

COOLING DESIGN ANALYZER FOR METAL ENCLOSURES

1. Calculate TOTAL EXPOSED EXTERIOR ENCLOSURE SURFACE AREA in SQUARE FEET and set at Arrow.

ENCLOSURE AREA
SQUARE FEET



2. Locate the TEMPERATURE DIFFERENCE (°F) between enclosure interior and surroundings.

TEMPERATURE DIFFERENCE °F

UNINSULATED

* 1/2" INSULATED

TEMPERATURE DIFFERENCE °F

* 1" INSULATED

* 2" INSULATED

TEMPERATURE DIFFERENCE °F

HEAT FLOW GAIN OR LOSS (WATTS)

ELEC. HEAT INPUT (WATTS)

COOLING REQUIREMENT (WATTS)

3. Read matching HEAT FLOW THRU WALLS on slide next to your WALL TYPE.

* Note: K for insulation is 0.02 BTU/hr.-ft.-°F

4. Find value from 3 on HEAT FLOW scale. This value is positive if SURROUNDING TEMP. is higher than DESIRED ENCLOSURE TEMP.

5. Calculate ELEC. HEAT INPUT to INTERNAL EQUIP. (volts x amps). Align this value on slide with HEAT FLOW on scale.

6. Read TOTAL COOLING REQUIREMENTS in WATTS.

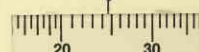
WATTS

WATTS

WATTS

(OVER) FOR EQUIPMENT SELECTION

COOLING DESIGN SLIDE RULE FOR ELECTRONIC ENCLOSURES (NEMA 12)



ENCLOSURE SURFACE AREA SQUARE FEET ①

ENCLOSURE TEMPERATURE DIFFERENCE FROM AMBIENT

UNINSULATED

1" INSULATED

ENCLOSURE TEMPERATURE DIFFERENCE FROM AMBIENT

③ TOTAL COOLING REQUIRED WATTS

AIR CONDITIONER MODEL NUMBER

AHP 3000

AHP 1700

AHP 1000FF

AHP 300FF

ENCLOSURE TEMPERATURE DIFFERENCE FROM AMBIENT °F / °C

-46

-45

-44

-43

-40

-38

-34

-30

-25

-20

-25.5

-25

-24

-23

-22

-20

-18

-16

-14

-10

AHP 3000

AHP 1700

AHP 1000FF

AHP 300FF

INSTRUCTIONS

1. Calculate total exposed exterior ENCLOSURE SURFACE AREA in square feet and set at Arrow.
2. Locate the required ENCLOSURE TEMPERATURE DIFFERENCE FROM AMBIENT between enclosure interior and surroundings and read matching heat flow thru walls. This value is negative if enclosure temperature is higher than surrounding temperature.
3. Add internal electrical heat load to heat flow thru walls and align TOTAL COOLING REQUIRED at Arrow.
4. Locate required ENCLOSURE TEMPERATURE DIFFERENCE FROM AMBIENT and select model number which satisfies condition. If condition falls between two models, unit on left will fulfill requirements.

COOLING DESIGN SLIDE RULE FOR ELECTRONIC ENCLOSURES (NEMA 12)



ENCLOSURE SURFACE AREA SQUARE FEET ①

ENCLOSURE TEMPERATURE DIFFERENCE FROM AMBIENT-°F

UNINSULATED

1" INSULATED

ENCLOSURE TEMPERATURE DIFFERENCE FROM AMBIENT-°F

③ TOTAL COOLING REQUIRED WATTS

AIR CONDITIONER MODEL NUMBER
AIR COOLED

AHP 1700

AHP-1000FF
AHP-1200X

AHP-300FF
AHP-301FF

ENCLOSURE TEMPERATURE DIFFERENCE FROM AMBIENT OR LIQUID INPUT* °F

-60

-55

-50

-45

-40

-30

-20

-10

0

AIR CONDITIONER MODEL NUMBER
LIQUID COOLED

LHP 1700FF

LHP 800FF

LHP 300FF

INSTRUCTIONS

1. Calculate total exposed exterior ENCLOSURE SURFACE AREA in square feet and set at Arrow.
2. Locate the required ENCLOSURE TEMPERATURE DIFFERENCE FROM AMBIENT between enclosure interior and surroundings and read matching heat flow thru walls. This value is negative if enclosure temperature is higher than surrounding temperature.
3. Add internal electrical heat load to heat flow thru walls and align TOTAL COOLING REQUIRED at Arrow.
4. Locate required ENCLOSURE TEMPERATURE DIFFERENCE FROM AMBIENT OR LIQUID INPUT and select model number which satisfies condition. If condition falls between two models, unit on left will fulfill requirements.

*Values are approximate. Please refer to individual performance curves for actual values.

BORG-WARNER AIR CONDITIONER SIZING GUIDE

COOLING CAPACITY
(WATTS)

7. Set TOTAL COOLING REQUIREMENTS
in WATTS (obtained in #6) at Arrow.
(1 Watt = 3.4 BTU/hr.)



8. Subtract surrounding air temperature
from desired enclosure temperature.
Watch signs (+, -). Select MODEL
NUMBER which satisfies condition.
IF CONDITION FALLS BETWEEN TWO
MODELS, UNIT ON LEFT WILL FULFILL
REQUIREMENTS.

ThermoElectrics BORG X WARNER®

the experts in solid state cooling

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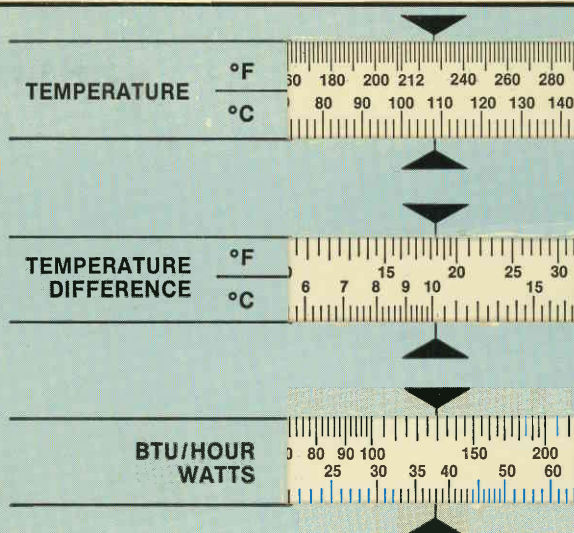
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INSTRUCTIONS

1. Set known value at Arrow.
2. Read equivalent at opposite Arrow.



Model AHP-300FF
with cold side fins and fan



Model AHP-1000FF
with cold side fin and fan



Model AHP-3000



Model AHP-1700



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INSTRUCTIONS

1. Set known value at Arrow.
2. Read equivalent at opposite Arrow.



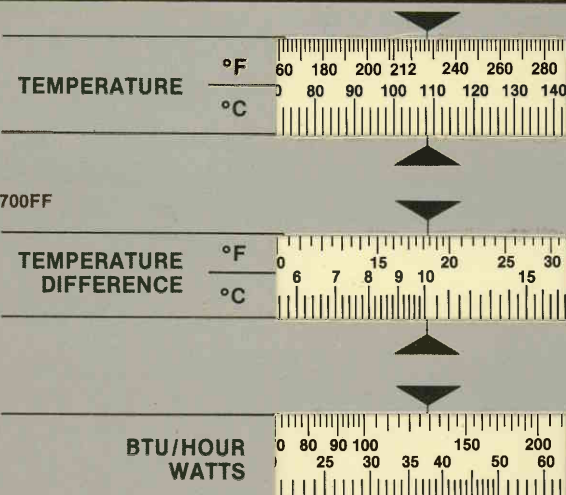
Model LHP-1700FF



Model LHP-800FF



Model LHP-300FF



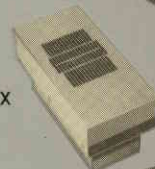
Model AHP-1700



Model AHP-1000FF
with cold side fin and fan



Model AHP-1200X



Model AHP-301FF



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