

SERIES PRM

These units are modular ferroresonant voltage stabilizers which obtain their source-isolated, overload-protected output from Kepco's proprietary transformer, Flux-O-Tran. This design lends itself to custom volt-ampere combinations; consult factory.

The low cost, highly dependable ferroresonant stabilizing technique provides extraordinary isolation from a wide variety of source noise. The d-c output is inherently short-circuit proof and cannot expose delicate loads to over-voltage hazards, see Figure 7, page 119. Hence no crowbar, fuses, or bounding circuits are needed in the output. Conventional input circuit protection is required.

Ferroresonant power supplies use no noise-producing switches or oscillators. Voltage setting is independent of delicate control settings or diode references, and requires no comparators, references, or limiters. Efficiency is 65-75%. Many models are UL recognized: UL 114 and 478. Consult factory.



PRM can be individually installed or may be combined into a custom power assembly for multi-output requirements. Please see pages 131-135 for details on Kepco's Power Assembly Program.



PRM MODEL TABLE

| MODEL | d-c OUTPUT (2) For custom Volt/Ampere combinations, consult factory | | LOAD EFFECT (1) VOLTS INCREASE | | | LOAD EFFECT CURVE See Pg 118 | RIPPLE (max) rms VOLTS |
|---------------------------------------|--|--------------|-----------------------------------|--------------|-------------|---------------------------------|------------------------|
| | VOLTS | AMPS | 100-50% LOAD | 100-25% LOAD | 100-0% LOAD | | |
| 120 WATTS (Size B) | | | | | | | FIG. 1 |
| PRM 12-10 | 12 | 0-10 | 0.6 | 1.0 | 1.3 | 2 | 0.3 |
| PRM 24-5 | 24 | 0-5 | 1.0 | 1.7 | 2.1 | 3 | 0.3 |
| PRM 120-1 | 120 | 0-1 | 4.6 | 7.6 | 9.4 | 5 | 0.3 |
| 180 WATTS (Size A) | | | | | | | FIG. 1 |
| PRM 12-15 | 12 | 0-15 | 0.6 | 1.0 | 1.2 | 1 | 0.4 |
| PRM 24-8 | 24 | 0-8 | 0.7 | 1.2 | 1.4 | 2 | 0.3 |
| PRM 28-7 | 28 | 0-7 | 0.7 | 1.2 | 1.6 | 2 | 0.4 |
| PRM 120-1.5 | 120 | 0-1.5 | 2.2 | 3.6 | 5.8 | 4 | 0.3 |
| 280 WATTS (Size AA) | | | | | | | FIG. 4 |
| PRM 8.5-30 | 8.5 | 0-30 | 0.5 | 0.8 | 0.9 | 1 | 0.3 |
| PRM 12-23 | 12 | 0-23 | 0.5 | 0.8 | 1.1 | 2 | 0.3 |
| PRM 15-18 | 15 | 0-18 | 0.7 | 1.1 | 1.2 | 3 | 0.3 |
| PRM 24-12 | 24 | 0-12 | 0.8 | 1.25 | 1.5 | 4 | 0.3 |
| PRM 28-10 | 28 | 0-10 | 0.8 | 1.25 | 1.6 | 5 | 0.3 |
| PRM 48-6 | 48 | 0-6 | 1.2 | 1.8 | 2.5 | 6 | 0.4 |
| PRM 120-2.4 | 120 | 0-2.4 | 2.4 | 4.0 | 5.5 | 7 | 0.4 |
| 300 WATTS DUAL OUTPUT (Size C) | | | | | | | FIG. 1 |
| PRM 2X12-12 | 12, 12 | 0-12, 0-12 | 0.5 | 0.7 | 1.0 | 1 | 0.3 |
| PRM 2X15-10 | 15, 15 | 0-10, 0-10 | 0.5 | 1.0 | 1.0 | 1 | 0.3 |
| PRM 2X24-6 | 24, 24 | 0-6, 0-6 | 0.6 | 1.0 | 1.0 | 2 | 0.2 |
| PRM 2X60-2.5 | 60, 60 | 0-2.5, 0-2.5 | 1.0 | 1.7 | 2.0 | 3 | 0.2 |
| 450 WATTS (Size C) | | | | | | | FIG. 1 |
| PRM 12-35 | 12 | 0-35 | 0.7 | 1.2 | 2.0 | 1 | 0.06 |
| PRM 24-20 | 24 | 0-20 | 0.8 | 1.3 | 2.7 | 2 | 0.06 |
| PRM 28-17 | 28 | 0-17 | 0.7 | 1.3 | 2.8 | 2 | 0.06 |
| PRM 48-10 | 48 | 0-10 | 0.9 | 1.4 | 3.8 | 3 | 0.06 |

(1) Measured at 115V a-c source.

(2) Accuracy ±2% or 0.25V set at 115V a-c, full load, and 30°C. The initial (cold) output is 1% higher. In dual output models, interaction between sections produces an extra +2% change when one section is unloaded from maximum to zero.

PRM MODEL TABLE

| MODEL | VOLTS (1) | | | | | AMPS | | | | | LOAD EFFECT (1) VOLTS INCREASE | | | LOAD EFFECT CURVE VOLTS | RIPPLE (max) rms |
|--------------------------|-----------|-------|--------------|-------|-------|------|------|-------------|------|------|-----------------------------------|--------------|-------------|----------------------------|------------------|
| | -B | -A | NOM | +A | +B | -B | -A | NOM+B | +A | LOAD | 100-50% LOAD | 100-25% LOAD | 100-0% LOAD | | |
| 60 WATTS (Size D) | | | | | | | | | | | | | | | |
| PRM 5-10 | 4.2 | 4.6 | 5.0 | 5.4 | 5.8 | 12.0 | 11.0 | 10.0 | 9.3 | 8.6 | 0.5 | 0.8 | 1.0 | 6 | 0.50 |
| PRM 8-7 | 7.2 | 7.6 | 8.0 | 8.4 | 8.8 | 7.8 | 7.5 | 7.0 | 6.7 | 6.4 | 0.6 | 0.9 | 1.0 | 6 | 0.33 |
| PRM 12-5 | 10.4 | 11.2 | 12.0 | 12.8 | 13.6 | 5.7 | 5.4 | 5.0 | 4.7 | 4.5 | 0.8 | 1.2 | 1.5 | 7 | 0.33 |
| PRM 15-4 | 13.4 | 14.2 | 15.0 | 15.8 | 16.6 | 4.5 | 4.2 | 4.0 | 3.8 | 3.6 | 0.9 | 1.3 | 1.8 | 8 | 0.33 |
| PRM 21-2.9 | 17.9 | 19.4 | 21.0 | 22.6 | 24.2 | 3.4 | 3.1 | 2.9 | 2.7 | 2.6 | 1.3 | 2.1 | 2.2 | 9 | 0.33 |
| PRM 26-2.3 | 22.0 | 24.0 | 26.0 | 28.0 | 30.0 | 2.7 | 2.5 | 2.3 | 2.1 | 2.0 | 1.3 | 2.1 | 2.7 | 10 | 0.33 |
| PRM 36-1.7 | 32.0 | 34.0 | 36.0 | 38.0 | 40.0 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.7 | 2.7 | 3.7 | 11 | 0.33 |
| PRM 240-0.25 | 220.0 | 230.0 | 240.0 | 250.0 | 260.0 | 0.27 | 0.26 | 0.25 | 0.24 | 0.23 | 6.0 | 10.8 | 12.5 | 12 | 0.33 |

(1) Measured at 115V a-c source.

The size D, Series 60 PRM modules are equipped with an adjustable tap arrangement on the output winding of the ferroresonant transformer selecting two increments of voltage above the nominal output and two increments of voltage below the nominal output. In the table of voltages, the nominal (center) tap is indicated by the bold face type.

The table of currents has a corresponding bold face column showing the current rating at the nominal voltage. The two adjacent columns on either side of the nominal current correspond to the respective voltage tap increments (A, B). The load effect is specified for the nominal output voltage.

PRM GENERAL SPECIFICATIONS

| SPECIFICATION | RATING/DESCRIPTION | CONDITION |
|----------------------------------|--|---|
| INPUT | | |
| Voltage | 100-130V a-c(1) | Single phase |
| Current | See Table 1 | Maximum load, 115V a-c |
| Frequency | 60Hz \pm 5%(1) | |
| OUTPUT | | |
| d-c Output | Ferroresonant | |
| Type of Stabilizer | Voltage stabilizer | Fixed |
| Current Limiting | ~150% of rated load current | 115V a-c source voltage |
| Isolation Voltage | 600V (d-c or peak) Dual output 60V d-c peak | Output to ground |
| Leakage Current Output to Ground | 50 microamperes 500 microamperes | rms at 115V a-c p-p at 115V a-c |
| Series Connection | 600V | Max. voltage off ground. On dual models, the maximum potential between outputs is 60V (d-c or peak). |
| Parallel Connection | Current sharing. Allow for 10% imbalance. | Possible for identical models (or halves of a dual supply) |
| OVP | Not required | Inherent in ferroresonant design |
| DYNAMICS | | |
| Transient Recovery | <400 milliseconds | 50-100% step-load current |
| Output Impedance | May be derived from tabulated load effect calculations ($\Delta E_o/\Delta I_o$). Above 10KHz, add the equivalent of 0.5 microhenries series inductance. | |
| MECHANICAL | | |
| Input & Output Connections | Barrier strip on one surface | All models |
| Cooling | Full output current is delivered at -20 to +55°C, no derating or external heat sink is required | Natural convection |
| Dimensions | See outline drawings | |
| Finish | Blue anodized housing | Sizes B & D |
| | Royal blue epoxy paint | Sizes A, AA, & C enclosures |
| Weight | See outline drawings | |

(1) PRM operate at 115V a-c 60Hz only. For models to operate at 230V a-c 50Hz, consult factory. For rack adapter panels, see page 120.

PRM STATIC SPECIFICATIONS

| SPECIFICATION | RATING/DESCRIPTION | CONDITION |
|-------------------------|---------------------------------|--|
| Accuracy | $\pm 2\%$ | Nominal source +30°C after ½ hour warmup |
| | $\pm 1\%$ (1) higher | Cold start |
| Source Effect | $\pm 1\%$ (1) | For loads between 25-100% |
| | $\pm 1.5\%$ | For loads between 0-25% |
| Source Frequency Effect | 1-1.5% | For 1% change in frequency |
| Temperature Effect | 0.05% per °C | 0-50 °C |
| Load Effect | See Fig. 1, 2, 4 page 118 | |
| Ripple & Noise | See Fig. 8 page 119 | |
| Time Effect | 1% or 0.1V whichever is greater | 8-hour drift |
| Efficiency | 65-75% | Max load |
| Temperature | -40°C to +85°C | Storage |
| | -20°C to +55°C | Operating |

(1) Size C, 450W models. $\pm 0.5\%$ typical.

TABLE 1
Input Current, Input Power, 115V a-c

| MODEL GROUP | AMPS, rms | WATTS |
|----------------|-----------|-------|
| 60W (Size D) | 1.1 | 100 |
| 120W (Size B) | 2 | 190 |
| 180W (Size A) | 3 | 280 |
| 280W (Size AA) | 4 | 360 |
| 300 (Size C) | 5 | 465 |
| 450W (Size C) | 6.5 | 600 |



Model PRM 21-2.9
60 Watts Size D
Available with case only



Model PRM 12-10
120 Watts Size B
Available with case only



Model PRM 24-8
180 Watts Size A
Optional cover, CA 200

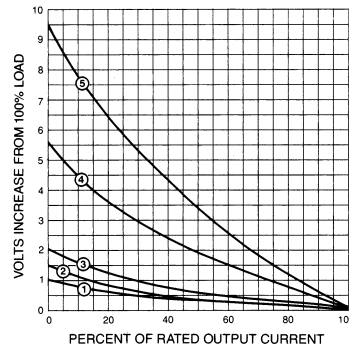


Model PRM 15-18
280 Watts Size AA
Optional cover, CA 200

Series PRM Load Effect

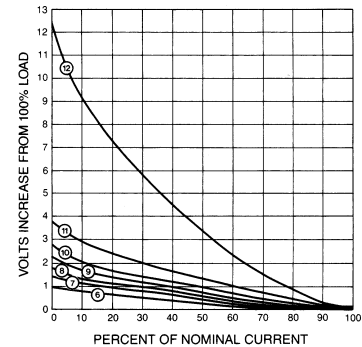
These curves represent typical performance parameters. Maximum specified values are given in the model tables. Use these curves to estimate the load effect for your load requirements.

FIGURE 1



TYPICAL LOAD EFFECT CURVE FOR SIZES "A" (180W), "B" (120W) AND "C" (300W) PRM MODELS

FIGURE 2



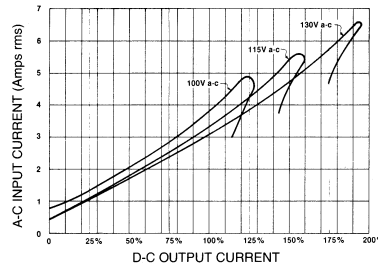
TYPICAL LOAD EFFECT CURVE FOR SIZE "D" (60W) PRM MODELS



Model PRM 2X12-12
300 Watts Size C
Optional cover, CA 300

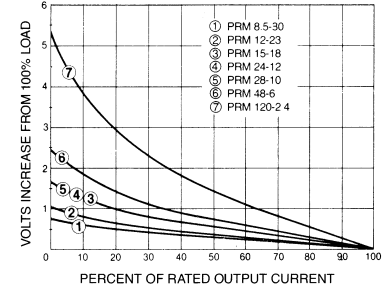
PRM 280 SERIES SIZE AA

FIGURE 3



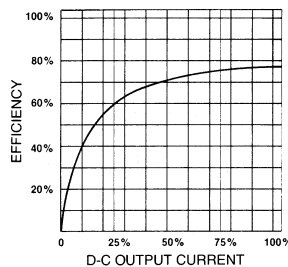
A-C INPUT CURRENT VS. LOAD CURRENT FOR LOW, NOMINAL AND HIGH INPUT SOURCE

FIGURE 4



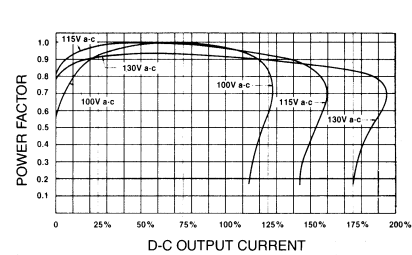
TYPICAL LOAD EFFECT AS A FUNCTION OF LOAD CURRENT

FIGURE 5



EFFICIENCY VS. LOAD CURRENT

FIGURE 6



POWER FACTOR VS. LOAD CURRENT FOR LOW, NOMINAL AND HIGH INPUT SOURCE



Model PRM 24-20
450 Watts Size C
Optional cover, CA 300

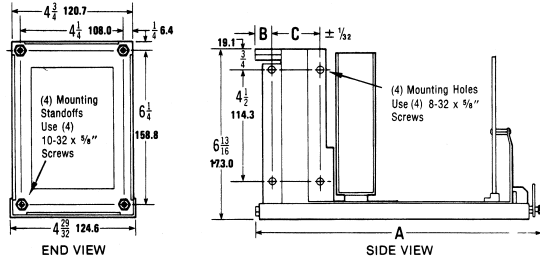
NOTE:

The end points of the curves in Figures 3 and 6 represent short-circuit conditions.



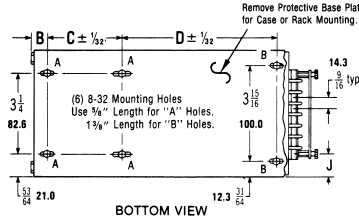
WEIGHTS

Size AA – 24lbs (10.9Kg)
 Size A – 24lbs (10.9Kg)
 Size C – 36lbs (16.4Kg)



SIZE AA, A, & C UNCASSED MODELS

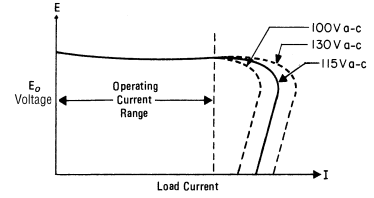
| MODELS | A | B | C | D | J |
|-----------------------------|----------------------------------|--------------------------------|-------------------------------|--------------------------------|--------------------------------|
| PRM SIZE "A" 180 Series | 10 ¹³ / ₁₆ | 5/8 | 2 ¹ / ₂ | 6 ¹ / ₂ | 1 ¹ / ₁₆ |
| PRM SIZE "AA" 280 Series | 10 ²⁹ / ₃₂ | 1 ¹ / ₁₆ | 2 ¹ / ₂ | 6 ¹ / ₂ | 48/64 |
| PRM SIZE "C" Dual Output | 15 ¹ / ₈ | 1 ¹ / ₁₆ | 3 ¹ / ₂ | 9 ⁹ / ₁₆ | 1/2 |
| PRM SIZE "C" 450 Series | 15 | 1 ³ / ₁₆ | 3 ¹ / ₂ | 9 ⁹ / ₁₆ | 1/2 |



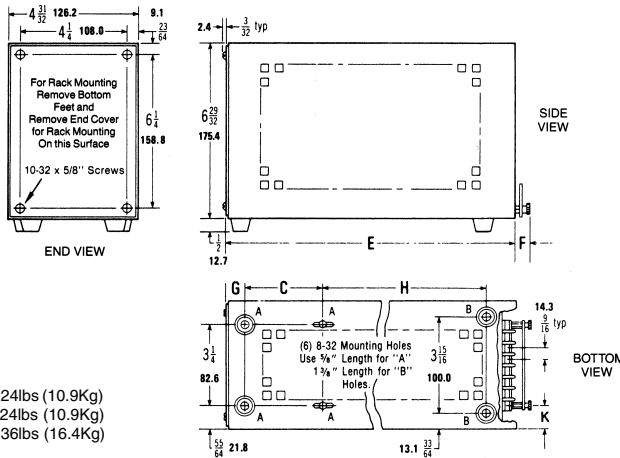
OUTLINE DIMENSIONAL DRAWINGS

Fractional dimensions in light face type are in inches.
 dimensions in bold face type are in millimeters.
 Tolerance: ± 1/64" (0.4) between mounting holes
 ± 1/32" (0.8) other dimensions

FIGURE 7



TYPICAL OUTPUT VOLTAGE CHARACTERISTIC AS A FUNCTION OF LOAD CURRENT AND A-C INPUT VOLTAGE



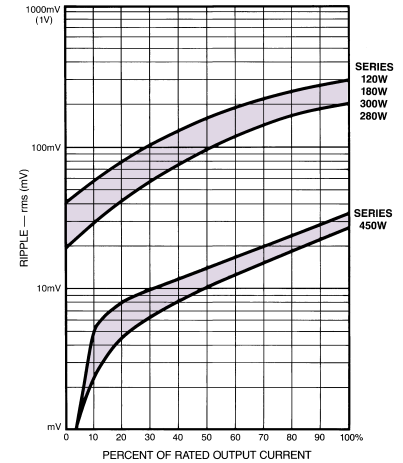
WEIGHTS

Size AA – 24lbs (10.9Kg)
 Size A – 24lbs (10.9Kg)
 Size C – 36lbs (16.4Kg)

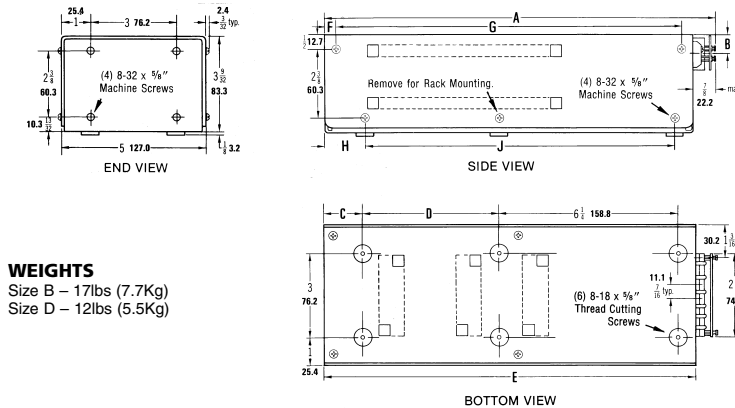
SIZE AA, A & C CASSED MODELS

| MODELS | C | E | F | G | H | J |
|-----------------------------|-------------------------------|---------------------------------|-----|--------------------------------|--------------------------------|--------------------------------|
| PRM SIZE "A" 180 Series | 2 ¹ / ₂ | 10 ⁷ / ₁₆ | 1/2 | 1 ¹ / ₁₆ | 6 ¹ / ₂ | 5 ⁵ / ₆₄ |
| PRM SIZE "AA" 280 Series | 2 ¹ / ₂ | 10 ¹ / ₈ | 1/2 | 3/4 | 6 ¹ / ₂ | 5 ¹ / ₆₄ |
| PRM SIZE "C" Dual Output | 3 ¹ / ₂ | 14 ⁹ / ₁₆ | 5/8 | 3/4 | 9 ⁹ / ₁₆ | 39/64 |
| PRM SIZE "C" 450 Series | 3 ¹ / ₂ | 14 ¹ / ₂ | 5/8 | 1 ³ / ₁₆ | 9 ⁹ / ₁₆ | 1/2 |

FIGURE 8



TYPICAL OUTPUT RIPPLE VS. LOAD CURRENT CURVES



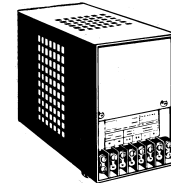
WEIGHTS

Size B – 17lbs (7.7Kg)
 Size D – 12lbs (5.5Kg)

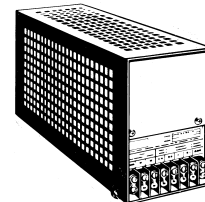
SIZE B & D MODELS (available cased only)

| MODELS | A | B | C | D | E | F | G | H | J |
|----------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|----|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| PRM SIZE "B" 120 Series | 13 ⁷ / ₈ | 1 ⁹ / ₃₂ | 1 ³ / ₈ | 4 ³ / ₄ | 13 | 3/8 | 12 ¹ / ₄ | 1 ³ / ₈ | 11 |
| PRM SIZE "D" 60 Series | 10 ⁷ / ₈ | 2 ¹ / ₃₂ | 1 ³ / ₁₆ | 2 ⁵ / ₁₆ | 10 | 1 ¹ / ₃₂ | 9 ⁹ / ₁₆ | 1 ³ / ₁₆ | 8 ⁹ / ₁₆ |

Cases for Series PRM



CA 200
 Protective cover for PRM Size A and Size AA model



CA 300
 Protective cover for PRM Size C model

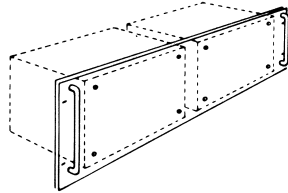
Rack Adapters for PRM Models

These models adapt Kepco ferroresonant power supplies to the standard 19" wide equipment rack or cabinet. Panel mounting holes are pre-drilled (standard E.I.A. pattern). Finish: Light gray, color 26440, Fed. Std. 595.

Dimensions in light face type are in inches, **dimensions in bold face type are in millimeters**. Weight in light face type is English measure, **bold face type is metric measure**.

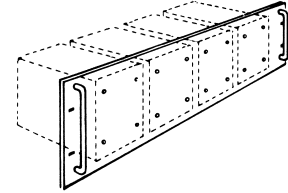
RA 8-2

Rack adapter for (2)
PRM size A-180 series or
size AA-280 series or
PRM size C; 300 series
(dual output) or 450 series.
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



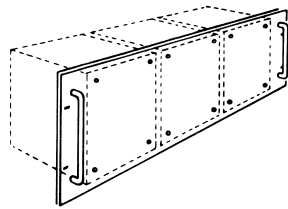
RA 16-4

Rack adapter for (4)
PRM size B-120 series
or size D-60 series.
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



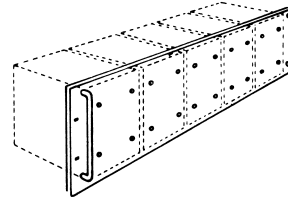
RA 9-3

Rack adapter for (3)
PRM size A-180 series or
size AA-280 series or
PRM size C; 300 series
(dual output) or 450 series.
Height: $6\frac{3}{32}$ (**177.0**)
Ship. Weight: 4 lbs. (**1.8 kg.**)



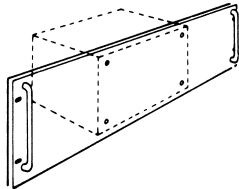
RA 17-5

Rack adapter for (5)
PRM size B-120 series
or size D-60 series.
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



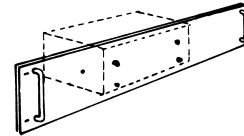
RA 10-1

Rack adapter for (1)
PRM size A-180 series or
size AA-280 series.
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



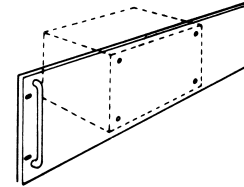
RA 30-1

Rack adapter for (1)
PRM size D-60 series.
Height: $3\frac{15}{32}$ (**88.1**)
Ship. Weight: 2 lbs. (**0.9 kg.**)



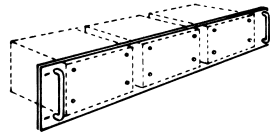
RA 31-1

Rack adapter for (1)
PRM size C-300 series
(dual output).
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



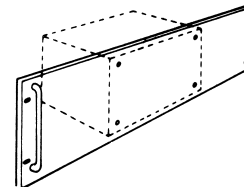
RA 14-3

Rack adapter for (3)
PRM size B-120 series or
size D-60 series.
Height: $3\frac{15}{32}$ (**88.1**)
Ship. Weight: 2 lbs. (**0.9 kg.**)



RA 38-1

Rack adapter for (1)
PRM size C-450 series.
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



RA 15-1

Rack adapter for (1)
PRM size B-120 series.
Height: $3\frac{15}{32}$ (**88.1**)
Ship. Weight: 2 lbs. (**0.9 kg.**)

