MP12 Input Transformer options

The input transformer plays a major role in the MP12 : It unbalances the microphone signal and brings some voltage gain.

Its essential characteristics are ratio, impedance, bandwidth, saturation level, common mode rejection and DC resistor.

These combined characteristics have a large impact on the final sound of the micpre.

High ratio and large bandwidth are contradictory, so we have to choose the best compromise for a given application.

The maximum gain of the MP12 is determined by the input transformer ratio, the DOA gain and the output transformer ratio.

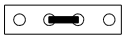
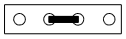
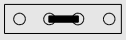
> Example : With a 1:8 input transformer and a 1:2 output transformer :
> Total gain = 18+46+6 = 70dB

JMP1 sets the ratio for dual primaries transformers. It is not needed for single primary transformers.

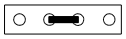
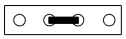
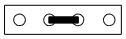
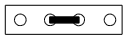
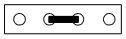
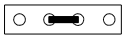
JMP2 is only used with the OEP transformer. It sets the ratio for the dual secondaries.

RL1 loads the secondary. Its value depends on the wanted micpre impedance, according to the formula : RL1 = (Ratio)^2 x 1200 (in ohms for a 1200 ohms input impedance).

CL1, RZ1 and CZ1 are used to smooth out the high frequency bumps in the frequency response curve. They must be taken from the constructor datasheet or they can be determined by experiment.

Transformer	Ratio	JMP1	JMP2	RL1	CL1	RZ1	CZ1	DOA*	Layout
Cinemag CMMI-8PCA	1:8	NC*	NC	82K	NC	10K	22p	A	1
Cinemag CMMI-10PCA	1:10	NC	NC	120K	NC	NC	NC	A	1
Cinemag CM-75101APC	1:10		NC	120K	NC	NC	NC	A	1
Cinemag CM-75101APC	1:5		NC	33K	NC	NC	NC	A/B	1
Cinemag CM-75101A	1:10		NC	120K	NC	NC	NC	A	2
Cinemag CM-75101A	1:5		NC	33K	NC	NC	NC	A/B	2
Cinemag CMMI-8B3PC	1:8	NC	NC	82K	NC	15K	100p	A	1
Cinemag CMMI-8B3	1:8	NC	NC	82K	NC	15K	100p	A	3
Cinemag CMMI-10B-PC	1:10	NC	NC	120K	NC	NC	NC	A	1
Cinemag CMMI-10B	1:10	NC	NC	120K	NC	NC	NC	A	3
Lundhal LL1538 (or XL)	1:5		NC	33K	NC	NC	NC	A/B	4
Lundhal LL1538 (or XL)	1:2.5		NC	8K2	NC	NC	NC	B	4

Document revision 1.2 – Last modification : 07/09/12

Transformer	Ratio	JMP1	JMP2	RL1	CL1	RZ1	CZ1	DOA*	Layout
Lundhal LL1576	1:7		NC	56K	NC	NC	NC	A	4
Lundhal LL1576	1:3.5		NC	15K	NC	NC	NC	A/B	4
Lundhal LL1577	1:14		NC	220K	NC	NC	NC	A	4
Lundhal LL1577	1:7		NC	56K	NC	NC	NC	A	4
Lundhal LL1578 (or XL)	1:10		NC	120K	NC	NC	NC	A	4
Lundhal LL1578 (or XL)	1:5		NC	33K	NC	NC	NC	A/B	4
OEP A262A3E	1:6.5			33K	NC	47K	220p	A/B	5
OEP A262A3E	1:3.2			10K	NC	22K	330p	A/B	5
Jensen JT-110K-HPC	1:8	NC	NC	82K	NC	10K	22p	A	1
Jensen JT115K-E	1:10	NC	NC	120K	NC	NC	NC	A	6
Jensen JP-13K6-C	1:5	NC	NC	33K	NC	12K	220p	A/B	3
Jensen JT-11K8-APC	1:3.5	NC	NC	15K	NC	NC	NC	A/B	1
Jensen JT-MB-CPCA	1:1	NC	NC	1K5	NC	NC	NC	B	1
Jensen JT-MB-CA	1:1	NC	NC	1K5	NC	NC	NC	B	7
Sowter 9820-F	1:8.7		NC	100K	NC	NC	NC	A	8
Sowter 9820-F	1:4.3		NC	22K	NC	NC	NC	A/B	8
Sowter 9610-C	1:10	NC	NC	120K	NC	NC	NC	A	9
Sowter 9610-F	1:10	NC	NC	120K	NC	NC	NC	A	10
Sowter 4935-C	1:7	NC	NC	56K	NC	NC	NC	A	9
Sowter 4935-F	1:7	NC	NC	56K	NC	NC	NC	A	11
Sowter 3195-C	1:7	NC	NC	56K	NC	NC	NC	A	9
Sowter 3195-F	1:7	NC	NC	56K	NC	NC	NC	A	12
Sowter 9145-F	1:4		NC	18K	NC	NC	NC	A/B	13
Sowter 9145-F	1:2		NC	5K1	NC	NC	NC	B	13
Sowter 9540-C	1:1	NC	NC	1K5	NC	NC	NC	B	14
Altran C-3402-2	1:8		NC	82K	NC	NC	NC	A	1
Altran C-3402-2	1:4		NC	18K	NC	NC	NC	A/B	1
Other transformers				TBD*	TBD	TBD	TBD		15

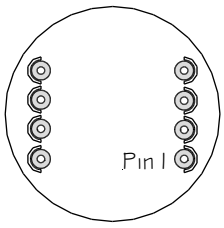
DOA* : Recommended DOA.

A type : DOA optimised for high impedance sources like SK25.
B type : DOA optimised for low impedance sources like SK99.
The above DOA's are available as options in our kits but the micpres will work with many others like API2520, Millennia MM-99, Forssell JFET-992, SCA SC25, JML99v, John Hardy 990C, ...

NC* : Not connected

TBD* : To be determined, look at the constructor data-sheet

Layout 1 : Cinemag CMMI-8PCA, CMMI-10PCA, CM-75101APC, CMMI-8B3PC, CMMI-10B-PC, Jensen JT-110K-HPC, JT-11K8-APC, JT-MB-CPCA, Altran C-3402-2



Top view

The pin holes on the PCB are identified by white semicircles.

It is necessary to leave a small gap between the transformer and the PCB surface in order to avoid any electrical contact between the metal case and pads. Fit a piece of double sided adhesive tape (supplied with the kit) on the transformer, between the pins. It is not necessary to remove the second protective layer from the tape as it is only used as a spacer.

Start by soldering 2 opposite pins, check the position, adjust if necessary then solder the other pins.

WARNING : Double check the pin 1 position because this transformer can be mounted backwards!

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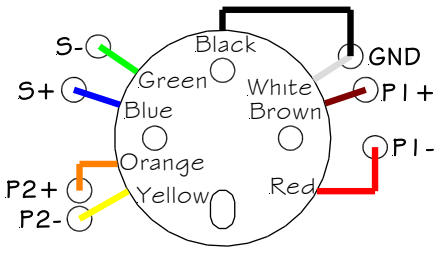
Layout 2 : Cinemag CM-75101A



Top view

This transformer is mounted with two 4-40 studs or 2 self taping screws. Use two 3 to 5mm insulated spacers to allow enough space for the wires.

Shorten the leads to the necessary length.

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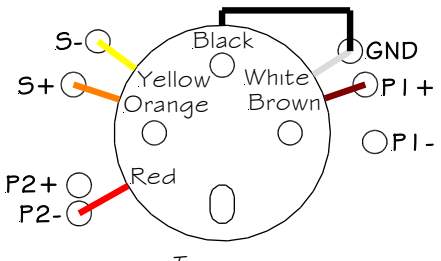
Layout 3 : Cinemag CMMI-8B3, CMMI-10B, Jensen JP-13K6-C



Top view

This transformer is mounted with two 4-40 studs or 2 self taping screws. Use two 3 to 5mm insulated spacers to allow enough space for the wires.

Shorten the leads to the necessary length.

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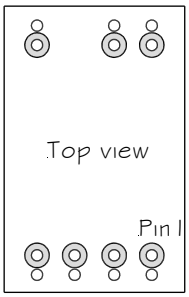
Layout 4 : Lundhal LL1538, LL1576, LL1577, LL1578



The pin holes on the PCB are identified by small white dots.

It is necessary to leave a small gap between the transformer and the PCB surface in order to avoid any electrical contact between the metal case and pads. Fit a piece of double sided adhesive tape (supplied with the kit) on the transformer, between the pins. It is not necessary to remove the second protective layer from the tape as it is only used as a spacer.

Start by soldering 2 opposite pins, check the position, adjust if necessary then solder the other pins.

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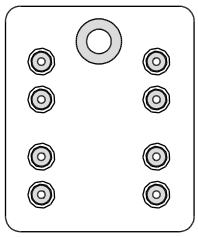
Layout 5 : OEP A262A3E



Top view

Bottom view

With spacer tape

First, the transformer must inserted into the Mu-metal case. The bottom plate is then fitted to the base and soldered in 4 points, one of the points being the ground pin.

The pin holes on the PCB are identified by white circles.

It is necessary to leave a small gap between the transformer and the PCB surface in order to avoid any electrical contact between the metal case and pads. Fit a piece of double sided adhesive tape (supplied with the kit) on the transformer, between the pins. It is not necessary to remove the second protective layer from the tape as it is only used as a spacer.

Start by soldering 2 opposite pins, check the position, adjust if necessary then solder the other pins.

To connect the ground pin which comes through the large hole, use a small piece of copper wire wrapped around the pin and soldered to the pad and to the pin.

The jumper JMP2 needs to be installed with this transformer.

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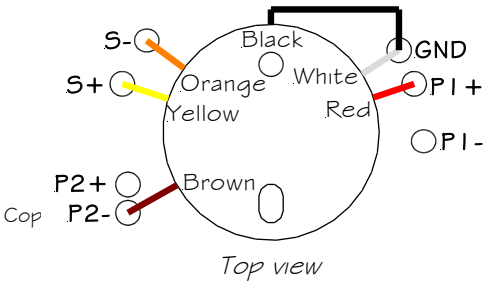

Top view

Layout 6 : Jensen JT115K-E

This transformer is mounted with 2 self taping screws and two 3 to 5mm insulated spacers to allow some space for the wires.

Shorten the leads to the necessary length.

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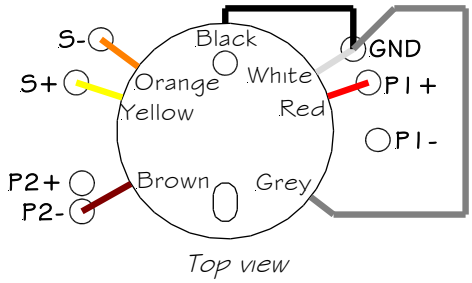
Layout 7 : Jensen JT-MB-CA



Top view

This transformer is mounted with 2 self taping screws and two 3 to 5mm insulated spacers to allow some space for the wires.

Shorten the leads to the necessary length.

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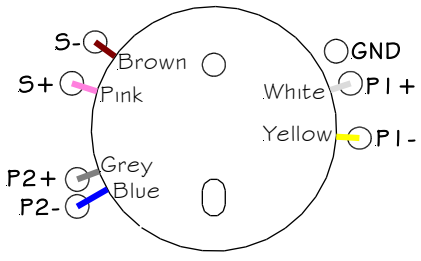
Layout 8 : Sowter 9820-F



Top view

This transformer is mounted with 2 M3 screws and two insulated spacers to avoid contacts between case and PCB.

Shorten the leads to the necessary length.

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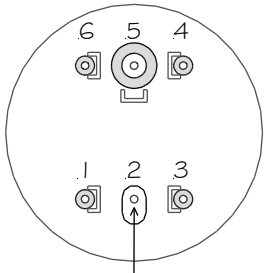


Top view

Layout 9 : Sowter 9610-C, 4935-C, 3195-C

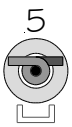
The pin holes on the PCB are identified by white rectangular brackets.

It is necessary to leave a small gap between the transformer and the PCB surface in order to avoid any electrical contact between the metal case and pads. Fit a piece of double sided adhesive tape (supplied with the kit) on the transformer, between the pins. It is not necessary to remove the second protective layer from the tape as it is only used as a spacer.

The pin 2 that comes through the oblong hole remains unconnected.

Start by soldering 2 opposite pins, check the position, adjust if necessary then solder the other pins.

To connect the ground pin 5 which comes through the large hole, use a small piece of copper wire wrapped around the pin and soldered to the pad and to the pin.



WARNING : Double check the pin 1 position because this transformer can be mounted backwards.

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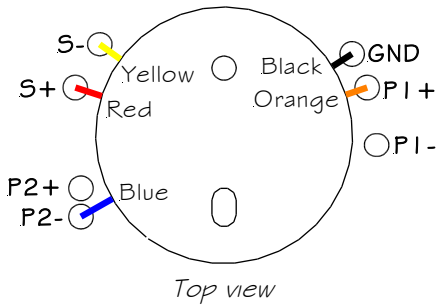
Layout 10 : Sowter 9610-F



Top view

This transformer is mounted with two M3 screws and two insulated spacers to avoid contacts between case and PCB.

Shorten the leads to the necessary length.

The green wire remains unconnected.

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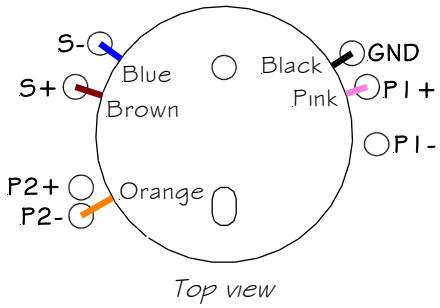
Layout 11 : Sowter 4935-F



Top view

This transformer is mounted with two M3 screws and two insulated spacers to avoid contacts between case and PCB.

Shorten the leads to the necessary length.

The green wire remains unconnected.

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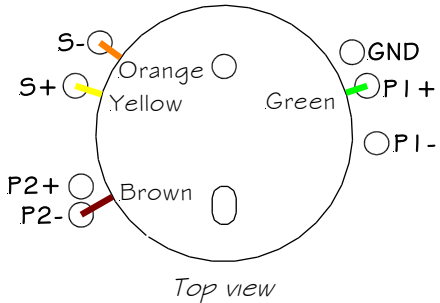
Layout 12 : Sowter 3195-F



Top view

This transformer is mounted with two M3 screws and two insulated spacers to avoid contacts between case and PCB.

Shorten the leads to the necessary length.

Cop

The pink wire remains unconnected.

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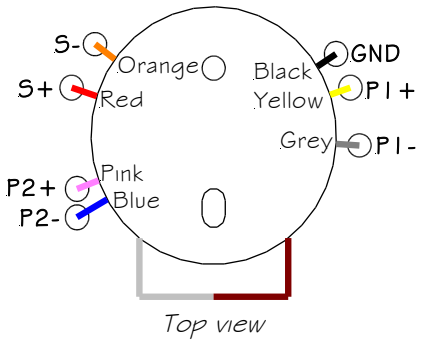
Layout 13 : Sowter 9145-F



Top view

This transformer is mounted with two M3 screws and two insulated spacers to avoid contacts between case and PCB.

Shorten the leads to the necessary length.

Solder together the brown and white wires and protect with tape.

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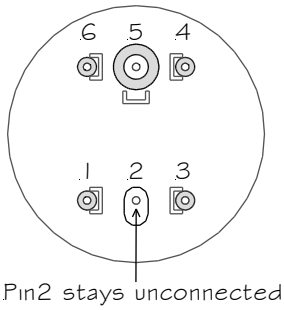
Layout 14 : Sowter 9540-C



Pin2 stays unconnected

Top view

The pin holes on the PCB are identified by white rectangular brackets.

It is necessary to leave a small gap between the transformer and the PCB surface in order to avoid any electrical contact between the metal case and pads. Fit a piece of double sided adhesive tape (supplied with the kit) on the transformer, between the pins. It is not necessary to remove the protective layer from the other side of the tape as it is only used as a spacer.

The pin 2 that comes through the oblong hole remains unconnected.

Start by soldering 2 opposite pins, check the position, adjust if necessary then solder the other pins.

To connect the ground pin 5 which comes through the large hole, use a small piece of

copper wire wrapped around the pin and soldered to the pad and to the pin.

WARNING : Double check the pin 1 position because this transformer can be mounted backwards.

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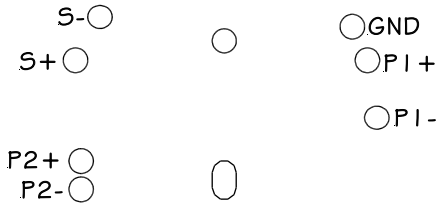
Layout 15 : Other transformers



The MP12 can use many other transformers that use flying leads, as long as they fit the size. You can use the two 3mm holes to attach them.

Connections :
Primary 1 hot --> P1+
Primary 1 cold --> P1-
Primary 2 hot --> P2+
Primary 2 cold --> P2-
Secondary hot --> S+
Secondary cold --> S-
Ground, shield, case --> GND

If the transformer has only one primary :
Primary hot --> P1+
Primary cold --> P2-

If the transformer has two secondaries :
Secondary 1 hot --> S+
Secondary 2 cold --> S-
Connect together Secondary 1 cold and Secondary 2 hot

JMP1 positions

 Primaries in parallel (low impedance, high ratio)

 Primaries in series (high impedance, low ratio)

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