

HOUSEKEEPING PADS

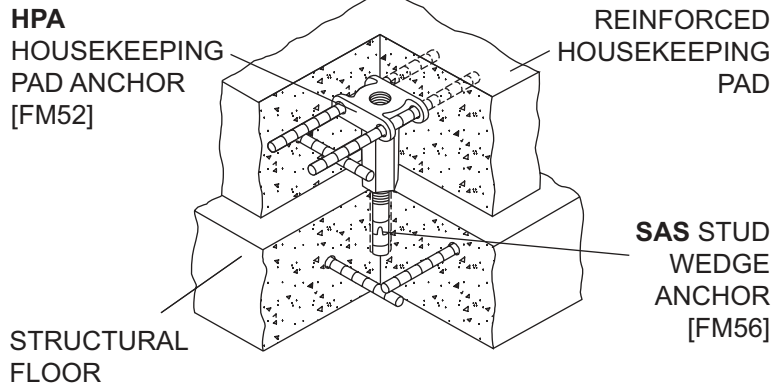
A major cause of equipment restraint failure is the breaking up of housekeeping pads. Virtually all housekeeping pads are poured independently after completion of the structure. In many cases there is no mechanical attachment to the structural floor and the pad itself may not be reinforced.

The floor diaphragm vibrates vertically and under resonant conditions generates more than 1G. This tosses the pad and the machine attached to it. As the pad crashes back it breaks up and the equipment loses all anchorage.

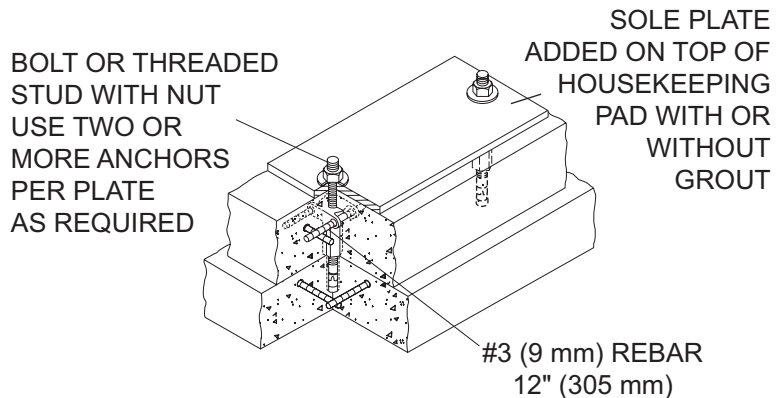
Since housekeeping pad sizes and locations are not established until after a machine room floor is poured, there is no way to cast in rebar pad stirrups. There is an undefined engineering area as to who should design and what type of cast in restraints should be used. In designing the HPA anchor system we have assumed the responsibility as part of our system certification. See Tables 6 & 7 on page FM11 HPA Anchorage Guidelines.

The HPA anchor [FM52] is manufactured in three sizes and has three anchoring capacities. The inverted hexagonal pyramid locks into the cured housekeeping pad and has provision for passing 2 #3 rebars through the holes on top for positioning the pad reinforcement system.

HOUSEKEEPING PAD ANCHOR ONLY



COMBINED HOUSEKEEPING PAD AND SOLE PLATE ANCHOR



The number of anchors that are needed depend on the HPA size and the vertical rating of the SAS stud anchor as listed.

TABLE 6
F_p Up To 0.5G (see example FM14)

Housekeeping Pad Area FT ² (M ²)	Reinforcing 12" (300mm) on Center Each Way	Perimeter HPA Size 24" (600mm) on Center	Interior HPA Size 36" (900mm) on Center	Maximum Weight of Pad and Equipment lbs (kg)
Up to 40 (3.7)	# 3 (T8)	HPA-1/2	HPA-1/2	8000 (3,600)
41 (3.8) to 100 (9.3)	# 4 (T12)	HPA-5/8	HPA-5/8	15,000 (6,800)
101 (9.4) to 250 (23)	# 4 (T12)	HPA-5/8	HPA-5/8	25,000 (11,400)
251 (23) to 400 (37)	# 5 (T16)	HPA-3/4	HPA-3/4	50,000 (22,800)

TABLE 7
F_p = 0.5G To 1.0G (see example FM14)

Housekeeping Pad Area FT ² (M ²)	Reinforcing 12" (300mm) on Center Each Way	Perimeter HPA Size and Centers	Interior HPA Size 36" (900mm) on Center	Maximum Weight of Pad and Equipment lbs (kg)
Up to 40 (3.7)	# 3 (T8)	HPA-5/8 24" (600mm) on Center	HPA-5/8	8000 (3,600)
41 (3.8) to 100 (9.3)	# 4 (T12)	HPA-5/8 24" (600mm) on Center	HPA-5/8	15,000 (6,800)
101 (9.4) to 250 (23)	# 4 (T12)	HPA-3/4 18" (450mm) on Center	HPA-3/4	25,000 (11,400)
251 (23) to 400 (37)	# 5 (T16)	HPA-3/4 18" (450mm) on Center	HPA-3/4	50,000 (22,800)

Notes for TABLES 6 & 7

1. These tables apply to systems where the center of gravity of the combined weight of the pad, equipment and isolation system is less than the width of the pad.
2. Reinforcing is to be placed at the centerline of the pad.



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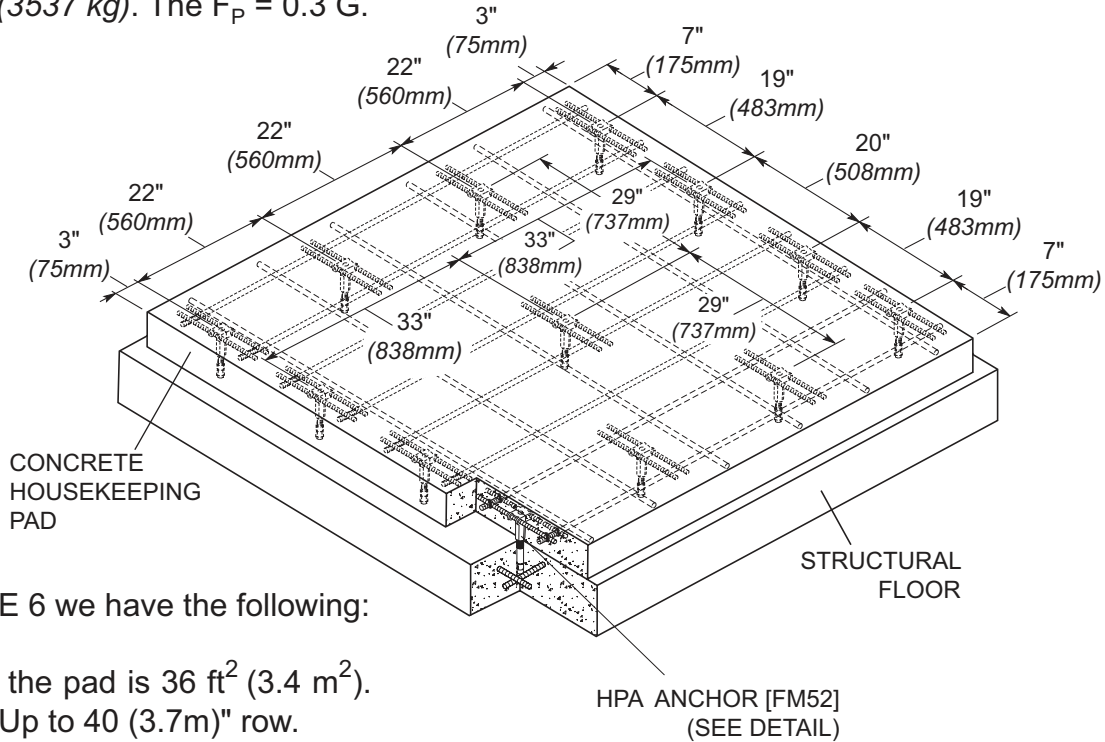
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FM11

Example No.1 – Housekeeping Pad

The housekeeping pad for a pump on a concrete inertia base is 6' x 6' x 4" (1830 x 1830 x 100 mm). The combined weight of the pump, motor, housekeeping pad and concrete inertia base is 7800 lbs (3537 kg). The $F_p = 0.3 G$.



Using TABLE 6 we have the following:

The area of the pad is 36 ft² (3.4 m²), so use the "Up to 40 (3.7m)" row.

The maximum perimeter edge spacing of HPA-1/2 is 24" (600 mm) on center, and the interior spacing at 36" (900 mm) on center. The required minimum pad reinforcement is #3 rebar 12" (300 mm) on center each way (O.C.E.W.).

