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ortofon

MAGNETO-
DYNAMIC STEREO
CARTRIDGE

F 15 – FF 15



DESCRIPTION

The Ortofon F 15 & FF 15 cartridges are magneto-dynamic devices using the patented VMS principle (Fig. 1) in which a variable magnetic shunt is the moving element, working in the centre of a toroidal magnet. This principle, an Ortofon exclusive, offers specific advantages of extraordinary linearity and consequential low distortion, its low mass provides for superior transient performance and excellent high frequency tracking and adequate output for all conventional high fidelity amplifying equipment.

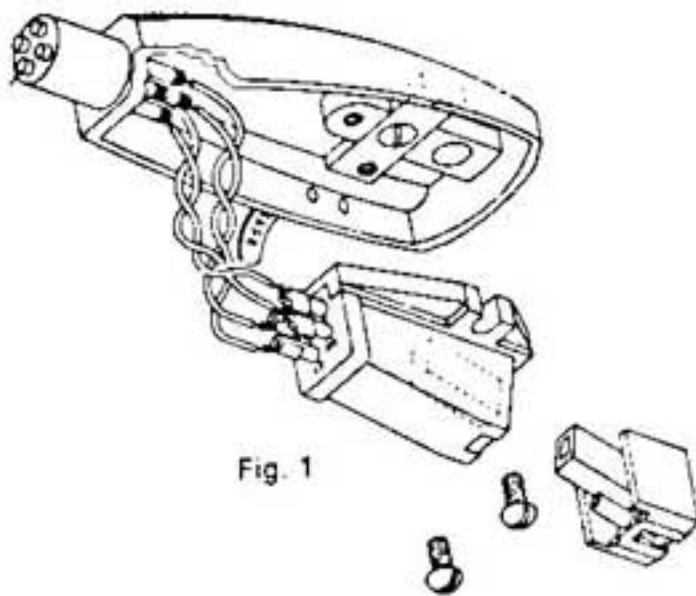


Fig. 1

In addition the cartridge features a high compliance, hence a light tracking pressure even at heavily recorded passages. The cartridge cantilever is fitted with a precision ground and polished diamond of minimum mass. The cantilever, its diamond and its damping components are part of a plug-in interchangeable assembly which can be readily replaced without tools and normally without dismounting the cartridge. The F 15 & FF 15 cartridges have a very low mass (5 grams) for minimum inertia and incorporate a built-in snap action stylus protector. The F 15 & FF 15 cartridges are precision components designed for use with highest graded equipment. They should be used in tonearms capable of operating properly at light tracking pressures. For F 15 maximum 2 grams and for FF 15 maximum 3 grams. A particularly suitable tonearm is the Ortofon AS 212. Other modern quality arms are generally suitable as are the arms of the best record changers.

MOUNTING THE CARTRIDGE

It is suggested that the stylus assembly be removed from the body of the cartridge in order to prevent damaging the delicate cantilever and diamond assembly while making the installation (fig. 2). This is achieved by pulling out the white plastic assembly while holding the black body of the unit. After the installation is completed the stylus assembly will plug back directly into the

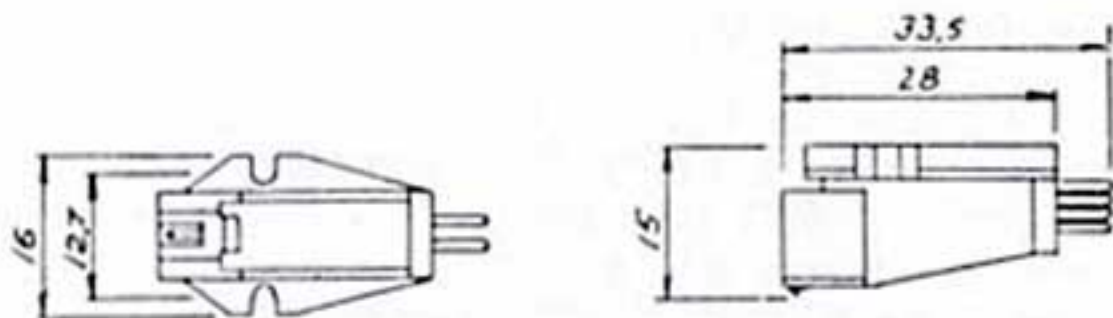


Fig. 2

cartridge body with the plastic guide providing correct alignment. Use the mounting screws provided with the cartridge or with the arm. Observe any specific recommendations of the arm manufacturer as to the use of stand-offs and the location of the stylus point relative to the arm. The mounting lugs on the cartridge are at the standard 1/2 inch (12.7 mm) pitch. It is very important that the cartridge base is level with the surface of the record for a correct installation. The white stylus part will then automatically also be parallel to the record surface. The stylus can be temporarily installed to ensure this. It may be necessary to adjust the arm height or the height of the cartridge in the head to obtain the proper position. In a record changer the cartridge must tilt downwards slightly towards the turntable so that the stylus portion will be parallel to the topmost record of a stack. If the stylus part is not parallel to the record surface, then the rear of the cartridge may come into contact with the surface of the record

while playing, especially if the record is in the slightest way warped. The four coloured leads in the head should be connected to the corresponding coloured pins on the rear of the cartridge as shown in the drawing. Clips should be used to fit on these pins. It is not safe to solder wires directly on to the pins unless

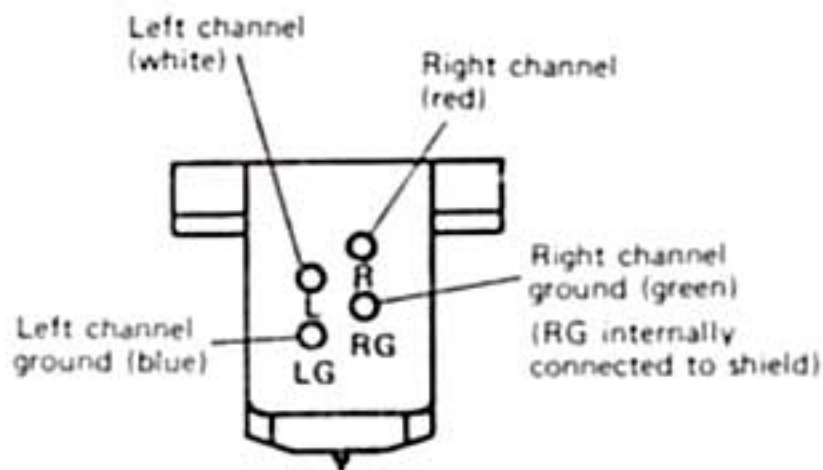


Fig. 3

one is an expert at delicate soldering. L and R for left and right; and LG and RG stand for left ground and right ground (fig. 3). Note that there is no need to make any connection to the body. At this stage the stylus can be reinstalled, and the tracking pressure set to the recommended value. For F 15 1.5 grams and for FF 15 2 grams. Under no circumstances should these cartridges be used with more than 2 or 3 grams pressure respectively, since this may cause the diamond to recede into the grooved portion

of the plastic stylus housing. In older arms it may not be possible to achieve the proper tracking force with these lightweight cartridges if the counterweight of the arm is too heavy. In this case, either some material must be removed from the counterweight, or some weight must be added to the head. The addition of weight in the head is not the best approach since this defeats the object of having a low inertia cartridge and may also cause the cantilever to "bottom" on warped records. Most high quality arms provide separately shielded conductors for the two channels. Frequently, a separate grounding wire is included from the chassis of the turntable to the amplifier. In such a situation, there should be no problems of hum. Should hum be audible at normal volume control settings (while the system is known to be hum-free), it is probable that there is a "hum loop" which is due to common grounding between the two channels at the turntable or between one of the channels and the separate grounding wire. The cartridge has little hum pick-up, therefore hum problems should be investigated by checking to see that these various ground paths are kept apart. In some turntables and changers the grounds of the two channels are tied together beneath the deck, therefore ground connections to this common tie point must be separated to ensure the lowest hum level. If there is no separate grounding wire, the tonearm and chassis should be connected to the right ground (RG) terminal beneath the deck.

STYLUS REPLACEMENT

As seen, the replacement of the stylus at a time when it is worn or damaged or when changing from one type of stylus unit to another, is accomplished very simply. In order to be certain that the replacement stylus will give the same performance as the original, use only a **genuine Ortofon replacement unit**.

WARRANTY

Your Ortofon F 15 & FF 15 are warranted to be free from electrical or mechanical defects for a period of one year after purchase. However, this warranty does not apply to stylus wear or breakage, nor does it apply to the abuse of the stylus cantilever. In the event of returning the cartridge for testing or repair, make certain that it is packed so that it cannot be damaged in transit (a situation for which Ortofon cannot assume responsibility). Include a description of the problem or fault for which it is returned.

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TECHNICAL DATA

Weight (grams)

Output voltage per channel at 1 kHz per cm/s (mV)

Output voltage per channel at 1 kHz per cm/s with STM-72 (mV)

Internal impedance DC resistance (ohm)

Inductance (mH)

Recommended load impedance per channel for CD-4 (kohm)

Recommended load impedance per channel for stereo (kohm)

Tracking angle ($^{\circ}$)

Frequency response (Hz—kHz)

± 1 dB (Hz—kHz)

Channel separation at 1 kHz (dB)

Channel separation at 30 kHz (dB)

Channel balance (dB)

Compliance (cm/dyne) Horizontal

Vertical

Trackability at 300 Hz at recommended tracking force (μm)

FIM distortion at recommended tracking force,

DIN 45.542, max. level (%)

Type of stylus

Stylus tip radius (μm)

Equivalent stylus tip mass (mg)

Tracking force range (grams)

Recommended tracking force (grams)

Replacement stylus

F 15 E	F 15	FF 15 E	FF 15	FF 15/BC	FF 15/78
5	5	5	5	5	5
1.0	1.0	1.0	1.0	1.5	1.0
—	—	—	—	—	—
800	800	800	800	800	800
600	600	600	600	600	600
—	—	—	—	—	—
47	47	47	47	47	47
15	15	15	15	15	15
20–20	20–20	20–20	20–20	20–20	20–20
20–8	20–8	20–8	20–8	20–5	20–8
25	25	20	20	25	25
—	—	—	—	—	—
2	2	2	2	2	2
$25 \cdot 10^{-6}$	$25 \cdot 10^{-6}$	$20 \cdot 10^{-6}$	$20 \cdot 10^{-6}$	$8 \cdot 10^{-6}$	$20 \cdot 10^{-6}$
$25 \cdot 10^{-6}$	$25 \cdot 10^{-6}$	$20 \cdot 10^{-6}$	$20 \cdot 10^{-6}$	$5 \cdot 10^{-6}$	$20 \cdot 10^{-6}$
60	60	60	60	50	50
< 1	< 1	< 1	< 1	< 1	< 1
Elliptical	Spherical	Elliptical	Spherical	Spherical	Spherical
18/8	15	18/8	15	15	65
0.9	0.9	0.9	0.9	0.9	0.6
1–2	1–2	1–3	1–3	6–8	1–3
1.5	1.5	2.0	2.0	6.0	2.0
N 15 E	N 15	NF 15 E	NF 15	NF 15/BC	NF 15/78