

Dayton Superior manufactures several lifting systems for Tilt-Up Construction. These systems are designed to meet the many job requirements found in the market. The project requirements along with the contractor's preference dictate which system is utilized on a project. Listed below is a brief description of the various options available to the contractor:

Superior Lifting System

This system features the T110 and T275 lifting inserts, capable of lifting up to 24,000 # SWL* per insert for face lifting and the T120 Superior Lifting Hardware for erection of the panels. The system is a ground release system, and typically used on larger, heavier panels. The insert is composed of a forged anchor with wire leg assembly for support and a plastic disposable void former. The insert is a directional insert used parallel to the height of the panel. For edge lifts, the Dayton P92P Erection Anchor with shear plate is utilized. This utilizes T120 Superior Lifting Hardware.

Ground Release II Lifting System

This system features the T41 Ground Release Insert capable of lifting up to 15,000 # SWL* per insert for face lifting and the T43L Ground Release Lifting Hardware for erection of the panels. This system is a ground release system typically used for panels up to 8" in thickness. The insert is a forged "dog bone" style insert with a plastic star base or wire base and a plastic disposable void former. The insert is a directional insert used parallel to the height of the panel. For edge lifts, the Dayton P52 Swift Lift[®] Anchor with shear bar is utilized. This anchor can utilize the same T43L hardware during the erection. This system is available in a 22,800 # SWL* System. See T81 Heavy Ground Release Insert.

Gyro Tilt Plus System

This system features the T49 Gyro Tilt Plus Face Insert capable of lifting up to 15,000 # SWL* per insert for face lifting and the T50 Gyro Tilt Plus Lifting Hardware for erection of the panels. This system is a ground release system typically used for panels up to 8" in thickness. The insert is a forged "dog bone" style insert with a wire leg assembly or plastic star base and a plastic disposable void former. This insert is a non-directional insert allowing complete rotation of the lifting hardware. For edge lifts, this system also uses the T49E Anchor (no base) with shear bar and the T50 Gyro Hardware during erection. This system is available in a 22,800 # SWL* System. See T52 Heavy Gyro Insert.

Coil Lifting System

This is the basic system employed during the original development years of tilt-up construction. This system uses the Dayton Superior T1 Pick-Up Insert along with B14 Coil Bolts and a variety of lifting hardware. The T1 Insert is available in 3/4" to 1-1/2" diameters, capable of lifting up to 14,000 # SWL* per insert. This system is utilized today with smaller applications and unique limited repetition panels. The T12 and T26 Lifting Hardware are used for erection of the panels.

***Note: See lifting system's respective Technical Data Sheet for rated lifting capacities based on panel thickness and concrete strength at time of lift.**

T110 Superior Lift System

The Dayton Superior T110 Superior Lift Insert consists of a forged foot anchor, 4-leg wire base and plastic void former. The insert is positioned with the void direction toward the top of the panel and then is tied in place to the rebar cage. The T120 Superior Lifting Hardware allows quick attachment to the insert and remote ground release after panel has been erected and braced. The T110 Superior Lift Inserts are shipped assembled, ready to go and are sized 1/8" less than the panel thickness.



T110 Superior Lift System



To Order:

Specify:(1) Quantity, (2) Name, (3) Panel Thickness, (4) bottom face aggregate or formliner thickness

Example:

150, T110 Superior Lift Inserts, 9" Panel with 1/2" formliner panel

Structural Panel Thickness	Anchor Size	Edge Distance		
		15"		30"
		SWL (lbs) Tension	SWL (lbs) Shear	SWL (lbs) Shear
5	4.125	9,500	9,600	11,340
5.5	4.125	11,500	9,900	13,760
6	4.625	13,600	10,350	16,340
6.5	5.125	15,000	10,980	19,060
7	5.625	16,500	11,200	21,920
7.25	5.875	17,200	12,000	22,750
7.5	6.125	17,800	12,400	23,140
8	6.625	21,800	13,900	23,900
8.5	7.125	22,800	15,500	24,000
9	7.625	23,800	16,740	24,000
9.25	7.875	24,000	17,400	24,000
9.5	7.875	24,000	17,400	24,000
10	7.875	24,000	17,400	24,000
10.5	7.875	24,000	17,400	24,000
11	7.875	24,000	17,400	24,000
11.25	7.875	24,000	17,400	24,000
11.5	7.875	24,000	17,400	24,000
12	7.875	24,000	17,400	24,000

T110 Safe Working Loads with T46 HD at 18" Spacing

Structural Panel Thickness	Tension (lbs)	Shear (lbs)
	f'c=3,000 psi 2:1 S.F.	f'c=3,000 psi 2:1 S.F.
5"	19,000	13,440
5.5"	23,000	13,860
6"	27,200	14,493
6.5"	30,000	15,378
7"	32,000	15,680
7.25"	32,000	16,800
7.5"	32,000	17,360
8"	32,000	19,460
8.5"	32,000	21,700
9"	32,000	23,436
9.25" or greater	32,000	24,360

- Safe Working Load (SWL) provides a factor of safety of approximately 2 to 1 in 3,000 psi normal weight concrete.
- Maximum tension values limited to 12-Tons in conjunction with compatible lifting hardware.
- The information presented in this table was compiled in conjunction with concrete testing and the design calculation criteria outlined in ACI 318-19 Chapter 17.
- Contact Dayton Superior Technical Assistance for shear loads for inserts located near an edge smaller than in the table.

When using pairs of T110 anchors in up to 6.5" concrete panel thickness, the two shear cones will not intersect when they're spaced 18" apart (shear cone radius is typically 1.5x the depth of the anchor foot). For use with the T46 HD Special Spreader Bar. For deeper/thicker installations, the interaction between the two anchors would begin reducing the combined capacity to less than 2 times a single anchor. However, the 32,000 lb. capacity of the T46 will cap the system beyond 6.5" panel thickness (2 x 15,700 lbs.) to a maximum of 16,000 lbs. per anchor.

Note: The two anchors should be secured to each other and the rebar reinforcing grid at the required 18" on center spacing by wire tying with 2-40" length of #4 rebar either side of the anchors shafts or order double T110 inserts that come assembled at 18" o.c.

Note: The short length of rebar recommended is an aid to prevent the insert from moving during concrete placement. When this rebar is added for insert stability, it should be placed against the vertical portion of the insert and at least 1" away from the insert's foot.