

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 461

CONNECTIONS
FOR AIRCRAFT GROUND ELECTRICAL SUPPLIES

1st EDITION

November 1965

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BRIEF HISTORY

The ISO Recommendation R 461, *Connections for Aircraft Ground Electrical Supplies*, was drawn up by Technical Committee ISO/TC 20, *Aircraft*, the Secretariat of which is held by the British Standards Institution (BSI).

Work on this question by the Technical Committee began in 1952 and led, in 1957, to the adoption of a Draft ISO Recommendation.

In May 1962, this Draft ISO Recommendation (No. 508) was circulated to all the ISO Member Bodies for enquiry. It was approved by the following Member Bodies:

Australia	Israel	Sweden
Belgium	Italy	Switzerland
Chile	Japan	Turkey
Czechoslovakia	Netherlands	United Kingdom
Denmark	New Zealand	U.S.S.R.
Finland	Portugal	Yugoslavia
France	Spain	

One Member Body opposed the approval of the Draft:

Germany

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council which decided, in November 1965, to accept it as an ISO RECOMMENDATION.

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CONNECTIONS FOR AIRCRAFT GROUND ELECTRICAL SUPPLIES

1. CONNECTIONS

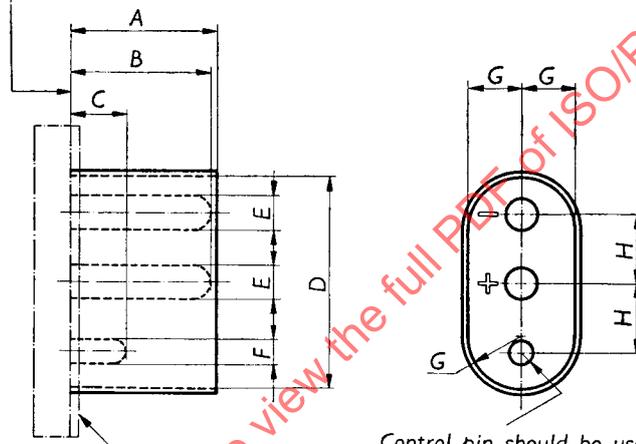
Connections for aircraft ground electrical supplies, i.e. aircraft plugs and ground supply sockets, should comply with the overall dimensions shown as follows.

1.1 Direct current

1.1.1 28 V

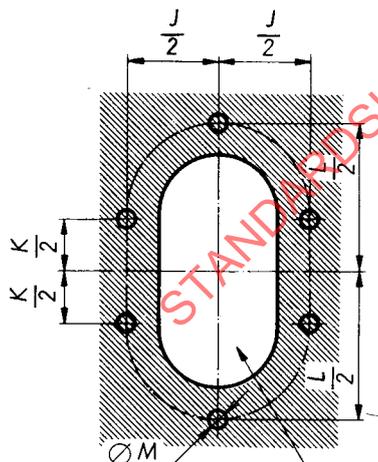
FIG. 1. — Aircraft plug

The length of engagement of the pins in the socket should not be affected by the method of mounting the aircraft plug.



On pressurized mountings, this surface should be suitable to enable a sealed joint to be made, when the shroud is passed through the aircraft structure.

Control pin should be used at positive polarity, at the voltage of the main positive pin.



Hole dimensions should be suitable for the particular plug.

Mounting dimensions

Dimension	Inches	Millimetres
A	2.125 ±0.03	54 ±0.8
B	2.0 ±0.015	50.8 ±0.4
C	0.75 ±0.015	19.1 ±0.4
D	3.062 $\begin{smallmatrix} +0.04 \\ 0 \end{smallmatrix}$	77.77 $\begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$
E	0.437 $\begin{smallmatrix} 0 \\ -0.002 \end{smallmatrix}$	11.1 $\begin{smallmatrix} 0 \\ -0.05 \end{smallmatrix}$
F	0.312 $\begin{smallmatrix} 0 \\ -0.002 \end{smallmatrix}$	7.92 $\begin{smallmatrix} 0 \\ -0.05 \end{smallmatrix}$
G	0.765 ±0.02	19.43 ±0.5
H	1.0 ±0.01	25.4 ±0.25
J	2.234	56.7
K	1.672	42.5
L	3.859	98
M	0.24	6.1

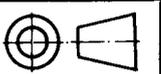
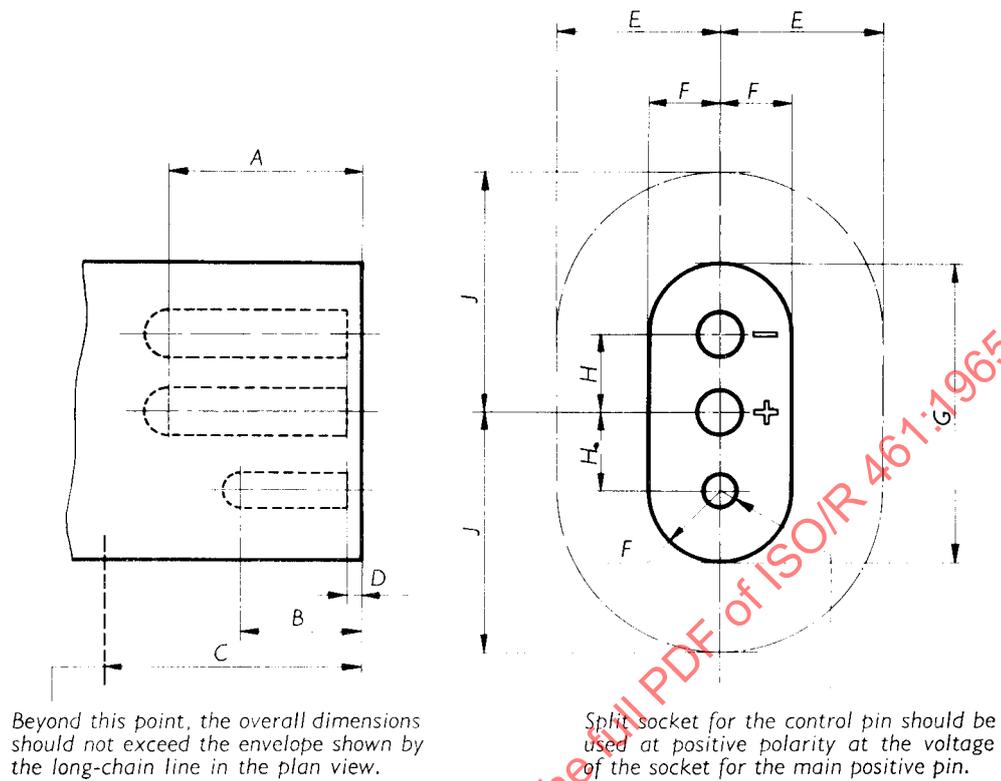


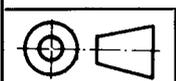
FIG. 2. — Ground supply socket



Individual socket inserts should have side play of ± 0.02 in (± 0.5 mm). Fit of sockets for main pins should be such as to limit the voltage drop at each main pin, measured between the cable connections of the ground supply socket and the aircraft plug, to 20 mV at 450 A.

Dimension	Inches	Millimetres
A	2.031 min.	51.6 min.
B	1.25 min.	31.8 min.
C*	2.5	63.5
D	0.125 max.	3.2 max.
E	1.65	41.9
F	0.655 ± 0.01	16.64 ± 0.25
G	$3.0 \begin{smallmatrix} 0 \\ -0.062 \end{smallmatrix}$	$76.2 \begin{smallmatrix} 0 \\ -1.6 \end{smallmatrix}$
H	1.0 ± 0.01	25.4 ± 0.25
J	2.5	63.5

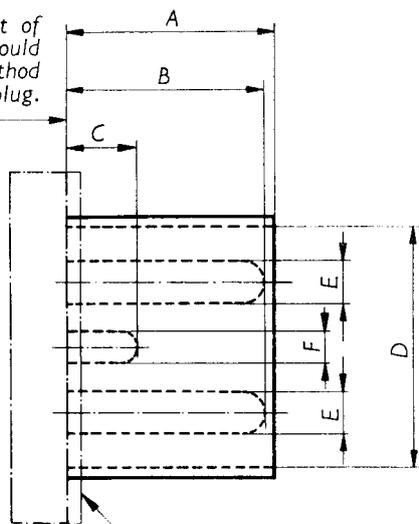
* Minimum length before any increase in cross section



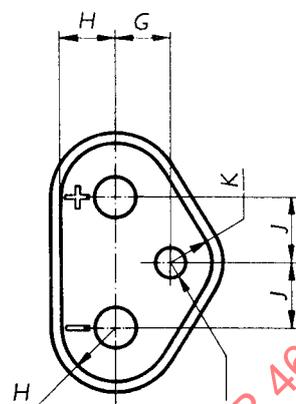
1.1.2 112 V

FIG. 3. — Aircraft plug

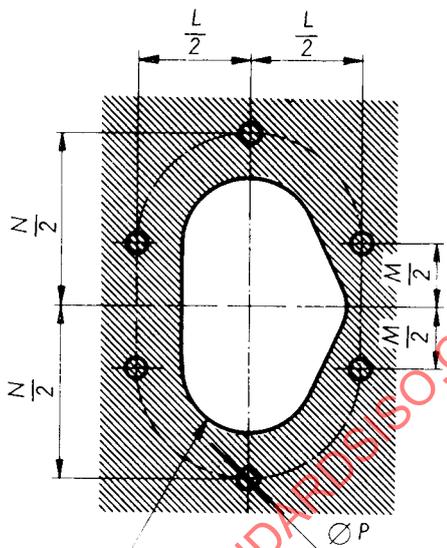
The length of engagement of the pins in the socket should not be affected by the method of mounting the aircraft plug.



On pressurized mountings, this surface should be suitable to enable a sealed joint to be made, when the shroud is passed through the aircraft structure.



Control pin should be used at positive polarity at the voltage of the main positive pin.



Hole dimensions should be suitable for the particular plug.

Mounting dimensions

Dimension	Inches	Millimetres
A	2.125 ±0.03	54 ±0.8
B	2.0 ±0.015	50.8 ±0.4
C	0.75 ±0.015	19.1 ±0.4
D	2.56 ^{+0.04} / ₀	65.02 ⁺¹ / ₀
E	0.437 ⁰ / _{-0.002}	11.1 ⁰ / _{-0.05}
F	0.312 ⁰ / _{-0.002}	7.925 ⁰ / _{-0.05}
G	0.562 ±0.02	14.27 ±0.5
H	0.593 ±0.02	15.06 ±0.5
J	0.687 ±0.01	17.45 ±0.25
K*	0.406 ±0.02	10.31 ±0.5
L	2.0625	52.4
M	1.5	38.1
N	3.375	85.7
P	0.24	6.1

* Radius

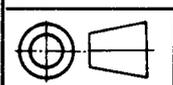
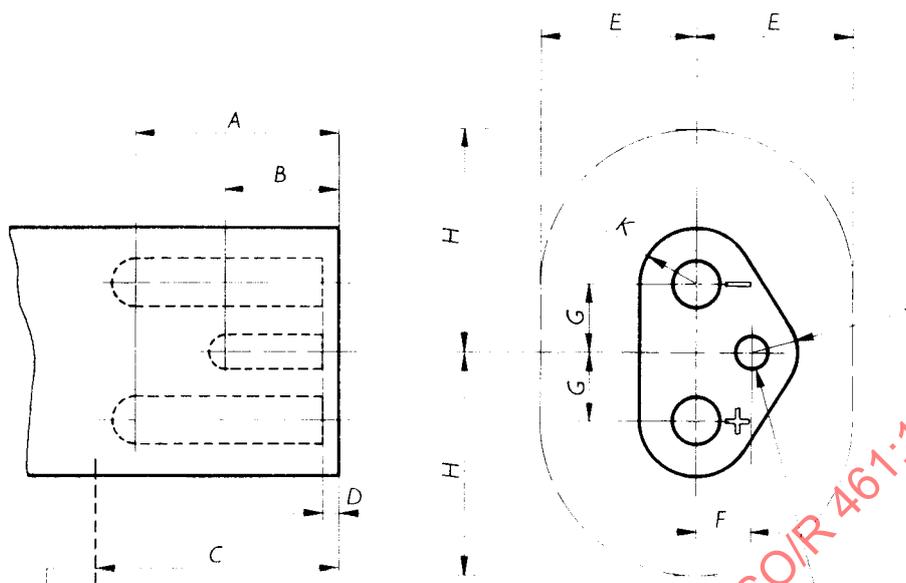


FIG. 4. — Ground supply socket



Beyond this point, the overall dimensions should not exceed the envelope shown by the long-chain line in the plan view.

Split socket for the control pin should be used at positive polarity at the voltage of the socket for the main positive pin.

Individual socket inserts should have side play of ± 0.02 in (± 0.5 mm). Fit of sockets for main pins should be such as to limit the voltage drop at each main pin, measured between the cable connections of the ground supply socket and the aircraft plug, to 20 mV at 450 A.

Dimension	Inches	Millimetres
A	2.031 min.	51.6 min.
B	1.25 min.	31.8 min.
C*	2.5	63.5
D	0.125 max.	3.2 max.
E	1.5	38.1
F	0.562 ± 0.01	14.27 ± 0.25
G	0.687 ± 0.01	17.45 ± 0.25
H	2.25	57.2
J**	0.375 ± 0.01	9.53 ± 0.25
K**	0.562 ± 0.01	14.57 ± 0.25

* Minimum length before any increase in cross section

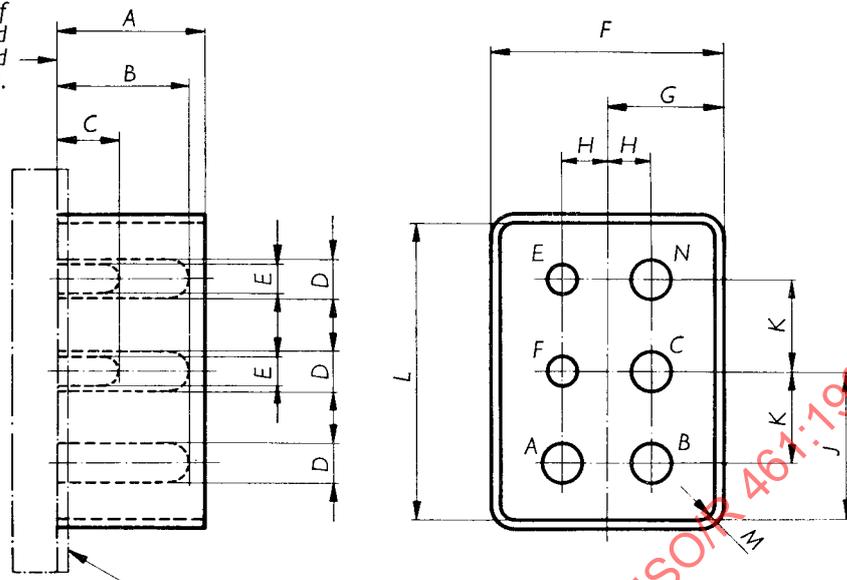
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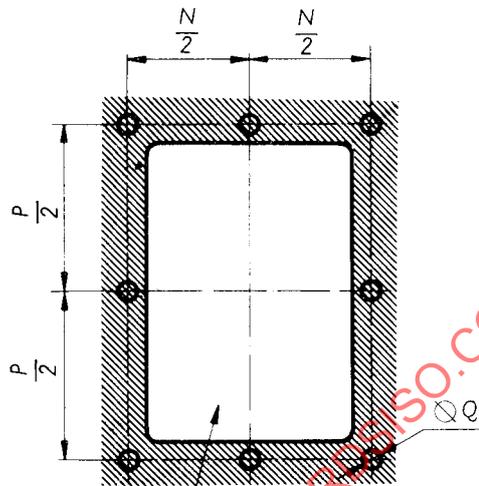
1.2 Alternating current, three-phase 115/200 V, 400 Hz

FIG. 5. — Aircraft plug

The length of engagement of the pins in the socket should not be affected by the method of mounting the aircraft plug.



On pressurized mountings, this surface should be suitable to enable a sealed joint to be made, when the shroud is passed through the aircraft structure.



Hole dimensions should be suitable for the particular plug.

Mounting dimensions

Dimension	Inches	Millimetres
A	1.64 ±0.03	41.7 ±0.8
B	1.50 ±0.015	38.1 ±0.4
C	0.75 ±0.015	19.1 ±0.4
D	0.437 ⁰ / _{-0.002}	11.1 ⁰ / _{-0.05}
E	0.312 ⁰ / _{-0.002}	7.925 ⁰ / _{-0.05}
F	2.30 ^{+0.04} / ₀	58.4 ⁺¹ / ₀
G	1.15 ^{+0.02} / ₀	29.2 ^{+0.51} / ₀
H	0.50 ±0.005	12.7 ±0.13
J	1.650 ^{+0.02} / ₀	41.9 ^{+0.5} / ₀
K	1.0 ±0.01	25.4 ±0.25
L	3.30 ^{+0.04} / ₀	83.8 ⁺¹ / ₀
M*	0.15 ±0.01	3.8 ±0.25
N	2.75	70
P	3.75	95.3
Q	0.257	6.5

* Radius

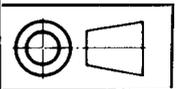
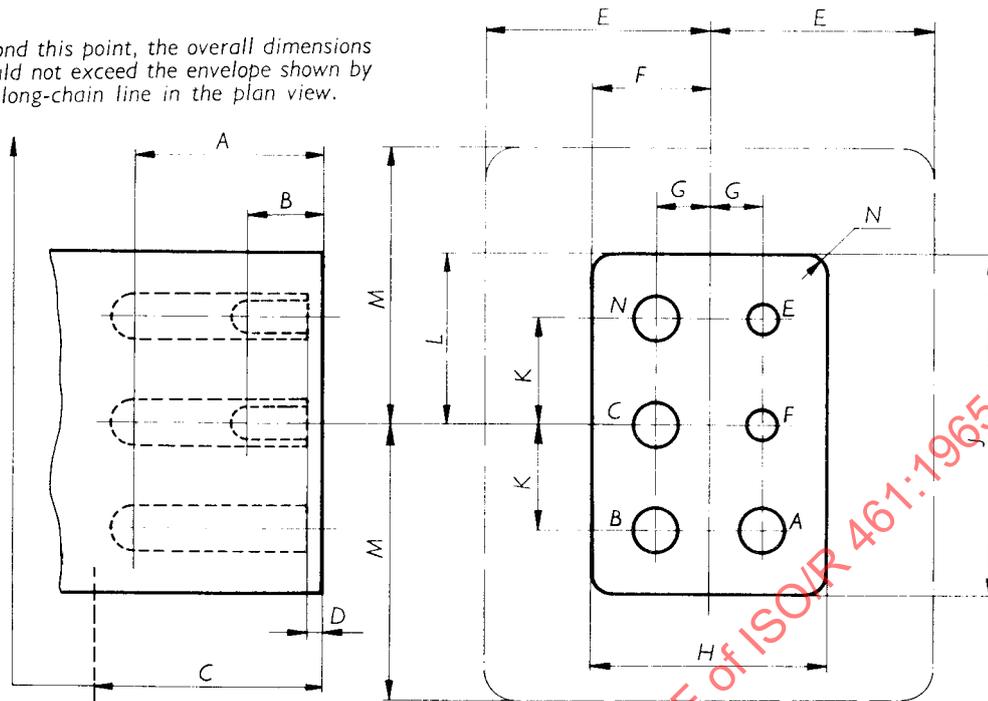


FIG. 6. — Ground supply socket

Beyond this point, the overall dimensions should not exceed the envelope shown by the long-chain line in the plan view.



Individual socket inserts should have side play of ± 0.02 in (± 0.5 mm). Fit of sockets for main pins should be such as to limit the voltage drop at each main pin, measured between the cable connections of the ground supply socket and the aircraft plug, to 20 mV at 450 A.

Dimension	Inches	Millimetres
A	1.846 min.	46.9 min.
B	0.812 min.	20.6 min.
C*	2.125	54
D	0.125 max.	3.2 max.
E	2.125	54
F	1.125 ± 0.01	28.58 ± 0.25
G	0.50 ± 0.005	12.7 ± 0.13
H	2.25 ± 0.02	57.2 ± 0.5
J	3.25 ± 0.02	82.6 ± 0.5
K	1.0 ± 0.01	25.4 ± 0.25
L	1.625 ± 0.01	41.3 ± 0.25
M	2.625	66.7
N**	0.15 ± 0.01	3.8 ± 0.25

* Minimum length before any increase in cross section

** Radius

