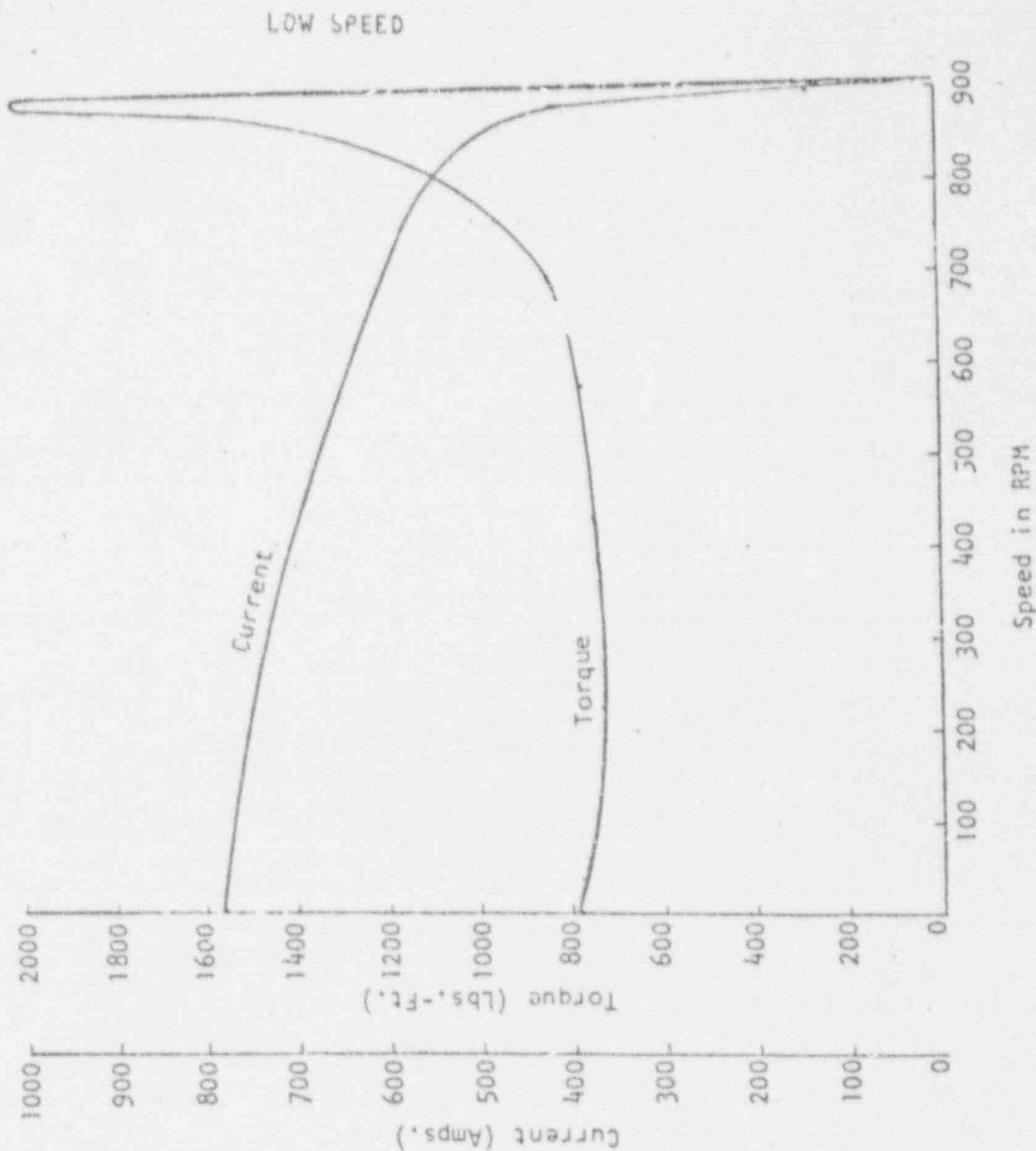
SPECIFICATION DATA:

S/S 525330
 ROTOR 67817-7RD
 TEST S.Q. X-328261-A6
 TEST DATE 8-31-74
 RES.
 AT 25°C .118/.0885

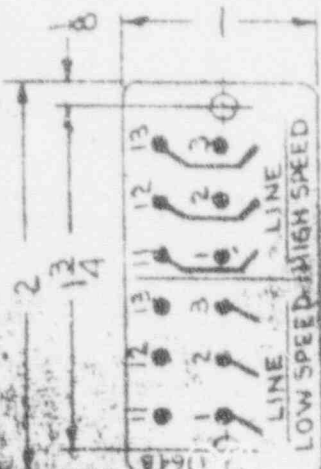
NAMEPLATE DATA:

FRAME D5008 K.P. 125/125
 DUTY Cont/60 Min. RPM 1190/890
 PHASE 3 VOLTS 550/550
 TYPE/FORM M/YF AMPS 132/138

CYCLES 60
 CODE H
 TEMP. RISE Spcl.
 NEMA DESIGN -
 ENCLOSURE TEAO



1764
SHEET



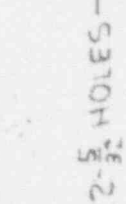
2-5/32 HOLES

MAT'L SPEC. 46024-AV
1764 20B&5GA (.032)
2 SPEED - 3 PHASE
B



2-5/32 HOLES

MAT'L SPEC. 46024-AV
1764 20B&5GA (.032)
2 SPEED - 2 PHASE
B

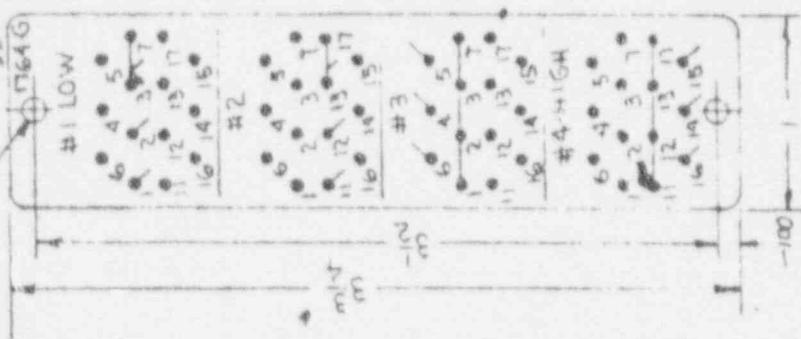


2-5/32 HOLES

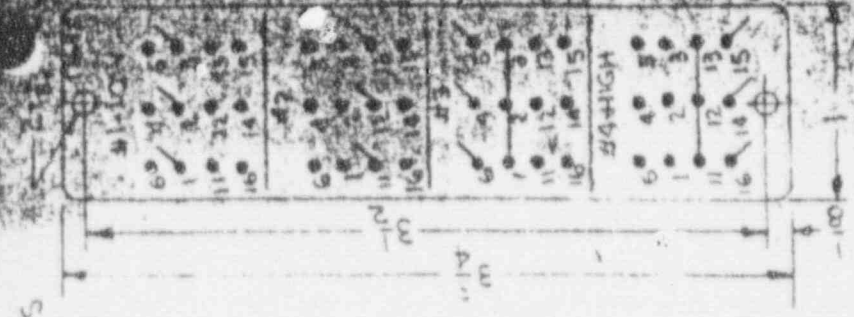


MAT'L SPEC. 46024-AV
1764 20B&5GA (.032)
2 SPEED - 3 PHASE
J

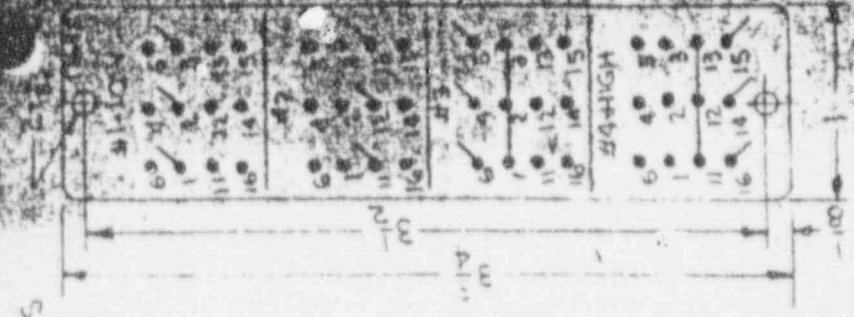
2-5/32 HOLES



MAT'L SPEC. 46024-AV
1764 20B&5GA (.032)
4 SPEED - 3 PHASE
H
CONSTANT HORSEPOWER



MAT'L SPEC. 46024-AV
1764 20B&5GA (.032)
4 SPEED - 3 PHASE
G
CONSTANT TORQUE



MAT'L SPEC. 46024-AV
1764 20B&5GA (.032)
4 SPEED - 3 PHASE
F
VARIABLE TORQUE

NOTE: WHITE SPACES ARE COLORED
OF METAL BLACK TO BE BURNED

FOR MODIFICATIONS - SEE 1764-A

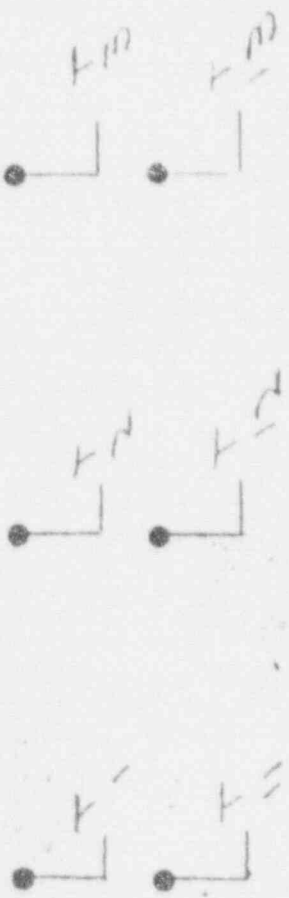
NOTE: ASA STD. TERM.
MARKING FOR ALL SYM
EXCEPT SYM 'J' WHICH
IS STD. NAVY MARKING

RELANCE ELECTRIC COMPANY
CLEVELAND, OHIO
CONNECTION DIAGRAM
MULTI-SPEED

DR. BY J.S.
DATE 6-17-32
CK BY E.E.H.
APPRO. S.O.
DRAWING NUMBER 1576

071295

| | | |
|--------|-----------------|---------|
| 5/1/33 | REDRAWN | AFK |
| 5/1/33 | REMOVED REE.CO. | RIV/WST |
| 5/1/33 | DATE | BY |



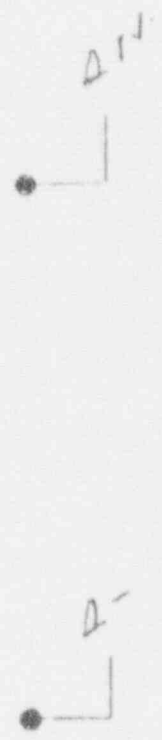
MOTOR WINDING
SIZE #1-AWG

LOW
SPEED
HIGHER
SPEED

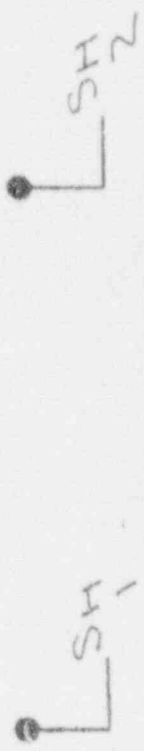


GROUND

NOTE -
CONNECT D & R2
TO WINDING WITH
CONNECTION BOX
OR SIGNAL SYSTEM




FAN MOTOR WINDING (R & T)



SPACE HEATERS
VOLTAGE 208/1/60
WATTAGE 440
SIZE #14 AWG

NDX-63330

| | | |
|--|--------------|--------------|
| PART | NAME | B/M |
| RELIANCE  CLEVELAND OHIO 44117 ELECTRIC COMPANY | | |
| CONNECTION DIAGRAM | | |
| JOY NUCLEAR FAN MOTOR | | |
| DR. <i>Rel</i> | DATE 5-20-73 | S.O. 3 |
| B/M | ENG'R | SHEET 1 OF 1 |
| CK. DEC | DUP. TR. | 600287 |
| APP. 1 | | |

071296

See U 258759

071297

Duty Master
Axivane Fan Motor - Vert. Mounting

U 213442
Farley

89372-10

071298

JOY MANUFACTURING CO.

BILL OF MATERIAL

DRAWING NO.

BILL OF MAT. NO.

SHEET NO. 1 OF 5

FF-12642

SK31170

600287-4

Name Electric Motor

ORDER NO. Customer Specs Notes 13 & 14

(Containment)

ISSUED: DFC

NBT932

4-17-73

NBS20 NBT278

NBS342 NBT337

NBS868 NBT648

| QUANTITY | | PART NUMBER | NAME OF PART | COST PER PIECE | TOTAL AMOUNT |
|-----------------------|----------|-------------|--|----------------|--------------|
| PER ORDER | PER UNIT | | | | |
| H.P.: | | | 1200/125 125/125 XXXXXX N/P Rated - Max. HP At Emergency Mode Conditions | | |
| Volts, Phase, Hertz.: | | | 550/3/60 Capable of Low Voltage Start-Up. See Notes. | | |
| Amps: | | | Rated S.F. (AOM) | | |
| Speed: | | | 1200/900 RPM. NEMA Design B (6.5 X F.L.C.) | | |
| Winding: | | | Two Speed - Two Winding - Constant HP - Braced For Reverse Starting | | |
| Frame: | | A2 | 89372-10 5008 Vendor Drwg. No. XXXXXXXXXXXXXX | | |
| Bearings: | | 416821-11AJ | Type - A-F Regreassable. Life - B-10, 100,000 Hours | | |
| Locations: | | | Type - Chevron BRB#2 Temp. - -30° to +150°C. | | |
| Fitting: | | | Grease - 1/8" Pipe Plug | | |
| | | | Relief - 1/4" Pipe Plug | | |
| Enclosure: | | | TEAO - Watertight | | |
| Mounting: | | | Horizontal Footless Double C-Face Vertical <u>Yes</u> - Shaft Down | | |
| Conduit Box: | | | Main Location 9 O'clock Type - C.I. One Size Oversize | | |
| | | | Accessory Location: 3 O'Clock. Type - C.I. Std. | | |
| Accessories: | | | Type - Winding Temp. Detectors - R. & T. Type - Space Heaters - 208/1/60 Location - Inside Of Winding Coils. (R. & T.) Location - In End Bracket (Heaters). Fan (Air-Over-Motor) Continuous. | | |
| Duty: | | | | | |
| Ambient: | | | Per FF-12642 | | |
| Insulation: | | | Class RN Life - 40 Years Per FF-12642 | | |
| Leads: | | | Mains - 36" Marked Terminals - Yes - In Bag | | |
| | | | Accessories - 36" Marked Terminals - Yes - In Bag | | |
| Shaft Extension: | | | Per SK-31170 (Tapered) | | |
| Condensate Drains: | | | Type - Removable Plugs Location - End Bells & Frame | | |

NEW INSERTION INTO MANUAL
112493-12-12-73
REPLACING 10-12-73

SHEET NO. 2 OF 5

ORDER NO.

600287-4

| QUANTITY | | PART NUMBER | NAME OF PART | COST PER PIECE | TOTAL AMOUNT |
|--------------|-------------|-------------|---|----------------------|-----------------|
| PER ORDER | PER UNIT | | | | |
| | | | Applications: | | |
| | | | Manufacturer: | | |
| | | | | | |
| | | | NOTES: 1. Bearing Loads - | | |
| | | | A. Fan Rotor Wt. 520 Lbs. (Cast Steel) | | |
| | | | B. Fan Rotor Inertia (WR^2) 800 Lbs./Ft. ² | | |
| | | | C. Aerodynamic Thrust 305 Lbs. (Vertical) | | |
| | | | D. Max. Thrust (Vertical) 825 Lbs. (Running) | | |
| | | | | | |
| | | | 2. Painting - | | |
| | | | Interior - Per FF-12642 | | |
| | | | Exterior - 1. Cleaned Per SSPC - SP - 6 - 63 | | |
| | | | 2. Prime - Carbozinc #LL - 3/2 MILS. | | |
| | | | 3. Finish By Joy. Carboline - Phenoline #305 | | |
| | | | 4 MILS Dry - Cream #808 | | |
| | | | | | |
| | | | 3. Note: No Thermocouples Required. Per FF-12642 - | | |
| | | | See Accessories, Page 1. | | |
| | | | 4. Name Plates - | | |
| | | | A. Motor - NEMA Standard MG1 - 10.39 - 1968 | | |
| | | | With AFBMA Bearings. Numbers On Plate. Rotation | | |
| | | | To Phase Sequence. | | |
| | | | B. Connection Diagram - One On Motor And One Loose For | | |
| | | | Fan Mounting To Show Connections For Hookup From Stator | | |
| | | | (Mains) And All Accessories. Copy To Engineering (Repro.) | | |

SHEET NO. 3 OF 5

ORDER NO.

| QUANTITY | | PART NUMBER | NAME OF PART | COST PER PIECE | TOTAL AMOUNT |
|--------------|-------------|-------------|--|----------------------|-----------------|
| PER ORDER | PER UNIT | | | | |
| | | 5. | Grounding - Frame Ground Lead To Be Connected Inside Of Motor Frame And Brought Out With Mains To C-Box With Grd. Post Thru Side Of Box For Customer's No. 2/0 Awg. Ground Connector. | | |
| | | 6. | Motor Standards Certification (Repros.) XXXXXXXXXXXXXXXXXXXXX For Reliance Nuclear Motor Program Specs. XXXXXXXXXXXXXXXXXXXXX For Reliance Nuclear Motor Program Specs. C. NEMA MG1-1967 D. ANSI - C50. 20-7, Forms A1 & A2 | | |
| | | 7. | Job Specifications, Forms And Certifications - (Repros.) A. Quality Assurance Per XXXXXXXX Reliance Q.A. Program for Nuclear Motors. Spec. XXXXXXXXXXXXXXXXXXXXX For Reliance Nuclear No. RSP-2-0095-01-661-0. Motor Specs. C. Vibration Test Documented (Max. 2 MILS) D. Motor Data To Joy For Seismic Design Analysis. E. Technical Requirements Per Specs. XXXXXXXX As Follows - 1. E-3 Forms 2. Motor Data Sheet Forms (2 Pages) 3. Bechtel Forms G-321-C Drawing & Data Requirements. F. Motor Curves (Repros.) Chart On One Diagram, At 75%, 80% And 100% Voltage - | | |

SHEET NO. 4 OF 5

ORDER NO.

| QUANTITY | | PART NUMBER | NAME OF PART | COST PER PIECE | TOTAL AMOUNT |
|--------------|-------------|-------------|---|----------------------|-----------------|
| PER ORDER | PER UNIT | | | | |
| | | | 1. Speed - Torque With Fan Load Imposed On It. | | |
| | | | 2. Current - Safetime (Thermal) | | |
| | | | 3. Speed - Current | | |
| | | | 4. Speed - Time (Load Acceleration) | | |
| | | | 5. Speed - Power Factor | | |
| | | | 6. Motor Rating Curve Showing HP - Air Velocity | | |
| | | | 0 to 3600 Feet/ Minute - Class RM Insulation. | | |
| | | | 7. Drawing Requirements - (Repros.) | | |
| | | | Furnish Motor Outline & Cross Section With | | |
| | | | Accessories Complete Shaft Outline-Dimensions | | |
| | | | And Overall Conduit Boxes With Complete | | |
| | | | Dimensions. Conduit Boxes To Have Terminal | | |
| | | | Blocks Mounted Inside Per Bechtel Drawgs. | | |
| | | | E-20 & E-21. Show On Motor Drawg. | | |
| | | | 8. Hardware - To Be Corrosion Resistant | | |
| | | | 9. Motor Balance - .002 Double Amplitude (Max.) | | |
| | | | 10. Motor Sealing - Per PF-12642 | | |
| | | | 11. Breathers - Per PF-12642 Notes 2 & 13. | | |
| | | | 12. Except as Noted Herein: | | |
| | | | Motor To Meet All requirements of Customer Job | | |
| | | | Specifications No. SS-11 2-14 Latest Revisions | | |

071302

BILL OF MAT. NO.

600287-4

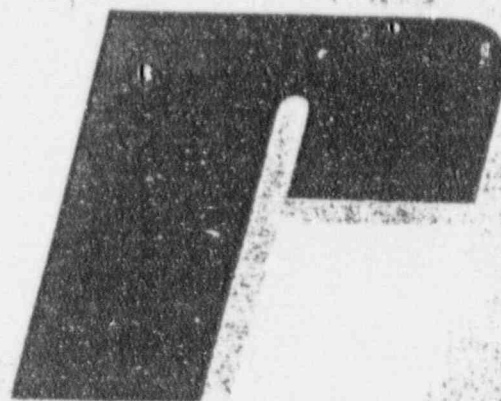
PET NO. 5 OF 5

ORDER NO.

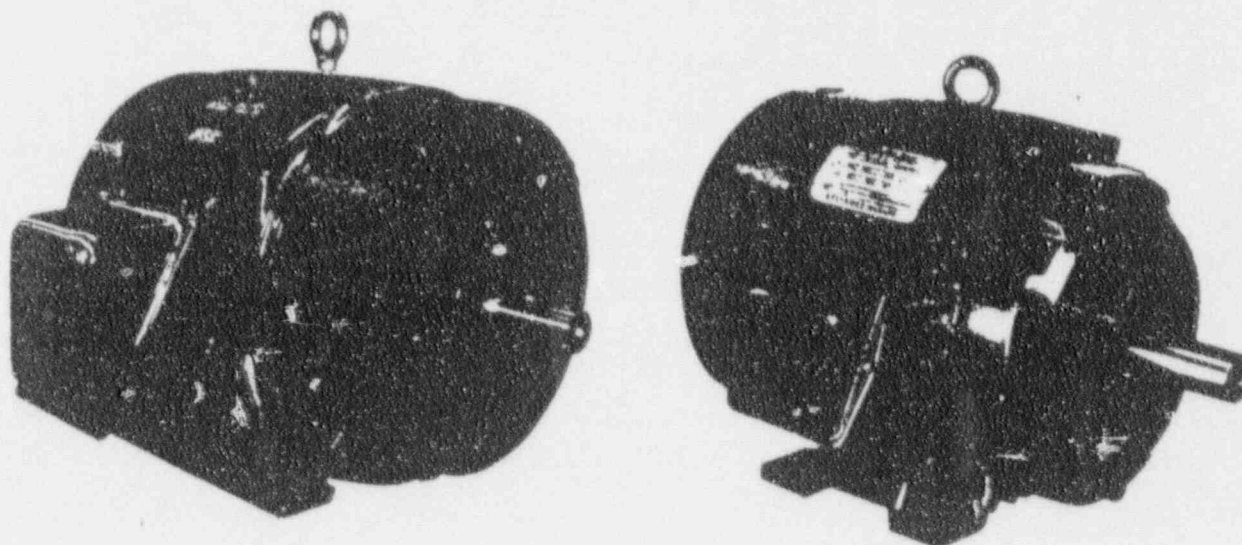
[illegible]

APRIL, 1972

INSTRUCTION MANUAL B-3620-5



INSTALLATION, OPERATION AND CARE OF
RELIANCE
STANDARD INTEGRAL HORSEPOWER INDUCTION MOTORS



IMPORTANT: It is important that these instructions be studied by the men installing and operating this equipment. Read thoroughly before starting. Keep these instructions for future reference.

RECEIVING AND HANDLING

ACCEPTANCE

Thoroughly inspect this equipment before accepting shipment from the transportation company. If any of the goods called for in the bill of lading or express receipt are damaged or the quantity is short, do not accept them until the freight or express agent makes an appropriate notation on your freight bill or express receipt. If any concealed loss or damage is discovered later, notify your freight or express agent at once and request him to make an inspection. We will be very happy to assist you in collecting claims for loss or damage in shipment; however, this willingness on our part does not remove the transportation company's responsibility in reimbursing you for collection of claims or replacement of material. Claims for loss or damage in shipment must not be deducted from the Reliance invoice, nor should payment of the Reliance invoice be withheld awaiting adjustment of such claims, as the carrier guarantees safe delivery.

If considerable damage has been incurred and the situation is urgent, contact the nearest Reliance District Office for assistance. Please keep a written record of all communications.

STORAGE

Equipment which is not going to be used immediately, should not be unpacked until ready for use. If this equipment is to be stored for any period of time prior to in-

stallation, the area storage should be clean and dry, protected from low temperature, rapid or extreme changes in humidity, oil, dirt, and similar adverse conditions. Equipment storage should be inspected periodically and the shaft rotated approximately every six months.

UNPACKING

After unpacking and inspection to see that all parts are in good condition, turn the shaft by hand to be sure there are no obstructions to free rotation. Equipment which has been in storage for sometime should be tested and relubricated prior to being put into service. Refer to "Test for General Condition" and "Lubrication" for procedure to be performed after extended storage.

Equipment with roller bearings is shipped with a shaft block at the opposite pulley end. In removing the shaft block, be sure to replace the bolts which are used to hold the shaft block in place during shipment.

WARRANTY

The Reliance Electric Company warrants workmanship and materials on this motor for a period of one year from date of shipment from the Reliance factory. In every case concerning warranty, contact the nearest Reliance Sales Office or authorized Reliance Service Shop.

INSTALLATION

INSPECTION

After the motor is unpacked, examine the nameplate data to see that it agrees with the power circuit to which it is to be connected. The motor is guaranteed to operate successfully with frequency not more than 5% and voltage not more than 10% above or below the nameplate data, or combined variation of voltage and frequency of not more than 10% above or below nameplate data. Efficiency, power factor and current may vary from nameplate data.

LOCATION

The motor should be installed in a location compatible with the motor enclosure and specified ambient.

LIFTING MEANS

When a lifting means is provided for handling the motor or generator, it should not be used to lift the motor or generator plus additional equipment such as gears, pumps, compressors, or other driven equipment. In the case of assemblies on a common base, any lifting means provided on the motor or generator should not be used to lift the assembly and base but, rather, the assembly should be lifted

by a sling around the base or by other lifting means provided on the base. In all cases, care should be taken to assure lifting in the direction intended in the design of the lifting means. Likewise, precautions should be taken to prevent hazardous overloads due to deceleration, acceleration or shock forces.

MOUNTING

Mount the motor on a foundation sufficiently rigid to prevent excessive vibration. Ball-bearing motors may be mounted with the feet at any angle. After carefully aligning the motor with the driven unit, bolt securely in place.

DRIVE

The pulley, sprocket, or gear used in the drive should be located on the shaft as close to the shaft shoulder as possible. Heat to install. Driving a unit on the shaft will damage the bearings.

Belt Drive: Align the pulleys so that the belt will run true; tighten the belt just enough to prevent slippage, any tighter will cause premature bearing failure. If possible, the lower side of the belt should be the driving side.

ROTATION

To reverse the direction of rotation, disconnect from power source and interchange any two of the three line leads for three phase motors, for two phase four wire, interchange the line leads on any one phase. For two phase three wire, interchange phase one and phase two line leads.

TEMPERATURE RISE

Under normal operating conditions, with the motor applied in accordance with the nameplate rating, the temperature rise will not exceed the proper limits. Always use a thermometer to determine the heating of a motor. The hand is not reliable in determining whether or not the motor is too hot.

TEST FOR GENERAL CONDITION

If the motor has been in storage for an extensive period or has been subjected to adverse moisture conditions, it is

best to check the insulation resistance of the stator winding with a megohmmeter.

If the resistance is lower than one megohm the windings should be dried in one of the two following ways:

1. Bake in oven at temperatures not exceeding 90°C. until insulation resistance becomes constant.
2. With rotor locked, apply low voltage and gradually increase current through windings until temperature measured with thermometer reaches 194°F. Do not exceed this temperature.

INITIAL LUBRICATION

"Reliance motors are shipped from the factory with the bearings properly packed with grease and ready to operate. Where the unit has been subjected to extended storage (6 months or more) the bearings should be relubricated prior to starting."

OPERATION

Due to the inherent characteristics of insulating materials, abnormally high temperatures shorten the operating life of electrical apparatus. The total temperature, not the temperature rise, should be the measure of safe operation. The class of insulation determines the maximum safe operating temperature. Aging of insulation occurs at an accelerated rate at abnormally high temperatures. A general rule for gauging the effect of excessive heat is that for each 10°C. rise in temperature above the maximum limit for the insulation, the life of the insulation is halved.

Unbalanced voltage or single-phase operation of polyphase machines may cause excessive heating and ultimate failure. It requires only a slight unbalance of voltage applied to a polyphase motor to cause large unbalance currents and resultant overheating.

Periodic checks of phase voltage, frequency and power consumption of a motor while in operation are recommended; such checks assure the correctness of frequency and voltage applied to the motor and yield an indication of the load offered by the apparatus which the motor drives. Comparisons of this data with previous no-load and full-load power demands will give an indication of the performance of the complete machine. Any serious deviations should be investigated and corrected.

Stator troubles can usually be traced to one of the following causes:

| | |
|---------------|------------------------|
| Worn bearings | Operating single phase |
| Moisture | Poor insulation |
| Overloading | Oil and dirt |

Dust and dirt are usually contributing factors. Some forms of dust are highly conductive and contribute materially to insulation breakdown. The effect of dust on the motor temperature through restriction of ventilation is a principal reason for keeping the windings clean.

Squirrel-cage rotors are rugged and, in general, give little trouble. The first symptom of a defective rotor is lack of torque. This may cause a slowing down in speed accompanied by a growling noise or perhaps failure to start the load.

This is caused by an open or high resistance joint in the rotor bar circuit. Such a condition can generally be detected by looking for evidence of localized heating.

MAINTENANCE

The fundamental principle of electrical maintenance is KEEP THE APPARATUS CLEAN AND DRY. This requires

periodic inspection of the motor, the frequency depending upon the type of motor and the service.

LUBRICATION (Cont'd)

RELUBRICATION PERIOD

For relubrication period, follow instruction plate on motor. If no plate is provided, relubricate per the following table:

| HP at 1800 RPM or Less | Standard Conditions | Severe Conditions | Extreme Conditions |
|------------------------|---------------------|-------------------|--------------------|
| 1/8 - 7 1/2 | 3 years | 1 year | 6 months |
| 10 - 40 | 1-2 years | 6 mo.-1 yr. | 3 months |
| 50 - 150 | 1 year | 6 months | 3 months |
| 200 & Up | 9 mo. - 1 yr. | 6 months | 3 months |
| All Motors | | | |
| Over 1800 RPM | 6 months | 3 months | 3 months |

Standard Conditions: Eight hours per day, normal or light loading, clean 100°F, maximum ambient.

Severe Conditions: Twenty-four hour per day operation, or shock loading, vibration, or dirt or dust 100-150°F, ambient.

Extreme Conditions: Heavy shock or vibration, dirt or dust.

For units with roller bearings divide above times by 3.

For motors operating in ambients between 0°F. and 120°F., use the following lubricants or their equal.

| | |
|---|-----------------------------|
| Standard Oil Co. of California - | Chevron BRB-2 * * |
| Standard Oil Co. of Indiana - | Stanobar No. 2 |
| Standard Oil Co. of New Jersey - | Andok C* and B |
| Master Lubricants Co. - | Lubriko M-6, M-21, and M-32 |
| New York and New Jersey Lubricant Co. - | F-925, S-58 and S-58-M |
| Gulf Refining Co. - | Precision No. 2 and No. 3 |
| The Texas Co. - | Starfak H, M, and No. 2 |
| Sinclair Refining Co. - | A. F. No. 2 |
| Tidewater Associated Oil Co. - | Tycol Armitage 0 |

Union Oil Co. of California -
Shell Oil Co. -
Socony Mobil Oil Co. -

Strona Ht - 1
Alvania No. 2
Mobilux Grease No. 2

* Not recommended for roller bearings.

** Standard lubricant supplied on new units.

For operation in other ambient temperatures, refer to motor tag 162214 or nearest Reliance Sales Office.

SLEEVE BEARINGS (FRAMES D-5000)

Motors with sleeve bearings are shipped from the factory without oil. Fill the reservoirs to the center of the oil level gauge (minimum) to 3/8 above center (maximum) with a good grade of turbine oil as recommended for electric motor and generator use by a reputable oil manufacturer.

THESE OILS MAY BE USED

Mobil DTE Light or Heavy Medium
Texaco Regal A or PC

Use Oil of the viscosity range indicated in the following table:

| Speed Range RMP | Recommended Viscosity Range SSU @ 100°F |
|-----------------|---|
| 1500 and below | 250-350 |
| 1800 and over | 100-200 |

Watch oil rings when first starting to see that they revolve.

Change oil every six months or more often under severe operation conditions.

CONSTANT LEVEL OILER

When supplied, refer to instructions accompanying the constant level oiler.

GENERAL

For special motors for use by United States Government including special specifications, master plans, etc., refer to the applicable master plans and specifications involved.

0133131

MATERIAL

HEAT TREAT

CARB.

HARDEN
HARDEN
QUENCH
QUENCHDRAW
HARDNESSUNLESS OTHERWISE NOTED: ALL DIMENSIONS IN INCHES; MACHINING DIMENSIONS LIMITED TO FRACTIONAL $\pm 1/32$,
DECIMAL $\pm .005$, ANGULAR $\pm 1/2^\circ$; STRUCTURAL DIMENSIONS LIMITED TO $\pm 1/16$. DO NOT SCALE THIS DRAWING.

071307

REVISIONS

NET 424
2-28-74E.O. NBQ 272
DATE 5-16-72

FAN STORAGE INSTRUCTIONS

- 1) Fans must be stored in a storage area which is dry, protected from low temperature, rapid and extreme changes in humidity. The storage area must also be free from any vibration.
- 2) For extended storage and negotiated extended warranty, the following instructions must be followed:

When fans are in storage longer than six (6) months, the rotors are to be rotated manually at least every six (6) months. Additional grease is to be added at this time to purge some of the grease in the bearing grease cavity. This is done to ensure that the bearings are always coated with lubricant.

If motors are equipped with space heaters, they are to be made operable.

Motor windings are to be megged at time of storage and at time of removal from storage. The resistance reading must not have dropped more than 50% of the initial reading. If the drop is below 50%, then the fan motor must be dried electrically or mechanically.

- 3) At time of removal from storage, fan motor bearings are to be purged to make sure that an ample supply of fresh grease is in each bearing grease cavity.

PATTERN NO.

SIMILAR TO

FINISH SYMBOLS

| SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION |
|--------|---------------------|--------|----------------------|
| A | 4 PRECISION POLISH | G | 250 ROUGH MACH. |
| B | 8 FINE POLISH | H | 500 HEAVY ROUGH |
| C | 16 COARSE POLISH | K | 1000 EX. HEAVY ROUGH |
| D | 32 GREASE OR EQUIV. | | |
| E | 63 BACH. | | |
| F | 125 BACH. | | |

JOY MANUFACTURING CO.
PLANT LOCATION AS INDICATED BELOW

| | |
|---------------------|----------------------|
| BUFFALO, N. Y. | NEW PHILADELPHIA, O. |
| CLAREMONT, N. H. | |
| FRANKLIN, PA. | |
| GALT, ONTARIO, CAN. | |
| GREENOCK, SCOTLAND | |
| MICHIGAN CITY, IND. | |

FAN STORAGE INSTRUCTIONS

| | | | |
|---------------|--------|--------|-----------|
| DR. BY | TR. BY | CK. BY | APPRO. BY |
| DATE | DATE | DATE | DATE |
| SUPERSEDES | | | |
| SUPERSEDED BY | | | |
| REPLACES | | | |
| REPLACED BY | | | |
| SCALE | | | CLASS |

FF 13340

Installation & Maintenance
Manual

(Same as in U258759)

Bulletin No.
NP-403