

TECHNICAL DATA SHEET

TYE

Denomination: **TYE screw anchor**

Codes: **TYE**

Reference: **FT TYE-en**

Date: **25/08/2026**

Revision: 4

Page: **1 of 7**



CHARACTERISTICS

- Pilot hole in concrete needed; thread is created by the anchor during the installation process
- No special drill bit required; install using standard-sized ANSI tolerance drill bits
- Code listed under IBC/IRC in accordance with ICC-ES AC193 and ACI 308.4R for cracked and uncracked concrete (size 1/4" only for uncracked concrete).
- Qualified for static, wind and seismic loading conditions
- Removable, leaving concrete surface flat. Ideal for temporary anchoring (e.g. formwork, bracing) or applications where fixtures may need to be moved
- Suitable when reduced edge distances or spacing required
- Shank in AISI 316 stainless steel

APPLICATIONS

- Use in outdoor coastal environments
- Structural fixings in cracked and uncracked concrete (size 1/4" only for uncracked concrete)
- Formwork and fixing
- Racking and shelving
- Attaching railings, handrails and ledgers
- Fixings of steel beams, channels, boilers, signals, stadium seatings, façade substructures, etc.

APPROVALS



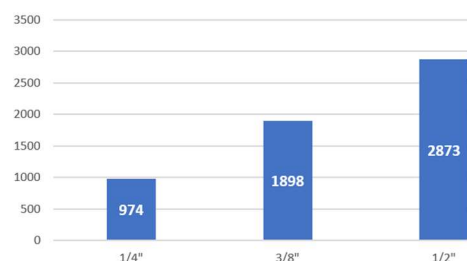
ESR-4314

Codes compliance:
IBC/IRC 2024, 2021, 2018, 2015
LABC/LARC 2026
CBC/CRC 2025
FBC 2026 2023

BASE MATERIALS



ALLOWABLE TENSION LOADS FOR DEEP EMBEDMENT DEPTH IN 2500 psi UNCRACKED CONCRETE with $\alpha=1,48$ [lb]



SIZES

1/4" – 1/2"

DRILL CONDITION



APPLICATION EXAMPLES



1. RANGE

ITEM	CÓDE	SIZE	PICTURE	COMPONENT	MATERIAL
1	TYE	1/4" - 1/2"		Hexagonal screw anchor	Head and shank: AISI 316 Tip: hardened carbon steel

TECHNICAL DATA SHEET

TYE

Denomination: **TYE screw anchor**

Codes: **TYE**

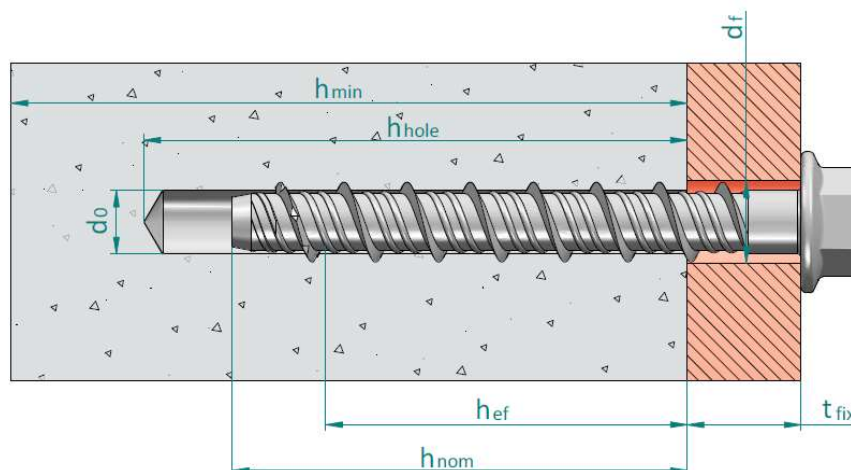
Reference: **FT TYE-en**

Date: **25/08/2026**

Revision: 4

Page: **2 of 7**

2. INSTALLATION DETAILS



Parameter	Symbol	Units	Nominal anchor diameter					
			1/4"		3/8"		1/2"	
Drill bit diameter	d_0	in (mm)	1/4 (6,4)	1/4 (6,4)	3/8 (9,5)	3/8 (9,5)	1/2 (12,7)	1/2 (12,7)
Nominal embedment depth ¹	h_{nom}	in (mm)	2 (51)	3 (76)	2 3/4 (70)	4 (102)	3 (76)	5 (127)
Effective embedment depth	h_{ef}	in (mm)	1,16 (29)	2,01 (51)	1,49 (38)	2,56 (65)	1,60 (41)	3,30 (84)
Minimum hole depth	h_{hole}	in (mm)	2 3/8 (60)	3 3/8 (86)	3 (76)	4 1/4 (108)	3 3/8 (86)	5 3/8 (137)
Maximum fixture clearance Hole diameter	d_f	in (mm)	3/8 (9,5)	3/8 (9,5)	1/2 (12,7)	1/2 (12,7)	5/8 (15,9)	5/8 (15,9)
Maximum installation torque	$T_{inst,max}$	ft lb (Nm)	10 (14)	10 (14)	35 (47)	35 (47)	35 (47)	35 (47)
Maximum impact wrench torque rating	$T_{impact,max}$	ft lb (Nm)	100 (136)	100 (136)	157 (213)	157 (213)	157 (213)	157 (213)
Minimum concrete thickness	h_{min}	in (mm)	3 1/4 (83)	4 (102)	4 (102)	4 3/4 (121)	4 3/4 (121)	6 3/4 (171)
Critical edge distance	c_{ac}	in (mm)	2 1/2 (64)	3 (76)	4 (102)	5 1/2 (140)	4 1/2 (114)	6 1/2 (165)
Minimum edge distance	c_{min}	in (mm)	1 3/4 (44)	2 (51)	1 1/2 (38)	1 1/2 (38)	1 3/4 (44)	1 3/4 (44)
Minimum spacing	s_{min}	in (mm)	3 (76)	3 (76)	3 (76)	3 (76)	3 (76)	3 (76)
Minimum overall anchor length ²	ℓ_{anch}	in (mm)	2 1/8 (54)	3 1/8 (79)	3 (76)	4 1/4 (108)	3 1/4 (83)	5 1/4 (133)
Spanner	Sw	in	7/16	7/16	9/16	9/16	3/4	3/4
Maximum fixture thickness	t_{fix}	in (mm)	L - 2 (L - 51)	L - 3 (L - 76)	L - 2 3/4 (L - 70)	L - 4 (L - 102)	L - 3 (L - 76)	L - 5 (L - 127)

TYE

Denomination: **TYE screw anchor**

Codes: **TYE**

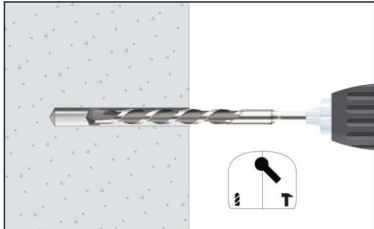
Reference: **FT TYE-en**

Date: **25/08/2026**

Revision: 4

Page: **3 of 7**

3. PRODUCT INSTALLATION



1. DRILL

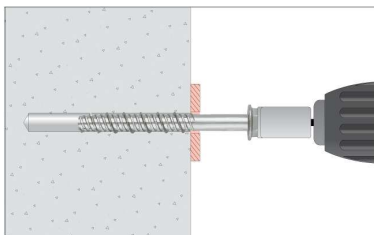
Drill a hole into the base material of the correct diameter and depth using a drill bit that meets the requirements of ANSI B212.15

Caution: oversized holes in base material will reduce or eliminate the mechanical interlock of the threads with the base material and reduce the anchor's load capacity



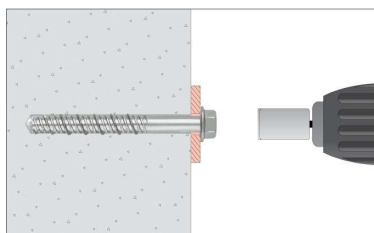
2. BLOW AND CLEAN

Remove dust and debris from hole using a hand pump, compressed air or a vacuum to remove loose particles left from drilling.



3. INSTALL

Select a powered impact wrench or a torque wrench that does not exceed the maximum torque $T_{\text{impact,max}}$ or $T_{\text{ins,max}}$ respectively. Attach an appropriate sized hex socket to the wrench. Mount the screw anchor head in the socket.



4. APPLY TORQUE

Drive the anchor with an impact driver or a torque wrench through the fixture and into the hole until the anchor head washer comes in contact with the fixture. The anchor must be snug after installation. Do not spin the hex socket off the anchor to disengage.

The screw anchor are permitted to be loosened by a maximum of one full turn and retightened with a torque wrench or a powered impact wrench to facilitate fixture attachment or realignment

Installation accessories

Code no.	Description	Box qty.	Image
MOBOMBA	Hand pump / Dust blower.	1	
MORCEPKIT	Kit 3 cleaning brushes	1	

TYE

Denomination: TYE screw anchor	Codes: TYE		
Reference: FT TYE-en	Date: 25/08/2026	Revision: 4	Page: 4 of 7

4. DESIGN INFORMATION

Tension design information^{1,2}

Design characteristic		Notation	Units	Nominal anchor diameter					
				1/4"		3/8"		1/2"	
Nominal embedment depth		h_{nom}	in (mm)	2 (51)	3 (76)	2 3/4 (70)	4 (102)	3 (76)	5 (127)
Anchor category		1, 2 or 3	-	2	2	2	1	2	1
STEEL STRENGTH IN TENSION (ACI 318-14 17.4.1 or ACI 318-11 D.5.1)									
Minimum specified ultimate strength		f_{uta}	psi (N/mm ²)	107,328 (740)		107,328 (740)		104,427 (720)	
Minimum specified yield strength		f_y	psi (N/mm ²)	85,862 (592)		85,862 (592)		83,542 (576)	
Effective tensile stress area (screw anchor body)		$A_{se,N}$	in ² (mm ²)	0.0398 (25.7)		0.0904 (58.3)		0.1709 (110.3)	
Steel strength in tension ³		N_{sa}	lb (kN)	4,272 (19.0)		9,702 (43.2)		17,847 (79.4)	
Strength reduction factor for steel failure in tension ⁴		ϕ_{sa}	-	0.75					
PULLOUT STRENGTH IN TENSION (ACI 318-14 17.4.3 or ACI 318-11 D.5.3)									
Characteristic pullout strength, uncracked concrete (2,500 psi) ^{6,7}		$N_{p,uncr}$	lb (kN)	733 (3.26)	2,620 (11.65)	1,895 (8.43)	4,321 (19.22)	2,301 (10.23)	6,541 (29.10)
Characteristic pullout strength, cracked concrete (2,500 psi) ^{6,7}		$N_{p,cr}$	lb (kN)	NA	NA	1,247 (5.55)	--	--	4,913 (21.86)
Characteristic pullout strength, cracked concrete (2,500 psi), seismic ^{6,7,8}		$N_{p,eq}$	lb (kN)	NA	NA	1,247 (5.55)	--	--	4,422 (19.87)
Normalization exponent	Uncracked concrete	n	-	0.49	0.32	0.39	0.29	0.43	0.38
	Cracked concrete	n	-	NA	NA	0.49	0.50	0.50	0.43
Strength reduction factor for pullout strength in tension ⁴		ϕ_{cb}	-	0.55	0.55	0.55	0.65	0.55	0.65
CONCRETE BREAKOUT STRENGTH IN TENSION (ACI 318-14 17.4.2 or ACI 318-11 D.5.2)									
Effective embedment		h_{ef}	in (mm)	1,16 (29)	2,01 (51)	1,49 (38)	2,56 (65)	1,60 (41)	3,30 (84)
Effectiveness factor for uncracked concrete ⁹		k_{uncr}	-	24	24	24	24	24	24
Effectiveness factor for cracked concrete ⁹		k_{cr}	-	NA	NA	17	17	17	17
Critical edge distance		c_{ac}	in (mm)	2 1/2 (64)	3 (76)	4 (102)	5 1/2 (140)	4 1/2 (114)	6 1/2 (165)
Strength reduction factor for pullout strength in tension ⁴		ϕ_p	-	0.55	0.55	0.55	0.65	0.55	0.65
Axial stiffness in service load range	Uncracked concrete	β_{uncr}	lb/in (kN/mm)	20,697 (3,625)	62,330 (10,916)	46,722 (8,182)	84,144 (14,736)	48,782 (8,543)	136,727 (23,944)
	Cracked concrete	β_{cr}	lb/in (kN/mm)	NA	NA	49,689 (8,702)	72,339 (12,669)	45,342 (7,941)	105,244 (18,431)

For SI: 1 inch = 25.4 mm, 1 in² = 645 mm², 1 psi = 0.00689 N/mm²; 1 lb = 0.00445 kN, 1 lb/in = 0.175 kN/mm

- The data in this table is intended to be used with the design provisions of ACI 318-14 Chapter 17 or ACI 318 Appendix D, as applicable; for anchors resisting seismic load combinations the additional requirements of ACI 318-14 17.2.3 or ACI 318 D.3.3, as applicable, shall apply.
- Installation must comply with published instructions and details.
- Tabulated values for steel strength in tension are based on test results per ACI 355.2 and must be used for design.
- All values of ϕ were determined from the load combinations of IBC Section 1605.2, ACI 318-14 Section 5.3 or ACI 318-11 Section 9.2, as applicable. If the load combinations of ACI 318-11 Appendix C are used, then the appropriate value of ϕ must be determined in accordance with ACI 318-11 D.4.4. For reinforcement that meets ACI 318-14 Chapter 17 or ACI 318 Appendix D, as applicable, requirements for Condition A, see ACI 318-14 17.3.3 or ACI 318-11 D.4.3, as applicable, for the appropriate ϕ factor when the load combinations of IBC Section 1605.2, ACI 318-14 Section 5.3 or ACI 318-11 Section 9.2, as applicable, are used.
- TYE screw anchor is considered a ductile steel element in tension as defined by ACI 318-14 2.3 or ACI 318 D.1, as applicable.
- For concrete compressive strength greater than 2,500 psi, N_{pn} = (pullout strength value from table)*(specified concrete compressive strength/2500)⁹
- Pullout strength does not control design of indicated anchors. Do not calculate pullout strength for indicated anchor size and embedment
- Reported values for characteristic pullout strength in tension for seismic applications are based on test results per ACI 355.2,

TECHNICAL DATA SHEET

TYE

Denomination: TYE screw anchor	Codes: TYE		
Reference: FT TYE-en	Date: 25/08/2026	Revision: 4	Page: 5 of 7

Shear design information^{1,2}

[illegible]

TECHNICAL DATA SHEET

TYE

Denomination: **TYE screw anchor**

Codes: **TYE**

Reference: **FT TYE-en**

Date: **25/08/2026**

Revision: **4**

Page: **6 of 7**

Factored design strength (ΦN_n and ΦV_n) calculated in accordance with ACI 318-14:

- Tabular values are provided for illustration and are applicable for single anchors installed in normal weight concrete with minimum slab thickness, $h_a = h_{min}$, and with the following conditions:
 - C_{a1} is greater than or equal to the critical edge distance, C_{ac} (table values based on $C_{a1} = C_{ac}$).
 - C_{a2} is greater than or equal to 1.5 times C_{a1} .
- Calculations were performed according to ACI 318-14. The load level corresponding to the controlling failure mode is listed. (e.g. For tension: steel, concrete breakout and pullout; For shear: steel, concrete breakout and pryout). Furthermore, the capacities for concrete breakout strength in tension and pryout strength in shear are calculated using the effective embedment values, h_{ef} , for the selected anchors as noted in the design information tables. Please also reference the installation specifications for more information.
- Strength reduction factors (Φ) were based on ACI 318-14 section 17.3.3 for load combinations. Condition B is assumed. Condition B is applied where supplementary reinforcement is not supplied.
- Tabular values are permitted for static loads only, seismic loading is not considered with these tables.
- For designs that include combined tension and shear, the interaction of tension and shear loads must be calculated in accordance with ACI 318-14 section 17.6.
- Interpolation is not permitted to be used with the tabular values. For intermediate base material compressive strengths please see ACI 318-14. For other design conditions including seismic considerations please see ACI 318-14.

Tension and shear design strengths for TYE in cracked concrete

Nominal anchor diameter (in.)	Nominal embed. h_{nom} (in.)	Minimum concrete compressive strength									
		$f'_c = 2,500$ psi		$f'_c = 3,000$ psi		$f'_c = 4,000$ psi		$f'_c = 6,000$ psi		$f'_c = 8,000$ psi	
		ΦN_n Tension (lb.)	ΦV_n Shear (lb.)	ΦN_n Tension (lb.)	ΦV_n Shear (lb.)	ΦN_n Tension (lb.)	ΦV_n Shear (lb.)	ΦN_n Tension (lb.)	ΦV_n Shear (lb.)	ΦN_n Tension (lb.)	ΦV_n Shear (lb.)
1/4	2	--	--	--	--	--	--	--	--	--	--
	3	--	--	--	--	--	--	--	--	--	--
3/8	2 3/4	686	1,082	717	1,185	770	1,369	850	1,676	912	1,836
	5	2,263	3,706	2,479	3,706	2,863	3,706	3,506	3,706	4,048	3,706
1/2	3	946	1,204	1,036	1,319	1,197	1,523	1,466	1,866	1,693	2,154
	5	3,193	6,605	3,321	6,605	3,533	6,605	3,855	6,605	4,101	6,605
Color code:		Pullout 		Concrete / pryout 				Steel 			

Tension and shear design strengths for TYE in uncracked concrete

Nominal anchor diameter (in.)	Nominal embed. h_{nom} (in.)	Minimum concrete compressive strength									
		$f'_c = 2,500$ psi		$f'_c = 3,000$ psi		$f'_c = 4,000$ psi		$f'_c = 6,000$ psi		$f'_c = 8,000$ psi	
		ΦN_n Tension (lb.)	ΦV_n Shear (lb.)	ΦN_n Tension (lb.)	ΦV_n Shear (lb.)	ΦN_n Tension (lb.)	ΦV_n Shear (lb.)	ΦN_n Tension (lb.)	ΦV_n Shear (lb.)	ΦN_n Tension (lb.)	ΦV_n Shear (lb.)
1/4	2	403	976	422	976	452	976	500	976	536	976
	3	1,441	1,607	1,484	1,607	1,554	1,607	1,658	1,607	1,736	1,607
3/8	2 3/4	1,042	1,528	1,080	1,674	1,142	1,836	1,236	1,836	1,308	1,836
	5	2,809	3,706	2,884	3,706	3,007	3,706	3,189	3,706	3,325	3,706
1/2	3	1,266	1,700	1,316	1,862	1,400	2,150	1,528	2,634	1,625	3,011
	5	4,252	6,605	4,402	6,605	4,649	6,605	5,021	6,605	5,303	6,605
Color code:		Pullout 		Concrete / pryout 				Steel 			

Converted allowable loads for TYE

ESR-4314 provides design information for load factor and characteristic resistance (LRFD), however allowable stress design (ASD) is still in use by some users. Translation of LRFD to ASD values is possible, however it is dependent on the levels of dead load and live load. Dead load is defined in the ACI 318 Building Code Requirements for Structural Concrete as "the weights of members, supported structure and permanent attachments that are likely to be present on a structure in service". Live load is defined in ACI 318-14 as "load that is not permanently applied to a structure, but is likely to occur during the service life of the structure (excluding environmental loads)". Examples of live loads are traffic on a walkway and non permanent loads associated with usage of a structure. Live load values are stipulated in the building code for various loading conditions and parts of structures.

To facilitate the translation of LRFD characteristic values to ASD values, a scenario of dead load and live load level is used to conservatively address the most common application as follows: 30% dead load; 70% live load. ACI 318-14 Equation (5.3.1b)

TECHNICAL DATA SHEET

TYE

Denomination: **TYE screw anchor**

Codes: **TYE**

Reference: **FT TYE-en**

Date: **25/08/2026**

Revision: **4**

Page: **7 of 7**

provides a conversion factor of 1,48 which is divided into the LRFD characteristic resistances and multiplied by a ϕ factor (according to the failure type) to determine an equivalent ASD load.

It is the responsibility of the user to select the appropriate ASD values based on the example loadings shown in this document or alternative dead versus live loading that may be applicable to the specific design.

The ASD values are provided in the following tables for tension and shear for different concrete strengths. Other installation and design provisions in ESR-4314 must be followed.

Converted allowable loads for TYE in cracked concrete

Nominal anchor diameter (in.)	Nominal embed. h_{nom} (in.)	Minimum concrete compressive strength									
		$f'_c = 2,500$ psi		$f'_c = 3,000$ psi		$f'_c = 4,000$ psi		$f'_c = 6,000$ psi		$f'_c = 8,000$ psi	
		T allowable ASD Tension (lb)	V allowable ASD Shear (lb)	T allowable ASD Tension (lb)	V allowable ASD Shear (lb)	T allowable ASD Tension (lb)	V allowable ASD Shear (lb)	T allowable ASD Tension (lb)	V allowable ASD Shear (lb)	T allowable ASD Tension (lb)	V allowable ASD Shear (lb)
1/4	2	--	--	--	--	--	--	--	--	--	--
	3	--	--	--	--	--	--	--	--	--	--
3/8	2 3/4	463	731	485	801	520	925	574	1,133	618	1,240
	5	1,529	2,504	1,675	2,504	1,934	2,504	2,369	2,504	2,735	2,504
1/2	3	639	814	700	891	809	1,029	990	1,260	1,144	1,455
	5	2,158	4,463	2,244	4,463	2,387	4,463	2,605	4,463	2,771	4,463

- Allowable load values are calculated using a conversion factor, α , from factored design strengths.
- Tabulated allowable load values assume 30% dead load and 70% live load, with controlling load combination 1,2D + 1,6L. Calculated weighted average for the conversion factor, $\alpha = 1,2*(0,3) + 1,6*(0,7) = 1,48$.

Converted allowable loads for TYE in uncracked concrete

Nominal anchor diameter (in.)	Nominal embed. h_{nom} (in.)	Minimum concrete compressive strength									
		$f'_c = 2,500$ psi		$f'_c = 3,000$ psi		$f'_c = 4,000$ psi		$f'_c = 6,000$ psi		$f'_c = 8,000$ psi	
		T allowable ASD Tension (lb)	V allowable ASD Shear (lb)	T allowable ASD Tension (lb)	V allowable ASD Shear (lb)	T allowable ASD Tension (lb)	V allowable ASD Shear (lb)	T allowable ASD Tension (lb)	V allowable ASD Shear (lb)	T allowable ASD Tension (lb)	V allowable ASD Shear (lb)
1/4	2	272	659	285	659	306	659	338	659	362	659
	3	974	1,086	1,002	1,086	1,050	1,086	1,120	1,086	1,173	1,086
3/8	2 3/4	704	1,032	730	1,131	772	1,240	835	1,240	884	1,240
	5	1,898	2,504	1,949	2,504	2,032	2,504	2,155	2,504	2,246	2,504
1/2	3	855	1,149	889	1,258	946	1,453	1,032	1,780	1,098	2,034
	5	2,873	4,463	2,974	4,463	3,141	4,463	3,393	4,463	3,583	4,463

- Allowable load values are calculated using a conversion factor, α , from factored design strengths.
- Tabulated allowable load values assume 30% dead load and 70% live load, with controlling load combination 1,2D + 1,6L. Calculated weighted average for the conversion factor, $\alpha = 1,2*(0,3) + 1,6*(0,7) = 1,48$.