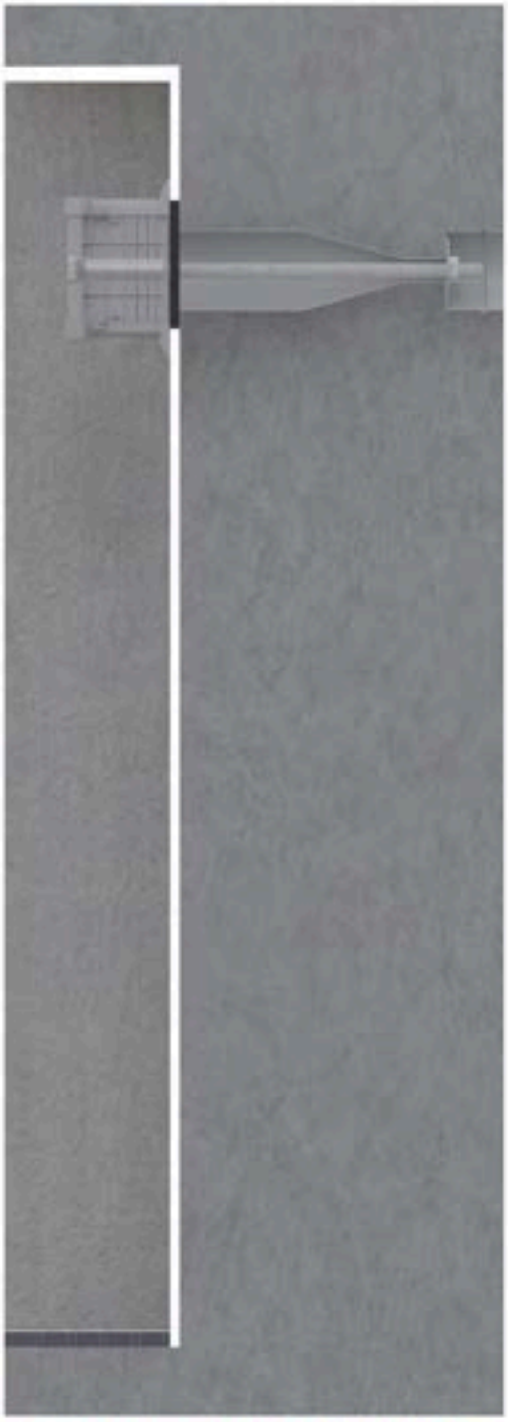
ALP SUPPLY®

2024 PRECAST ACCESSORIES TECHNICAL MANUAL & CATALOG

ALP® TECH SLOT® INSERTS TENSION APPLICATIONS

Panel to Steel Column Connection

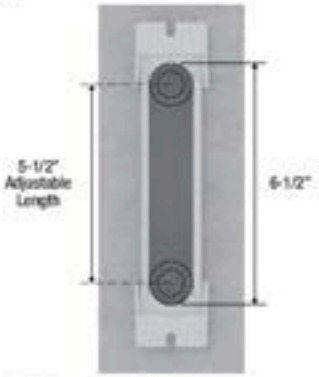
Panel to Floor Connection



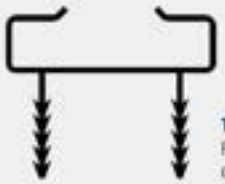
Spandrel to Concrete Column Connection

ALP® TECH SLOT® INSERTS

The ALP Tech Slot Inserts are designed to provide an adjustable and high capacity tieback for precast panel connections to framing systems. Tech Slots are manufactured with standard 3/4-10 UNC thread, which can be used with ALP Straps, all-thread, or bolts. Engineers must select the grade of all-thread or bolt that meets the requirements of the application. Tech Slot Inserts were designed and tested to be utilized in both insulated and non-insulated wall panels. **Standard Finish is Plated.** ***Lid must stay on when pouring concrete to prevent bowing during the curing process.***



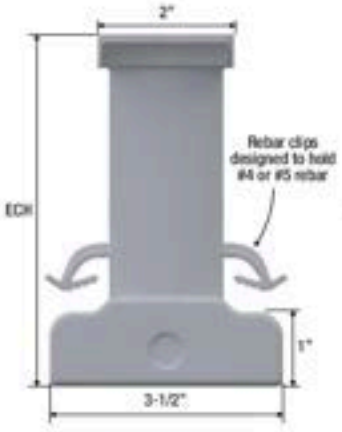
(2) T-Nuts shown for illustration purposes only



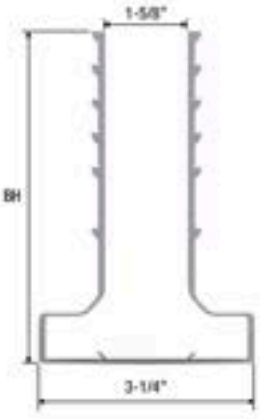
TSFP
Foam Pins clip to base of the Tech Slot Body

DIMENSIONS

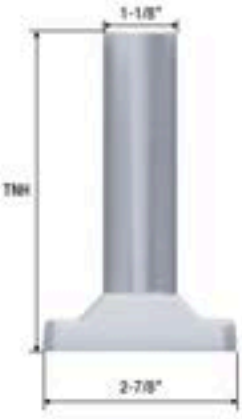
Part #	Description	BH - Body Height	ECH - End Cap Height	TNH - T-Nut Height	BD - Bolt Diameter	Threads Per Inch (UNC)	Cap Color	T-Nut Ultimate Mechanical in Tension (lbs)
TSI63-34NP	TSI-63	3"	3-1/8"	2-3/4"	3/4"	10	White	38,000
TSI64-34NP	TSI-64	4"	4-1/8"	3-3/4"	3/4"	10	Red	38,000
TSI65-34NP	TSI-65	5"	5-1/8"	4-3/4"	3/4"	10	Black	38,000
TSI66-34NP	TSI-66	6"	6-1/8"	5-3/4"	3/4"	10	Blue	38,000



End Cap



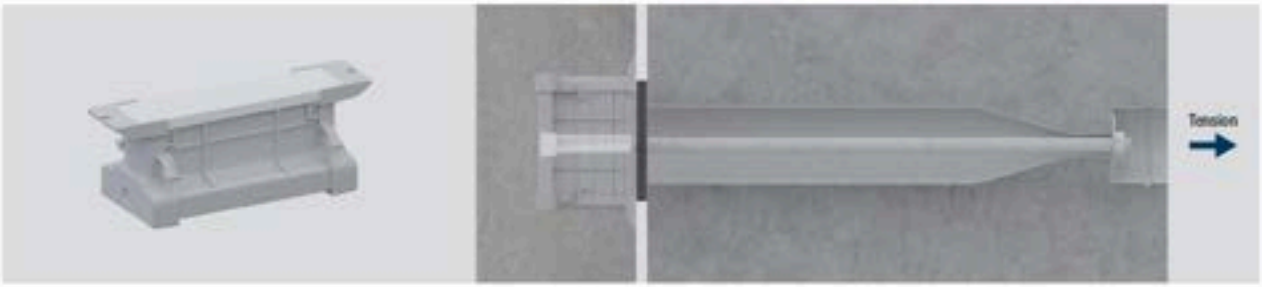
Body

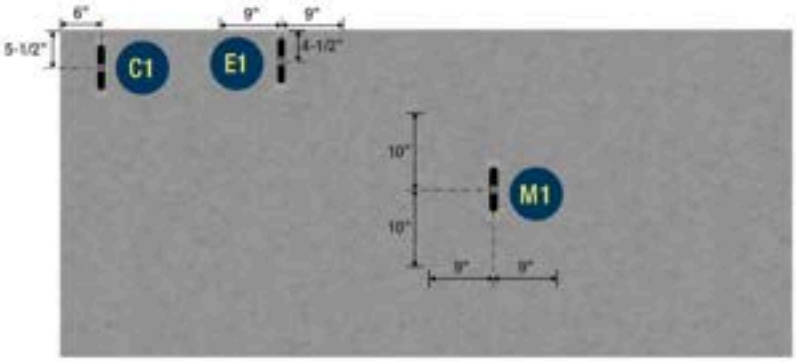


T-Nut

T-Nut Thread Engagement

TSI63 - ALP® TECH SLOT® INSERTS (TENSION)





Dimensions shown are minimum edge distances for insert location and concrete breakout, which can be used in either vertical or horizontal orientations

CAPACITIES - TSI63 - 3" HEIGHT

		5,000 psi			6,000 psi			Max Capacity					
Insert Location	Required Reinforcement*	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	psi	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	# of Tests	Failure Mode
M1	None	9,574	8,508	940	10,488	9,320	1,030	7,000	11,328	10,067	1,112	3	MSC
	#5 x 24" Rebar**	13,518	12,469	646	N/A	N/A	N/A	5,000	13,518	12,469	646	5	MSC
E1	None	6,956	6,664	283	7,620	7,300	310	6,848	8,141	7,799	331	3	ESC
C1	Corner Bars	7,759	7,474	253	8,499	8,187	277	6,006	8,503	8,191	277	4	CSC

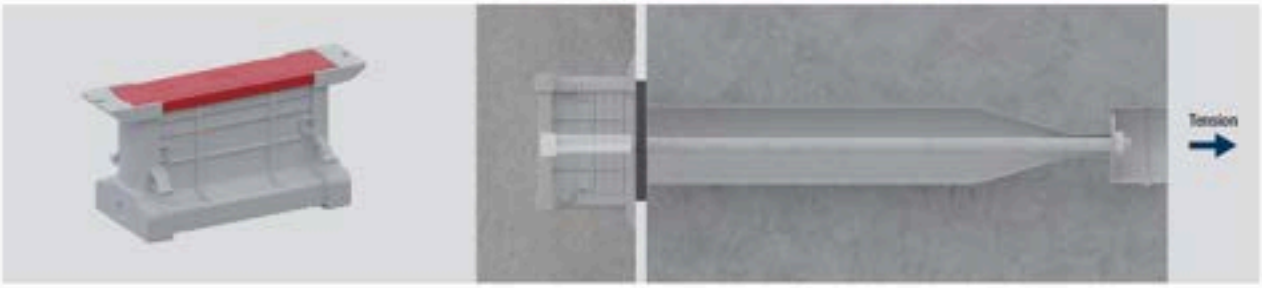
*Refer to Reinforcement Detail page for more information

- 1/4" x 3" x 3" (minimum) washer required for published shear capacities and compression applications
- To ensure sufficient thread engagement, all thread should be turned clockwise until bottoming out inside the T-Nut
- Insert Capacity is based upon T-Nut location that yields the lowest capacity for the application.
- Minimum solid panel thickness is 4". For insulated wall panels, insert can sit directly on insulation with a minimum 3" wythe thickness

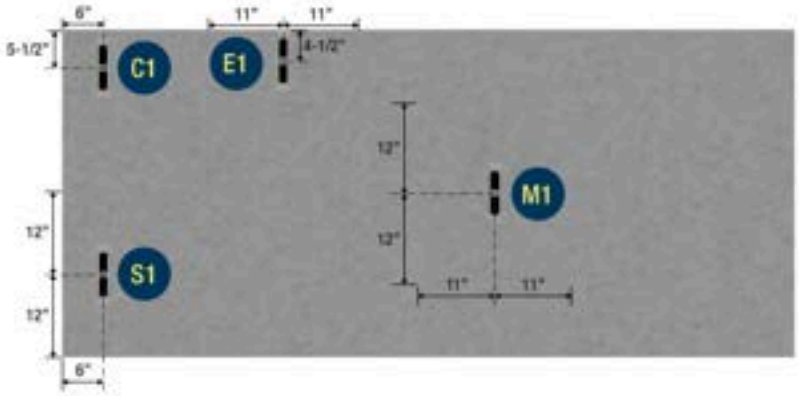
**Minimum edge distances should be adjusted to provide required concrete coverage

- Published values based upon unreinforced concrete, unless noted otherwise
- Tension Values for M1 can be used in applications that sits directly on styrofoam or minimum 1" clear concrete below
- All load values, other than M1, require minimum 1" clear concrete below insert bottom
- Average Ultimate loads above should be reduced by either 5% fractile method or 2 standard deviations for 5 tests or greater or 3 standard deviations for less than 5 tests.
- Other testing values may be available upon request

TSI64 - ALP® TECH SLOT® INSERTS (TENSION)



Dimensions shown are minimum edge distances for insert location and concrete breakout, which can be used in either vertical or horizontal orientations



CAPACITIES - TSI64 - 4" HEIGHT

		5,000 psi			6,000 psi			Max Capacity					
Insert Location	Required Reinforcement*	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	psi	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	# of Tests	Failure Mode
M1	None	19,075	16,462	2,348	20,895	18,033	2,572	7,000	22,569	19,478	2,778	4	MSC
	#5 x 24" Rebar**	19,380	17,021	2,147	21,230	18,646	2,352	7,000	22,931	20,140	2,540	8	MSC
S1	Trim Bar	18,549	18,549	N/A	N/A	N/A	N/A	5,000	18,549	18,549	N/A	1	SSC
E1	None	10,347	9,428	796	11,334	10,328	872	6,848	12,109	11,034	931	3	ESC
C1	Corner Bars	12,456	11,666	686	13,645	12,779	751	6,006	13,651	12,786	752	3	CSC

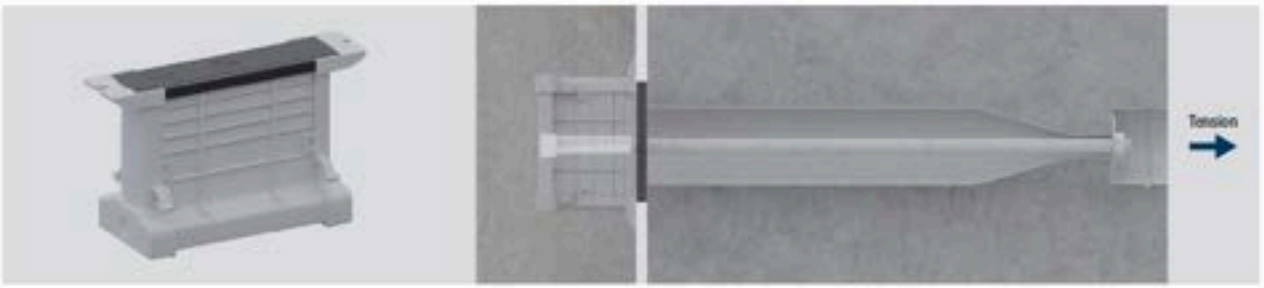
*Refer to Reinforcement Detail page for more information

**Minimum edge distances should be adjusted to provide required concrete coverage

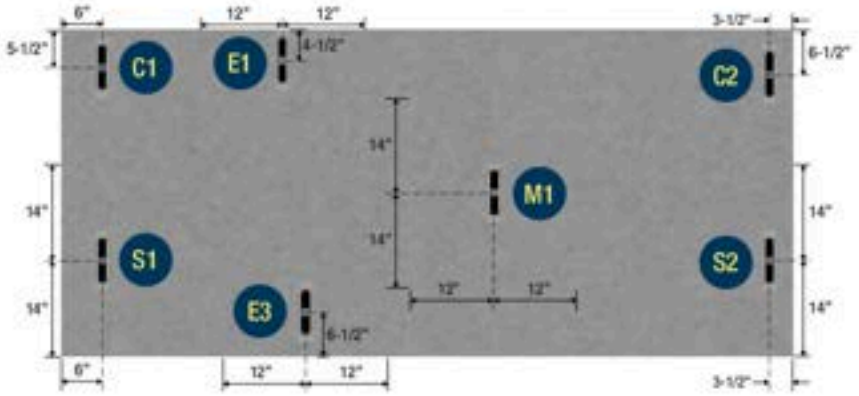
- 1/4" x 3" x 3" (minimum) washer required for published shear capacities and compression applications
- To ensure sufficient thread engagement, all thread should be turned clockwise until bottoming out inside the T-Nut
- Insert Capacity is based upon T-Nut location that yields the lowest capacity for the application.
- Minimum solid panel thickness is 5". For insulated wall panels, insert can sit directly on insulation with a minimum 4" wythe thickness
- Published values based upon unreinforced concrete, unless noted otherwise

- Tension Values for M1 can be used in applications that sits directly on styrofoam or minimum 1" clear concrete below
- All load values, other than M1, require minimum 1" clear concrete below insert bottom
- Average Ultimate loads above should be reduced by either 5% fractile method or 2 standard deviations for 5 tests or greater or 3 standard deviations for less than 5 tests.
- Other testing values may be available upon request

TSI65 - ALP® TECH SLOT® INSERTS (TENSION)



Dimensions shown are minimum edge distances for insert location and concrete breakout, which can be used in either vertical or horizontal orientations



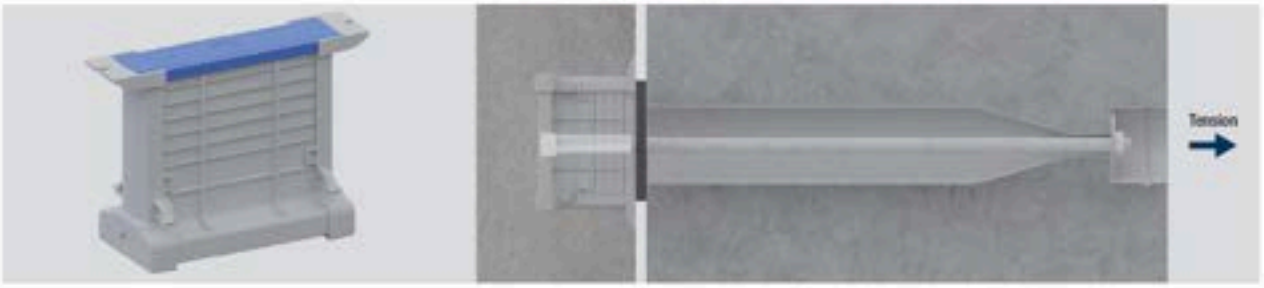
CAPACITIES - TSI65 - 5" HEIGHT

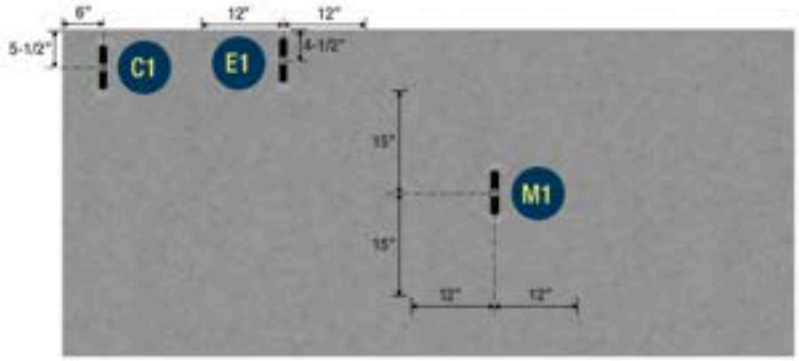
		5,000 psi			6,000 psi			Max Capacity					
Insert Location	Required Reinforcement*	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	psi	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	# of Tests	Failure Mode
M1	None	24,023	21,851	1,891	26,316	23,937	2,071	7,000	28,424	25,854	2,237	3	MSC
S1	Trim Bar	23,678	23,678	N/A	N/A	N/A	N/A	5,000	23,678	23,678	N/A	1	SSC
S2	None	17,055	16,280	591	N/A	N/A	N/A	5,547	17,964	17,147	623	4	SSC
E1	None	13,798	12,823	847	15,115	14,047	928	6,941	16,257	15,108	998	4	ESC
E3	None	22,552	22,082	530	N/A	N/A	N/A	5,547	23,754	23,259	559	3	ESC
C1	Corner Bars	16,807	15,222	1,470	18,411	16,674	1,610	6,006	18,420	16,683	1,611	3	CSC
C2	None	13,979	12,450	1,404	N/A	N/A	N/A	5,547	14,724	13,113	1,479	4	CSC

*Refer to Reinforcement Detail page for more information

- 1/4" x 3" x 3" (minimum) washer required for published shear capacities and compression applications
- To ensure sufficient thread engagement, all thread should be turned clockwise until bottoming out inside the T-Nut
- Insert Capacity is based upon T-Nut location that yields the lowest capacity for the application.
- Minimum solid panel thickness is 6". For insulated wall panels, insert can sit directly on insulation with a minimum 5" wythe thickness
- Published values based upon unreinforced concrete, unless noted otherwise
- Tension Values for M1 can be used in applications that sits directly on styrofoam or minimum 1" clear concrete below
- All load values, other than M1, require minimum 1" clear concrete below insert bottom
- Average Ultimate loads above should be reduced by either 5% fractile method or 2 standard deviations for 5 tests or greater or 3 standard deviations for less than 5 tests.
- Other testing values may be available upon request

TSI66 - ALP® TECH SLOT® INSERTS (TENSION)





Dimensions shown are minimum edge distances for insert location and concrete breakout, which can be used in either vertical or horizontal orientations

CAPACITIES - TSI66 - 6" HEIGHT

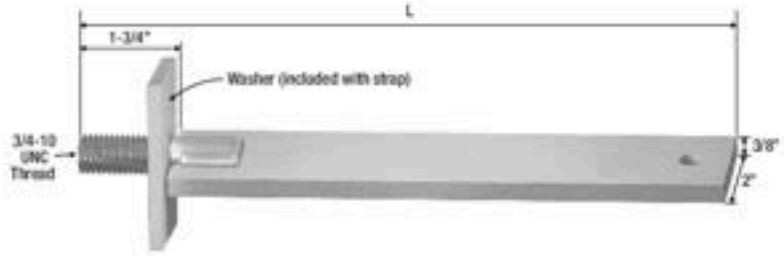
		5,000 psi			6,000 psi			Max Capacity					
Insert Location	Required Reinforcement*	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	psi	Ultimate Avg. (lbs)	Ultimate Min. (lbs)	Std. Dev. (lbs)	# of Tests	Failure Mode
M1	None	29,510	27,492	1,852	32,327	30,116	2,029	6,000	32,327	30,116	2,029	3	MSC
E1	None	18,259	17,294	877	20,001	18,944	960	6,941	21,513	20,376	1,033	3	ESC
C1	Corner Bars	18,419	15,917	3,096	20,177	17,436	3,392	6,006	20,187	17,445	3,393	3	CSC

*Refer to Reinforcement Detail page for more information

- 1/4" x 3" x 3" (minimum) washer required for published shear capacities and compression applications
- To ensure sufficient thread engagement, all thread should be turned clockwise until bottoming out inside the T-Nut
- Insert Capacity is based upon T-Nut location that yields the lowest capacity for the application.
- Minimum solid panel thickness is 7". For insulated wall panels, insert can sit directly on insulation with a minimum 6" wythe thickness
- Published values based upon unreinforced concrete, unless noted otherwise
- Tension Values for M1 can be used in applications that sits directly on styrofoam or minimum 1" clear concrete below
- All load values, other than M1, require minimum 1" clear concrete below insert bottom
- Average Ultimate loads above should be reduced by either 5% fractile method or 2 standard deviations for 5 tests or greater or 3 standard deviations for less than 5 tests.
- Other testing values may be available upon request

ALP® TECH SLOT® THREADED STRAPS

The ALP Tech Slot Threaded Strap connects the Tech Slot Insert to the framing system to provide for shear and tension design loads. Strap is threaded into the insert until flush against washer then turned back counter clockwise until strap is flat. Then strap is welded to the framing system or embed. Available in 4 lengths for various field requirements. ALP Threaded Straps should only be used with the ALP Tech Slot Inserts. **Standard Finish is Plated.**



TSW1433P
Tech Slot Washer available separately

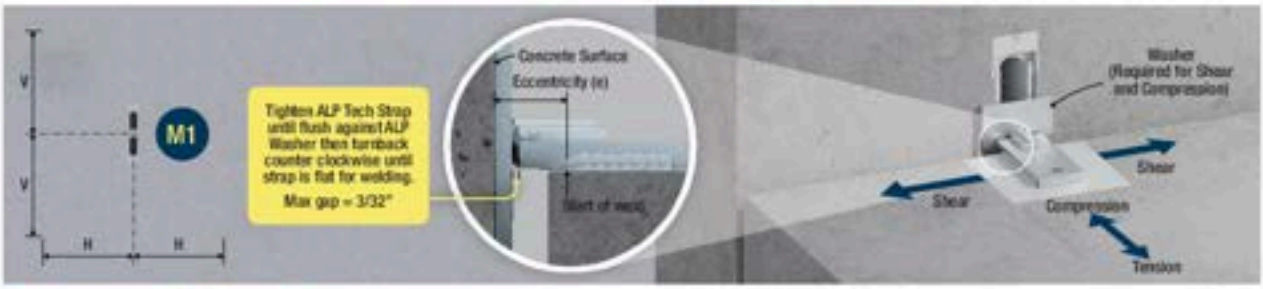
DIMENSIONS

Part #	L	Finish	Ultimate Mechanical in Tension (lbs)	Qty/Ctn	Weight (lbs)
TSS6N34WP	6-1/4"	Plated	38,000	24	1.93
TSS8N34WP	8-1/4"	Plated	38,000	20	2.38
TSS10N34WP	10-1/4"	Plated	38,000	16	2.84
TSS12N34WP	12-1/4"	Plated	38,000	14	3.28

MATERIAL PROPERTIES

	Min. Yield (KSI)	Min. Ult. (KSI)	Min. Elongation
Strap	50	68	20%
Stud	120	140	12%

ALP® TECH SLOT® INSERTS AND STRAPS (SHEAR)



SHEAR CAPACITIES - M1 LOCATION

Insert	Loading (Shear) Eccentricity	Max Mechanical Capacity: Ultimate Average (lbs)	Max Mechanical Capacity: Standard Dev. (lbs)	Max Mechanical Capacity: # of Tests	Capacity in Concrete (5,000 psi): Ultimate Average (lbs)	Capacity in Concrete (5,000 psi): Standard Dev. (lbs)	Capacity in Concrete (5,000 psi): # of Tests	Edge Distances: H	Edge Distances: V
TSI63	1" e	21,488	3,065	5	14,034	N/A	1	11-1/2"	11-1/2"
	3" e	15,753	834	5	13,318	254	3		
TSI64	1" e	21,488	3,065	5	17,743	473	3	13"	13"
	3" e	15,753	834	5	13,318	254	3		
TSI65	1" e	21,488	3,065	5	17,743	473	3	13"	13"
	3" e	15,753	834	5	13,318	254	3		
TSI66	1" e	21,488	3,065	5	17,743	473	3	13"	13"
	3" e	15,753	834	5	13,318	254	3		

- 1/4" x 3" x 3" (min.) washer required for published shear capacities and compression loading applications.
- Insert Capacity is based upon T-Nut location that yields the lowest capacity for the application.
- Shear edge distances are based upon a minimum slab thickness of 8" unreinforced concrete.
- Shear capacities and edge distances for concrete sections with less than 8" thicknesses must be adjusted per ACI 318 edge shear calculations.
- For eccentricity between 1" and 3", linear regression calculation equations can be used.
- Average Ultimate loads above should be reduced by either 5% fractile method or 2 standard deviations for 5 tests or greater or 3 standard deviations for less than 5 tests. Engineer shall use either mechanical or concrete capacities based on worst-case calculations.
- After ultimate loads are reduced, a strength reduction factor must be applied to arrive at the design capacity.