WKCR

Screw with a round head for steel-wood connections

Diameters: ⌀8 mm | ⌀10 mm
Length range: from 40 to 200 mm

Round head construction screw for structural connections of wooden members, including solid, bonded and wood-based panels.

TX DRIVE

Zn WHITE

EUROPEAN TECHNICAL ASSESSMENT
ETA-18/0817

SCREW MATERIAL - Carbon steel
ANTI-CORROSION PROTECTION - Galvanized steel (white)

PRODUCT ADVANTAGES:

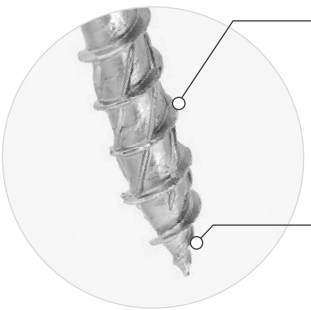
ROUND HEAD WITH CYLINDRICAL UNDERHEAD AND TX DRIVE - Allows safe and secure fastening of perforated and angular metal plates. TX drive guarantees optimum torque transfer.

UNDERHEAD REINFORCEMENT - Wider screw diameter under the head improves shear strength of the screw.

HIGH TORQUE - Allows screws to be installed without pre-drilling, even in hardwood substrates.

SHANK RIBS - Shank ribs reduce installation torque by reaming the hole.

WAX COATING - Wax coating applied during the production process significantly reduces the torque.



NEW CUTTING EDGE / SERRATED THREAD
New special design of cutting edge with added milling reduces screwing resistance by 20%. This helps to extend the life of batteries and power tools. Special cutting notches integrated on the thread cut wood fibres structure while screwing in.

DOUBLE THREAD
Additional recessed second thread improves remarkably the speed of timber penetration and reaction time of first grip into the wood.

EXAMPLES OF APPLICATIONS:

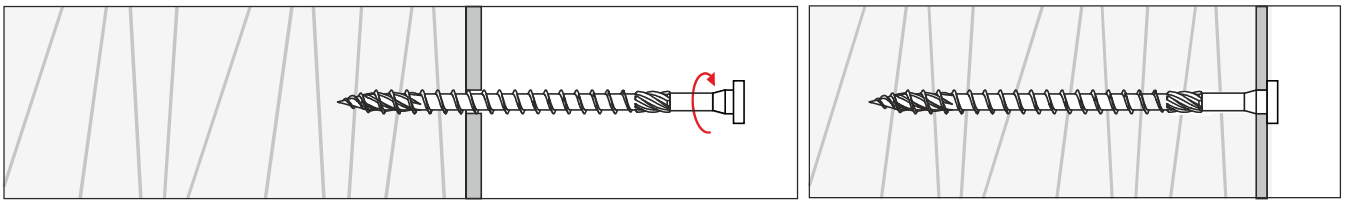
SUBSTRATES

Solid timber

Glued laminated timber
CLT, KVH, BSH/GLT

Laminated Veneer Lumber - LVL

INSTALLATION INSTRUCTIONS (screw requires no pre-drilling)



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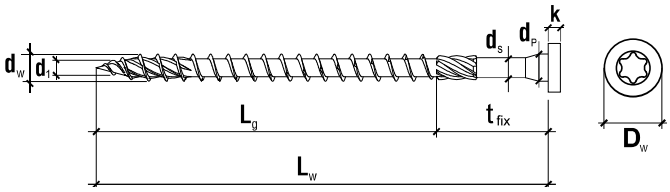

Codes and dimensions						
	Product code	Dimensions	Thread length	Max. usable length	Type of drive	Quantity
	Galvanized - white	d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	[-]	[pcs]
WKCH-8						
⌀8	WKCR-08040-B	8x40	35	5	TX 40	50
	WKCR-08050-B	8x50	45	5	TX 40	50
	WKCR-08060-B	8x60	50	10	TX 40	50
	WKCR-08070-B	8x70	50	20	TX 40	50
	WKCR-08080-B	8x80	50	30	TX 40	50
	WKCR-08100-B	8x100	50	50	TX 40	50
	WKCR-08120-B	8x120	80	40	TX 40	50
	WKCR-08140-B	8x140	100	40	TX 40	50
	WKCR-08160-B	8x160	100	60	TX 40	50
	WKCR-08180-B	8x180	100	80	TX 40	50
	WKCR-08200-B	8x200	100	100	TX 40	50
WKCH-10						
⌀10	WKCR-10060-B*	10x60	50	10	TX 40	50
	WKCR-10070-B*	10x70	50	20	TX 40	50
	WKCR-10080-B*	10x80	50	30	TX 40	50
	WKCR-10100-B*	10x100	50	50	TX 40	50
	WKCR-10120-B*	10x120	80	40	TX 40	50
	WKCR-10140-B*	10x140	80	60	TX 40	50
	WKCR-10160-B*	10x160	100	60	TX 40	50
	WKCR-10180-B*	10x180	100	80	TX 40	50
	WKCR-10200-B*	10x200	100	100	TX 40	50

* Product on order

Geometry							
Product	Outer thread diameter	Inner thread diameter	Unthreaded part diameter	Underhead diameter	Head diameter	Head thickness	Length range
	d_w [mm]	d_1 [mm]	d_s [mm]	d_p [mm]	D_w [mm]	k [mm]	L_w [mm]
WKCR ⌀8	8	5,50	5,78	7,80	13,00	3,00	40-200
WKCR ⌀10	10	6,30	7,00	9,80	15,00	3,50	60-200

Mechanical characteristics					
Product	Characteristic yield moment	Characteristic withdrawal resistance parameter	Characteristic head-pull-through resistance parameter	Characteristic tensile strength	Characteristic torsional strength
	$M_{y,k}$ [N*m]	$f_{ax,k}$ [N/mm^2]	$f_{head,k}$ [N/mm^2]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
WKCR ⌀8	25	12	15,3	25	27
WKCR ⌀10	43	11	14,2	36	45

1. Characteristic withdrawal and head-pull-through resistance based on reference density of timber ρ_a = 350 kg/m^3

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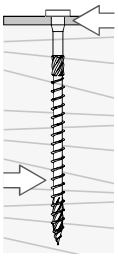
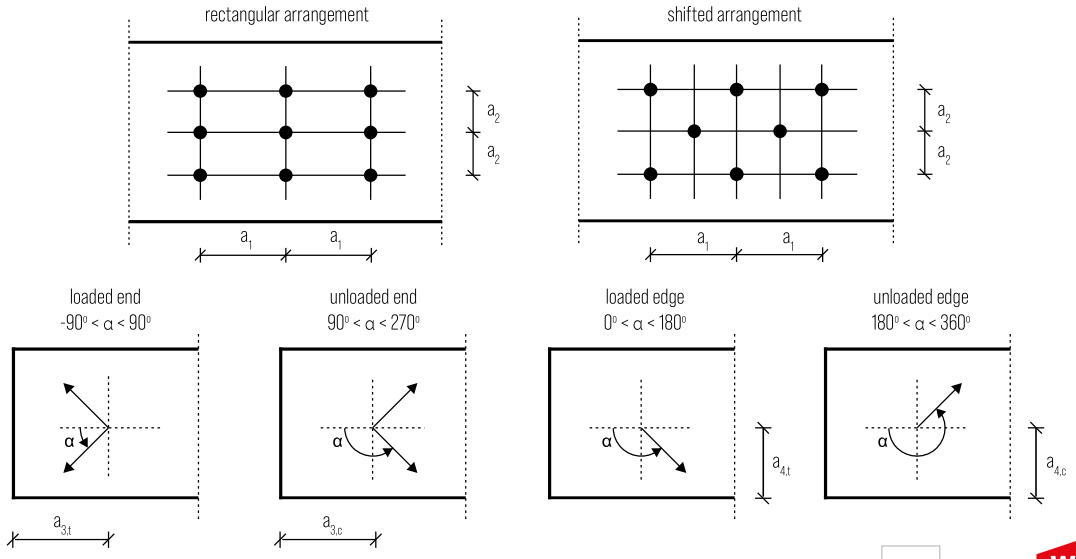
TIMBER

Minimum distances for laterally loaded screws - timber					
Angle between force and fiber direction α = 0 °			Angle between force and fiber direction α = 90 °		
					
WITHOUT PRE-DRILLED HOLE			**WITHOUT PRE-DRILLED HOLE**		
d_w [mm]	**Ø 8**	**Ø 10**	**d_w [mm]**	**Ø 8**	**Ø 10**
a_1 [mm]	67	84	**a_1 [mm]**	28	35
a_2 [mm]	28	35	**a_2 [mm]**	28	35
$a_{3,t}$ [mm]	120	150	**$a_{3,t}$ [mm]**	80	100
$a_{3,c}$ [mm]	80	100	**$a_{3,c}$ [mm]**	80	100
$a_{4,t}$ [mm]	40	50	**$a_{4,t}$ [mm]**	80	100
$a_{4,c}$ [mm]	40	50	**$a_{4,c}$ [mm]**	40	50
WITH PRE-DRILLED HOLE			**WITH PRE-DRILLED HOLE**		
d_w [mm]	**Ø 8**	**Ø 10**	**d_w [mm]**	**Ø 8**	**Ø 10**
d_0 [mm]	5	6	**d_0 [mm]**	5	6
$d_{0,steel}$ [mm]	9	11	**$d_{0,steel}$ [mm]**	9	11
a_1 [mm]	28	35	**a_1 [mm]**	22	28
a_2 [mm]	17	21	**a_2 [mm]**	22	28
$a_{3,t}$ [mm]	96	120	**$a_{3,t}$ [mm]**	56	70
$a_{3,c}$ [mm]	56	70	**$a_{3,c}$ [mm]**	56	70
$a_{4,t}$ [mm]	24	30	**$a_{4,t}$ [mm]**	56	70
$a_{4,c}$ [mm]	24	30	**$a_{4,c}$ [mm]**	24	30

1. Minimum distances in accordance with EN 1995 and ETA-18/0817
2. Minimum distances is valid for timber characteristic density of $p_k \leq 420$ kg/m^3
3. In case of connection timber-timber minimum distances (a_1, a_2) should be multiplied by a factor of 1,45
4. Hole diameter d_0 is valid for softwood
5. Hole diameter $d_{0,steel}$ is valid for steel plate



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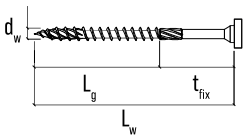
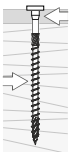
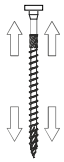
TIMBER

Characteristic resistances for laterally and axially loaded screws - timber

DIMENSIONS				SHEAR			TENSION		
Diameter	Length	Thread length	Usable length	timber-timber	steel-timber (thin plate)	steel-timber (thick plate)	Withdrawal	Head pull-through	Tension
									
d_w [mm]	L_w [mm]	L_g [mm]	t_{fix} [mm]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]	$R_{head,k}$ [kN]	$R_{tens,k}$ [kN]
WKCR 8									
ø8	40	35	5	0,62	t = 4 mm: 1,77	t = 8 mm: 3,41	3,36	2,58	25,00
	50	45	5	0,62	2,26	3,95	4,32	2,58	25,00
	60	50	10	1,23	2,76	4,51	4,80	2,58	25,00
	70	50	20	2,46	3,25	4,92	4,80	2,58	25,00
	80	50	30	2,70	3,74	5,23	4,80	2,58	25,00
	100	50	50	3,19	4,05	5,23	4,80	2,58	25,00
	120	80	40	2,97	4,77	5,95	7,68	2,58	25,00
	140	100	40	2,97	5,25	6,43	9,60	2,58	25,00
	160	100	60	3,50	5,25	6,43	9,60	2,58	25,00
	180	100	80	3,50	5,25	6,43	9,60	2,58	25,00
	200	100	100	3,50	5,25	6,43	9,60	2,58	25,00
WKCR 10									
ø10	60	50	10	1,44	t = 5 mm: 3,16	t = 10 mm: 5,51	5,50	3,20	36,00
	70	50	20	2,88	3,74	5,92	5,50	3,20	36,00
	80	50	30	3,31	4,32	6,39	5,50	3,20	36,00
	100	50	50	3,78	5,42	7,10	5,50	3,20	36,00
	120	80	40	3,82	6,24	7,92	8,80	3,20	36,00
	140	80	60	4,53	6,24	7,92	8,80	3,20	36,00
	160	100	60	4,53	6,79	8,47	11,00	3,20	36,00
	180	100	80	4,84	6,79	8,47	11,00	3,20	36,00
	200	100	100	4,84	6,79	8,47	11,00	3,20	36,00

NOTES:

1. Characteristic resistances in accordance with EN 1995 and ETA-18/0817
2. In order to obtain a design resistance, use the following formula :

$$R_d = \frac{R_k * k_{mod}}{\gamma_M}$$

Factors γ_M and k_{mod} should be taken in accordance with EN 1995

3. Design resistance for tension is smaller value of the following :

$$R_{ax,d} = min \begin{cases} \frac{R_{ax,k} * k_{mod}}{\gamma_M} \\ \frac{R_{tens,k}}{\gamma_{M2}} \end{cases}$$

Factors γ_M and k_{mod} should be taken in accordance with EN 1995. Factor γ_{M2} should be taken in accordance with EN 1993

4. Characteristic resistances were calculated for a characteristic density of timber ρ_k = 350 kg/m^3
5. Characteristic resistances were calculated considering that the threaded part of the screw is fully inserted into timber element
6. Characteristic shear resistances were calculated for connections without pre-drilled holes
7. Characteristic shear resistances for steel-timber connections were calculated for thin steel plate with thickness t ≤ 0,5d_w
8. Characteristic shear resistances for steel-timber connections were calculated for thick steel plate with thickness t ≥ d_w
9. Characteristic withdrawal resistances were calculated assuming an angle of 90° between screw and grain direction and for penetration length equal L_g
10. Characteristic head pull-through resistances were calculated for timber element