



 **Farrat**
ENGINEERS ON A MISSION

MechFLOOR

MechFLOOR

MechFLOOR has been designed with industry needs in mind using a modular system that can be configured to precise load, height build-up and acoustic performance requirements whilst being simple, practical and fast to install.

- ▶ Plant Rooms
- ▶ Mechanical Rooms
- ▶ Boiler Rooms
- ▶ Engine Rooms
- ▶ Utility Rooms
- ▶ Service Rooms
- ▶ Equipment Rooms
- ▶ Pump Rooms
- ▶ HVAC Rooms
- ▶ Technical Rooms

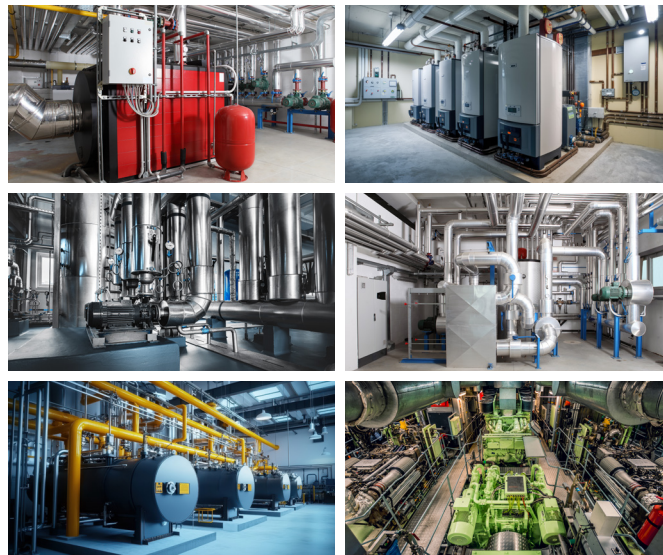
Features:

- ▶ f_n @Operating Load: **6 - 10Hz**
- ▶ f_n @Dead Load: **11Hz**
- ▶ Height: **163 – 313mm**
- ▶ Weight: **2.6 – 6.3kN/m²**
- ▶ Air Gap: **50 - 200mm**
- ▶ Floor Finish: **Concrete**
- ▶ UDL: **7.6 – 26.1kN/m²**
- ▶ **Point Load: UDL: 4.5 – 31.2kN**
(minimum 1000 mm centres)
 (Load capacities subject to slab design)
- ▶ Warranty: **Up to 25 years**

The acoustic performance figures quoted are for the base system using a 50mm air gap and 100mm floating concrete floor slab. Enhanced performance can be expected with increases in air gap and/or floating slab thickness e.g. compared to Figure 1 on page 3, increasing the floating concrete slab to 150mm can lead to a 1dB improvement and more at very low frequencies.

MechFLOOR floating slabs can be designed with fully fibre reinforced concrete to allow fixings into the slab without the risk of hitting rebar.

Self-compacting concrete can also be used to ensure high flatness tolerance is achieved to allow floor finishes to be laid directly on top of it.



Performance:

MechFLOOR PRO (MFP1040) R_w : 72 dB ΔL_w : 36 dB

Frequency (Hz)	63	125	250	500	1K	2K	4K
R (dB)	52	50	55	77	81	82	84

MechFLOOR MAX (MFM1040) R_w : 76 dB ΔL_w : 36 dB

Frequency (Hz)	63	125	250	500	1K	2K	4K
R (dB)	56	57	58	77	80	82	83

Test/Assessment Standards:

Acoustic (Airborne): ISO 10140-1,2,4:2020
ISO 717-1:2013

Acoustic (Impact): ISO 10140-1,3:2010
Based on 140 mm structural slab, no ceiling ISO 717-2:2013

Fire: EN 1994-1-2:2010

Based on 160 mm MD05-V3 Composite Deck in a multi span configuration

Standards:



Our acoustic isolators provide complete flexibility in terms of dynamic stiffness and damping. Where necessary we can design bespoke configurations to match your precise needs.

Floor design considers the capacity of the MechFLOOR Isomat Isolators AND the reinforced concrete floating slab. See MechFLOOR Design Guide for more detailed guidance or contact Farrat for support in selecting or designing a floor for your specific needs.

		MechFLOOR PRO			
MechFLOOR Reference Code (Used for design detailing and pricing).		MFP1040	MFP1540	MFP2040	MFP2540
	Unit	Case 1	Case 2	Case 3	Case 4
Imposed load UDL [ILmax] (Worst case Uniformly distributed load (UDL) on the floor).	kN/m²	5.0	5.0	5.0	5.0
Isolator Grid	mm	400	400	400	400
Slab Thickness (Thickness of floating reinforced concrete slab. Can be in between values shown).	mm	100	150	200	250
Formwork Type (Standard = OSB. Cement Particle Board (CPB) available as option).	-	OSB 15	OSB 15	OSB 15	OSB 15
Total DL	kN/m²	2.6	3.8	5.0	6.3
Isolator Capacity (Can be used as a check for number of isolators based on total imposed load).	kN	2.4	2.4	2.4	2.4
UDL Total Capacity	kN/m²	14.7	14.7	14.7	14.7
Residual Point Load Capacity [PLmax] (Capacity for Point Loading. See Design Guide for positioning and spacing of point loads).	kN	4.5	8.5	11.9	13.7
Natural Frequency @ DL	Hz	15.0	12.0	11.0	10.0
Natural Frequency @ DL + UDL	Hz	9.0	8.0	8.0	7.0
Nat Frequency @ DL + UDL + PointLoad	Hz	6.0	6.0	6.0	6.0
Deflection @ DL	mm	1.6	2.5	3.3	4.1
Deflection @ DL+UDL	mm	5.1	5.9	6.7	7.5
Deflection @ DL + UDL + PointLoad	mm	9.8	9.8	9.8	9.8
Nominal Floor Height @ DL Assumes nominal 50mm (minus deflection) air gap. Options available for increased air gap thickness to enhance acoustic performance).	mm	163	213	262	307
Nominal Floor Height @ DL + UDL	mm	160	209	258	307
Nom Floor Height @ DL + UDL + PointLoad	mm	155	205	255	305

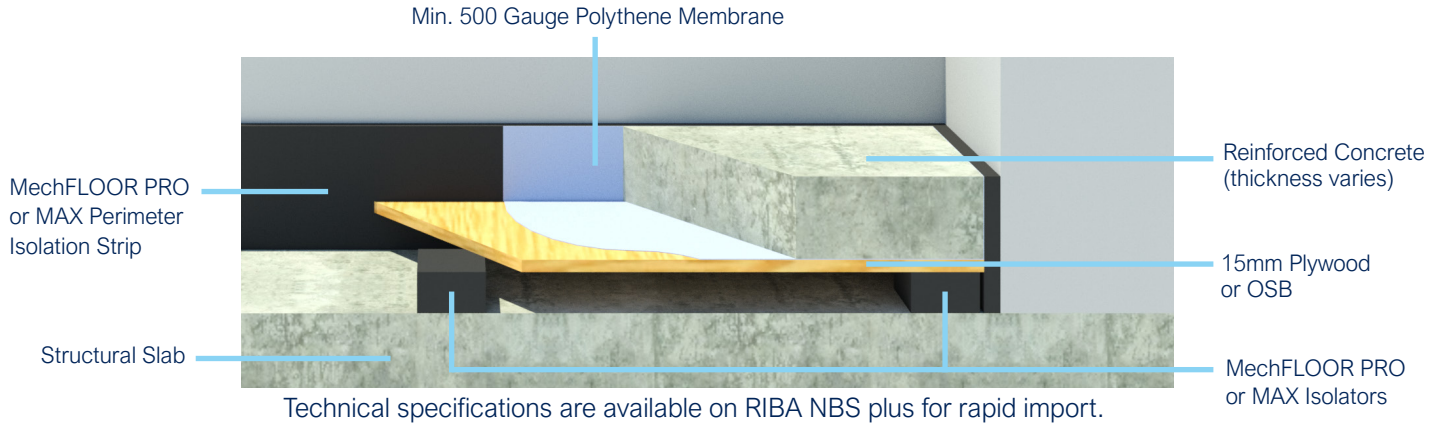
Two suggestions for UDL of 10kN/m2. PRO offers enhanced performance, MAX offers economy.

		MechFLOOR PRO				MechFLOOR MAX			
MechFLOOR Reference Code		MFP1030	MFP1530	MFP2030	MFP2530	MFM1040	MFM1540	MGM2040	MFM2540
	Unit	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11	Case 12
Imposed load UDL [ILmax]	kN/m²	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Isolator Grid	mm	300	300	300	300	400	400	400	400
Slab Thickness	mm	100	150	200	250	100	150	200	250
Formwork Type	-	OSB 15	OSB 15	OSB 15	OSB 15	OSB 15	OSB 15	OSB 15	OSB 15
Total DL	kN/m²	2.6	3.8	5.0	6.3	2.6	3.8	5.0	6.3
Total UDL	kN/m²	12.6	13.8	15.0	16.3	12.5	13.7	14.9	16.1
Isolator Capacity	kN	2.4	2.4	2.4	2.4	3.6	3.6	3.6	3.6
UDL Total Capacity	kN/m²	26.1	26.1	26.1	26.1	22.5	22.5	22.5	22.5
Residual Point Load Capacity [PLmax]	kN	8.2	16.0	24.9	31.9	8.2	12.7	10.9	16.3
Natural Frequency @ DL	Hz	20.0	16.0	14.0	13.0	21.4	17.4	15.1	13.5
Natural Frequency @ DL + UDL	Hz	9.0	9.0	8.0	8.0	9.5	9.0	8.7	8.3
Nat Frequency @ DL + UDL + PointLoad	Hz	7.0	7.0	6.0	6.0	7.8	7.0	7.0	7.0
Deflection @ DL	mm	0.9	1.4	1.8	2.3	1.1	1.6	2.2	2.7
Deflection @ DL+UDL	mm	4.7	5.2	5.6	6.1	5.5	6.1	6.6	7.2
Deflection @ DL + UDL + PointLoad	mm	8.5	9.3	9.8	9.8	8.1	10.0	10.0	10.0
Nominal Floor Height @ DL	mm	164	214	263	313	164	213	263	312
Nominal Floor Height @ DL + UDL	mm	160	210	259	309	159	209	258	208
Nom Floor Height @ DL + UDL + PointLoad	mm	156	206	255	305	157	205	255	305

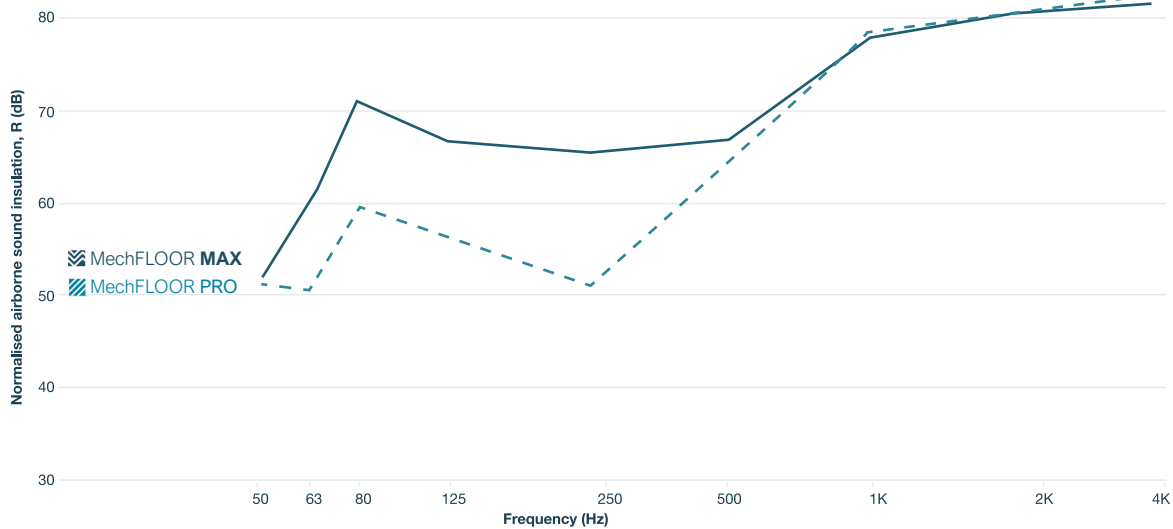
		MechFLOOR PRO				MechFLOOR MAX			
MechFLOOR Reference Code		MFP1030	MFP1530	MFP2030	MFP2530	MFM1030	MFM1530	MGM2030	MFM2530
	Unit	Case 13	Case 14	Case 15	Case 16	Case 17	Case 18	Case 19	Case 20
Imposed load UDL [ILmax]	kN/m ²	15.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0
Isolator Grid	mm	300	300	300	300	400	400	400	400
Slab Thickness	mm	100	150	200	250	100	150	200	250
Formwork Type	-	OSB 15	OSB 15	OSB 15	OSB 15	OSB 15	OSB 15	OSB 15	OSB 15
Total DL	kN/m ²	2.6	3.8	5.0	6.3	2.6	3.8	5.0	6.3
Total UDL	kN/m ²	17.6	18.8	20.0	21.3	22.5	23.7	24.9	26.1
Isolator Capacity	kN	2.4	2.4	2.4	2.4	3.6	3.6	3.6	3.6
UDL Total Capacity	kN/m ²	26.1	26.1	26.1	26.1	40.0	40.0	40.0	40.0
Residual Point Load Capacity [PLmax]	kN	6.9	10.5	13.7	15.7	8.2	16.0	21.7	31.2
Natural Frequency @ DL	Hz	20.0	16.0	14.0	13.0	28.5	23.2	20.1	18.0
Natural Frequency @ DL + UDL	Hz	8.0	8.0	7.0	7.0	9.4	9.2	8.9	8.7
Nat Frequency @ DL + UDL + PointLoad	Hz	6.0	6.0	6.0	6.0	7.8	7.6	7.0	7.0
Deflection @ DL	mm	0.9	1.4	1.8	2.3	0.6	0.9	1.2	1.5
Deflection @ DL+UDL	mm	6.6	7.1	7.5	8.0	5.6	5.9	6.2	6.5
Deflection @ DL + UDL + PointLoad	mm	9.8	9.8	9.8	9.8	8.1	8.7	10.0	10.0
Nominal Floor Height @ DL	mm	164	214	263	313	164	214	264	313
Nominal Floor Height @ DL + UDL	mm	158	208	257	307	159	209	259	308
Nom Floor Height @ DL + UDL + PointLoad	mm	155	205	255	305	157	206	255	305



MechFLOOR



MechFLOOR Grade Performance Comparison:



Our MechFLOOR products are available for dispatch with 24 hours. We hold stock and regularly export worldwide from the **UK**. Our products are also stocked in **Germany, The Netherlands** and the **UAE**.



Our team of engineers are always on hand to offer advice relating to specification, detailing and installation. We can deliver this remotely or on-site, **anywhere in the world**.



All of our MechFLOOR systems are designed with ease of installation, durability and follow on trades in mind. **No operational maintenance is required.**



Our isolators are manufactured in the UK under and accredited ISO 9001:2015 quality management system. Our **performance test data** is all supplied from UKAS and IPAC accredited laboratories.

MechFLOOR Floor Isolators

Product Code: 2MF-P-01 (PRO) or 2MF-M-01 (MAX)

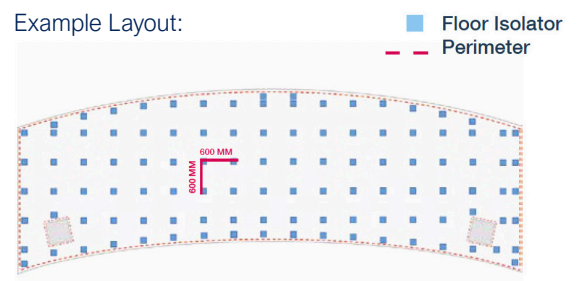
Measure: Isolators at 400 mm cross centres. Allow 7.4 isolators per m² (floor area) + 0.4 isolators per m² for non-rectangular shapes
Isolators at 300 mm cross centres. Allow 12.6 isolators per m² (floor area) + 0.6 isolators per m² for non-rectangular shapes

MechFLOOR Perimeter Isolation Strips

Product Code: 2MF-P-02 (PRO) or 2MF-M-02 (MAX)

Measure: Strips are 2000 mm long
Allow 0.5 strips per meter (perimeter, including penetrations)
+ 10% off-cuts etc

Example Layout:



MechFLOOR

The following design rules apply when designing a MechFLOOR System. It is recommended the design is checked and approved by the project's structural engineer.

1. Provided values for point load capacity consider a patch load distribution of minimum 100mm x 100mm.
2. If two or more point loads are located on a direct distance of less than $2x$ (Dpl), the mobilised area of the point loads interact and their sum should not exceed the noted point load capacity for the respective floor system. (See Figure 1 and Figure 2)
3. If a load is applied closer than $2x$ Slab Thickness to any slab edge, this load must not exceed the reduced point load capacity "Max Point Load Corner" given as an extra value in the table. (See Figure 3)
4. Openings in the floor slab affect the load distribution onto the supporting isolators, these can be considered the same as edges in the design checks as shown in Figure 3. If multiple openings are present within a mobilised area from a point load please contact Farrat to consider your design requirements.
5. The general basis of design considers Fibre reinforced concrete with general mesh and the concrete information is a guide only. All concrete floor slab checks are to be conducted by the project Engineer to ensure the suitability of the slab for the application.
6. Please note that the isolators deflect under load up to 10mm at the maximum capacity values indicated in for the respective floor systems. This it to be accounted for when pouring the concrete slab and care is to be taken to ensure there is no continued deflection and over-thick slabs present from installation. Deflection at intermediate load stages are provided in the table for review and consideration.
7. The consideration for construction loads acting on the formwork are based on the below figures, please contact Farrat if construction loads are anticipated to be in excess of this or bespoke formwork is to be designed for the application.

BS 5975	Access Load	0.75	kN/m ²
BS 5975	Heaping	0.8	kN/m ²
BS 5975	Light Works	1.5	kN/m ²

8. All standard MechFLOOR systems have an Air Gap of 50mm minus initial deflection. Taller air gaps may need to be considered for floor areas above 200m² particularly if the void cannot be vented.
9. If any of the above design rules cannot be met with your application requirements then please contact the Farrat Engineering Department.

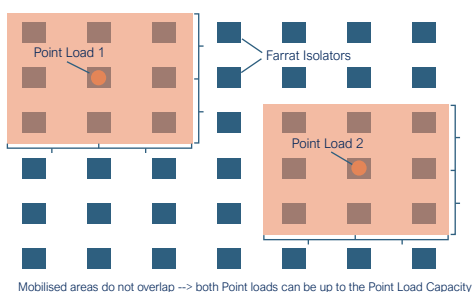


Figure 1: Two point loads where the mobilised areas are not overlapping.

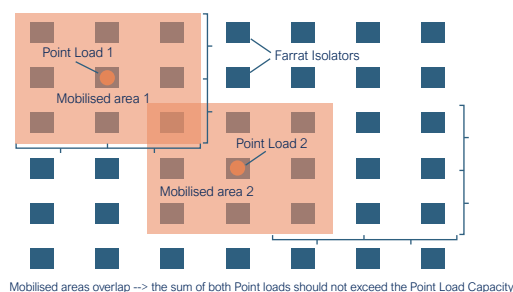


Figure 2: Two point loads with overlapping mobilised areas.

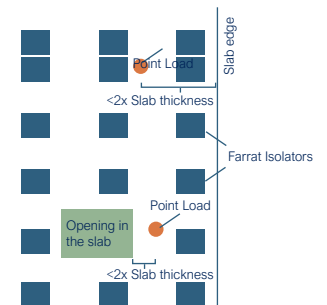


Figure 3: Point loads close to slab edges or openings.



Aviva Studios Manchester

Farrat installed MechFLOOR on the warehouse tower roof to eliminate noise and vibration transmission into the office spaces below. This solution helps create a quieter environment by effectively isolating vibrations from the rooftop plant.

Shakespeare North

At Shakespeare North, a Jacobean-style theatre in Prescot, Farrat delivered acoustic isolation to improve sound quality by reducing noise and vibration in the performance spaces.



SEVEN Entertainment, Riyadh

In Riyadh's SEVEN Saudi Entertainment Exit 10, Farrat supplied 12 rooftop floating floor systems to isolate air handling units and cut down on noise and vibration in the mall.

