RED HEAD
CONCRETE ANCHORING SPECIALISTS

Multi-Set II®
Drop-In Anchors

DESCRIPTION / SUGGESTED SPECIFICATIONS

Internally Threaded Heavy-Duty Anchoring Systems

Drop-In, Shell-Type Anchors —
SPECIFIED FOR ANCHORAGE INTO CONCRETE

Drop-In, shell type anchors feature an internally threaded, all-steel shell with expansion cone insert and flush embedment lip. Anchors are manufactured from zinc-plated carbon steel, 18-8 stainless steel and 316 stainless steel.

Anchors should be installed with carbide tipped hammer drill bits made in accordance to ANSI B212.15-1994 specifications.

Anchors should be tested to ASTM E488 criteria and listed by ICC (formerly ICBO). Anchors should also be listed by the following agencies as required by the local building code: UL, FM, City of Los Angeles, California State Fire Marshal and Caltrans.

ADVANTAGES

RM Drop-In Anchor 	■ Lipped anchor body keeps anchor flush ■ Easy Installation ■ Keeps all rods same length ■ Easy inspection ■ Available in carbon steel, 18-8 and 316 stainless steel
RL Drop-In Anchor 	■ Below surface setting for easy patch work ■ Higher performance potential with deep embedment setting
RX Drop-In Anchor 	■ Optimized (only 3/4" long) for use in hollow-core, pre-cast plank and post-tension slabs ■ Lip keeps anchor flush during installation ■ Shallow drilling — fast installation
Coil Thread Anchor 	■ Quick thread attachment—ideal for 1 sided forming ■ Use coil rod on job ■ 2 diameters (1/2" and 3/4")

Depth Charge Stop Drill and RX Drop-In Anchors

Ideal for Hollow-Core, Pre-Cast Plank and Post Tension Slabs

DepthCharge™ Stop Drill

- Optimized for use in hollow-core, pre-cast plank and post-tension slabs
- Lip keeps anchor flush during installation
- Shallow drilling—fast installation

RX Drop-In Anchor

See page 68 for kits

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Multi-Set II Anchor

SELECTION CHART

Multi-Set II Drop-In Anchors

USER TYPE	APPLICATION	BASE MATERIAL	CORROSION RESISTANCE LEVEL	DROP-IN ANCHOR TYPE	PART NUMBER	SETTING TOOL PART NUMBER*	BOLT SIZE-THREADS PER INCH	DRILL BIT DIAMETER In. (mm)	THREAD DEPTH In. (mm)	EMBEDMENT MIN. HOLE DEPTH In. (mm)	QTY/WT PER BOX Lbs.	QTY/WT PER MASTER CTN Lbs.
HVAC/Fire Sprinkler  		Solid concrete/ lightweight fill deck	Low	RM 	RM-14 RM-38 RM-12 RM-58 RM-34	RT-114 RT-138 RT-112 RT-158 RT-134	1/4" - 20 3/8" - 16 1/2" - 13 5/8" - 11 3/4" - 10	3/8 (9.5) 1/2 (12.7) 5/8 (15.9) 7/8 (22.2) 1 (25.4)	3/8 (9.5) 1/2 (12.7) 3/4 (19.1) 1 (25.4) 1-1/4 (31.8)	1 (25.4) 1-5/8 (41.3) 2 (50.8) 2-1/2 (63.5) 3-3/16 (81.0)	100/ 2.6 50/ 3.4 50/ 5.8 25/ 7.8 25/11.9	1000/ 28 500/ 36 400/ 49 125/ 41 100/ 49
		Hollow-core pre-cast or Post-tension	Low	RX 	RX-38 RX-12	RTX-138 RTX-112	3/8" - 16 1/2" - 13	1/2 (12.7) 5/8 (15.9)	3/8 (9.5) 1/2 (12.7)	3/4 (19.1) 1 (25.4)	100/ 3.5 50/ 3.0	1000/ 36 500/ 31
		Solid concrete/ lightweight fill deck	Medium	SRM** 18-8 S.S. 	SRM-14 SRM-38 SRM-12 SRM-58 SRM-34	RT-114 RT-138 RT-112 RT-158 RT-134	1/4" - 20 3/8" - 16 1/2" - 13 5/8" - 11 3/4" - 10	3/8 (9.5) 1/2 (12.7) 5/8 (15.9) 7/8 (22.2) 1 (25.4)	3/8 (9.5) 1/2 (12.7) 3/4 (19.1) 1 (25.4) 1-1/4 (31.8)	1 (25.4) 1-5/8 (41.3) 2 (50.8) 2-1/2 (63.5) 3-3/16 (81.0)	100/ 2.7 50/ 3.4 50/ 6.0 25/ 18.0 25/ 12.0	1000/ 28 500/ 36 400/ 50 125/ 42 100/ 50
		Solid concrete	High	SSRM** 316 SS	SSRM-38 SSRM-12	RT-138 RT-112	3/8" - 16 1/2" - 13	1/2 (12.7) 5/8 (15.9)	1/2 (12.7) 3/4 (19.1)	1-5/8 (41.3) 2 (50.8)	50/ 3.4 50/ 6.0	500/ 36 400/ 50
Concrete Contractor, General Contractor, Highway 		Solid concrete	Low	CL-Coil Threaded 	CL-12 CL-34	RT-112 RT-134	1/2" - 6 3/4" - 4.5	5/8 (15.9) 1 (25.4)	3/4 (19.1)| 1-1/4 (31.8)	2 (50.8) 3-3/16 (81.0)	50/ 5.7 25/ 11.9	400/ 47 100/ 49
Concrete Cutting/ Sawing Contractor/ Misc Metal 		Solid concrete/ lightweight fill deck	Low	RL (w/o lip) 	RL-14 RL-38 RL-12 RL-58 RL-34	RT-114 RT-138 RT-112 RT-158 RT-134	1/4" - 20 3/8" - 16 1/2" - 13 5/8" - 11 3/4" - 10	3/8 (9.5) 1/2 (12.7) 5/8 (15.9) 7/8 (22.2) 1 (25.4)	3/8 (9.5) 1/2 (12.7) 3/4 (19.1) 1 (25.4) 1-1/4 (31.8)	1 (25.4) 1-5/8 (41.3) 2 (50.8) 2-1/2 (63.5) 3-3/16 (81.0)	100/ 2.6 50/ 3.4 50/ 5.8 25/ 7.8 25/ 11.9	1000/ 28 500/ 36 400/ 49 125/ 41 100/ 49

* 1 setting tool per master carton.

** For continuous extreme low temperature, use stainless steel.

Multi-Set II Depth Charge Bits

PART NUMBER	DESCRIPTION FEATURE BENEFITS	DRILLING DEPTH
DCX-138	3/8" Depth Charge Stop Drill	3/4"
DCX-112	1/2" Depth Charge Stop Drill	1"

DepthCharge™ Stop Drill

- Shoulder prevents over drilling
- Less likely to hit reinforcing steel or post-tension cable in concrete

- No lost time or energy drilling farther than necessary
- Anchor is set at a specified depth, does not drop too far into hole

Multi-Set II Anchor


RM Drop-In Anchor


RL Drop-In Anchor


RX Drop-In Anchor


Coil Thread Anchor

SUGGESTED SPECIFICATIONS

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SPECIFIED FOR ANCHORAGE INTO CONCRETE

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Anchors should be installed with carbide tipped hammer drill bits made in accordance to ANSI B212.15-1994 specifications.

Anchors should be tested to ASTM E488 criteria and listed by ICC (formerly ICBO). Anchors should also be listed by the following agencies as required by the local building code: UL, FM, City of Los Angeles, California State Fire Marshal and Caltrans.

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PERFORMANCE TABLE

Multi-Set II Drop-In Anchors			Ultimate Tension and Shear Values (Lbs/kN) in Concrete*				
BOLT DIA In. (mm)	ANCHOR DIA. In. (mm)	MIN. EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	TENSION Lbs. (kN)			SHEAR Lbs. (kN)
				f'c = 2000 PSI (13.8 MPa)	f'c = 4000 PSI (27.6 MPa)	f'c = 6000 PSI (41.4 MPa)	f'c >_2000 PSI (13.8 MPa)
1/4 (6.4)	3/8 (9.5)	1 (25.4)	RM, RL or CL-Carbon or SRM-18-8 S.S. or SSRM-316 S.S.	1,680 (7.5)	2,360 (10.5)	2,980 (13.3)	1,080 (4.8)
3/8 (9.5)	1/2 (12.7)	1-5/8 (41.3)		2,980 (13.3)	3,800 (16.9)	6,240 (27.8)	3,160 (14.1)
1/2 (12.7)	5/8 (15.9)	2 (50.8)		3,300 (14.7)	5,840 (26.0)	8,300 (36.9)	4,580 (20.4)
5/8 (15.9)	7/8 (22.2)	2-1/2 (63.5)		5,500 (24.5)	8,640 (38.4)	11,020 (49.0)	7,440 (33.1)
3/4 (19.1)	1 (25.4)	3-3/16 (81.0)		8,280 (36.8)	9,480 (42.2)	12,260 (54.5)	10,480 (46.6)

*Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

* For continuous extreme low temperature applications, use stainless steel.

PERFORMANCE TABLE

Multi-Set II Drop-In Anchors			Ultimate Tension and Shear Values (Lbs/kN) in Lightweight Concrete*				
BOLT DIA In. (mm)	ANCHOR DIA. In. (mm)	EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	LIGHTWEIGHT CONCRETE f'c = 3000 PSI (20.7 MPa)		LOWER FLUTE OF STEEL DECK WITH LIGHTWEIGHT CONCRETE FILL f'c = 3000 PSI (20.7 MPa)	
				TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/8 (9.5)	1/2 (12.7)	1-5/8 (41.3)	RM, RL or CL-Carbon or SRM-18-8 S.S. or SSRM-316 S.S.	2,035 (9.1)	1,875 (8.4)	3,340 (14.9)	4,420 (19.6)
1/2 (12.7)	5/8 (15.9)	2 (50.8)		2,740 (12.2)	2,750 (12.2)	3,200 (14.2)	4,940 (22.0)
5/8 (15.9)	7/8 (22.2)	2-1/2 (63.5)		4,240 (18.9)	4,465 (19.9)	5,960 (26.5)	5,840 (26.0)
3/4 (19.1)	1 (25.4)	3-3/16 (81.0)		5,330 (23.7)	6,290 (28.0)	8,180 (36.4)	9,120 (40.6)

*Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

PERFORMANCE TABLE

Multi-Set II Drop-In Anchors			Recommended Edge & Spacing Distance Requirements*				
BOLT DIA In. (mm)	ANCHOR DIA. In. (mm)	EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	EDGE REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	MIN. DISTANCE AT WHICH LOAD FACTOR APPLIED = .80 FOR TENSION = .70 FOR SHEAR In. (mm)	SPACING REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	MIN. ALLOWABLE SPACING BETWEEN ANCHORS LOAD FACTOR APPLIED = .80 FOR TENSION = .55 FOR SHEAR In. (mm)
1/4 (6.4)	3/8 (9.5)	1 (25.4)	RM, RL or CL-Carbon or SRM-18-8 S.S. or SSRM-316 S.S.	1-3/4 (44.5)	7/8 (22.2)	3-1/2 (88.9)	1-3/4 (44.5)
3/8 (9.5)	1/2 (12.7)	1-5/8 (41.3)		2-7/8 (73.0)	1-7/16 (36.5)	5-11/16 (144.5)	2-7/8 (73.0)
1/2 (12.7)	5/8 (15.9)	2 (50.8)		3-1/2 (88.9)	1-3/4 (44.5)	7 (177.8)	3-1/2 (88.9)
5/8 (15.9)	7/8 (22.2)	2-1/2 (63.5)		4-3/8 (111.1)	2-3/16 (55.6)	8-3/4 (222.3)	4-3/8 (111.1)
3/4 (19.1)	1 (25.4)	3-3/16 (81.0)		5-5/8 (142.9)	2-13/16 (71.4)	11-3/16 (284.2)	5-5/8 (142.9)

*Spacing and edge distances shall be divided by 0.75 when anchors are placed in structural lightweight concrete. Linear interpolation may be used for intermediate spacing and edge distances.

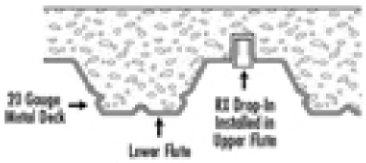
PERFORMANCE TABLE

Multi-Set II Drop-In Anchors	Ultimate Tension and Shear Values (Lbs/kN) for RX-38 (3/4" Embedment)* and RX-12 (1" Embedment)*							
BOLT DIA In. (mm)	DRILL In. (mm)	EMBEDMENT In. (mm)	2500 PSI 17.2 MPa) CONCRETE		4000 PSI (27.6 MPa) CONCRETE		HOLLOW CORE	
			TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/8 (9.5)	1/2 (12.7)	3/4 (19.1)	1,571 (7.0)	2,295 (10.2)	1,987 (8.8)	2,903 (12.9)	1,908 (8.5)	2,401 (10.7)
1/2 (12.7)	5/8 (15.9)	1 (25.4)	2,113 (9.4)	2,585 (11.6)	2,673 (11.9)	3,270 (14.5)	2,462 (11.0)	2,401 (10.7)

* The tabulated values are for RX-38 anchors installed at a minimum of 12-diameters on center and minimum edge of 6-diameters for 100 percent anchor efficiency. Spacing and edge distance may be reduced to 6 diameters and 3 diameter edge distance provided the values are reduced 50 percent. Linear interpolation may be used for intermediate spacing and edge margins.

* Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

PERFORMANCE TABLES



Multi-Set II Drop-In Anchors	Anchoring Overhead in 3000 PSI Lightweight Concrete On Metal Deck				
ANCHOR	DRILL HOLE DAIMETER In. (mm)	EMBEDMENT In. (mm)	3000PSI (20.7 MPa) CONCRETE		
			ULTIMATE TENSION LOAD Lbs. (kN)		ALLOWABLE WORKING LOAD Lbs. (kN)
RX-38 Drop-In	1/2 (12.7)	3/4 (19.1)	Upper Flute	1,410 (6.3)	353 (1.6)
			Lower Flute	1,206 (5.4)	301 (1.3)

* Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

Combined Tension and Shear Loading—for Multi-Set Anchors

Allowable loads for anchors subjected to combined shear and tension forces are determined by the following equation:

$$(Ps/Pt)^{5/3} + (Vs/Vt)^{5/3} \leq 1$$

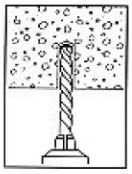
Ps = Applied tension load Vs = Applied shear load Pt = Allowable tension load VT = Allowable shear load

Multi-Set II RX Drop-In Kits

Part No.	Description
RX-38	3/8" drop-in using 1/2" drill bit
RTX-138	Setting Tool
DCX-138	Depth Charge Stop Drill
RX-38KIT	Contains: 1,000 RX-38 Anchors, 5 RTX-138 Setting Tools and 2 DCX-138 Depth Charge Stop Drills

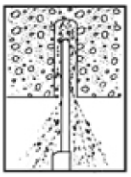
Part No.	Description
RX-12	1/2" drop-in using 5/8" drill bit
RTX-112	Setting Tool
DCX-112	Depth Charge Stop Drill
RX-12KIT	Contains: 500 RX-12 Anchors, 3 RTX-112 Setting Tools and 1 DCX-112 Depth Charge Stop Drill

INSTALLATION STEPS

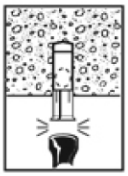


To set anchor flush with surface:

1. Drill hole to required embedment (see Table).



2. Clean hole with pressurized air.



3. Drive anchor flush with surface of concrete .

4. Expand anchor with setting tool provided (see chart). Anchor is properly expanded when shoulder of setting tool is flush with top of anchor.

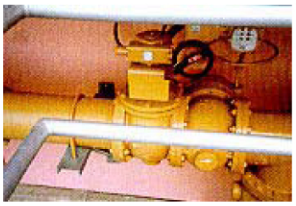
To set anchor below surface:
Drill hole deeper than anchor length. Thread bolt into anchor. Hammer anchor into hole until bolt head is at desired depth. Remove bolt and set anchor with setting tool.

PART NUMBER RTX-138
For use with RX-38 only.

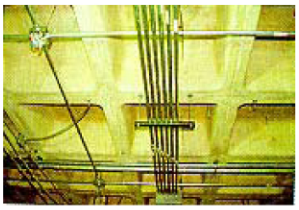
PART NUMBER RTX-112
For use with RX-12 only.

PART NUMBER RT-138
1 setting tool per master carton

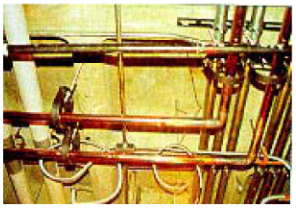
APPLICATIONS



Pumps and heavy piping are common applications for larger diameter Multi-Set Drop-In Anchors.



Cable tray and strut suspended from concrete ceilings are ideal Multi-Set applications. In post-tension or hollow-core slabs use the RX-38



The Multi-Set Anchor is the standard for pipe-hanging. The RM version has a retainer lip to keep all anchors flush at the surface, keeping all your threaded rod the same length.

FEATURES

For use with threaded rods or headed bolts (supplied by contractor)

(A) **Expander Slots**—allow for easy setting and superior performance

(B) **Cone Insert**—that expands the anchor when driven with setting tool and hammer

(C) **Body**—available in zinc-plated steel, 18-8 stainless steel, and 316 stainless steel

(D) **Easy Depth Inspection**—keeps threaded rod drop lengths consistent

(E) **Retainer Lip**—to keep anchor flush with surface

APPROVALS / LISTINGS

Meets or exceeds U.S. Government G.S.A. Specification A-A-55614 Type 1 (Formerly GSA: FF-S-325 Group VIII)

Underwriters Laboratories

Factory Mutual

City of Los Angeles – #RR2748

California State Fire Marshal

Caltrans