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Products for *Section*

4



high currents (> 250 A)

- Port areas : power supply to ships, cranes ...
- Tunnels, mining and quarries : power supply to tunnel drilling machines, mining vehicles ...
- Buildings and public works : power supply to underground pipings ...
- Railroad transport : power supply to engines and coaches ...
- Iron and steel industry : power supply to industrial furnaces ...
- Water treatment : power supply to submersible pumps ...
- Power supply to generators



PF

High current plugs and sockets

The range

Advantages

315 to 400 A - 690 V

400 to 600 A - 1000 V

Dimensions

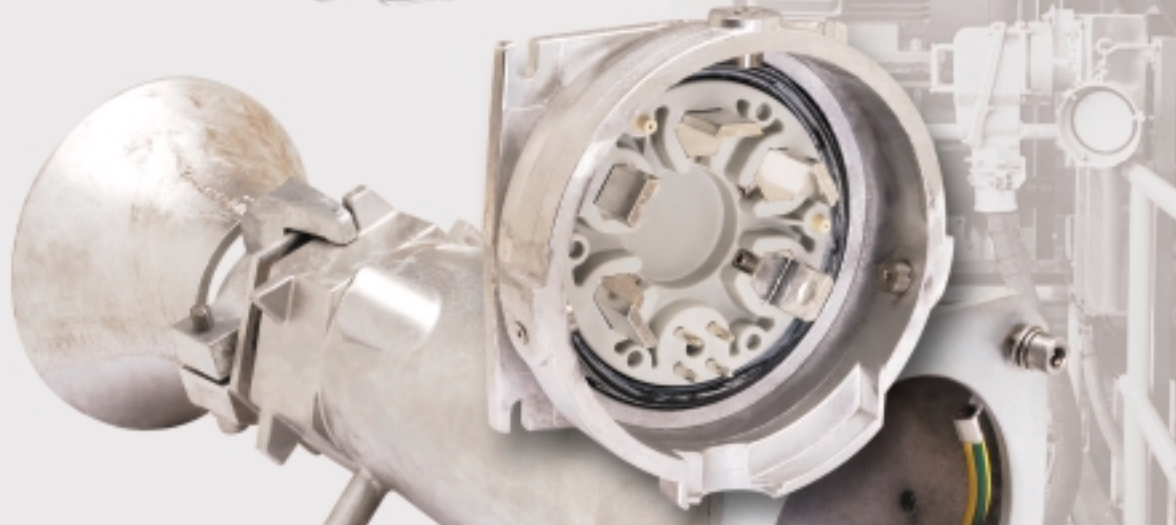
Spare parts: see page 177

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High performance plugs and socket-outlets

315 to 600 Amps, up to 1 000 Volts, IK10, IP66/67, up to 8 auxiliaries ... and easy and safe handling! The most powerful industrial plugs and socket-outlets meet the requirements of high power distribution: power supply to machines for mining

and quarries, to machines to dig (tunnels), to ships and equipments (harbours), to town equipments, to public utilities ...

SPECIFICATION

315 to 600 Amps, IP 66/67
plugs and socket-outlets
separating the power contact
opening and closing from that
of the pilot contacts, safety
shutter (IP4X socket-outlet),
silver butt-contacts.

*Product technical data
sheet on e-catalogue -
www.marechal-electric.com*

Main advantages

Easy handling in complete safety

Conventional plugs and socket-outlets used in high current applications have two major drawbacks: firstly they require significant force for plug insertion and removal. Secondly, plug insertion into the socket-outlet first closes the main circuit, and then closes the pilot circuit without achieving watertightness.

The innovative design of the Marechal PF plug and socket-outlet allows:

- a plug insertion and removal with very little effort
- a total safety for the user thanks to a separate operation between connecting / disconnecting the main contacts (socket-outlet and inlet) and connecting / disconnecting the pilot contacts (socket-outlet and inlet).

Thus the user first closes the PF's main circuit under no-load conditions by rotating the plug into the socket-outlet. Watertightness is, in the same time, automatically achieved. Then the user only needs to lock the plug. This operation closes in the same time the pilot circuit and allows the main circuit to be energized.

Conversely, the user opens the pilot circuit by unlocking the plug. The main circuit is thus de-energized. Again, without any effort, he just has then to rotate the plug in its socket-outlet to remove it.

Result: PFQ and PFC plugs and socket-outlets provide the user with absolute safety and unequalled ease of operation.

Automatic IP66/67 watertightness

Marechal PF plugs and socket-outlets are IP66/67 watertight in all configurations (*a plug lid is available as an optional feature to ensure the plug watertightness when not in use*). They allow the simultaneous closing of the main circuit and the watertightness of the plug and socket-outlet just by rotating the plug in the socket-outlet.

Guaranteed safety

The connection and disconnection are done without any danger to the user, through pilot contacts that provide the electrical locking.

The pilot contacts are operated by the rotation of a cam which also ensures mechanical locking of the plug on the socket-outlet.

Risk of oxidization is eliminated by the use of silver-nickel tipped contacts. The quality of long term connections is thus assured.

The socket-outlets include a safety shutter that makes live parts inaccessible. This safety shutter may be removed from the front, for easy cleaning and maintenance.

High current plugs and socket-outlets

PFQ

PFC

Electrical features

Rated current	from 315 to 400 A	from 400 to 600 A
Maximum voltage	690 VAC/DC	1000 VAC/DC
Contacts	Silver butt-contacts with metallic strip	
Pilot contacts (1)	Silver-nickel butt-contacts with metallic braid	
Auxiliary contacts (2)	Silver-nickel butt-contacts with metallic braid	
Active parts protected (3) (with socket-outlet lid open)	IP4X	IP2X
Keying system (4)	10 positions	7 positions

Mechanical features

Automatic watertightness (5)	IP66/67	IP66/67
Pilot and auxiliaries device (6)	Easy access	Easy access
Wiring (terminals) ...	with M14 screw	with M14 screw
Wiring (entries) ...	for single or multiple entries	for single entry
Casing in metal (7)	✓	✓

(1) At this power level, it is impossible to break directly on load, an electric locking is compulsory by a switch or a contactor controlled by pilot contacts.

(2) to convey informations.

(3) thanks to a safety shutter.

(4) allowing discrimination between different power supplies (voltage, frequency, AC current, DC current).

(5) achieved as soon as the plug is fully inserted into the socket-outlet or when the lid of the socket-outlet is closed, without any other operation.

(6) which ensures both electric and mechanical locking.

(7) anti-corrosion treated metal (aluminium AS13) providing an outstanding resistance to high temperature and offering an excellent mechanical resistance to shocks (impact resistance IK10).

Regulatory features

PF plugs and sockets comply with:

- The European Low Voltage Directive (*decree N°95-1081 dated 3rd October 1995*),
- The French decree **N° 88-1056** dated 14th November 1988 relating to workers' protection,
- The decrees relating to workers' protection in Belgium, Spain and Italy.

PFQ3/Q4

High current plugs and sockets

315 to 400 A - 690 V plugs and sockets-outlets



Main features:

- (socket-outlet) IP 66/67
- (socket-outlet + inlet) IP 66/67
- IK 10
- Umax AC / DC 690V
- Wiring (mini / maxi) flexible 150 / 240 mm²
- Wiring (mini / maxi) stranded 150 / 240 mm²
- 2 pilot contacts intended to control upstream closing and opening (compulsory) by a switch or a contactor
- 6 auxiliary contacts to carry informations
- Wiring for single entry or multiple entries



Socket-outlet (female)



Inlet (male)



Accessories



Inlet lid



Key for locking and operate pilot contacts

PFQ3: 315A

Voltage	Polarity	Material	Part #
20 - 24 V	2P	Metal	47 34 08A
190 - 230 V	3P+E	Metal	47 34 033
220 - 250 V	1P+N+E	Metal	47 34 015
380 - 440 V	3P+E	Metal	47 34 013
Dual voltage*	3P+N+E	Metal	47 34 017

Voltage	Polarity	Material	Part #
20 - 24 V	2P	Metal	47 38 08A
190 - 230 V	3P+E	Metal	47 38 033
220 - 250 V	1P+N+E	Metal	47 38 015
380 - 440 V	3P+E	Metal	47 38 013
380 - 440 V	3P+N+E	Metal	47 38 017

PFQ4: 400A

Voltage	Polarity	Material	Part #
20 - 24 V	2P	Metal	47 44 08A
190 - 230 V	3P+E	Metal	47 44 033
220 - 250 V	1P+N+E	Metal	47 44 015
380 - 440 V	3P+E	Metal	47 44 013
Dual voltage*	3P+N+E	Metal	47 44 017

Voltage	Polarity	Material	Part #
20 - 24 V	2P	Métal	47 48 08A
190 - 230 V	3P+E	Métal	47 48 033
220 - 250 V	1P+N+E	Métal	47 48 015
380 - 440 V	3P+E	Métal	47 48 013
380 - 440 V	3P+N+E	Métal	47 48 017

* See Bookmark

Other voltages, polarities: see page 8

Socket-outlet accessory

Key for locking and operate pilot contacts 47 3A 824

On request: locking by lock (free or captive key)

Inlet accessory

Inlet lid 47 4A 126

Also see:

Dimensions page 132
Technical Manual page 150

Installation accessories



Box

wiring from 95 to 150 mm²

PFQ3

PFQ4

wiring from 185 to 240 mm²

PFQ3

PFQ4

Tightening

46 - 50 mm	47 3A 023 951	47 4A 023 951	47 3A 023 241	47 4A 023 241
51 - 55 mm	47 3A 023 952	47 4A 023 952	47 3A 023 242	47 4A 023 242
56 - 60 mm	47 3A 023 953	47 4A 023 953	47 3A 023 243	47 4A 023 243
61 - 65 mm	47 3A 023 954	47 4A 023 954	47 3A 023 244	47 4A 023 244
66 - 70 mm	47 3A 023 955	47 4A 023 955	47 3A 023 245	47 4A 023 245
71 - 75 mm	47 3A 023 956	47 4A 023 956	47 3A 023 246	47 4A 023 246
76 - 80 mm	47 3A 023 957	47 4A 023 957	47 3A 023 247	47 4A 023 247
81 - 85 mm	47 3A 023 958	47 4A 023 958	47 3A 023 248	47 4A 023 248
86 - 90 mm	47 3A 023 959	47 4A 023 959	47 3A 023 249	47 4A 023 249

The boxes are supplied with a built-in cable gland. On request: boxes for installation in ducts, boxes equipped with circuit breaker, earth-leakage switch, contactor etc.



Handle

straight *

PFQ3

PFQ4

angled 90°

PFQ3

PFQ4

Tightening

46 - 50 mm	47 3A 013 50	47 4A 013 50	47 3A 913 50	47 4A 913 50
51 - 55 mm	47 3A 013 55	47 4A 013 55	47 3A 913 55	47 4A 913 55
56 - 60 mm	47 3A 013 60	47 4A 013 60	47 3A 913 60	47 4A 913 60
61 - 65 mm	47 3A 013 65	47 4A 013 65	47 3A 913 65	47 4A 913 65
66 - 70 mm	47 3A 013 70	47 4A 013 70	47 3A 913 70	47 4A 913 70
71 - 75 mm	47 3A 013 75	47 4A 013 75	47 3A 913 75	47 4A 913 75
76 - 80 mm	47 3A 013 80	47 4A 013 80	47 3A 913 80	47 4A 913 80
81 - 85 mm	47 3A 013 85	47 4A 013 85	47 3A 913 85	47 4A 913 85
86 - 90 mm	47 3A 013 90	47 4A 013 90	47 3A 913 90	47 4A 913 90

* Trumpet gland available on request



Mechanical and electric locking (by pilot contacts)

At this power level, it is impossible to break directly on load; an electric locking is compulsory by means of a switch or a contactor controlled by pilot contacts. On request, we can provide boxes with earth-leakage circuit breakers or switches, contactors, fuses, boxes for loop-in / loop-out, with entries for single pole cables etc.

Also see on next page: "How to cable PF plugs and socket-outlets"

PFC4/C5/C6 400 to 600 A - 1000 V

plugs and sockets-outlets

High current plugs and sockets



Main features:

- (socket-outlet) IP 66/67
- (socket-outlet + inlet) IP 66/67
- IK 10
- Umax AC / DC 1000V
- Wiring (mini / maxi) flexible 150 / 240 mm²
- Wiring (mini / maxi) stranded 150 / 240 mm²
- 2 pilot contacts intended to control upstream closing and opening (compulsory) by a switch or a contactor
- 2 auxiliary contacts to carry informations
- Wiring for single entry



Socket-outlet (female)



Inlet (male)



PFC4: 400A

Voltage	Polarity	Material	Part #
20 - 24 V	2P	Metal	49 44 08A
190 - 230 V	3P+E	Metal	49 44 033
220 - 250 V	1P+N+E	Metal	49 44 015
380 - 440 V	3P+E	Metal	49 44 013
Dual voltage*	3P+N+E	Metal	49 44 017

Voltage	Polarity	Material	Part #
20 - 24 V	2P	Metal	49 48 08A
190 - 230 V	3P+E	Metal	49 48 033
220 - 250 V	1P+N+E	Metal	49 48 015
380 - 440 V	3P+E	Metal	49 48 013
380 - 440 V	3P+N+E	Metal	49 48 017

PFC5: 500A

Voltage	Polarity	Material	Part #
20 - 24 V	2P	Metal	49 54 08A
190 - 230 V	3P+E	Metal	49 54 033
220 - 250 V	1P+N+E	Metal	49 54 015
380 - 440 V	3P+E	Metal	49 54 013
Dual voltage*	3P+N+E	Metal	49 54 017

Voltage	Polarity	Material	Part #
20 - 24 V	2P	Metal	49 58 08A
190 - 230 V	3P+E	Metal	49 58 033
220 - 250 V	1P+N+E	Metal	49 58 015
380 - 440 V	3P+E	Metal	49 58 013
380 - 440 V	3P+N+E	Metal	49 58 017

PFC6: 600A

Voltage	Polarity	Material	Part #
20 - 24 V	2P	Metal	49 64 08A
190 - 230 V	3P+E	Metal	49 64 033
220 - 250 V	1P+N+E	Metal	49 64 015
380 - 440 V	3P+E	Metal	49 64 013
Dual voltage*	3P+N+E	Metal	49 64 017

Voltage	Polarity	Material	Part #
20 - 24 V	2P	Metal	49 68 08A
190 - 230 V	3P+E	Metal	49 68 033
220 - 250 V	1P+N+E	Metal	49 68 015
380 - 440 V	3P+E	Metal	49 68 013
380 - 440 V	3P+N+E	Metal	49 68 017

* See Bookmark

Other voltages, polarities: see page 8

Socket-outlet accessory

Key for locking and operate pilot contacts 49 3A 824

On request: locking by lock (free or captive key)

Inlet accessory

Inlet lid 49 4A 126

Accessories



Inlet lid



Key for locking and operate pilot contacts

Also see:

Dimensions page 132
Technical Manual page 150

Installation accessories



Box

wiring from 95 to 150 mm²

PFc4

PFc5

PFc6

wiring from 185 to 240 mm²

PFc4

PFc5

PFc6

Tightening

46 - 50 mm	49 4A 023 951	49 5A 023 951	49 6A 023 951	49 4A 023 241	49 5A 023 241	49 6A 023 241
51 - 55 mm	49 4A 023 952	49 5A 023 952	49 6A 023 952	49 4A 023 242	49 5A 023 242	49 6A 023 242
56 - 60 mm	49 4A 023 953	49 5A 023 953	49 6A 023 953	49 4A 023 243	49 5A 023 243	49 6A 023 243
61 - 65 mm	49 4A 023 954	49 5A 023 954	49 6A 023 954	49 4A 023 244	49 5A 023 244	49 6A 023 244
66 - 70 mm	49 4A 023 955	49 5A 023 955	49 6A 023 955	49 4A 023 245	49 5A 023 245	49 6A 023 245
71 - 75 mm	49 4A 023 956	49 5A 023 956	49 6A 023 956	49 4A 023 246	49 5A 023 246	49 6A 023 246
76 - 80 mm	49 4A 023 957	49 5A 023 957	49 6A 023 957	49 4A 023 247	49 5A 023 247	49 6A 023 247
81 - 85 mm	49 4A 023 958	49 5A 023 958	49 6A 023 958	49 4A 023 248	49 5A 023 248	49 6A 023 248
86 - 90 mm	49 4A 023 959	49 5A 023 959	49 6A 023 959	49 4A 023 249	49 5A 023 249	49 6A 023 249

The boxes are supplied with a built-in cable gland. On request: boxes for installation in ducts, boxes equipped with circuit breaker, earth-leakage switch, contactor etc.



Handle

straight *

PFc4

PFc5

PFc6

angled 90°

PFc4

PFc5

PFc6

Tightening

46 - 50 mm	49 4A 013 50	49 5A 013 50	49 6A 013 50	49 4A 913 50	49 5A 913 50	49 6A 913 50
51 - 55 mm	49 4A 013 55	49 5A 013 55	49 6A 013 55	49 4A 913 55	49 5A 913 55	49 6A 913 55
56 - 60 mm	49 4A 013 60	49 5A 013 60	49 6A 013 60	49 4A 913 60	49 5A 913 60	49 6A 913 60
61 - 65 mm	49 4A 013 65	49 5A 013 65	49 6A 013 65	49 4A 913 65	49 5A 913 65	49 6A 913 65
66 - 70 mm	49 4A 013 70	49 5A 013 70	49 6A 013 70	49 4A 913 70	49 5A 913 70	49 6A 913 70
71 - 75 mm	49 4A 013 75	49 5A 013 75	49 6A 013 75	49 4A 913 75	49 5A 913 75	49 6A 913 75
76 - 80 mm	49 4A 013 80	49 5A 013 80	49 6A 013 80	49 4A 913 80	49 5A 913 80	49 6A 913 80
81 - 85 mm	49 4A 013 85	49 5A 013 85	49 6A 013 85	49 4A 913 85	49 5A 913 85	49 6A 913 85
86 - 90 mm	49 4A 013 90	49 5A 013 90	49 6A 013 90	49 4A 913 90	49 5A 913 90	49 6A 913 90

* Trumpet gland available on request

How to cable PF plugs and socket-outlets



1. The cable gland is mounted on a detachable flange ...



2. Which helps the alignment of the cable conductors with the socket-outlet terminals. Wire the conductors to these terminals.



3. Once the conductors are fixed, slide the flange into the grooves provided and close the box lid.



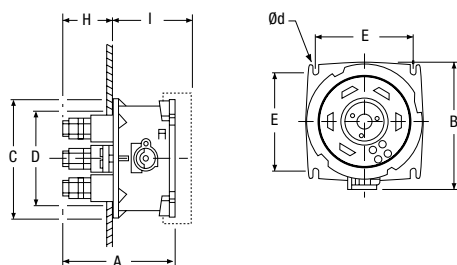
4. Ensure all screws are tightened to provide an IP66/67 watertightness.



PF range dimensions

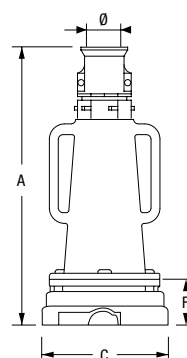
Socket-outlet + plug

Socket-outlet



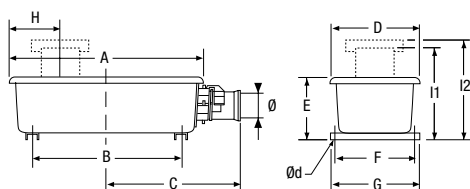
	A	B	C	D	E	H	I	Ød
PFQ	194	240	196	140	146	76	175	10
PFC	220	250	230	185	190	100	210	10

Straight plug



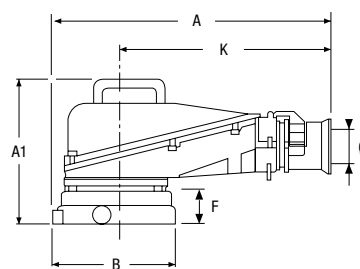
	A	C	F	Ø
PFQ	585	196	75	46-90
PFC	675	230	95	46-90

Surface mounting socket-outlet



	A	B	C	D	E	F	G	H	I1	I2	Ø	Ød
PFQ BOX 1	442	284	365	340	240	306	340	145	358	415	46-90	11.5
PFQ BOX 2	742	584	515	340	240	306	340	145	360	450	46-90	11.5
PFC BOX 1	442	284	365	340	240	306	340	145	358	415	46-90	11.5
PFC BOX 2	742	584	515	340	240	306	340	145	360	450	46-90	11.5

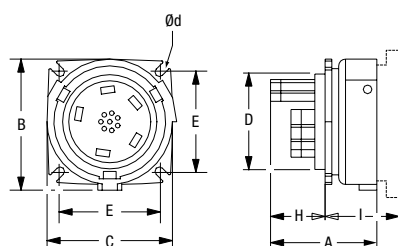
Angled plug



	A	A1	B	F	K	Ø
PFQ	470	292	240	75	352	46-90
PFC	595	320	266	95	457	46-90

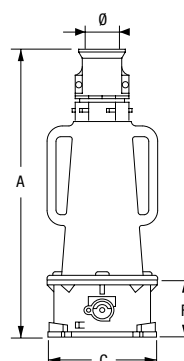
Coupler socket + inlet

Inlet



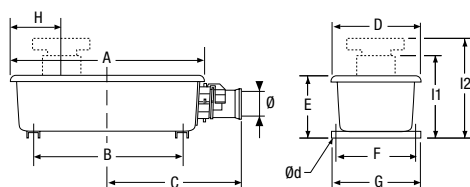
	A	B	C	D	E	H	I	Ød
PFQ	155	240	196	135	146	80	175	11
PFC	195	266	230	175	190	100	210	11

Straight coupler socket



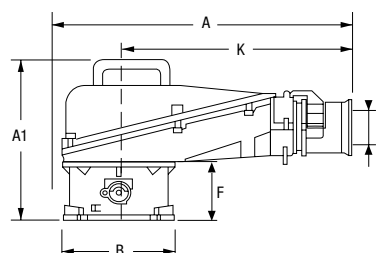
	A	C	F	Ø
PFQ	585	196	75	46-90
PFC	675	230	95	46-90

Surface mounting appliance inlet



	A	B	C	D	E	F	G	H	I1	I2	Ø	Ød
PFC BOX 1	442	284	365	340	240	306	340	145	315	415	46-90	11.5
PFC BOX 2	742	584	515	340	240	306	340	145	335	450	46-90	11.5
PFC BOX 1	442	284	365	340	240	306	340	145	315	415	46-90	11.5
PFC BOX 2	742	584	515	340	240	306	340	145	335	450	46-90	11.5

Angled coupler socket



	A	A1	B	F	K	Ø
PFC	470	334	240	118	372	46-90
PFC	595	340	250	120	457	46-90



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