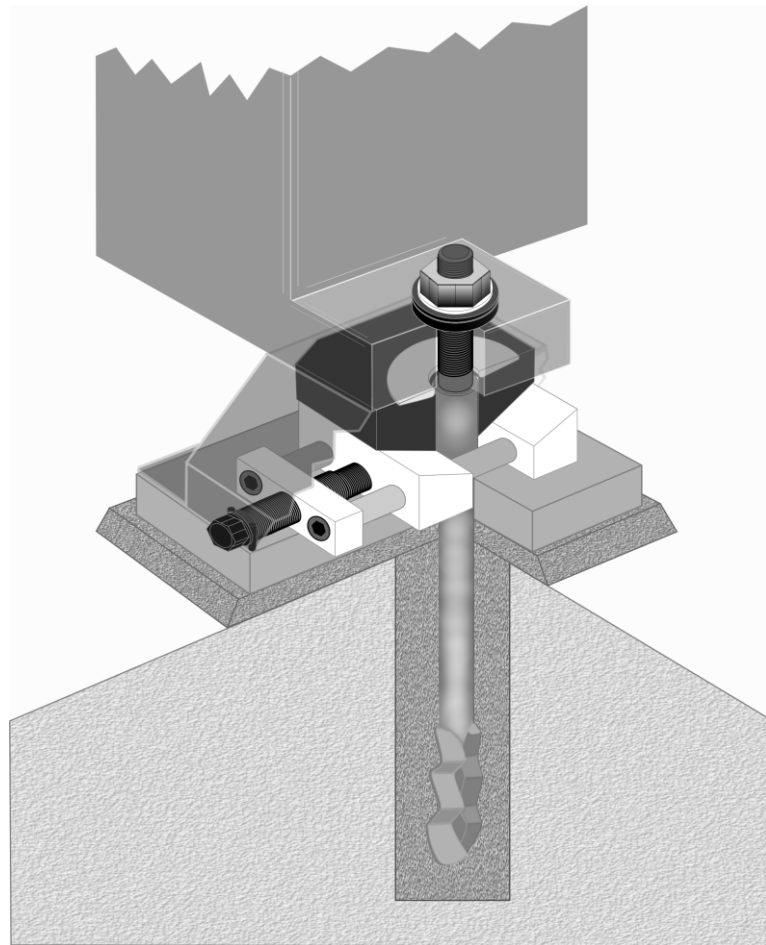


Technical Bulletin M/L - 700

**Instructions for anchoring machinery on
Nivell® DK Mounts**



***For precise leveling and rigid anchoring
of machinery to floors or foundations.***

INSTALLATION INSTRUCTIONS

Foundation Preparation

1. Locate anchoring locations per machine general assembly and foundation drawings.
2. Grout cavities can be precast in the concrete or formed later by grinding or chiseling. The grout can also be formed on the top of the existing concrete using grout forms.
3. Core drill holes. Diameter and depth of cored hole in accordance with anchor bolt specification sheet.
4. All concrete cavities and cored holes must be free of dust. Use dry, oil-free compressed air and then wipe with moist cloth. *See grout instructions for details.*

Machine Installation

1. After the concrete has sufficiently cured to support the machine weight, position the machine over its anchoring locations.
2. Inspect each DK Mount, making sure that they are all at their lowest height. This is accomplished by turning the leveling adjustment screw counterclockwise until it stops. Do not force.
3. Temporarily support the machine using steel blocks and/or timbers at a height high enough to install the DK Mounts and anchors to the machine base. See Figure 1.
4. Attach the DK Mounts to the base of the machine using the anchor bolts, nuts and retaining collar. Lock nuts should be snug. See Cover sketch.
5. Position and install grout forms. See Figure 2. For Vibro/Dynamics Grout Forms, remove the protective paper from the Butyl Tape on *one side only* and apply around the perimeter of the Grout Form per supplied instructions. Leave the protective paper cover on the side that adheres to the floor/foundation. Thoroughly clean the floor with dry, oil-free compressed air. Peel back the remaining protective paper cover, position the grout form, and then firmly press the Grout Form to the floor/foundation and hold for 30 seconds to set the adhesive.

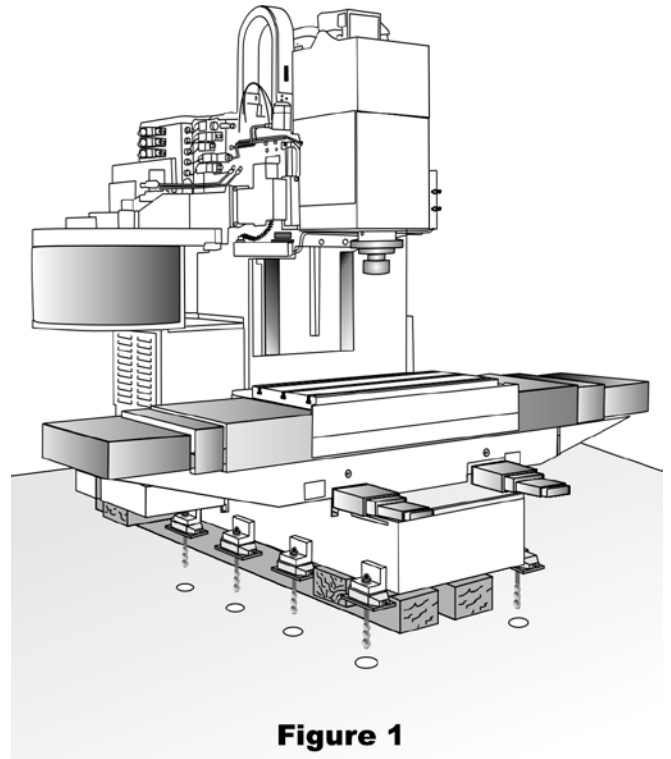


Figure 1

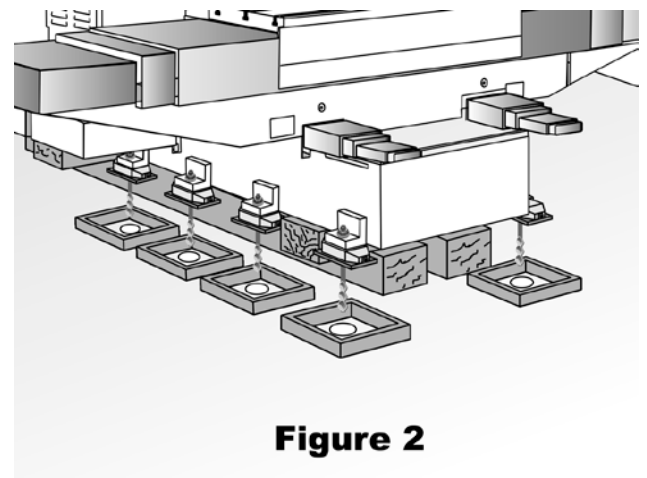


Figure 2

6. Check that the DK Mounts and anchors are still aligned with the grout cavities and then lower the machine to the desired elevation, while still supporting the machine with steel blocks and/or timbers. See Figure 3.

Note: The distance between the foundation and the DK Mounts must not exceed the grout thickness specifications below:

- $\frac{1}{2}$ " epoxy grout.
- $1 \frac{1}{2}$ " cementitious grout.

7. Rough level the machine to within $\pm 1/16$ " (1.6 mm).

Grouting

1. Mix grout as per instructions provided with the grout.
2. Make sure that all surfaces have been prepared and are clean per grout instructions. This is *critical* to good adhesion of grout to concrete surfaces!
3. Pour the grout into form until it covers the base of the DK by $\frac{1}{4}$ ". See Figure 4. Pour the grout from one location only. Pouring the grout from multiple locations can trap air and form air pockets in the grout.
4. Allow grout to fully set per instructions.

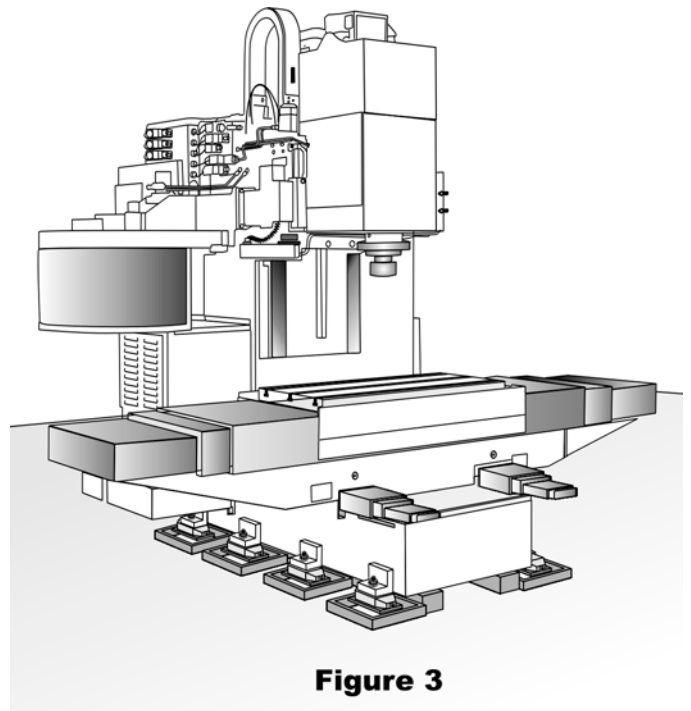


Figure 3

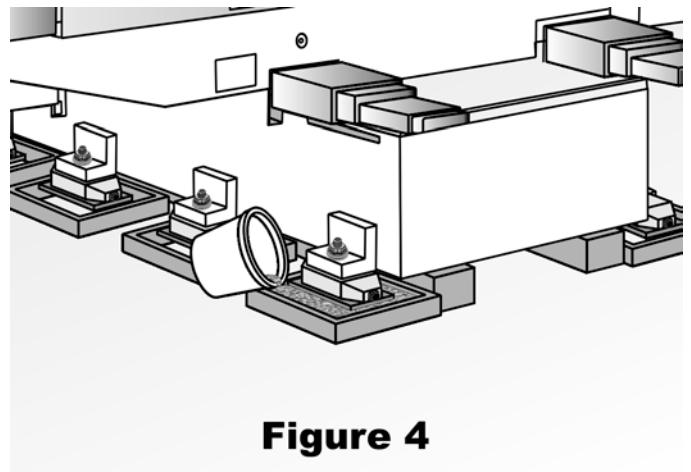


Figure 4

Leveling and Alignment

1. Loosen all of the DK Anchor lock nuts so that the machine can be raised slightly to remove temporary supports.
2. Raise the machine and remove the temporary supports.
3. Lower the machine onto the DK Anchors. See Figure 5.
4. Level and align the machine using the locations per manufacturer instructions.
5. Determine the machine's high point and raise all of the DK Anchors around that point.
6. Adjust the DK Anchors in groups. If one side is low, raise all of the DK Anchors on that side until the machine is level in that direction.
7. Repeat Step 6 in the other direction.
8. All DK Anchors should be checked, making sure that they are carrying load. Support points carrying similar loads will have similar torque values. Check all support points.
9. Equally tighten all of the DK Anchor Lock Nuts using a short-handled wrench. Do not tighten more than 40 ft-lbs (54 N-m or 554 Kg-cm).
10. To set the anchor bolt tension, raise all of the DK Anchor Mounts by turning the leveling adjustment screw clockwise, one full turn. *Caution:* Do not exceed the torque values as per Table 1 below.

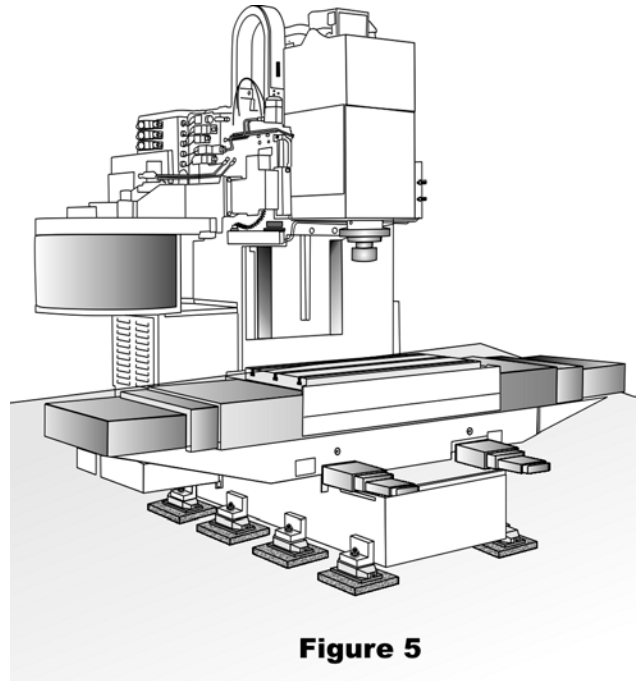


Figure 5

Table 1		
Model Number	Leveling Adjustment Screw Torque	
	English	Metric
DK-2, DK-95, DK2-10, DKG-2	45 ft-lbs	60 N-m or 620 Kg-cm
DK-4	148 ft-lbs	200 N-m or 2050 Kg-cm

11. Recheck machine leveling and alignment.
12. Make the final, fine leveling and alignment adjustments using the DK Anchor leveling adjustment screw. **Note: the leveling adjustment screw torques must not exceed the values per Table 1. If torque value is too high, the DK Anchor must have been set too low. Correct by loosening the lock nut, raising the DK Anchor, torquing the lock nut per Step 9, and then resetting the anchor bolt tension per Step 10.**

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APPENDIX

<i>Anchor Bolt Data</i>	Recommended Core Hole Diameter (in.)	
	Grout Type	
	Epoxy	Cementitious
Aileron™ Anchors (Vector Bolt Style) <i>(includes anchor, spherical washer set, lock nut and flat washer)</i>		
M20 x 400 (.78" x 15.8")	2.0	3.0
M24 x 500 (.94" x 19.7")	2.5	3.5
M30 x 600 (1.18" x 23.6")	3.0	4.0
M36 x 800 (1.4" x 31.5")	3.5	5.0
Threaded Rod Style <i>(includes bolt, lock nut and flat washer)</i>		
3/4-10 x 16"	1.0	3.0
7/8-9 x 20"	1.25	3.0
1-8 x 24"	1.5	3.0
1 1/4-7 x 32"	1.75	4.0

GROUT VOLUME REQUIREMENT TABLE <i>(Cubic Inches)</i>											
Hole Depth (inches)	Hole Diameter (inches)										
	1	1.25	1.5	1.75	2	2.5	3	3.5	4	5	6
4	1.6	3.4	5.5	8.1	11.0	18.1	26.7	36.9	48.7	77.0	111.5
5	2.0	4.2	6.9	10.1	13.8	22.6	33.4	46.2	60.9	96.2	139.4
6	2.4	5.1	8.3	12.1	16.5	27.1	40.1	55.4	73.1	115.4	167.3
7	2.8	5.9	9.7	14.1	19.3	31.7	46.8	64.6	85.2	134.7	195.1
8	3.2	6.7	11.1	16.2	22.0	36.2	53.4	73.9	97.4	153.9	223.0
9	3.6	7.6	12.4	18.2	24.8	40.7	60.1	83.1	109.6	173.2	250.9
10	4.0	8.4	13.8	20.2	27.6	45.2	66.8	92.3	121.8	192.4	278.8
11	4.4	9.3	15.2	22.2	30.3	49.7	73.5	101.5	133.9	211.6	306.6
12	4.8	10.1	16.6	24.2	33.1	54.3	80.2	110.8	146.1	230.9	334.5
14	5.6	11.8	19.3	28.3	38.6	63.3	93.5	129.2	170.5	269.4	390.3
16	6.4	13.5	22.1	32.3	44.1	72.3	106.9	147.7	194.8	307.8	446.0
18	7.2	15.2	24.9	36.3	49.6	81.4	120.2	166.2	219.2	346.3	501.8
20	8.0	16.8	27.6	40.4	55.1	90.4	133.6	184.6	243.5	384.8	557.5

Notes:

1. The above grout volumes subtract the volume of a 3/4" (20 mm) anchor bolt.
2. Multiply the number of holes by the table volume to determine the total grout volume required. Multiply by 1.15 (115%) as a safety margin.
3. Divide total volume calculated in Step 2 by the grout package volume to determine the number of containers required.