

TP DROP IN ANCHOR

TP DA+ & TP DAL+

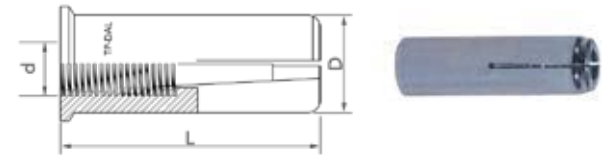
■ Product Description

- European approval for non-structural applications in cracked and non-cracked concrete
- R30 to R120 Fire Approval
- Functioning by deformation
- Installation prior to the material to be fixed
- Bolt can be disassembled so that the surface of the base material is smooth
- Bolt is not included



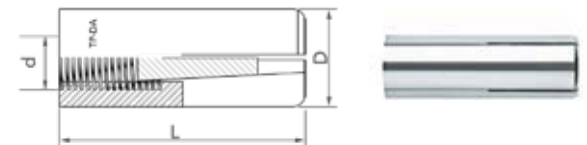
TP DA+ : TP Drop in Anchor (Zinc Plated), has an ETA approval for non-structural application

Item Number	Description	Size	Approval
TP 6761	TP Drop in Anchor (Zinc Plated)	TP DA+ M06	✓
TP 6762	TP Drop in Anchor (Zinc Plated)	TP DA+ M08	✓
TP 6763	TP Drop in Anchor (Zinc Plated)	TP DA+ M10	✓
TP 6764	TP Drop in Anchor (Zinc Plated)	TP DA+ M12	✓
TP 6765	TP Drop in Anchor (Zinc Plated)	TP DA+ M16	✓
TP 6766	TP Drop in Anchor (Zinc Plated)	TP DA+ M20	✓



TP DAL+ : TP Drop in Anchor (Zinc Plated with flatted lip), has an ETA approval for non-structural application

Item Number	Description	Size	Approval
TP 6767	TP Drop in Anchor (Zinc Plated with flatted lip)	TP DAL+ M06	✓
TP 6768	TP Drop in Anchor (Zinc Plated with flatted lip)	TP DAL+ M08	✓
TP 6769	TP Drop in Anchor (Zinc Plated with flatted lip)	TP DAL+ M10	✓
TP 6770	TP Drop in Anchor (Zinc Plated with flatted lip)	TP DAL+ M12	✓
TP 6771	TP Drop in Anchor (Zinc Plated with flatted lip)	TP DAL+ M16	✓



TP DA-A4+ : TP Drop in Anchor (Stainless steel A4), not approved



Item Number	Description	Size
TP 6772	TP Drop in Anchor (Stainless steel A4)	TP DA-A4+ M06
TP 6773	TP Drop in Anchor (Stainless steel A4)	TP DA-A4+ M08
TP 6774	TP Drop in Anchor (Stainless steel A4)	TP DA-A4+ M10
TP 6775	TP Drop in Anchor (Stainless steel A4)	TP DA-A4+ M12
TP 6776	TP Drop in Anchor (Stainless steel A4)	TP DA-A4+ M16
TP 6777	TP Drop in Anchor (Stainless steel A4)	TP DA-A4+ M20

■ Application

- Fixing suspended ceilings, sprinklers and ventilation systems
- Structural fixing, inner and outer iron works
- Fixing threaded bars

■ Anchor Material

No.	Name	Size	Component	Material
1	TP DA+	M6 to M20	Capsule	Carbon steel
			Cone	Carbon steel Coating: zinc $\geq 5 \mu\text{m}$
2	TP DAL+	M6 to M20	Capsule	Carbon steel
			Cone	Carbon steel Coating: zinc $\geq 5 \mu\text{m}$
3	TP DA-A4+	M6 to M20	Capsule	Stainless steel A4
			Cone	Stainless steel A4

■ Accessories

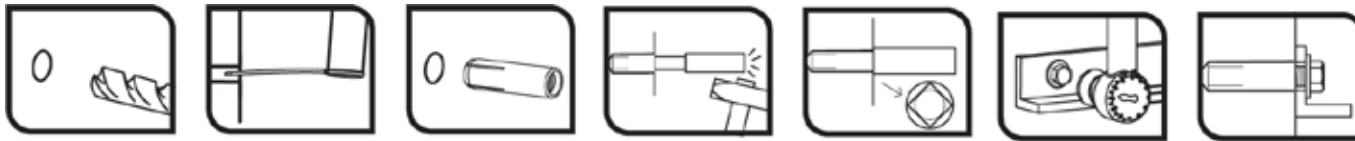
Manual installation tool used for Drop in anchor (TP DI-HS)

Item Number	Description	Size
TP 6268	TP Manual setting tool	TP DI-HSM06
TP 6269	TP Manual setting tool	TP DI-HSM08
TP 6270	TP Manual setting tool	TP DI-HSM10
TP 6271	TP Manual setting tool	TP DI-HSM12
TP 6272	TP Manual setting tool	TP DI-HSM16
TP 6273	TP Manual setting tool	TP DI-HSM20



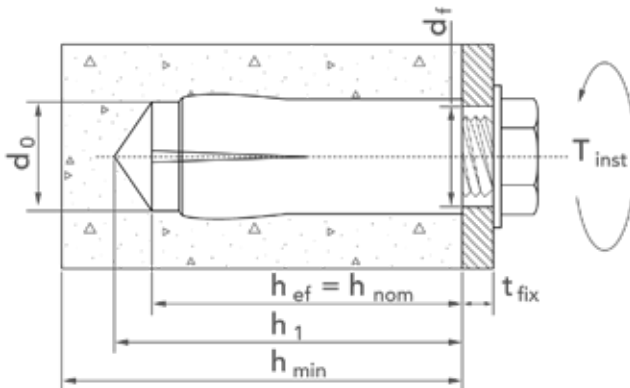
■ Installation Procedure

- Check the concrete base is well compacted and porosity insignificant. Dry and wet drills allowed.
Drill at hammer or percussion position. Respect specified diameter and depth
- Blow and clean hole from dust and drill debris using air pump and brush
- Introduce the anchor in the hole completely. Use hammer if necessary. The anchor must not stand out of the surface of the base material
- Insert the expansion tool into the inner cone of the anchor. Hammer until the setting tool is levelled with the anchor
- Put the material to be fixed and insert the bolt or stud through holes. Use a bolt with the correct length. Wide washers are recommended (DIN 9021). Do not introduce any materials between the material to be fixed and the washer (sealants, etc.). Apply the nominal torque using dynamometric wrench



■ Installation Parameters

Installation parameters			M6	M8	M10	M12	M16	M20
d_o	Nominal diameter of drill bit	mm	8	10	12	15	20	25
D	Thread diameter	mm	M6	M8	M10	M12	M16	M20
d_f	Fixture clearance hole diameter	mm	7	9	12	14	18	22
T_{inst}	Maximum installation torque	Nm	4	11	17	38	60	100
$l_{s,min}$	Minimum screwing depth	mm	6	8	10	12	16	20
$l_{s,max}$	Maximum screwing depth	mm	10	13	17	21	27	34
h_{min}	Minimum Thickness of concrete member	mm	100	100	100	100	130	160
h_1	Depth of drilled hole	mm	27	33	43	54	70	86
h_{nom}	Overall anchor embedment depth in the concrete	mm	25	30	40	50	65	80
h_{ef}	Effective anchorage depth	mm	25	30	40	50	65	80
S_{min}	Minimum allowable spacing	mm	60	60	80	100	130	160
C_{min}	Minimum allowable distance	mm	105	105	140	175	230	280
	Installation tool	-	TP DI-HSM06	TP DI-HSM08	TP DI-HSM10	TP DI-HSM12	TP DI-HSM16	TP DI-HSM20



■ Characteristic Resistance

Characteristic resistance in non-cracked concrete C20/25 for an isolated anchor (no spacing and edge distance effects) with bolt class 6.8 or A4-70

Characteristic Resistance				M6	M8	M10	M12	M16	M20
TP DA+	N_{RK}	Tension Characteristic resistance	KN	6.30	8.30	12.70	17.80	26.40	36.10
	ψ	Concrete coefficient C30/37	-	1.02	1.22	1.15	1.15	1.22	1.19
	ψ	Concrete coefficient C40/45	-	1.04	1.41	1.29	1.28	1.41	1.35
	ψ	Concrete coefficient C50/60	-	1.05	1.55	1.37	1.37	1.55	1.46
	γ_M	Tension partial safety factor	-	1.80	1.80	2.10	2.10	2.10	2.10
	V_{RK}	Shear Characteristic resistance	KN	6.30	8.30	9.10	17.80	32.50	47.50
	γ_M	Shear partial safety factor	-	1.50	1.50	1.25	1.50	1.25	1.25
TP DAL+	N_{RK}	Tension Characteristic resistance	KN	6.30	8.30	12.70	17.80	26.40	-
	ψ	Concrete coefficient C30/37	-	1.02	1.22	1.15	1.15	1.22	-
	ψ	Concrete coefficient C40/45	-	1.04	1.41	1.29	1.28	1.41	-
	ψ	Concrete coefficient C50/60	-	1.05	1.55	1.37	1.37	1.55	-
	γ_M	Tension partial safety factor	-	1.80	1.80	2.10	2.10	2.10	-
	V_{RK}	Shear Characteristic resistance	KN	6.30	8.30	9.10	17.80	32.50	-
	γ_M	Shear partial safety factor	-	1.50	1.50	1.25	1.50	1.25	-
TP DA-A+4	N_{RK}	Tension Characteristic resistance	KN	5.00	6.60	10.20	14.30	21.10	28.80
	ψ	Concrete coefficient C30/37	-	1.02	1.22	1.15	1.15	1.22	1.19
	ψ	Concrete coefficient C40/45	-	1.04	1.41	1.29	1.28	1.41	1.35
	ψ	Concrete coefficient C50/60	-	1.05	1.55	1.37	1.37	1.55	1.46
	γ_M	Tension partial safety factor	-	2.10	2.10	2.10	2.10	2.10	2.10
	V_{RK}	Shear Characteristic resistance	KN	6.30	8.30	10.50	17.80	32.10	52.00
	γ_M	Shear partial safety factor	-	1.50	1.50	1.52	1.50	1.52	1.52

Characteristic resistance in non-structural applications in concrete C20/25 to C50/60 (cracked and non-cracked) for an isolated anchor (no spacing and edge distance effects) with bolt class 6.8

Characteristic Resistance				M6	M8	M10	M12	M16	M20
TP DA+	F _{RK}	Resistance to any direction (C20/25 to C50/60)	KN	2.00	3.00	5.00	7.50	12.00	20.00
	γ _M	Partial safety factor	-	1.80	1.80	2.10	2.10	2.10	2.10
TP DAL+	F _{RK}	Resistance to any direction (C20/25 to C50/60)	KN	2.00	3.00	5.00	7.50	12.00	-
	γ _M	Partial safety factor	-	1.80	1.80	2.10	2.10	2.10	-

■ Calculation example

Fixing a 400kg tensile load (= 3.92 kN) in non-cracked concrete C30/37 with TP DA+ M10 anchor and bolt class 6.8

Calculation:

The safe load coefficient recommended is $\gamma F = 1.4$

Verification to be performed: Design Load calculation < Resistance of calculation

Design load calculation = service load * safe load coefficient = 3.92 * 1.4 = 5.49 kN

Resistance of calculation = Characteristic resistance * Concrete coefficient / tension partial safety factor = 12.7*1.15 / 2.1 = 6.95 kN

Verification: 5.49 kN < 6.95 kN

Result: The fixing is safe.