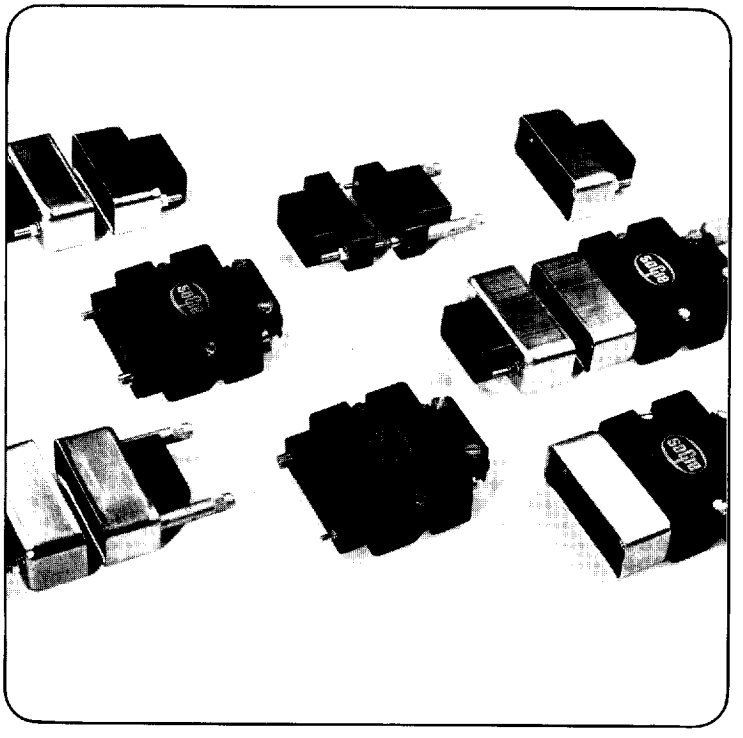
SUMMARY



MMC Series

NF - C - 93 426
HE 621 - 622 models
MIL - C - 28 748
GAM T 1 List

INTRODUCTION

The Radiall MMC series have been designed in response to the majority of connection problems of cabling installation, internal and external on electrical and electronic equipment.

They are made up of a rectangular insulating block which accepts equally male or female contacts fitted with different types of wires and coaxial cables. A large number of accessories : hoods with cable clamp, contact protection shrouds, locking. . . make it possible for this connector to be made up uniquely to correspond to the users exact requirements.

Of simple construction but highly reliable, MMC offer enormous adaptability of use with the help of the range of accessories. This has allowed the Radiall MMC series to be widely approved for use in all civil and military fields such as computers, telecommunications, medical, aeronautical, naval, nuclear, etc. . .

All of the contacts are removable in order to facilitate replacement, repairs or modification to circuits.

A range of robust manual and automatic tooling with easy-to-follow instructions answers straight-forward connector/cable assembly. It conforms to French specification NF-C-93 426 HE 621 - 622.

DESCRIPTION

BLOCKS

A pair of MMC connectors comprises :

a block « P » (plug)
a block « R » (receptacle)

of identical dimensions but distinguished by :

- the engraved letters « P » or « R » on the mating faces,
- the contact identification and position of the cavities is a mirror image of the mating half.

Each block « P » and « R » must be fitted with male and female guides or jackscrews.

- on the block P female guide beside hole 1 or A
- on the block R male guide beside hole 1 or A (in order to prevent mismatching and misalignment).

Pins and/or sockets for equipment wire, twisted pairs and coaxial cable can be housed in either plug or receptacle giving a multitude of connection possibilities

Contact arrangements : 14 - 20 - 26 - 34 - 42 - 50 - 75 - 104 - 158 and 208 ways.

CONTACTS

The wire contacts size 16 (pin dia 1.58 mm) are for crimping to AWG 16 to 28.

Contacts for wire wrapping are available with tails 0.6 x 0.6 or 1.2 x 1.2 square.

The coaxial contacts are for crimping to 2 mm and 2.6 mm coaxial cables and AWG 24 to 30 twisted pairs.

For all other contact terminations : CONSULT US.

No tool is necessary for the insertion, the extraction is from the rear using an extraction tool introduced by the mating face of the connector.

ACCESSORIES

Each contact arrangement is available with a range of accessories such as :

- rack guides
- fixed and rotating jackscrews
- 2-part metal hoods to facilitate access to the wiring
- hoods for sheathed cable harnesses
- shrouds (male and female) to protect the contacts with or without polarising slots
- cable clamps.

GENERAL CHARACTERISTICS

DESCRIPTION		MATERIAL	PLATING
Insulator		Glass filled phenolic	
Equipment wire contacts	Body	Copper alloy	Gold over nickel
	Spring		Gold over nickel
	Retention clip		Nickel
Coaxial contacts	Body & centre Contacts	Copper alloy	Gold over nickel
	Ferrule	Copper alloy	Nickel
	Insulator	PTFE	
Rack guide		Brass	Nickel plated
Jackscrews		Stainless steel	
Shroud		Steel	Yellow chromate cadmium plated
Hood		Zinc or aluminium alloy	Painted
Cable clamp		Stainless steel	

ELECTRICAL DATA

EQUIPMENT WIRE CONTACTS

Wire section	AWG	16	18	20	22	24	26	28
	mm^2	1,34	0,93	0,60	0,38	0,22	0,14	0,093
Current rating (Amp.)		13	10	7,5	5	3	2	1
Maximum Ø on insulation					3,10			
Contact resistance					$\leqslant$ 5 mΩ			

COAXIAL CONTACTS

- Nominal impedance : 50 Ω
- Operating frequency : 0 to 1 000 MHz
- Dielectric withstanding voltage : 600 V r.m.s. at 50 Hz (at sea level)
- Insulation resistance : $\geqslant$ 5 000 MΩ
- Contact resistance : $\leqslant$ 12 mΩ

Frequency	0 - 200 MHz	200 - 500 MHz	500 - 1000 MHz
Voltage standing wave ratio (VSWR)	1.10	1.15	1.40
Insertion loss by pair (dB)	$<$ 0.015	$<$ 0.025	$<$ 0.025

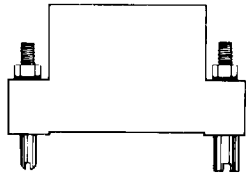
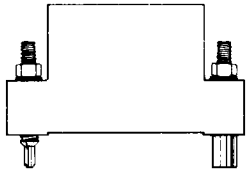
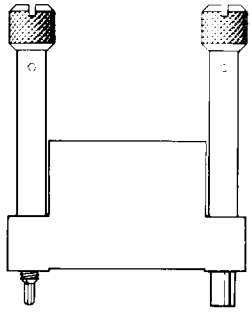
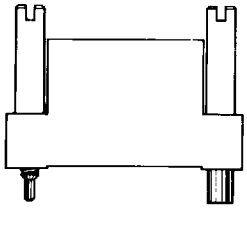
CONNECTORS

- Insulation resistance : $>$ 5 000 MΩ
- Dielectric withstanding voltage : 1 500 V r.m.s. at 50 Hz (at sea level)

MECHANICAL and ENVIRONMENTAL DATA

- Retention of the contact in moulding : $>$ 50 N
- Coupling torque per contact pair : $\geqslant$ 3,4 N
- Durability : 500 matings
- Vibration : 20 g from 80 to 2 000 Hz
- Shock : 50 g
- Temperature range : -55° C $+125^{\circ}$ C
- Damp heat : 21 days
- Salt spray : 48 H

SELECTOR CHART

Accessories / Connectors P or R / Mounts with	Top entry strain relief clamp	Hood top entry	Hood side entry
Rack guides 	▲ ▲ ▲	▲ ▲ ▲	▲ ▲ ▲
Fixed jackscrews 	▲ ▲ ▲	▲ ▲ ▲	▲ ▲ ▲
Long rotating jackscrews 	▲ ▲ ▲	▲ ▲ ▲	▲ ▲ ▲
Short rotating jackscrews 			

SELECTOR CHART

Female shroud	Male shroud	ARRANGEMENTS						
		14	20	26	34	42	50	75
		●	●	●			●	●
		●	●	●	●	●	●	●
								●
▲		●	●	●	●		●	●
	▲	●	●	●	●		●	●
▲		●	●	●			●	●
	▲	●	●	●			●	●
▲		●	●	●	●		●	●
	▲	●	●	●	●		●	●
▲								●
	▲							●
		●	●	●			●	●
		●	●	●	●	●	●	●
								●
▲		●	●	●	●		●	●
	▲	●	●	●	●		●	●
▲		●	●	●			●	●
	▲	●	●	●			●	●
▲		●	●	●	●		●	●
	▲	●	●	●	●		●	●
▲								●
	▲							●
▲		●	●	●	●		●	●
	▲	●	●	●	●		●	●

Example : Connector P with rack guides, mounts with (▲) hood top entry and male shroud. This assembly is available (●) in the following arrangements 14 - 20 - 26 - 34 - 50 - 75.

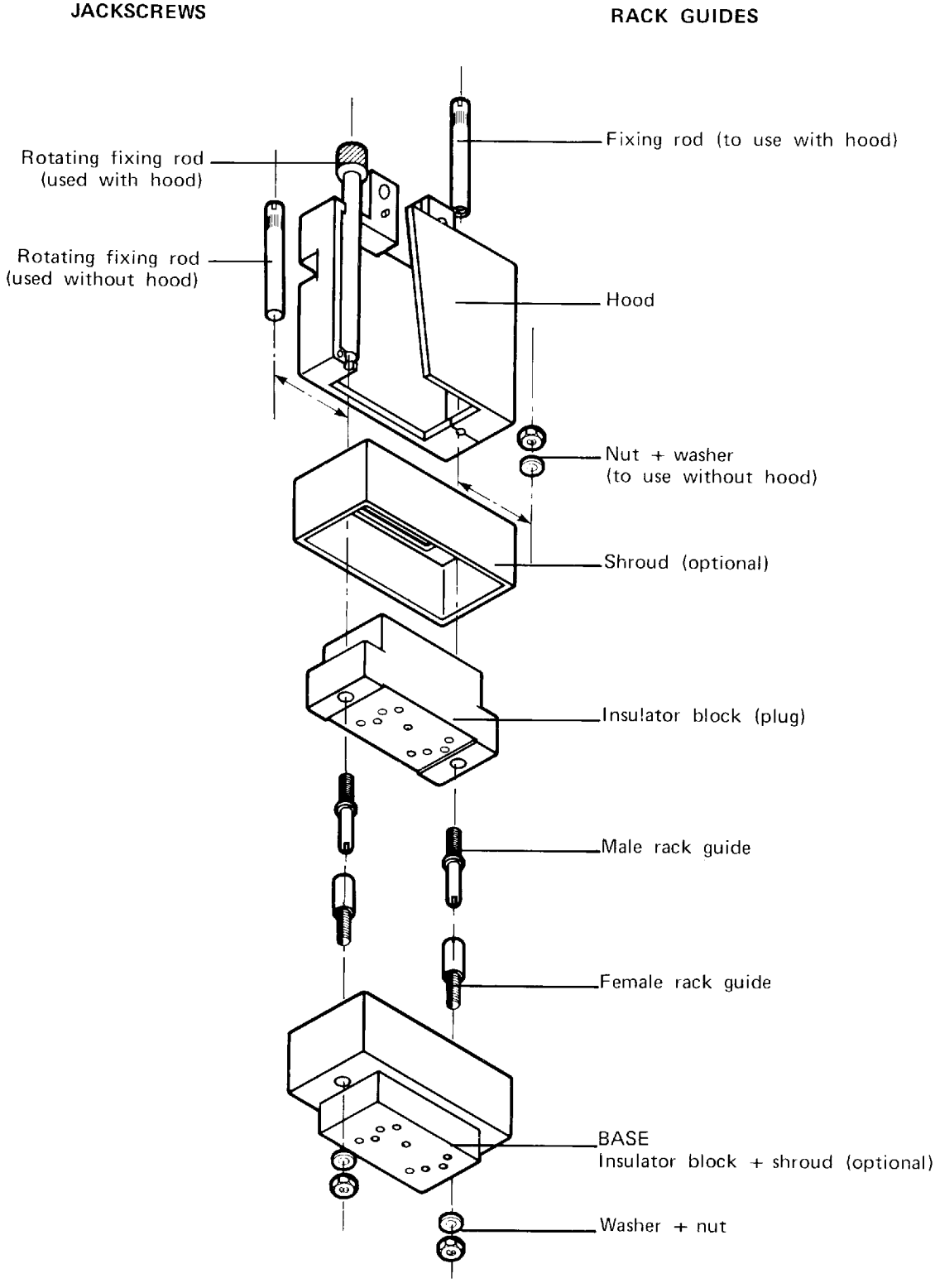
INTERMATEABILITY CHART

Plug P or R / Base P or R	Rack guides	Short rotating jackscrews	Rack guides + Male shroud	Rotating jackscrews + male shroud	Rack guides + hood
Rack guides	●				●
Fixed jackscrews		●			
Rack guides + female shroud			●		
Fixed jackscrews + female shroud				●	
Rack guides + hood / Rack guides + clamp	●				●
Rack guides + Hood + female shroud / Rack guides + clamp + female shroud			●		
Fixed jackscrews + hood / Fixed jackscrews + clamp		●			
Fixed jackscrews + hood + female shroud / Fixed jackscrews + clamp + female shroud				●	

INTERMATEABILITY CHART

Rack guides + clamp	Rack guides + hood + male shroud	Rack guides + clamp + male shroud	Rotating jackscrews + hood	Rotating jackscrews + clamp	Rotating jackscrews + Hood + male shroud	Rotating jackscrews + clamp + male shroud
●						
			●	●		
	●	●				
					●	●
●						
	●	●				
			●	●		
					●	●

ASSEMBLY INSTRUCTIONS



HOW TO ORDER

CONNECTORS WITH GUIDES

(without other accessories)

690 600

Series

Basic code

(see table below)

CONNECTORS WITH ACCESSORIES

690 600 O A O

Series

Basic code

(see table below)

Mandatory

Accessories

- O : no accessories
- A : hood top entry
- B : hood side entry (only 75 way)
- C : top entry strain relief clamp (not available in 34 and 42 way)

Shouds

- O : no shroud
- A : ★ male shroud **WITHOUT** polarising
  ★★ male shroud **WITH** polarising

polarising in	1	3	5	7
code	B	C	D	E

Male shroud mounts on block P
Female shroud mounts on block R

- F : ★ female shroud **WITHOUT** polarising
  ★★ female shroud **WITH** polarising

polarising in	1	3	5	7
code	G	H	J	K

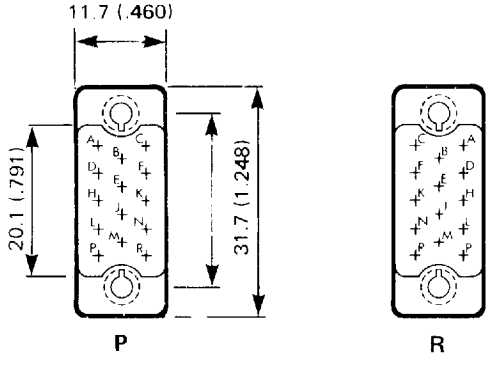
★ *not available in 42 way*
★★ *not available in 14 way*

NOTA : When connector has a shroud with polarising, polarization starts from the cavity A or 1 side of the connector (refer to page 35)

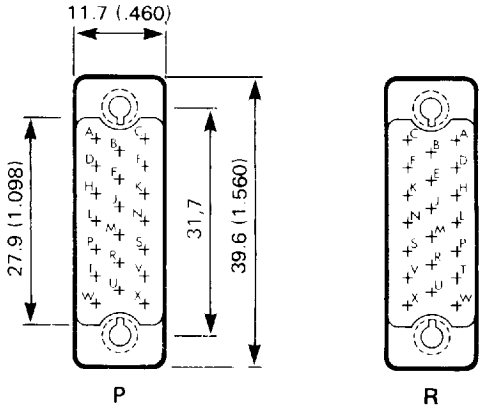
Number of contacts	Rack guides		Fixed jackscrews		Rotating jackscrews	
	Block P	Block R	Block P	Block R	Block P	Block R
14	400	500	701	700	600	602
20	410	510	711	710	610	612
26	420	520	721	720	620	622
34	430	530	731	730	630	632
42	440	540	741	740	640	642
50	450	550	751	750	650	652
75	460	560	761	760	660	662

CONTACT ARRANGEMENTS

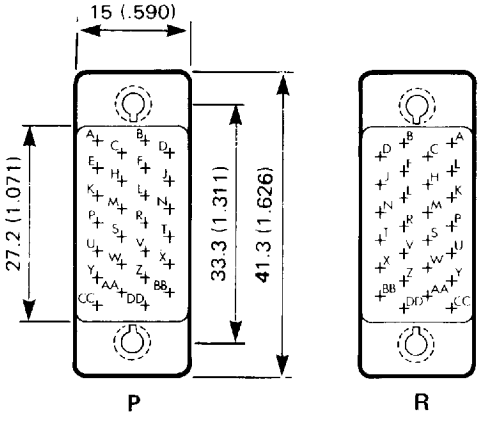
VIEW WIRING SIDE



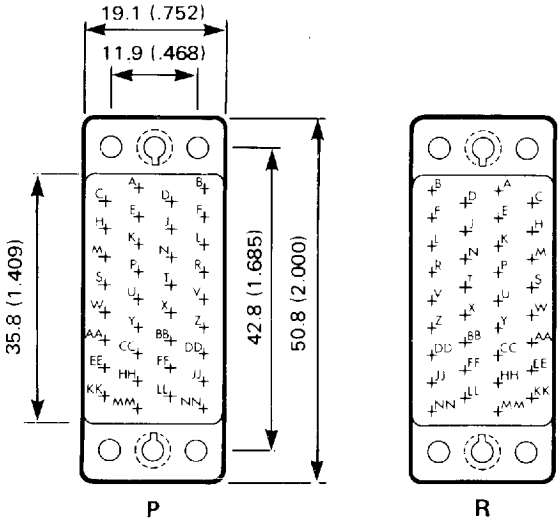
14 CONTACTS



20 CONTACTS



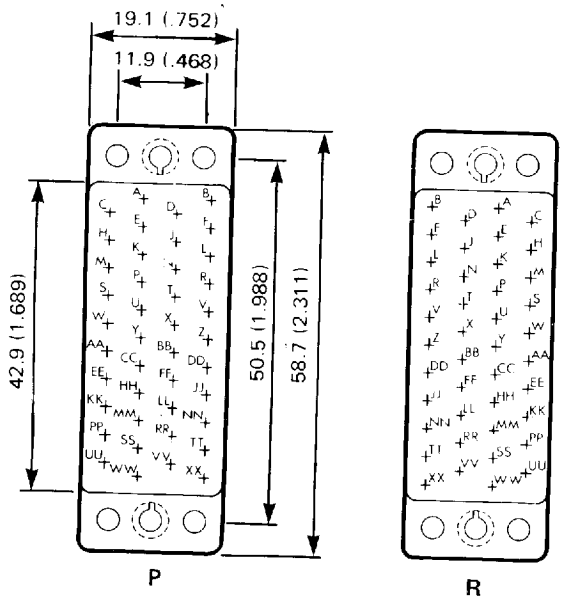
26 CONTACTS



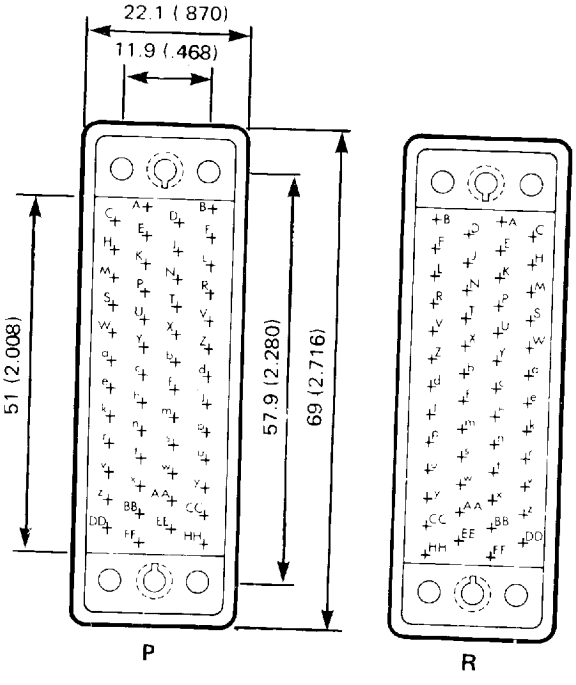
34 CONTACTS

CONTACT ARRANGEMENTS

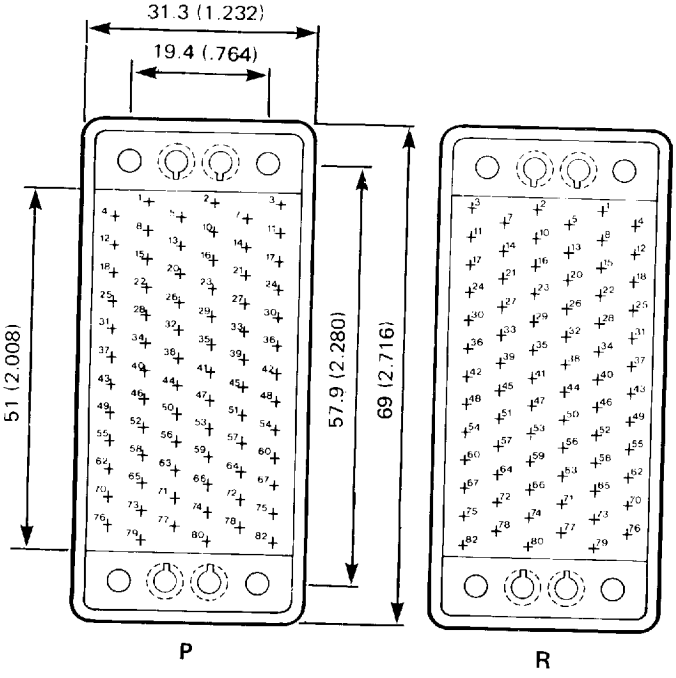
VIEW WIRING SIDE



42 CONTACTS

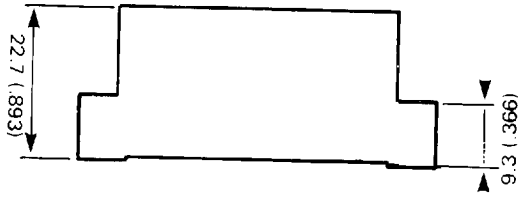


50 CONTACTS

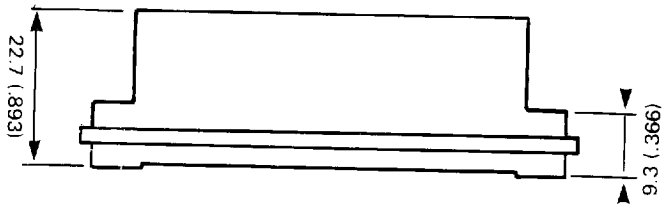


75 CONTACTS

14, 20, 26, 34, 42 CONTACTS

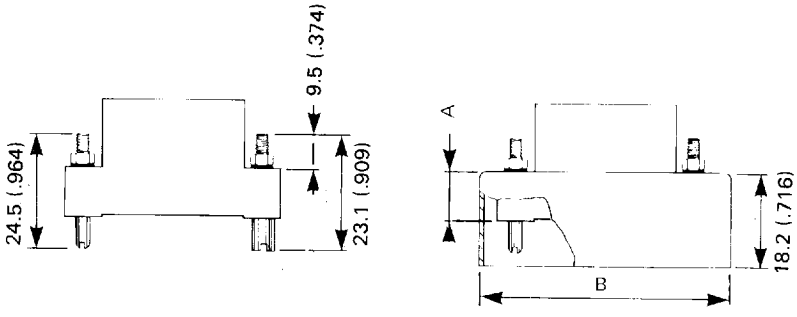


50, 75 CONTACTS



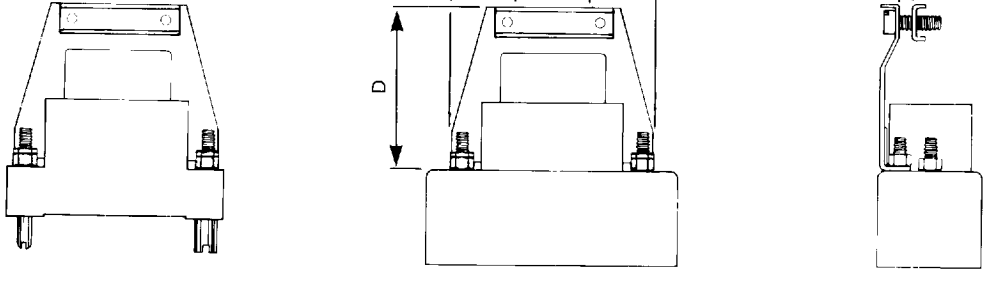
RACK GUIDES

CONNECTOR BLOCK



Number of contacts	A	B		C	
		male	female	male	female
14	10.1 (.397)	34.8 (1.370)	37.2 (1.464)	14.2 (.559)	16.6 (.653)
20	10.1 (.397)	42.2 (1.661)	45.1 (1.775)	14.2 (.559)	16.6 (.653)
26	10.1 (.397)	44.2 (1.740)	46.1 (1.826)	17.3 (.681)	19.4 (.764)
34	10.3 (.405)	54 (2.126)	56.4 (2.220)	22.2 (.874)	24.6 (.968)
42		*Shroud not available*			
50	10.3 (.405)	72 (2.834)	74.6 (2.937)	25.3 (.996)	27.8 (1.094)
75	10.3 (.405)	72.4 (2.850)	74.7 (2.940)	34.4 (1.354)	37 (1.456)

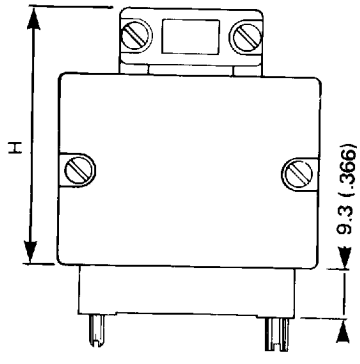
STRAIN RELIEF CABLE CLAMP (top entry)

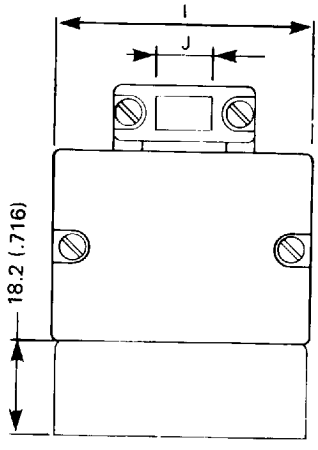


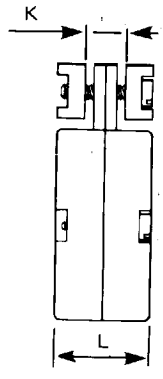
Number of contacts	D	E	Cable entry dimensions	
			F	G max.
14	44 (1.732)	31.5 (1.240)	5 (.197)	8 (.315)
20	44 (1.732)	39.5 (1.555)	12 (.472)	8 (.315)
26	44 (1.732)	41.1 (1.618)	12 (.472)	10 (.394)
34		*Cable clamp not available*		
42				
50	53 (2.086)	65.6 (2.582)	26 (1.023)	14 (.551)
75	53 (2.086)	65.6 (2.582)	26 (1.023)	18 (.708)

RACK GUIDES

HOOD-TOP ENTRY

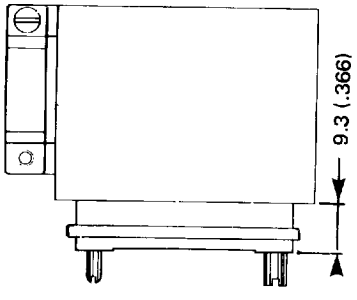


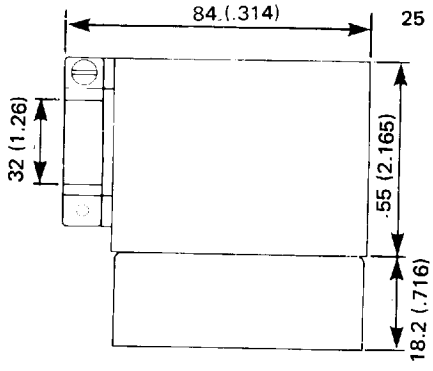


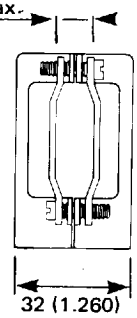


Number of contacts	H	I	Cable entry dimensions		L
			J	K max.	
14	46 (1.811)	39 (1.535)	7.6 (.299)	13 (.512)	17 (.670)
20	46 (1.811)	47 (1.850)	15 (.590)	13 (.512)	17 (.670)
26	46 (1.811)	48.5 (1.909)	17 (.670)	17 (.670)	21 (.827)
34	52.5 (2.067)	53.5 (2.106)	22 (.866)	20 (.787)	24 (.945)
42	47 (1.850)	61 (2.401)	32 (1.260)	12 (.472)	21.5 (.846)
50	66.5 (2.618)	68.5 (2.697)	26 (1.023)	21 (.827)	25 (.984)
75	47 (1.850)	68 (2.677)	40 (1.575)	21 (.827)	30.5 (1.200)

HOOD SIDE ENTRY



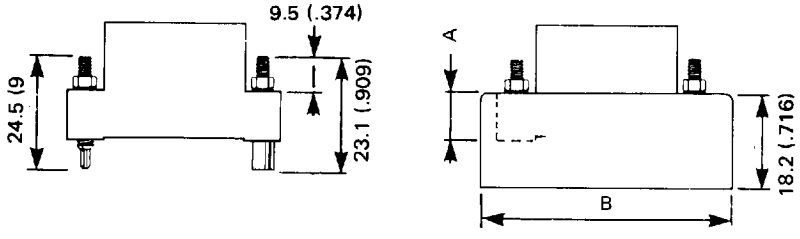




ONLY AVAILABLE FOR 75 WAY

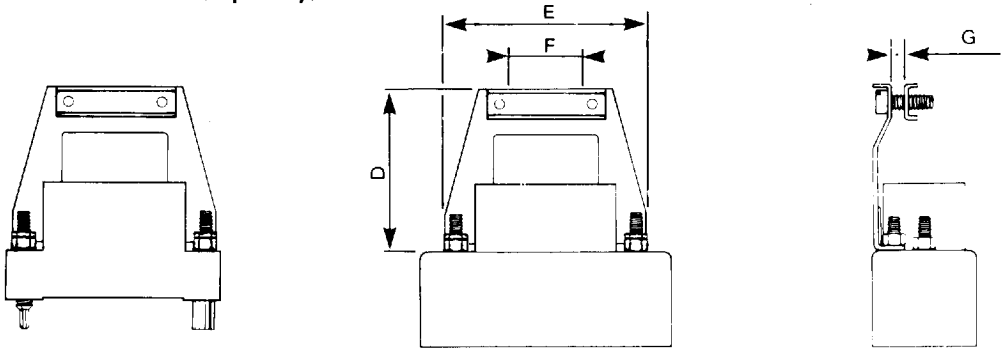
FIXED JACKSCREWS

CONNECTOR BLOCK



Number of contacts	A	B		C	
		male	female	male	female
14	10.1 (.398)	34.8 (1.370)	37.2 (1.464)	14.2 (.559)	16.6 (.653)
20	10.1 (.398)	42.2 (1.661)	45.1 (1.775)	14.2 (.559)	16.6 (.653)
26	10.1 (.398)	44.2 (1.740)	46.4 (1.827)	17.3 (.681)	19.4 (.764)
34	10.3 (.405)	54 (2.126)	56.4 (2.220)	22.2 (.874)	24.6 (.968)
42		*Shroud not available*			
50	10.3 (.405)	72 (2.834)	74.6 (2.937)	25.3 (.996)	27.8 (1.094)
75	10.3 (.405)	72.4 (2.850)	74.7 (2.940)	34.4 (1.354)	37 (1.456)

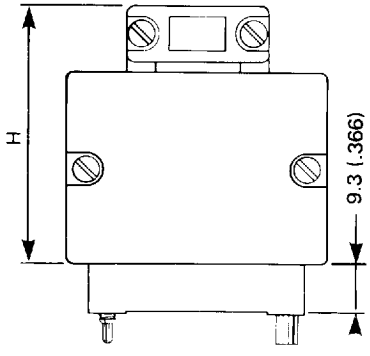
STRAIN RELIEF CABLE CLAMP (top entry)

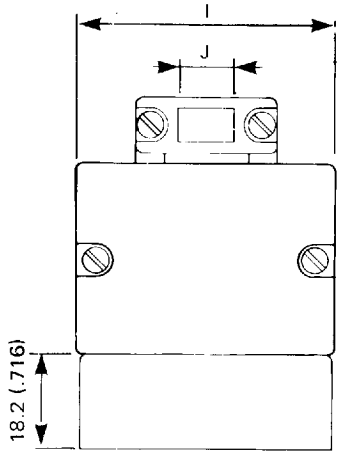


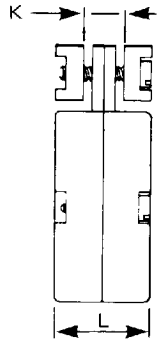
Number of contacts	D	E	Cable entry dimensions	
			F	G max.
14	44 (1.732)	31.5 (1.240)	5 (.197)	8 (.315)
20	44 (1.732)	39.5 (1.555)	12 (.472)	8 (.315)
26	44 (1.732)	41.1 (1.618)	12 (.472)	10 (.394)
34		*Cable clamp not available*		
42				
50	53 (2.086)	65.6 (2.582)	26 (1.023)	14 (.551)
75	53 (2.086)	65.6 (2.582)	26 (1.023)	18 (.708)

FIXED JACKSCREWS

HOOD TOP ENTRY

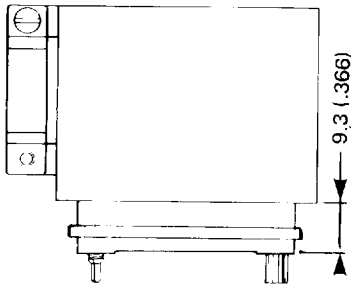


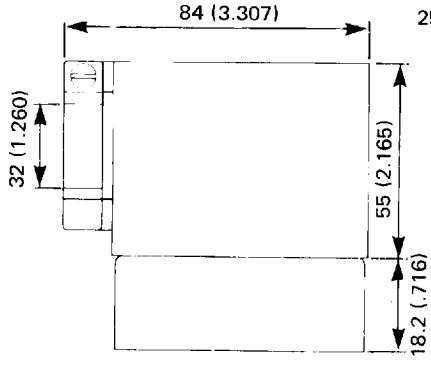


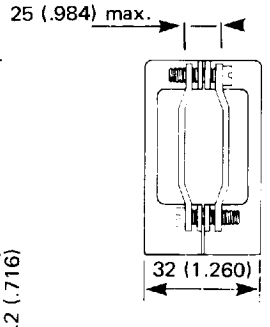


Number of contacts	H	I	Cable entry dimensions		L
			J	K max.	
14	46 (1.811)	39 (1.535)	7.6 (.299)	13 (.512)	17 (.670)
20	46 (1.811)	47 (1.850)	15 (.590)	13 (.512)	17 (.670)
26	46 (1.811)	48.5 (1.910)	17 (.670)	17 (.670)	21 (.827)
34	52.5 (2.067)	53.5 (2.106)	22 (.866)	20 (.787)	24 (.945)
42	47 (1.850)	61 (2.401)	32 (1.260)	12 (.472)	21.5 (.846)
50	66.5 (2.618)	68.5 (2.697)	26 (1.023)	21 (.827)	25 (.984)
75	47 (1.850)	68 (2.677)	40 (1.575)	21 (.827)	30.5 (1.200)

HOOD SIDE ENTRY



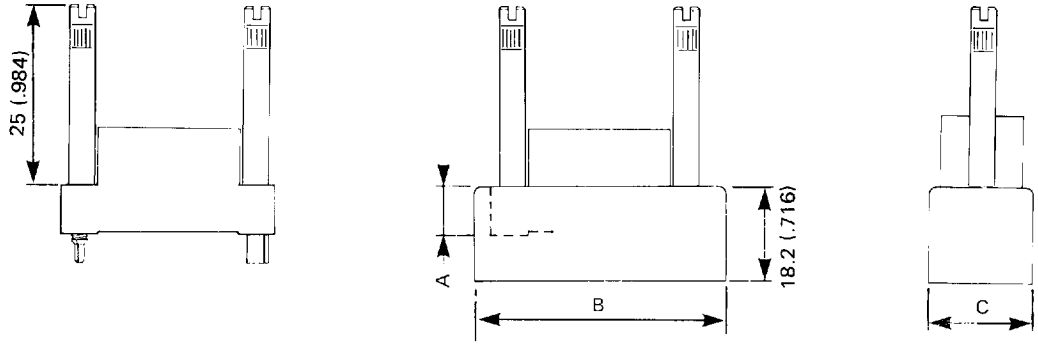




ONLY AVAILABLE FOR 75 WAY

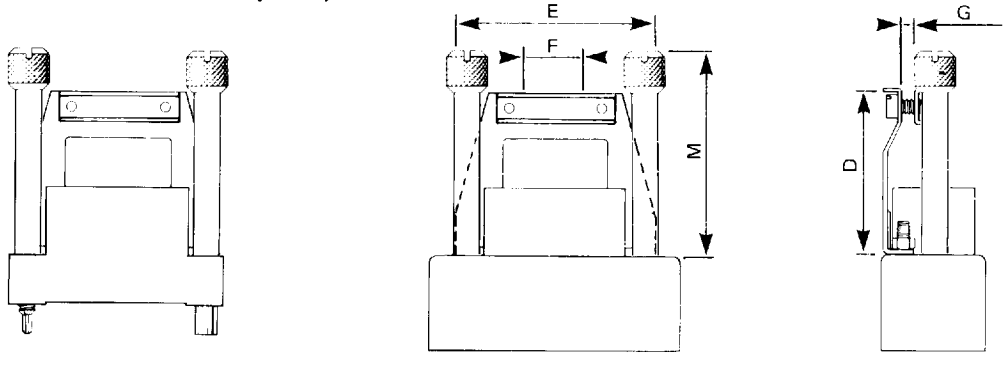
ROTATING JACKSCREWS

CONNECTOR BLOCK



Number of contacts	A	B		C	
		male	female	male	female
14	10.1 (.398)	34.8 (1.370)	37.2 (1.464)	14.2 (.560)	16.6 (.653)
20	10.1 (.398)	42.2 (1.661)	45.1 (1.775)	14.2 (.560)	16.6 (.653)
26	10.1 (.398)	44.2 (1.740)	46.4 (1.827)	17.3 (.681)	19.4 (.764)
34	10.3 (.405)	54 (2.126)	56.4 (2.220)	22.2 (.874)	24.6 (.968)
42		*Shroud not available*			
50	10.3 (.405)	72 (2.834)	74.6 (2.940)	25.3 (1.012)	27.8 (1.094)
75	10.3 (.405)	72.4 (2.850)	74.7 (2.940)	34.4 (1.354)	37 (1.456)

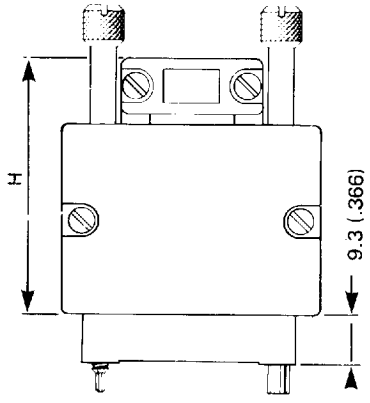
STRAIN RELIEF CABLE CLAMP (top entry)

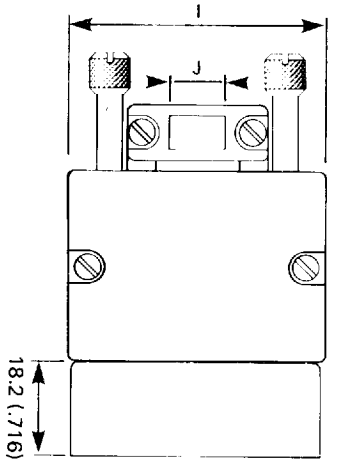


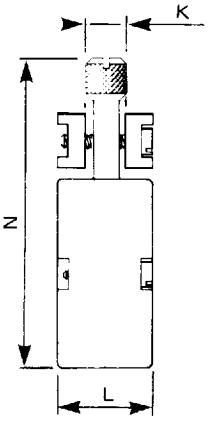
Number of contacts	D	E	M	Cable entry dimensions	
				F	G max.
14	44 (1.732)	31.5 (1.240)	60 (2.362)	5 (.197)	8 (.315)
20	44 (1.732)	39.5 (1.555)	60 (2.362)	12 (.472)	8 (.315)
26	44 (1.732)	41.4 (1.630)	60 (2.362)	12 (.472)	10 (.394)
34		*Cable clamp not available*			
42					
50	53 (2.086)	65.6 (2.582)	64 (2.519)	26 (1.023)	14 (.551)
75	53 (2.086)	65.6 (2.582)	64 (2.519)	26 (1.023)	18 (.708)

ROTATING JACKSCREWS

HOOD TOP ENTRY

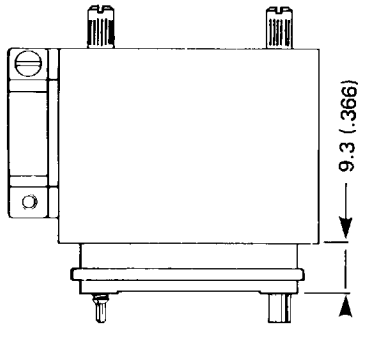


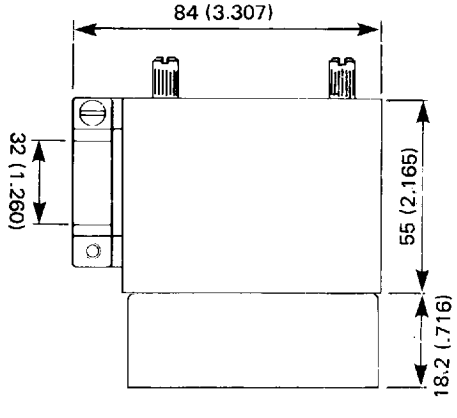


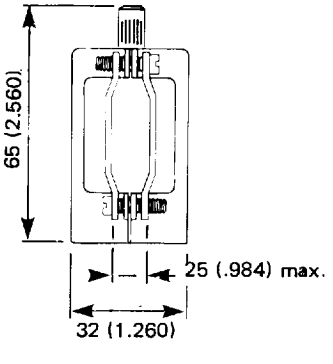


Number of contacts	H	I	Cable entry dimensions		L	N
			J	K max.		
14	46 (1.811)	39 (1.535)	7.6 (.299)	13 (.512)	17 (.669)	60 (2.362)
20	46 (1.811)	47 (1.850)	15 (.591)	13 (.512)	17 (.669)	60 (2.362)
26	46 (1.811)	48.5 (1.909)	17 (.669)	17 (.669)	21 (.827)	60 (2.362)
34	52.5 (2.067)	53.5 (2.106)	22 (.866)	20 (.787)	24 (.945)	64 (2.519)
42	47 (1.850)	61 (2.401)	32 (1.260)	12 (.472)	21.5 (.846)	64 (2.519)
50	66.5 (2.618)	68.5 (2.697)	26 (1.023)	21 (.827)	25 (.984)	78 (3.071)
75	47 (1.850)	68 (2.677)	40 (1.575)	21 (.827)	30.5 (1.200)	78 (3.071)

HOOD SIDE ENTRY



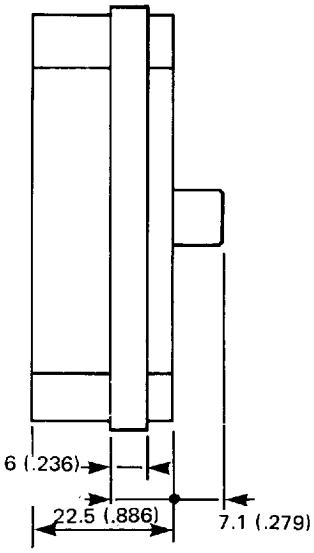


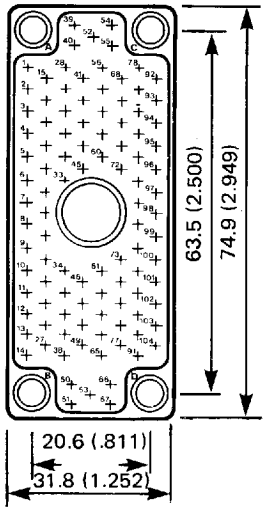


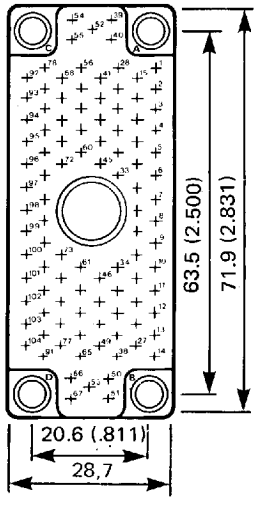
ONLY AVAILABLE FOR 75 WAY

BLOCKS 104 CONTACTS

VIEW WIRING SIDE







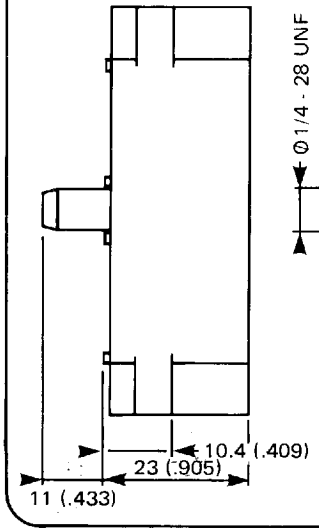
R TYPE

Central guide	Rack guides A	B	C	D	Référence
mates with all the blocks P	no guides				690 571
	fem.	male	male	fem.	690 570
	fem.	—	—	fem.	690 572
	fem.	fem.	fem.	fem.	690 573

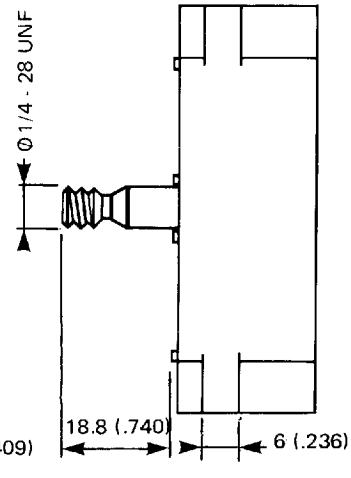
P TYPE

Central guide	Rack guides A	B	C	D	Référence
Central rack guide	no guides				690 481
	male	fem.	fem.	male	690 480
	male	—	—	male	690 482
	male	male	male	male	690 483
Sunken hex. nut 4 A/F	no guides				690 471
	male	fem.	fem.	male	690 470
	male	—	—	male	690 472
	male	male	male	male	690 473
Central jackscrew	no guides				690 476
	male	fem.	fem.	male	690 475
	male	—	—	male	690 477
	male	male	male	male	690 478

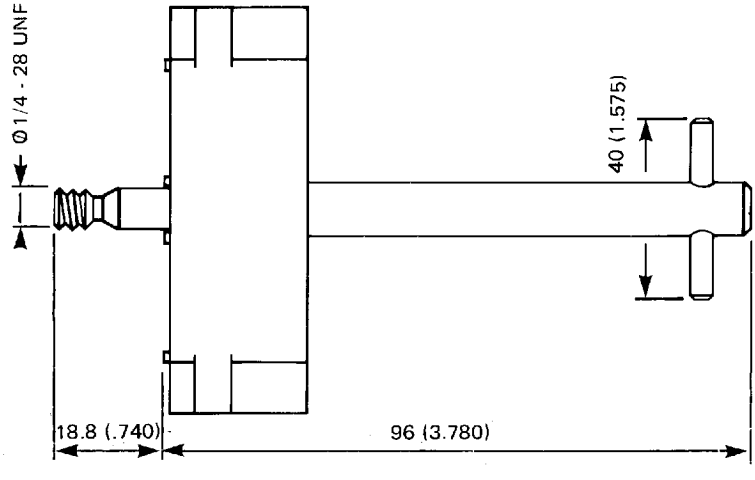
Rack guide



Sunken hex. nut



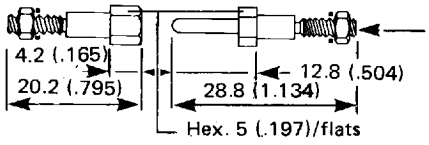
Central jackscrew



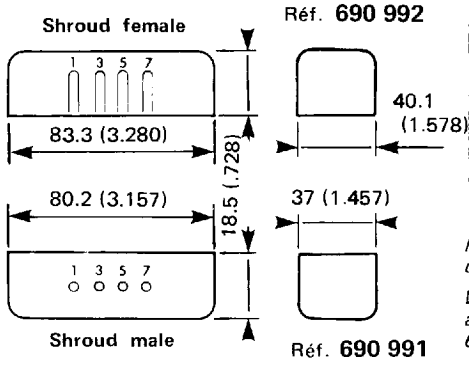
BLOCKS 104 CONTACTS

GUIDES (stainless steel) to mount in positions A, B, C, D

Female Réf. **690 950** — **male** Réf. **690 960**



SHROUDS
(cadmium plated steel)



Polarisation code	Position
110	1
120	3
130	5
140	7

No polarising : use 6 digit no

With polarising : add polarising code to end of 6 digit reference.

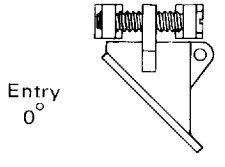
Ex. : **690 991 110**

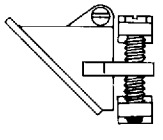
Polarising is positioned next to cavity 1 of insulator block.

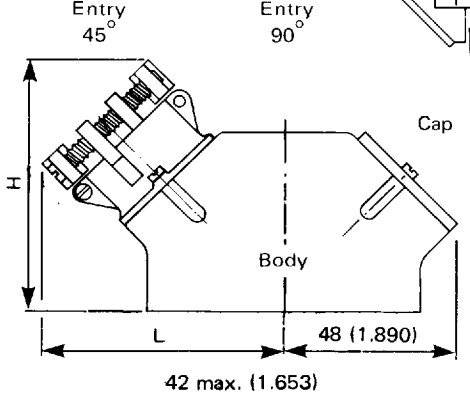
HOOD
(cast aluminium painted black)

Piece parts
(1 or 2 rotatable entry)

	Référence
Body (2 part)	690 977
entry 0 - 90°	690 980
entry 45°	690 979
Cap	690 978





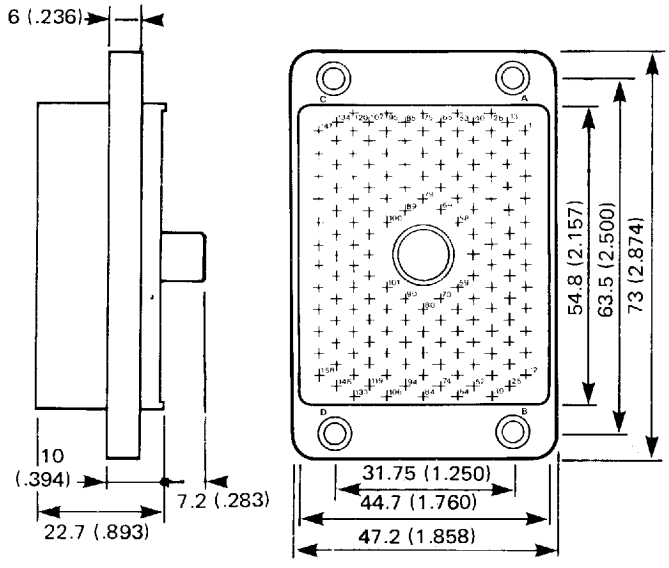


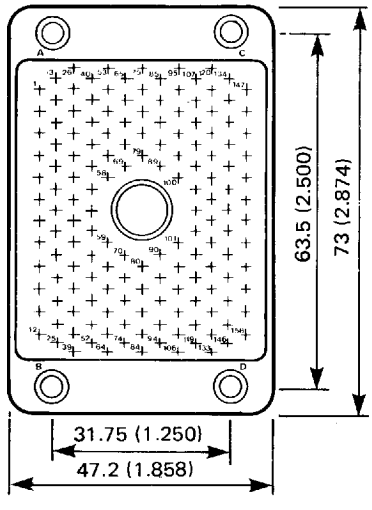
Assembly

Entry	Cable clamp max. cm²	L	H	Référence
1 entry 45°	7,8	70	71	690 971
2 entry 45°	15,6			690 972
1 entry 0°	5,3	55	66	690 973
2 entry 0°	10,6			690 974
1 entry 90°	5,3	65	57	690 973
2 entry 90°	10,6			690 974

BLOCKS 158 CONTACTS

VIEW WIRING SIDE





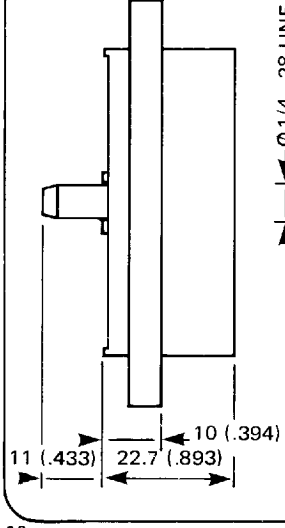
R TYPE

Central guide	Without guides	Guides supplied unmounted	
		4 female	2 m./2 fem.
mates with all blocks P	690 686	690 670	690 680

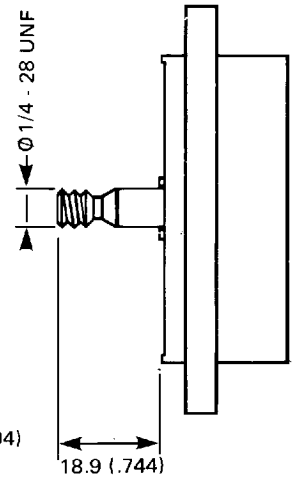
P TYPE

Central guide	Without guides	Guides supplied unmounted	
		4 male	2 m./2 fem.
Central rack guide	690 681	690 678	690 683
Sunken Hex. 4 A/F	690 671	690 679	690 684
Central jackscrew	690 676	690 677	690 682

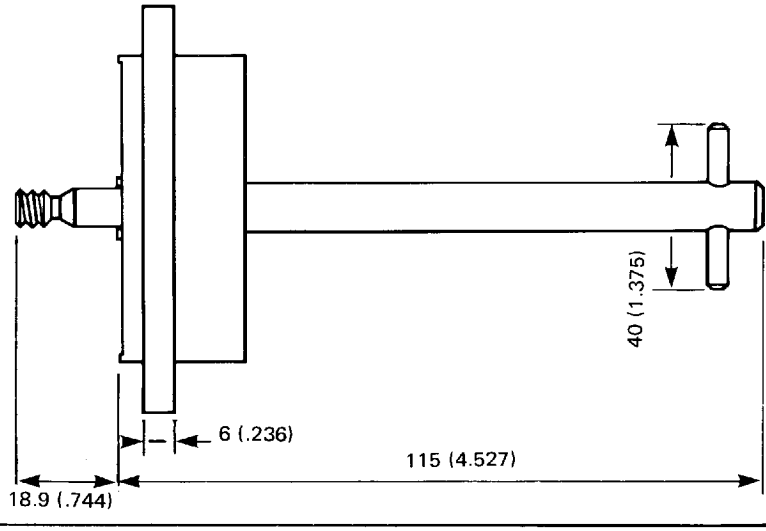
Rack guide



sunken hex. nut



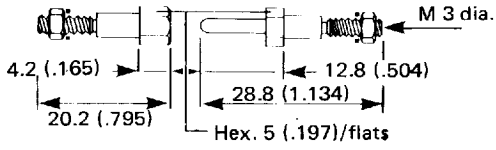
Central jackscrew



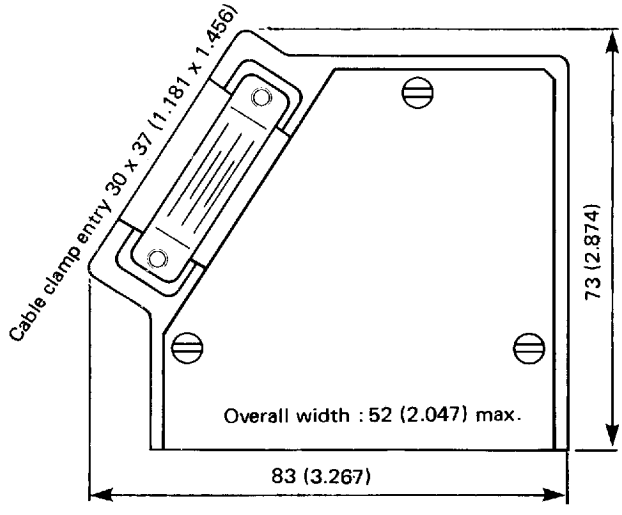
BLOCKS 158 CONTACTS

GUIDES (stainless steel) to mount in positions A, B, C, D

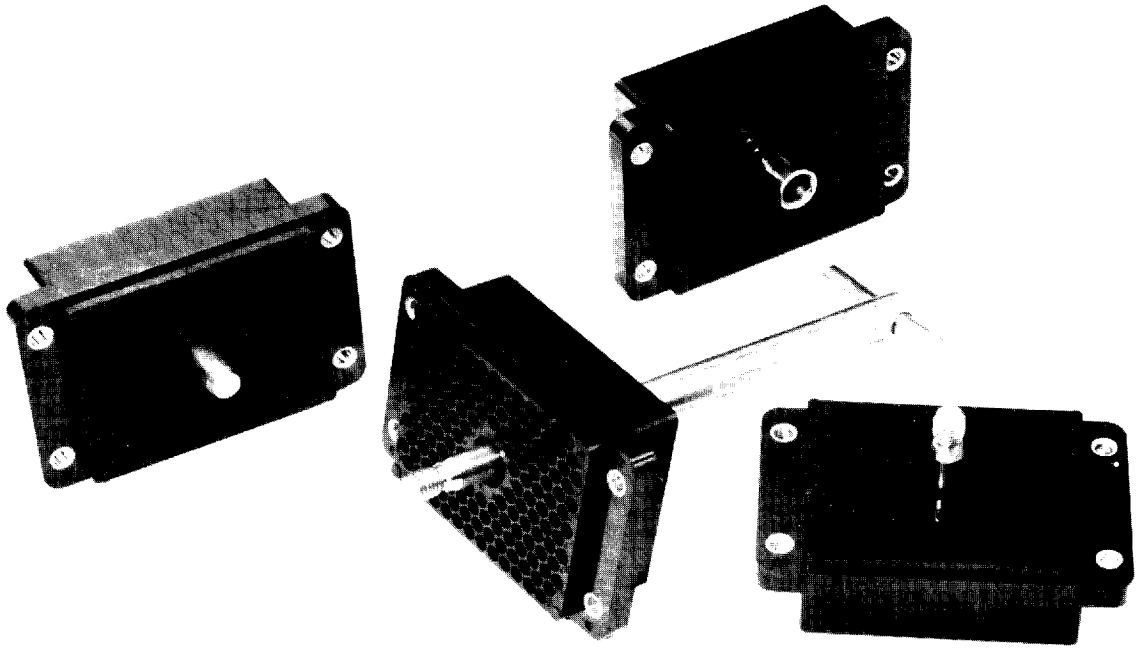
female	male
Réf. **690 950**	Réf. **690 960**



HOOD
(cast aluminium painted black)

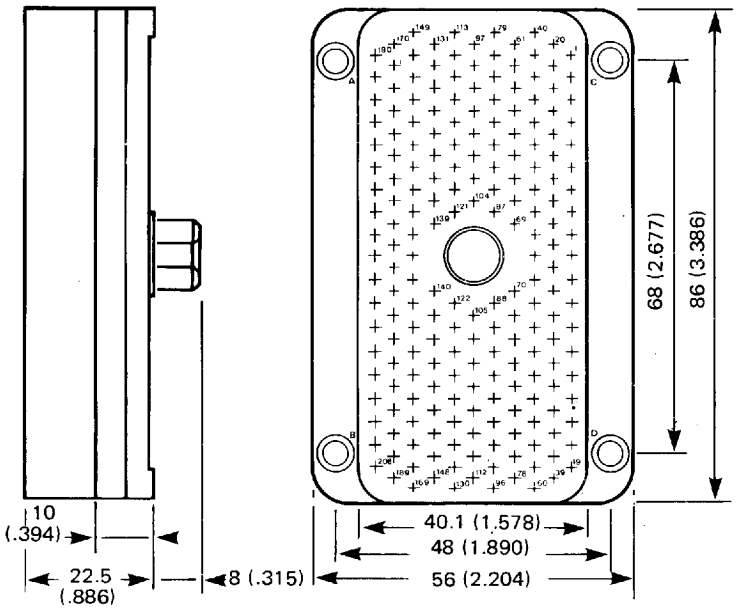


Référence :
690 985

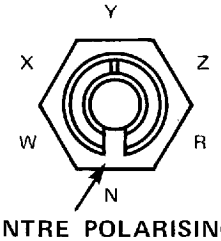


BLOCKS 208 CONTACTS

VIEW WIRING SIDE

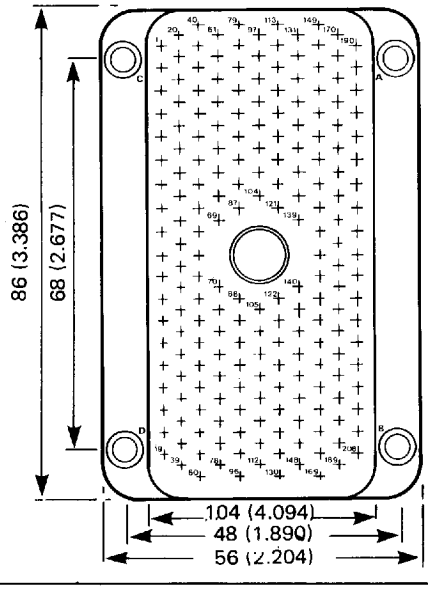


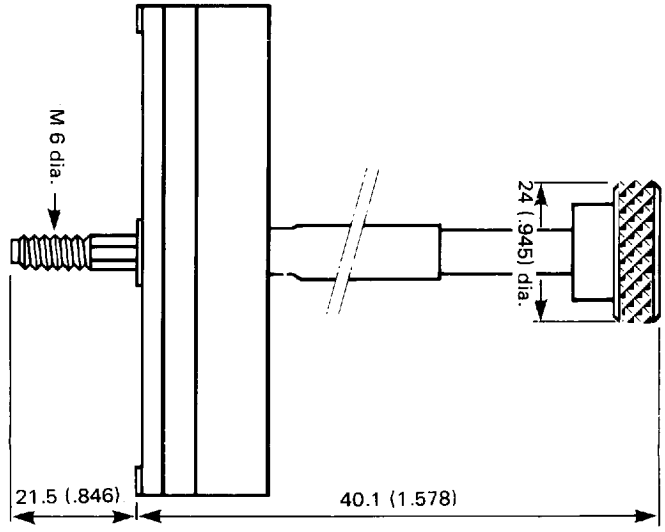
Polarising positions	Guides supplied : unmounted	
	4 female	2 male /2 fem.
N	690 768 001	690 778 004
R	690 768 002	690 778 007
Z	690 768 003	690 778 002
Y	690 768 004	690 778 003
X	690 768 005	690 778 001
W	690 768 006	690 778 005



CENTRE POLARISING POSITION

Polarising positions	Guides supplied : unmounted	
	4 male	2 male /2 fem.
N	690 769 001	690 767 001
R	690 769 002	690 767 002
Z	690 769 003	690 767 003
Y	690 769 004	690 767 004
X	690 769 005	690 767 005
W	690 769 006	690 767 006



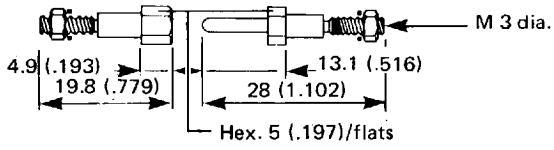


BLOCKS 208 CONTACTS

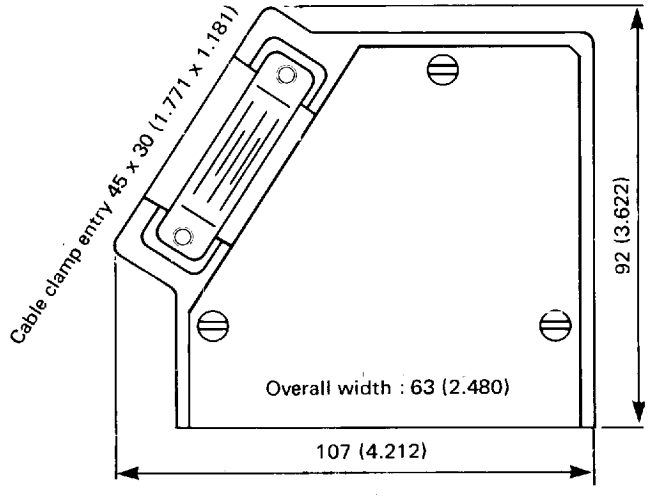
GUIDES (stainless steel) to mount in positions A, B, C, D

female
Réf. **690 958**

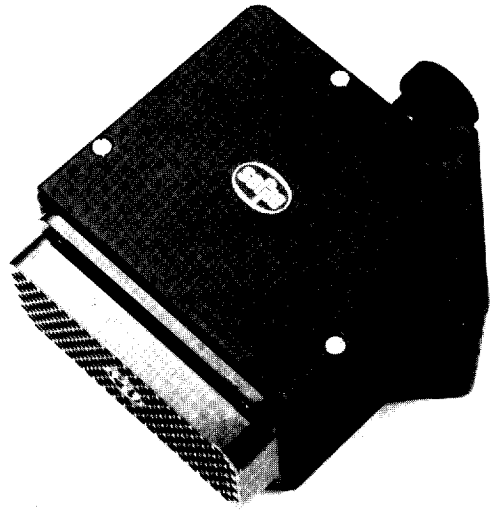
male
Réf. **690 968**



HOOD
(cast aluminium painted black)



Référence :
690 982

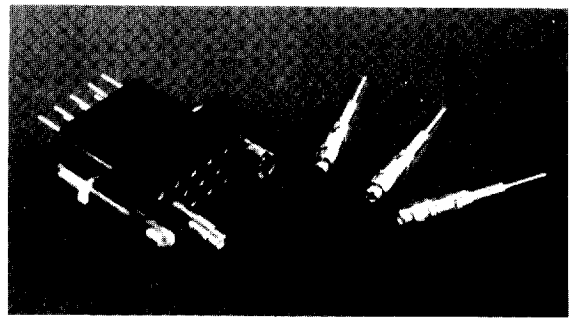


FRONT RELEASE AND FRONT REMOVABLE CONTACTS

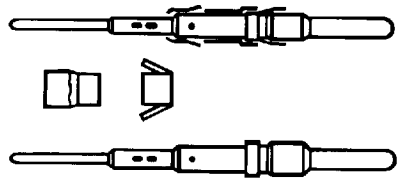
In order to facilitate the junction of MMC series connectors with a flexible or steady printed circuits, RADIALL created a range of solder tail and wire wrap front release contacts.

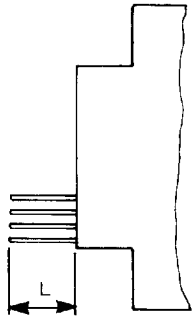
This eases to remplace a damaged contact without unwiring the set.

These 16 size contacts fit with all standard MMC connectors cavities from 14 to 208 which allow to mix them on a same connector with micro-coaxial contacts and crimping contacts.



- Contact with retention clip and antiroatation sleeve. It must be used for the original equipement of connectors.
- Contact without retention clip and antirotation sleeve for replacement of a damaged contact.

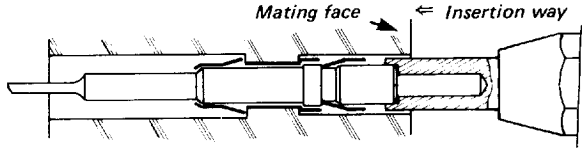


TYPE	LENGTH OF TAIL	CONTACT		REPLACEMENT CONTACT	
		PIN	SOCKET	PIN	SOCKET
Mini-wrapping Ø 0,6 flats 2 wraps		690 220	690 320	690 220 001	690 320 001
Mini-wrapping Ø 0,6 flats 3 wraps		690 221	690 321	690 221 001	690 321 001
Picot pour C.I. 0.65 mm dia.		690 222	690 322	690 222 001	690 322 001

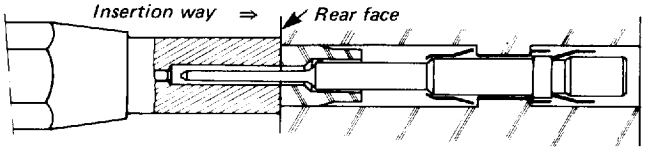
INSTALLATION AND EXTRACTION OF FRONT RELEASE FRONT REMOVABLE MMC CONTACTS

CONTACT INSTALLATION

1) Insert the contact fitted with the retention clip through the mating face and push it home by means insertion tool 282 501.

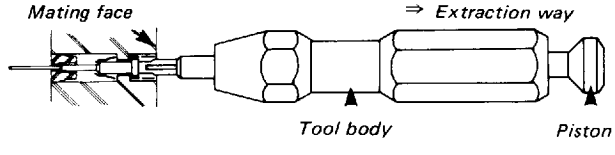


2) Introduce the sleeve by the rear face with tool 282 502 and push it until it flushes with the insulator.



CONTACT REPLACEMENT

Extraction : insert the extraction tool 282 917 by the mating face into the cavity of the contact to be replaced. Push it until it butts against the contact shoulder. Maintain the pressure on piston and pull on body tool to extract the contact. To free the contact release pressure on piston.



Installation of a new contact without retention clip : insert the contact through the mating face, push it with tool 282 501 until contact snaps in place.

MMC SERIES

EQUIPMENT WIRE CONTACTS

CABLES					CRIMP EQUIPMENT WIRE CONTACTS			CRIMPING TOOL			
AWG size	Section in mm²	Position on crimp tool	Ø max. on sleeve	Stripping length	PIN	SOCKET	Colour Coding	MIL Ref.	RADIALL Ref.	POSITIONER	Extraction tool
16	1,34	6	3.10 (.122)	7 (.275)	690 200 — 26.6 (1.047)	690 300 — 18.8 (.740)	Green	M 22 520/1.01	282 291	282 975	282 920
18	0,93	5									
20	0,60	4									
16	1,34	6	3.10 (.122)	7 (.275)	690 201 — 27.7 (1.090)	690 301 — 20.4 (.803)	Green + red			282 976	
18	0,93	5			Contacts for earthing						
20	0,60	4									
20	0,60	4	2.20 (.086)	5 (.197)	690 215	690 315	Black				
22	0,38	3									
24	0,22	2									
24	0,22	4	1.60 (.063)	5 (.197)	690 235	690 335	Violet				
26	0,14	2									
28	0,093	2									

TOOLS		
	Insertion	Extraction
WIRE WRAPPING EQUIPMENT CONTACTS — SOCKET	282 921	282 920
WIRE WRAPPING EQUIPMENT CONTACTS — PIN		

TYPE	LENGTH OF TAIL	WIRE WRAPPING EQUIPMENT CONTACTS — PIN	WIRE WRAPPING EQUIPMENT CONTACTS — SOCKET
Mini wrapping 0.6 (..024)/flats (diagonal 0.78 (.031) to 0.86 (.034)	L = 15.5 (.610)	690 241	690 341
Wrapping standard to 1.2 (.047)/flats (diagonal 1.38 (0.54) to 1.86 (.073)	L = 19.5 (.767)	690 240	690 340

MMC SERIES

TWISTED PAIR CONTACTS

CABLES				Wiring instructions ★	TOOLS						TWISTED PAIR CONTACTS	
					Centre contact			Outer contact		Extractor tool	SOCKET	PIN
AWG sizes		Section in mm²	Ø max. on insulator		Crimp tool	Position on crimp tool	Positioner	Crimp tool	Positioner		Body female contact Centre male contact	Body male contact Centre female contact
24	Stranded wire cable	0,22	0.96 (.038)	B	RADIALL 282 281 MIL - M 22 520/2.01	2	RADIALL 282 981 MIL - M 22 520/2.04	RADIALL 282 292 MIL - M 22 520/4.01	RADIALL 282 973 MIL - M 22 520/4.02	282 920	690 070	690 170
26	Stranded wire cable	0,14	0.84 (.033)	A		2					690 060 (cable dia 2.10 (.083)	690 160 (cable dia 2.10 (.083)
28		0,093	0.73 (.029)			1						
30		0,055	0.66 (.026)			1						
26	Single wire cable	0,12	0.85 (.033)			3						
28		0,08	0.67 (.026)			2						
30		0,05	0.58 (.023)			1						
26	Stranded wire cable	0,14	0.84 (.033)			2					690 061 (cable dia 1.70 (.067)	690 161 (cable dia 1.70 (.067)
28		0,093	0.73 (.029)			1						
26	Single wire cable	0,12	0.85 (.033)			3						
28		0,08	0.67 (.026)			2						
30	Stranded wire cable	0,055	0.66 (.026)			1					690 062 (cable dia 1 (.039)	690 162 (cable dia 1 (.039)
30	Single wire cable	0,05	0.58 (.023)			1						

★ *Refer to pages 30 and 31.*

● *settings indicated are those advised, nevertheless they must be modified following the diameter of cable and the tool tolerances.*

MMC SERIES

COAXIAL CONTACTS

COAXIAL CONTACTS	PIN	Body male contact Centre female contact			
	SOCKET	Body female contact Centre male contact			
TOOLS	Extraction tool		282 920		
	Outer contact	Positioner	**RADIALL** 282 973	MIL - M 22 520/4.02	
		Crimp tool	**RADIALL** 282 292	MIL - M 22 520/4.01	
	Centre contact	Positioner	**RADIALL** 282 981	MIL - M 22 520/2.04	
		Position on crimp tool	1	2	1
		Crimp tool	**RADIALL** 282 281	MIL - M 22 520/2.01	
Wiring instructions ★			C	D	
CABLES	Outer dia.		2 (.079)	2.54 (.100) ±0.13 (.005)	
	Impedance Ω		50	50	75
	Cable reference		RG. 178/U RG. 196/U KX. 21	KX. 3A RG. 316/U KX. 22	RG. 179/U

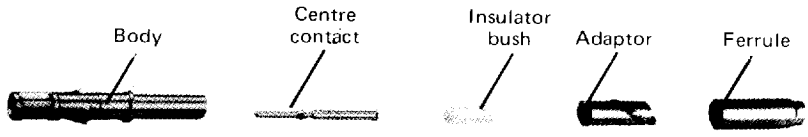
★ *Refer to page 32*

MMC SERIES
TWISTED PAIR CONTACT CABLING INSTRUCTIONS

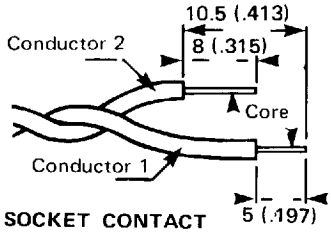
CABLING INSTRUCTIONS A

CONTACT REF. 690 060
690 260
690 061
690 161
690 062
690 162

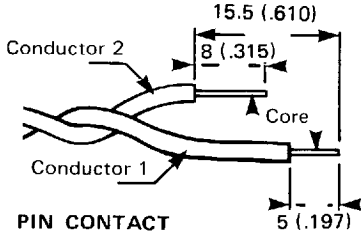
WIRE SIZES **AWG 26**
AWG 28
AWG 30



1) WIRE STRIPPING

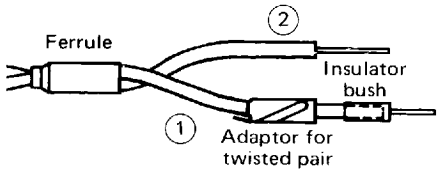


SOCKET CONTACT

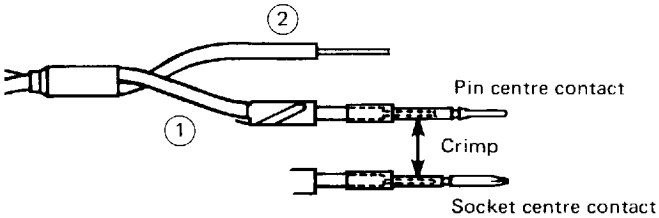


PIN CONTACT

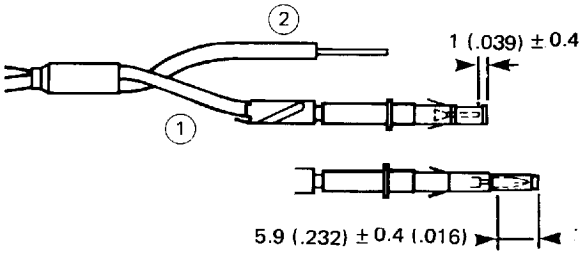
2) WIRING INSTRUCTIONS



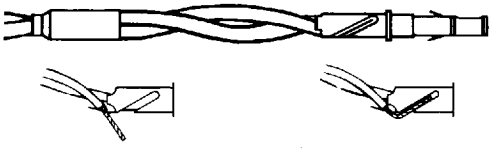
- Slide the ferrule over the twisted pair cable.
- Following the type of contact, strip the 2 conductors to shown dimensions here above.
- Slide adaptor over conductor (1)
- Slide insulator bush over conductor (1)



- Put the core of the cable (1) in to the centre contact (pin or socket) until it butts against the insulator bush.
- Engage the assembly (cable + centre contact) into the positioner of the crimping tool, and crimp centre contact according to setting instructions page 28.



- Engage the centre contact into the body, with reasonable force push home. Check the dimensional position, following type of centre contact (pin/ socket).



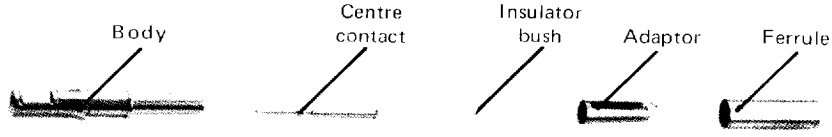
- Slide the adaptor on to the body up to the shoulder.
- Place the core of conductor (2) under the adaptor tab, and slide core into the helical slot.

- Slide the ferrule over the adapter up to the shoulder of the body.
- Engage the assembly into the positioner of the crimping tool, then crimp according to setting instructions, page 28.

MMC SERIES
TWISTED PAIR CONTACT CABLING INSTRUCTIONS

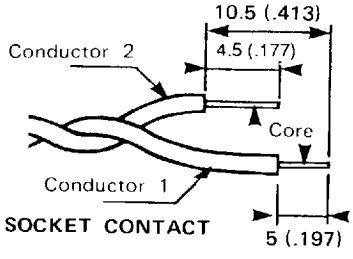
CABLING INSTRUCTIONS B

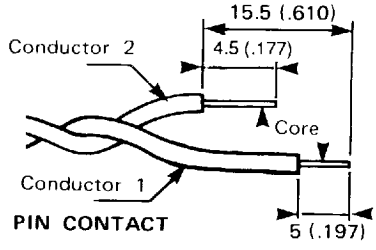
CONTACT REF. 690 070
690 170



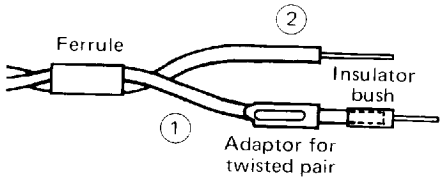
WIRE SIZES AWG 24

1) WIRE STRIPPING

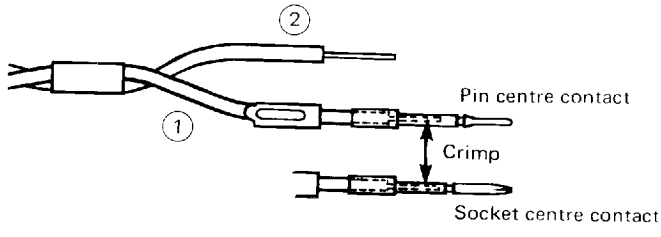




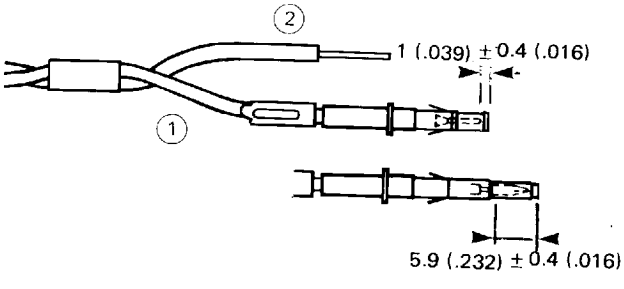
2) WIRING INSTRUCTIONS



- Slide the ferrule over the twisted pair cable.
- Following the type of contact, strip the 2 conductors to shown dimensions here above.
- Slide adaptor over conductor (1)
- Slide insulator bush over conductor (1)



- Put the core of the cable (1) in to the centre contact (pin or socket) until it butts against the insulator bush.
- Engage the assembly (cable + centre contact) into the positioner of the crimping tool, and crimp centre contact according to setting instructions page 28.



- Engage the centre contact into the body, with reasonable force push home. Check the dimensional position, following type of centre contact (pin/socket).

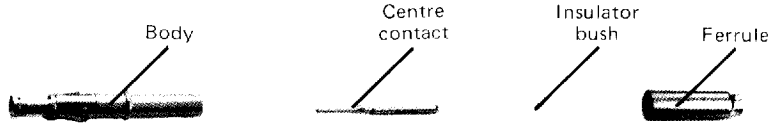
- Slide the adaptor onto the body up to the shoulder.
- Place the core of the conductor (2) into the straight slot, on the outer face of the adaptor.

- Slide the ferrule over the adapter up to the shoulder of the body.
- Engage the assembly into the positioner of the crimping tool, then crimp according to setting instructions, page 28.

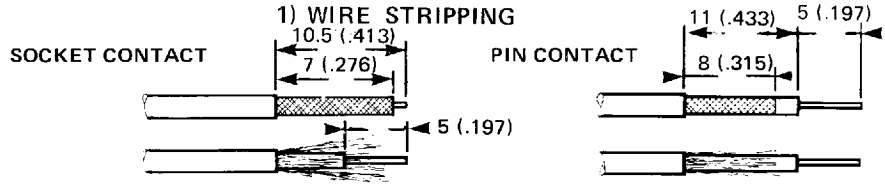
MMC SERIES
COAXIAL CONTACTS
CABLING INSTRUCTIONS

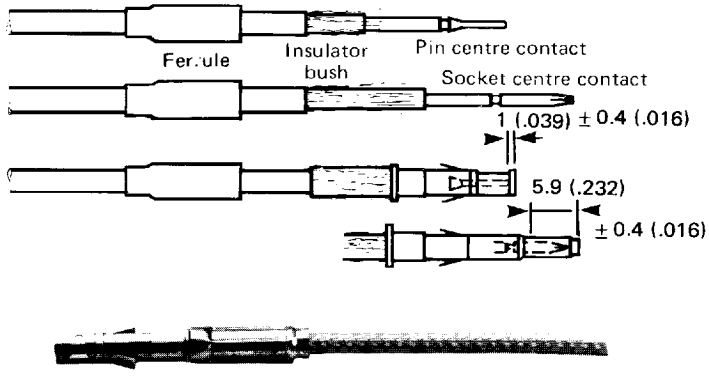
CABLING INSTRUCTIONS C

CONTACT REF. 690 020
690 120



1) WIRE STRIPPING



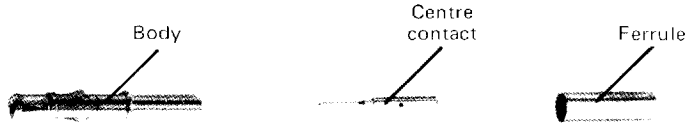


2) WIRING INSTRUCTIONS

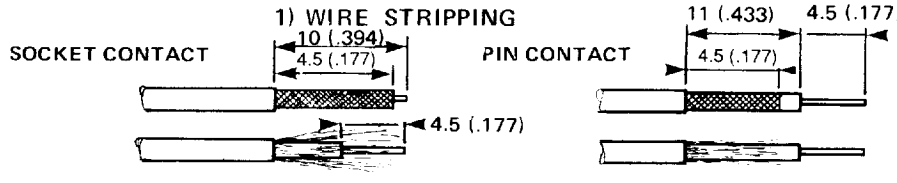
- Slide the ferrule over the coaxial cable.
- Following the type of contact, strip the 2 conductors to dimensions shown above.
- Comb the braid and slide on the insulator bush until it butts against the dielectric of the cable.
- Place the core of the cable into the centre contact so as to butt against the dielectric.
- Engage the assembly into the positioner of the crimping tool and crimp according to instructions indicated on page 29.
  Engage the centre contact into the body and with reasonable force push home, check the dimensional position of the centre contact (pin or socket).
- Pull down the braid over the body and slide the ferrule on to the body up to the shoulder.
- Engage the assembly into the positioner of the crimping tool, then crimp according to instructions indicated on page 29.

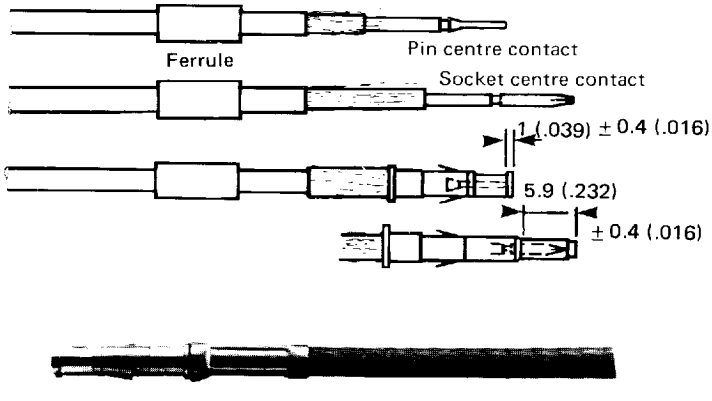
CABLING INSTRUCTIONS D

CONTACT REF 690 040
690 140



1) WIRE STRIPPING

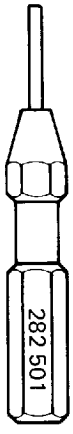


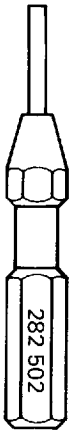


2) WIRING INSTRUCTIONS

- Slide the ferrule over the coaxial cable.
- Following the type of contact, strip the 2 conductors to dimensions shown above.
- Place the core of the cable into centre contact so as to butt against dielectric.
- Engage the assembly into the positioner of the crimping tool, then crimp according to instructions indicated on page 29.
- Engage the centre contact into the body and with reasonable force push home, check the dimensional position of the centre contact (pin or socket).
- Pull down the braid over the body and slide ferrule over braid up to the body shoulder.
- Engage the assembly into the positioner of the crimping tool, then crimp according to instructions given on page 29.

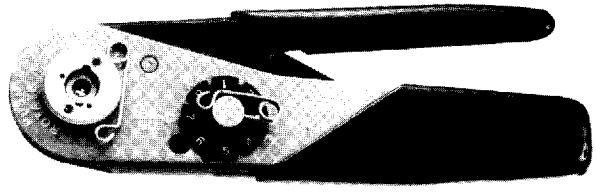
TOOLING



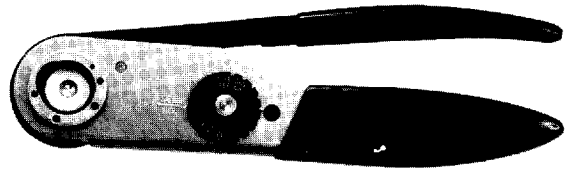


CRIMP TOOLS

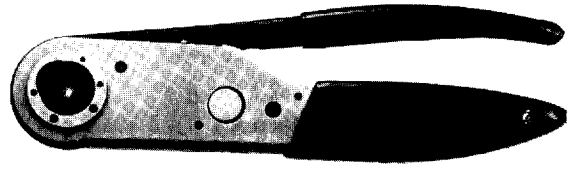
282 281
M 22520/2 - 01



282 291
M 22520/1 - 01

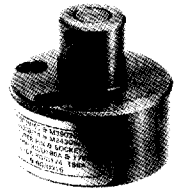


282 292
M 22520/4 - 01



POSITIONERS

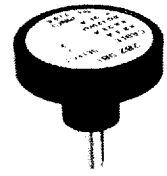
282 973
M 22520/4 - 02



282 975
Daniels TP 617

282 976
Daniels TP 616

282 981
M 22520/2 - 04



INSERTION TOOL wire wrap

282 921

EXTRACTION TOOL

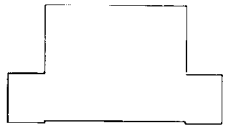
282 920

JACKSCREW AND RACK GUIDE SELECTOR CHART

GUIDES			NUMBER OF CONTACTS						
			14	20	26	34	42	50	75
Rack guides	Without hood	male				690 962			
		fem.				690 952			
	With hood	male	690 963			690 962			
		fem.	690 953			690 952			
Fixed guides	Without hood	male				690 961			
		fem.				690 951			
	With hood	male	690 964			690 961			
		fem.	690 954			690 951			
Rotating jackscrews	Without hood	male				690 965			
		fem.				690 955			
	With hood	male	690 966			690 949		690 967	
		fem.	690 956			690 939		690 957	

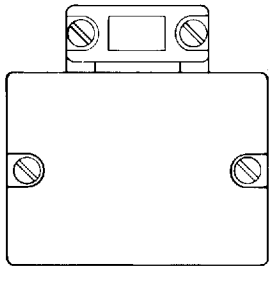
PIECE PARTS

INSULATOR BLOCKS ONLY :



Number of contacts	Block	
	Type P	Type R
14	690 401	690 501
20	690 411	690 511
26	690 421	690 521
34	690 431	690 531
42	690 441	690 541
50	690 451	690 551
75	690 461	690 561

HOODS

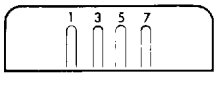


Note : When ordering hoods separately, do not forget to order the appropriate guides or jackscrews (refer to page 34).

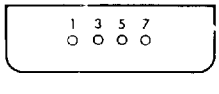
Number of contacts	HOODS reference
14	690 905
20	690 908
26	690 911
34	690 914
42	690 917
50	690 920
75	Type P : 690 923 Type R : 690 924

SHROUDS

Female shroud



Male shroud



without polarising :
use the six digit reference

with polarising :
indicate the 3 digit suffix following the polarising position required.

E.G. : **690 943 120** (position 3)

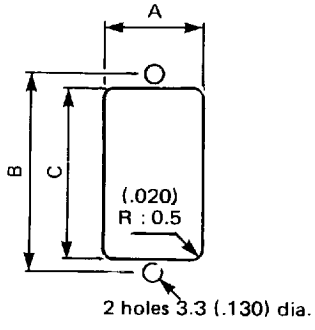
Polarisation code	Position
110	1
120	3
130	5
140	7

Male shroud is to be mounted on insulator block P.
Female shroud is to be mounted on insulator block R.
Polarising is to be positioned next to cavity 1 or A of the insulator block.

Number of contacts	Male shroud	Female shroud
14	690 940	690 930
20	690 941___	690 931___
26	690 942___	690 932___
34	690 943___	690 933___
42	*Not available*	
50	690 945___	690 935___
75	690 946___	690 936___

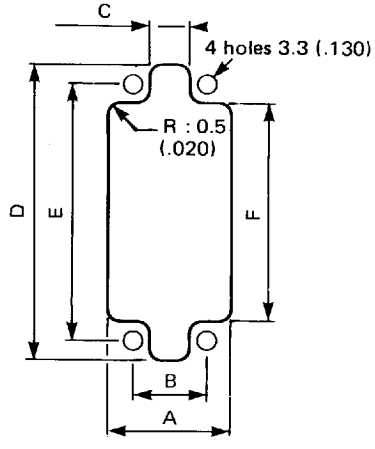
PANEL CUTOUTS

14 - 20 - 26 CONTACTS



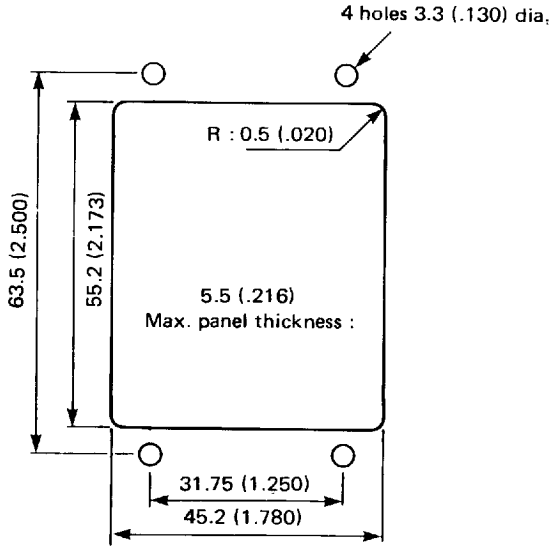
Number of contacts	A	B	C	Max. panel thickness
14	12.4 (.488)	23.8 (.937)	20.8 (.819)	6 (.236)
20	12.4 (.488)	31.7 (1.248)	28.7 (1.130)	6 (.236)
26	15.7 (.618)	33.3 (1.311)	29.2 (1.150)	6 (.236)

34 - 42 - 50 - 75 - 104 CONTACTS

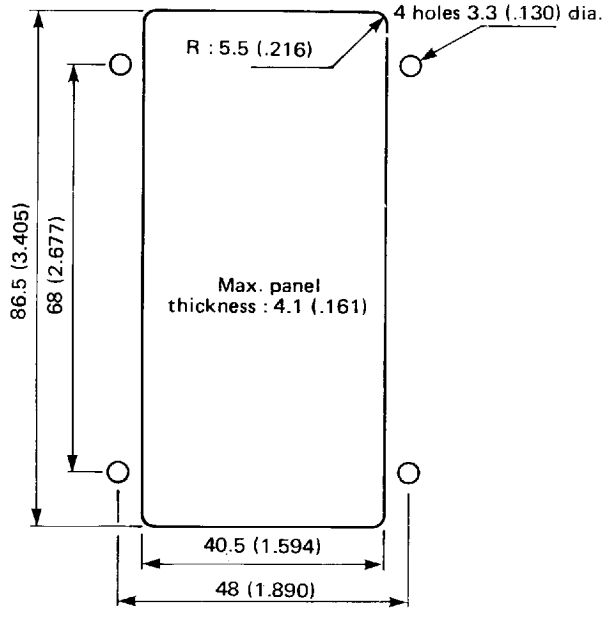


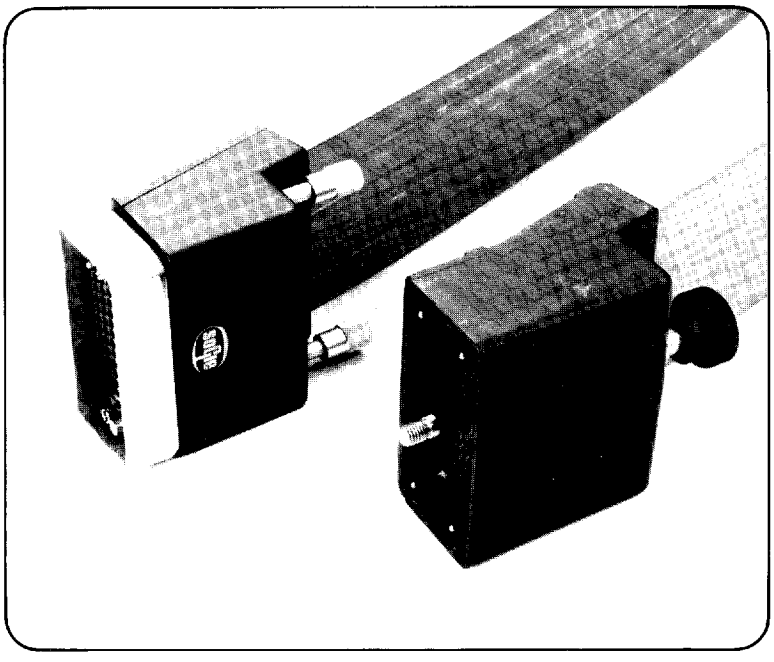
Number of contacts	A	B	C	D	E	F	Max. panel thickness
34	19.8 (.779)	11.9 (.468)	6.3 (.248)	49.3 (1.940)	42.8 (1.685)	36.6 (1.441)	6 (.236)
42	19.8 (.779)	11.9 (.468)	6.3 (.248)	56.9 (2.240)	50.5 (1.983)	43.7 (1.720)	6 (.236)
50	19.8 (.779)	11.9 (.468)	6.3 (.248)	64.3 (2.531)	57.9 (2.279)	51.6 (2.031)	6 (.236)
75	29 (1.141)	19.4 (.764)	14.2 (.559)	64.3 (2.531)	57.9 (2.279)	51.6 (2.031)	6 (.236)
104	29.3 (1.153)	20.6 (.811)	12.7 (.500)	72.5 (2.854)	63.5 (2.500)	55.6 (2.189)	5.5 (.216)

158 CONTACTS



208 CONTACTS





MMC SHEATHED CABLE HARNESS

DESCRIPTION

The MMC series extendable sheathed cable harness permits a flexible electrical link between two units or between a rack and panel. The connectors can be supplied separately or as a cable assembly to specified lengths. They are suitable for 2 applications :

- A removable link between units or rack and panel.
- An assembly with one end attached to the rack and the other end with a free plug.

INTRODUCTION

The connectors and contacts utilised, are the MMC series which is detailed on the preceding pages. Like the MMC series, they may be equipped with jackscrews or rack guides, and polarising shrouds enabling different polarising combinations.

Contact arrangements : 34 - 75 and 104 ways.

HOOD

Cast in strong aluminium alloy, the hood protects the contact/cable terminations and gives strain relief to the cable sheath.

SHEATH

In self-extinguishing polychlorophrene, the sheath protects the cables.

Temperature range : $-30^{\circ}C$ to $+110^{\circ}C$

SHEATHED CABLE HARNESS

34 CONTACTS

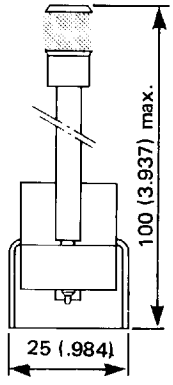
RECEPTACLE Ref. **690 730** (see page 11)

Dimensions : *see pages 12 & 16*

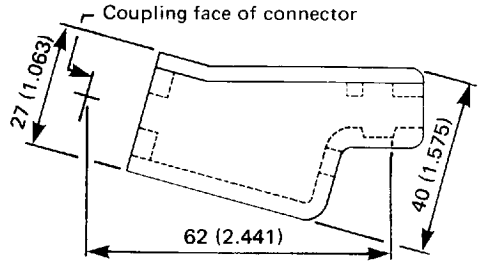
Panel cutout : *see page 26*

PIECE PARTS

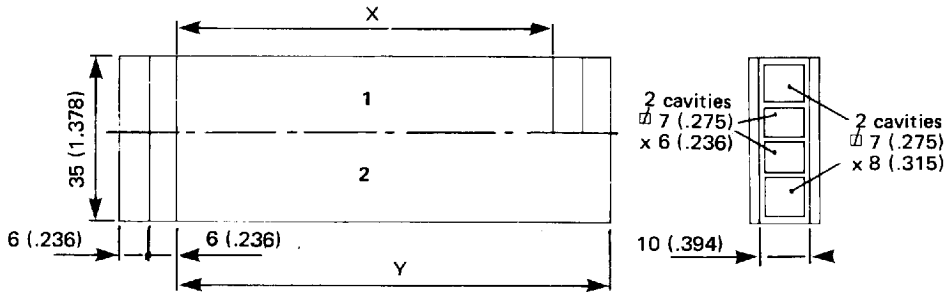
PLUG
Réf. **690 633**



HOOD
Réf. **690 916**



FLAT FLEXIBLE SHEATH



1 Sheath with 2 arresting strips on ends. Reference **690 785 . . . ★**

2 Sheath with 2 arresting strips on 1 end only, the 2 other strips are supplied unbonded. Reference **690 786 . . . ★**

★ *Complete the reference No. by adding 3 digits corresponding to the lengths X or Y in centimeters* **EG. 36 cms = 036**

ASSEMBLY

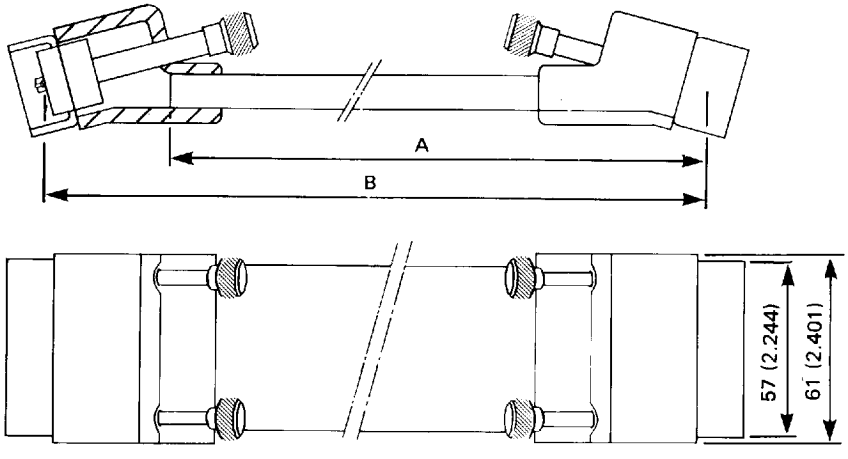
– can be supplied wired or unwired

– when ordering, indicate the total lengths :

A for single end assembled

B for double end assembled

and specify wiring details. After study of request, a reference part No. will be allocated to the requirement.



SHEATHED CABLE HARNESS

75 CONTACTS

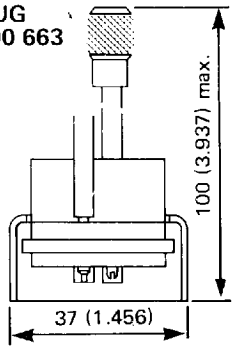
PIECE PARTS

RECEPTACLE Ref. **690 760** *(see page 11)*

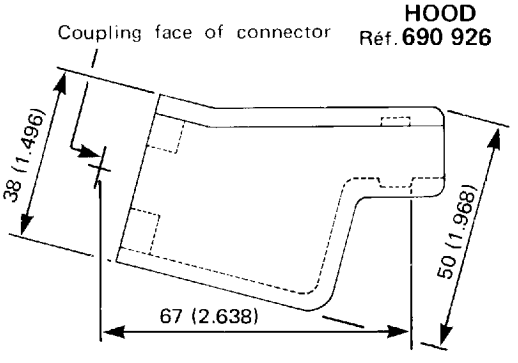
Dimensions : *see pages 13 & 16*

Panel cutout : *see page 26*

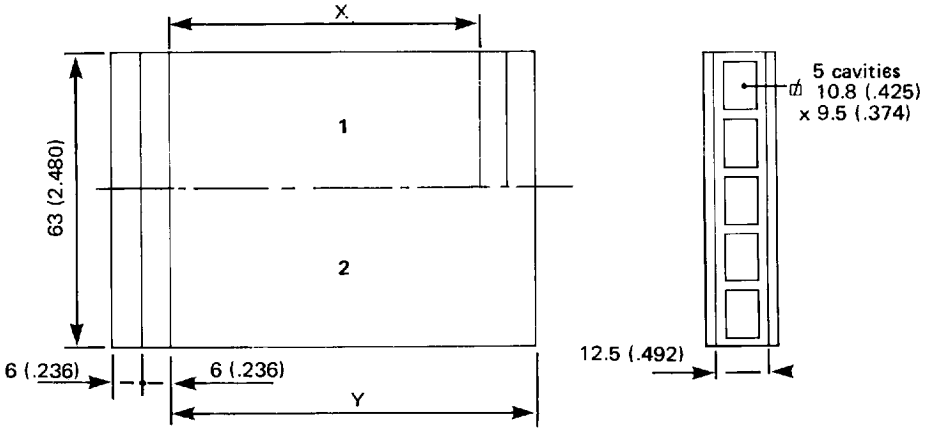
PLUG
Réf. **690 663**



HOOD
Réf. **690 926**



FLAT FLEXIBLE SHEATH



1 Sheat with 2 arresting strips on both ends. Reference **690 789 . . . ★**

2 Sheath with 2 arresting strips on 1 end only, the 2 other strips are supplied unbonded. Reference **690 790 . . . ★**

★ *Complete the reference No. by adding 3 digits corresponding to the lengths X or Y in centimeters* **EG. 36 cm = 036**

ASSEMBLY

– can be supplied wired or unwired

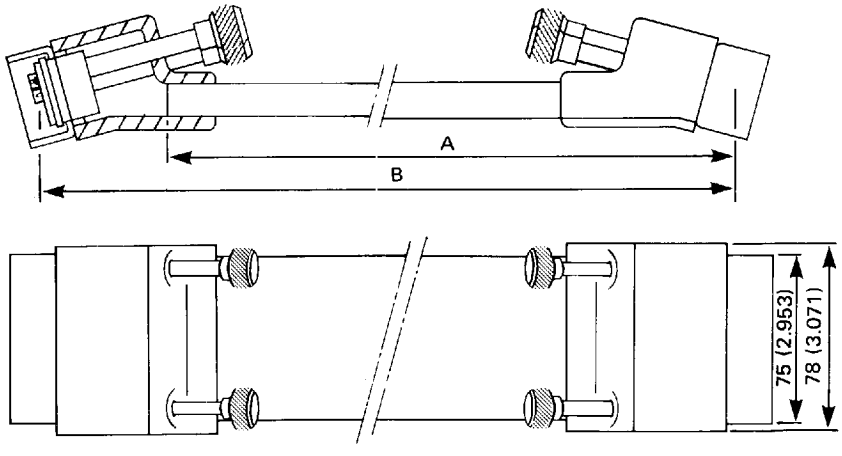
– when ordering indicate the total lengths :

A for single end assembled

B for double end assembled

and specify wiring details.

After study of request, a reference part No. will be allocated to the requirement.



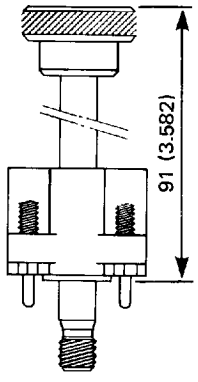
SHEATHED CABLE HARNESS

104 CONTACTS

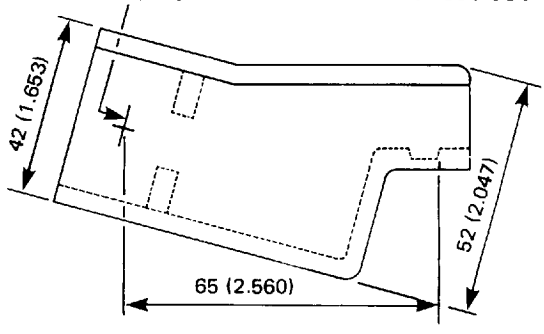
RECEPTACLE Ref. **690 573** (see page 20)
Dimensions : *see page 20*
Panel cutout : *see page 26*

PIECE PARTS

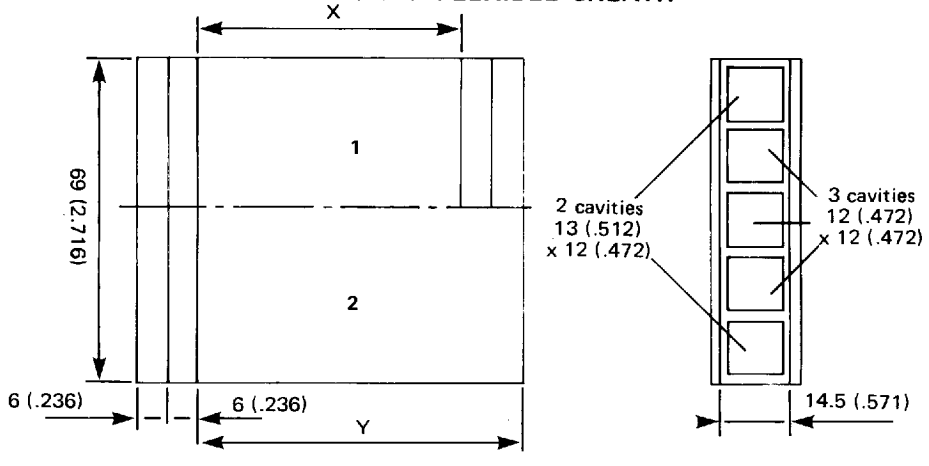
PLUG
Réf. **690 490**



HOOD
Réf. **690 981**



FLAT FLEXIBLE SHEATH



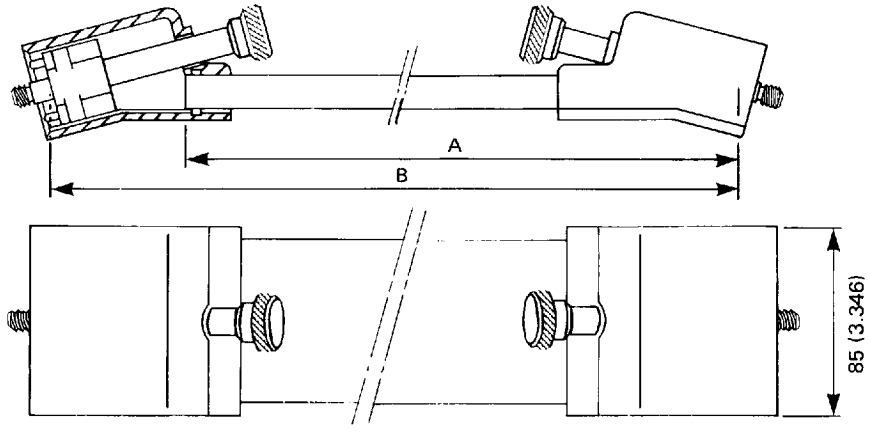
1 Sheath with 2 arresting strips on both ends. Reference **690 791 ... ★**

2 Sheath with 2 arresting strips on 1 end only, the 2 other strips are supplied unbonded. Reference **690 792 ... ★**

★ *Complete the reference No. by adding 3 digits corresponding to the lengths X or Y in centimeters* **E.G. 36 cm = 036**

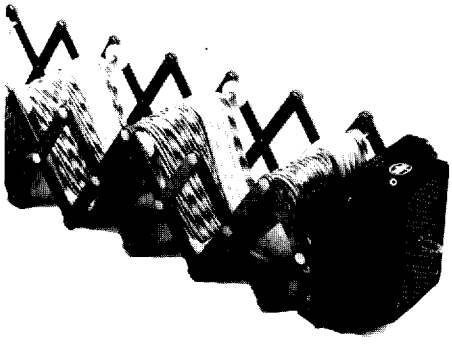
ASSEMBLY

– can be supplied wired or unwired
– when ordering indicate the total lengths :
A for single end assembled
B for double end assembled
and specify wiring details.
After study of request, a reference part No. will be allocated to the requirement.



MMC SERIES
CABLE HARNESSES
NAVAL SPECIFICATION AGB/T

Using the MMC connector and conforming to the French specification STCAN - AGB/T, these products permit access to rack mounted equipement whilst still in operation :



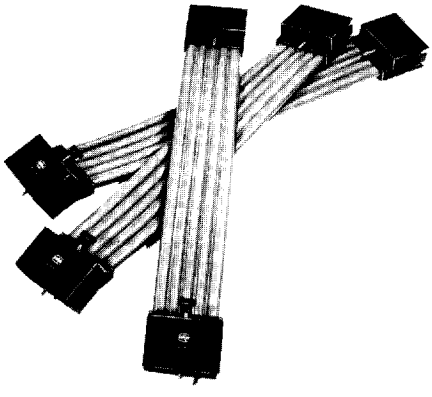
EXPANDABLE CABLE HARNESS

Conforming to the AGB/T540 specification and homologated by the STCAN department, these harnesses consist of two MMC series connectors with strain relief hoods, which are linked by a mechanical pantograph supporting ribbon wires, twisted pair and/or coaxial cables.

There are 5 types available :

- 104 individual ways
- 104 individual ways for multiplexer circuitry
- 158 individual ways (not in AGB/T)
- 158 individual ways for multiplexer circuitry
- 208 individual ways

Each type may be assembled using various cables : equipment, coaxial, twisted pair, twisted triple and ribbon cable.



SHEATHED CABLE HARNESS

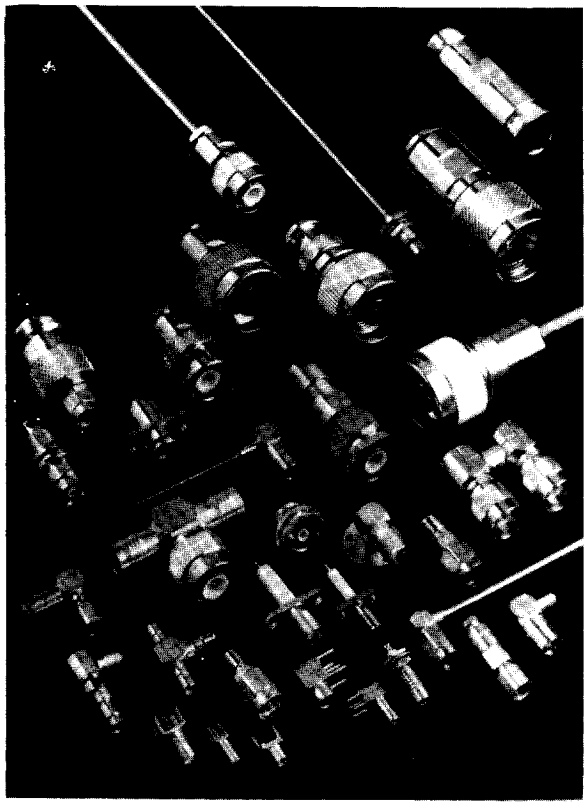
Conforming to the AGB/T552 specifications, these harnesses consist of two MMC series connectors with strain relief hoods, which are linked by a flexible sheath through which pass the cables.

Arrangement availabie 104 and 208 ways.

Different types of wiring possible. Please consult.

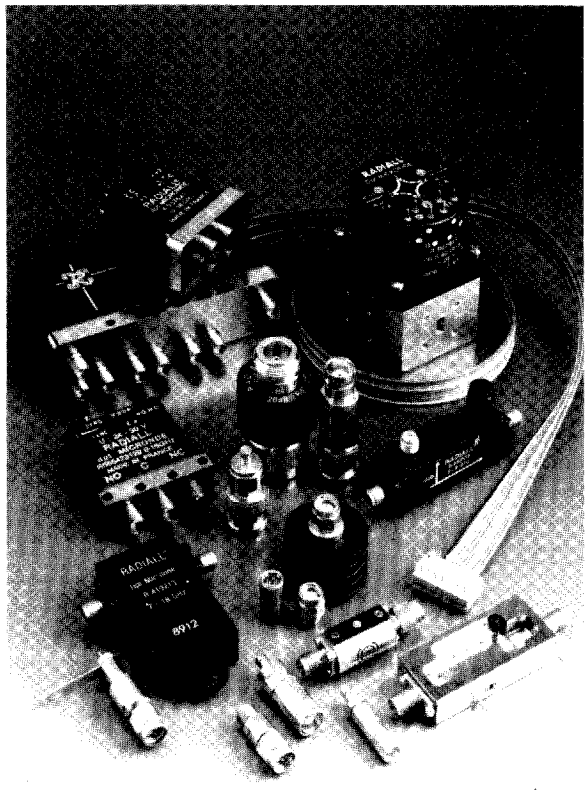
Further details on request.

RADIALL PRODUCT RANGE



COAXIAL CONNECTORS DC-46 GHz

- **Microminiature**
  MMS - MCX - SSMB - SSMA - SBMA
- **Subminiature**
  SMB - SMC - SMZ - SMZ lock - 1.0/2.3 - SMA - SMA 2.9 - BMA - PCB cable terminals
- **Miniature**
  BNC 50 Ω, 75 Ω and commercial
  TNC 50 Ω, 75 Ω and commercial - TNC 18 GHz
  MiniQuick - 1,6/5,6 - Twinax - Triax
- **Standard**
  N 50 Ω and 75 Ω - N 18 GHz
  C - LC - HN - HN2 - UHF - UHF2 - 7/16
- **High Voltage**
- **Coaxial adaptors**
- **Accessories and assembly tools**
- **RF cable assemblies**
  SHF low loss cable assemblies



MICROWAVE COMPONENTS from DC up to 40 GHz (custom product)

- **Coaxial terminations**
- **Coaxial attenuators**
- **Coaxial couplers**
- **Coaxial and waveguide switches**
- **Detectors**
- **Other coaxial components**