

PRODUCT DATA SHEET
QD
QuicDiamond™ Plate Dowel



INSTALLATION

Preparation

During progress of work all QuicDiamonds shall be protected from damage and should be free of oil, dirt and concrete spatter.

Location & Placement of QuicDiamonds

1. Set up formwork.
2. Locate and mark with chalk line at specified location, usually at center of slab but at least 2 1/4" from top of slab.
3. Align QuicDiamond™ Sleeve at specified location.
4. Use preset nails to attach QuicDiamond™ Sleeve to formwork.



QUICDIAMOND™ SYSTEM INFORMATION

QD-025	1/4"	1/4" x 4-1/2" x 4-1/2"
QD-038	3/8"	3/8" x 4-1/2" x 4-1/2"
QD-075	3/4"	3/4" x 4-1/2" x 4-1/2"
Sleeve Material: ABS		
Plate: A-36 Steel - meets ACI-330R-08 requirements		

5. Install any reinforcement needed.
6. Place and finish concrete per ACI specification. Pour at least 18 inches from QuicDiamond™ System.
7. Consolidate the concrete around the QuicDiamond™ System, vibrate & finish concrete.
8. After concrete cures, remove formwork with base & bend nails away from plate.
9. For subsequent adjoining slabs repeat steps 1-5.



10. Place plate into sleeve.
11. Repeat steps 6-8.

DOWEL SIZE AND SPACING FOR CONSTRUCTION JOINTS

Slab Depth	Dowel Dimensions*			On-Center Dowel Spacing		
	Round	Square	QuicDiamond™**	Round	Square	QuicDiamond™
5" to 6" 130 - 150 mm	3/4" x 14" 19 x 360 mm	3/4" x 14" 19 x 360 mm	1/4" x 4-1/2" x 4-1/2" 6 x 110 x 110 mm	12" 300 mm	14" 360 mm	18" - 24" 460 - 610mm
7" to 9" 180 - 230 mm	1" x 16" 25 x 410 mm	1" x 16" 25 x 410 mm	3/8" x 4-1/2" x 4-1/2" 9 x 110 x 110 mm	12" 300 mm	14" 360 mm	18" - 24" 460 - 610mm
9" to 11" 230 - 280 mm	1-1/4" x 18" 32 x 460 mm	1-1/4" x 18" 32 x 460 mm	3/4" x 4-1/2" x 4-1/2" 19 x 110 x 110 mm	12" 300 mm	12" 300 mm	20" - 24" 510 - 610mm

Source Material: ACI 360R-10, *Design of Slabs-on-Ground*, Table 6.1; ACI 302.IR-04, *Guide for Concrete Floor and Slab Construction*, Table 3.2 PCA 4th Edition, Table 6.2

* Total dowel length includes allowance made for joint opening and minor errors in positioning dowels.

** Construction tolerances required make it impractical to use diamond-shaped load plates in saw-cut contraction joints. Note: Table values based on maximum opening of .2 in. (5 mm). Dowels must be carefully aligned and supported during concrete operations. Misaligned dowels may lead to cracking.

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RESISTANCE

The resistances of the QuicDiamond dowels are determined based on AC/ 302.1R-15 and AC/ 318-19 for U.S. applications, as well as TR34.4 (UK Concrete Society, August 2013) for European standards.

All calculated design resistances apply to single plate dowels and assume plain concrete without additional reinforcement. The same approach can be extended to steel and macro-synthetic fiber reinforced concrete, but final performance must be verified by a qualified engineer. Design resistance of single dowel in shear Psh and bearing/bending Pmax, plate

These calculations are for reference only and should not replace site-specific structural engineering analysis. Actual performance may vary based on concrete properties, construction methods, and applied loads. It is the responsibility of the designer or engineer to verify all calculations and ensure compliance with local building codes and project-specific requirements.

Dowel Type	Joint Opening x	Shear Psh	P Max Plate
QD-025	.75"	22,553 lbf / 100.3 kN	5,290 lbf / 23.5 kN
QD-038	.75"	33,829 lbf / 150.5 kN	7,935 lbf / 35.3 kN
QD-075	.75"	67,658 lbf / 301.0 kN	15,870 lbf / 70.6 kN

Table 10. Punching shear resistances are calculated based on AC/ 302. 1 R-15 and TR34.4, assuming plain concrete without additional reinforcement. The values provided apply to slabs using .375 QuicDiamond dowels with a . 75" joint opening. These calculations serve as a reference and should be verified by a qualified engineer to ensure compliance with project-specific requirements and local building codes. Actual performance may vary based on construction methods, joint openings, and applied loads.

Slab Thickness	Punching C25/30 (3,625 psi)	Punching C32/40 (5,000 psi)	Punching C40/50 (5,800 psi)
4 inch	23,487 lbf / 104.5 kN	26,831 lbf / 119.3 kN	29,251 lbf / 130.2 kN
6 inch	35,231 lbf / 156.7 kN	40,246 lbf / 179.1 kN	43,861 lbf / 195.2 kN
8 inch	46,974 lbf / 208.9 kN	53,661 lbf / 238.5 kN	58,481 lbf / 260.3 kN
10 inch	58,718 lbf / 261.2 kN	67,077 lbf / 298.0 kN	73,102 lbf / 325.4 kN