

Your reliable supporter of Fasteners from Japan

**WAKAI**<sup>®</sup>

THE HIGH GRADE SELF DRILLING  
SCREWS FOR STEEL BUILDINGS

# PRODUCT GUIDE

*Version 1*

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**WAKAI**

## WAKAI GROUP PROFILE

# WAKAI®

*Your reliable supporter of Fasteners from Japan*

AKIS is a brand of WAKAI Group established in 1940 in Osaka, Japan. WAKAI has been creating construction fasteners and industrial fasteners since then.

WAKAI has developed over 700 patented products and sold them through our strong sales force.

WAKAI has as many as 5,000 customers in Japan, Europe, North America, Southeast Asia, such as hardware stores, builders, construction companies, manufactures of building materials and so on.

In 1966 WAKAI established its manufacturing plant - Onoda Nail Co.,Ltd.

Due to the close cooperation of between these functions of the development, sales and manufacturing, WAKAI enjoys a good reputation for its high quality, competitive pricing and accurate delivery from our customers.

With our experience and sales performance as we mentioned above, Wakai has started WAKAI VIETNAM CO.,LTD. in Ho Chi Minh city to expand the business in overseas. Our purpose is following:

- 1. Make a contribution to the industry of Vietnam, during the sales of "AKIS", our original SDS brand.**
- 2. Meet the customers's demand with high function and high quality products.**
- 3. Make a contribution to the development of Vietnam's society.**



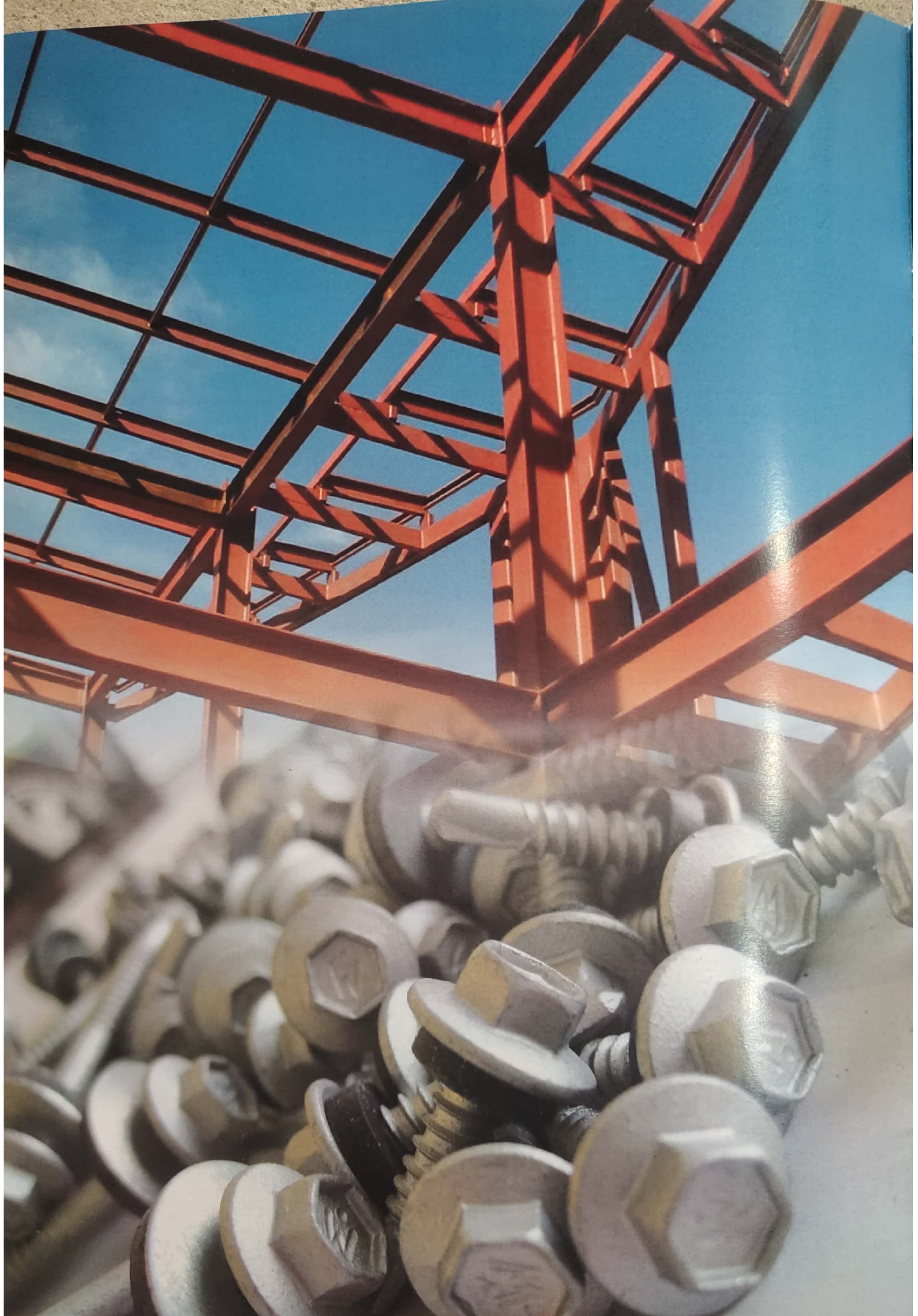
With more than 70 years of experiences, WAKAI has achieved its status with the products based on Japan's quality management system.

WAKAI can carry out the process chain from researching the needs of market, to designing, manufacturing, distributing, providing after-sales service, which brings customers confidence on use of our products.

AKIS contains:

- Self drilling screw for steel buildings, including screws for Seamlock, liplock, corrugated metal roof and wall.
- Self drilling screw for Panel system.
- Self drilling screw for steel floor-Deck.
- Self drilling screw for sandwich panel.

(Please refer to the website: [www.wakaivietnam.com.vn](http://www.wakaivietnam.com.vn))



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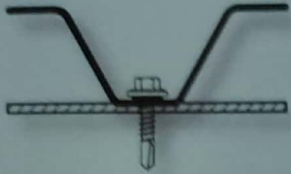
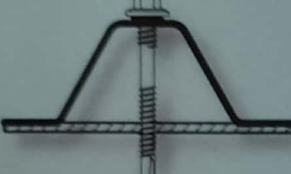
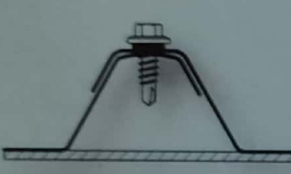
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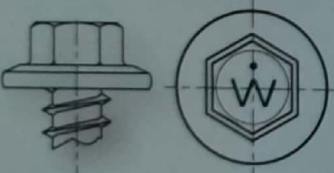
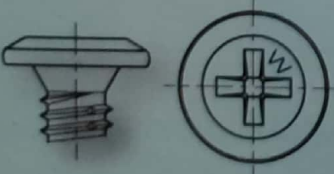



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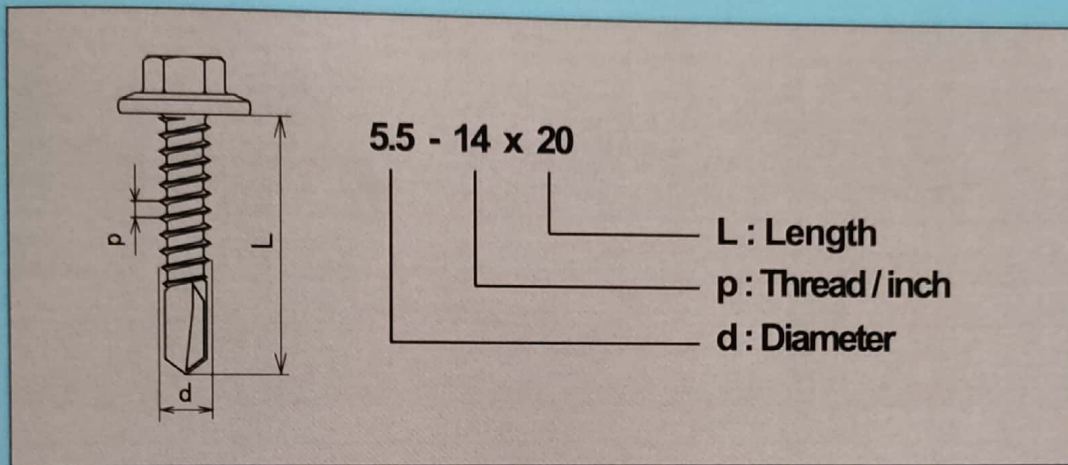
## APPLICATION

	<p>The screw fixing at low position (Valley Fixing) of corrugated sheet metal: the distance from the screw head to the steel purlin is small and the contact pressure is strongest. This method is usually applied for wall fixing.</p>
	<p>The screw fixing at high position (Crest Fixing) of corrugated sheet metal: the screw avoids the water passage when it rains. This method is usually applied for roof fixing.</p>
	<p>The screw fixing two layers of thin sheet metal: This method is usually applied for the side lapping fixing.</p>

## WAKAI'S HEAD SHAPES AND DRILL-POINTS

	<p>Hexagon head : The most common head shape for its easy use and for the best transmission of power from the screw drive.</p>
	<p>Wafer head: This head has a cross recess. The head height is low and suitable to positions requiring flat sursafe without interfering other materials or requiring an aesthetic look after being fastened.</p>
 <p><b>No.2</b></p>  <p><b>No.3</b></p>  <p><b>No.5</b></p>	<p>Drill-point No.2 is suitable for thin steel metal up to 2.5 mm in thickness.</p> <p>Drill-point No.3 is suitable for steel furlin up to 6 mm in thickness.</p> <p>Drill-point No.5 is suitable for steel beam up to 12 mm in thickness.</p>

DIMENTION



**d**  
Diameter

- Definition: the nominal outlet diameter of a screw thread.
- Screw thread diameter of WAKAI is shown in metric.
- Note: The gauge system is still found in the market and the conversion table is shown below:

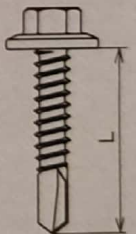
Gauge	Meter
# 6	3.5 mm
# 8	4.2 mm
# 10	4.8 mm
# 12	5.5 mm
# 14	6.3 mm
# 15	6.5 mm

**p**  
Thread / inch

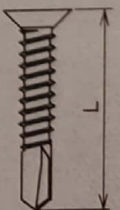
- Definition: the number of threads per inch.
- The larger the number of threads is the smaller the distance between the two threads (pitch).

**L**  
Length

- Definition: the functioning length of the screw.
- The length of the screws with emerging head after fixing on the material is measured from the drill-point to flange of the screw.



- The length of the screws where the head is sunk into the material is measured from the drill-point to the end of the head.



**ATTENTION :**  
In some cases, the pitch is omitted to express the screw size, such as 5.5 x 20 instead of 5.5 - 14 x 20. WAKAI may apply this expression for easy understanding.

## SURFACE TREATMENT

The corrosion of fasteners can be caused by sea-breeze, acids air from industry and chemical sprays or humidity in tropical areas. The corrosion of fasteners may have harmful affects on the performance of whole building.

The surface treatment on fasteners varies depending on the levels of anti-corrosion resistance. The special coating of WAKAI protects the screws against the corrosion and keeps fastenings the sheet metal tight without ruining the look.



The test result of WAKAI screws, conducted by the internationally accredited laboratories, shows that they comply with the corrosion resistance requirements of Australian Standard AS3566.2(2002). It contains:

- 2.000 hrs of neutral salt Spray test - AS 2331.3.1.
- 2.000 hrs of U.V condensation test - ASTM G154.
- 1.000 hrs of humidity test - ASTM D2247.
- 15 cycles of sulfur dioxide test - DIN 50018.

Plus, 2.000 hrs of neutral salt spray test according to Japanese Industrial Standard JIS 2371NO5.

## ANTI - LEAKING WASHER

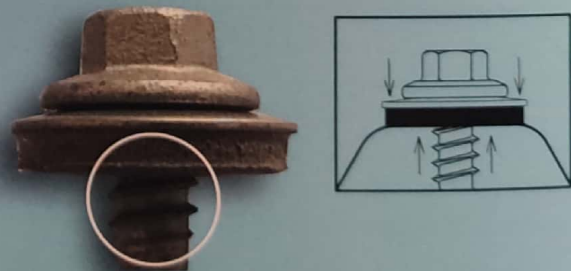
WAKAI for roof fixing is assembled with EPDM Bonded Washer with its diameter 19 mm. 3mm-thick EPDM is high-elastic rubber. It stands high temperature and fits firmly onto the sheet metal with its large contact area. Therefore, this brings high capacity of anti-leaking.



Moreover, metal washer prevents the screw from overfastening and unscrewing by vibration of the building.

### The thread under the head:

The long screw has an double thread structure. On fastening the screw, the thread under the head brings the roof upwards while the washer pushes the roof downwards. The upward pressure made by the thread under the head may straighten or even push back the burr made on the initial drilling and prevent from leaking.



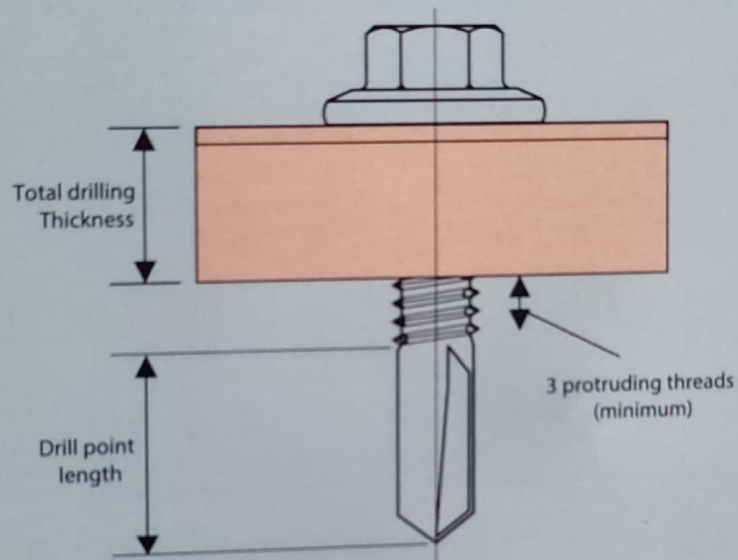
### Advantages of the thread under the head:

- Gives you a clear signal of fastening-up to stop driving.
- Controls over-driving.
- Prevents roof from bending down on walking on the roof.



# RULE OF LENGHT SELECTION

The length of the drill point must be greater than the total drilling thickness of the material, inclusive of air gaps. The screw must be of sufficient length to ensure at least 3 threads protruding through the fastened material.



**CLIP FIXING**  
 Seamlock (page 14-15)

(Not seal)

- 5.5 - 14 x 20
- 5.5 - 14 x 25
- 5.5 - 14 x 30
- 5.5 - 14 x 35
- 5.5 - 14 x 45

**ROOF FIXING**  
 HEX head (page 12-13)

Sizes:

- 5.5 - 14 x 45
- 5.5 - 14 x 50
- 5.5 - 14 x 55
- 5.5 - 14 x 68

**WALL FIXING**  
 HEX head (page 18-19)

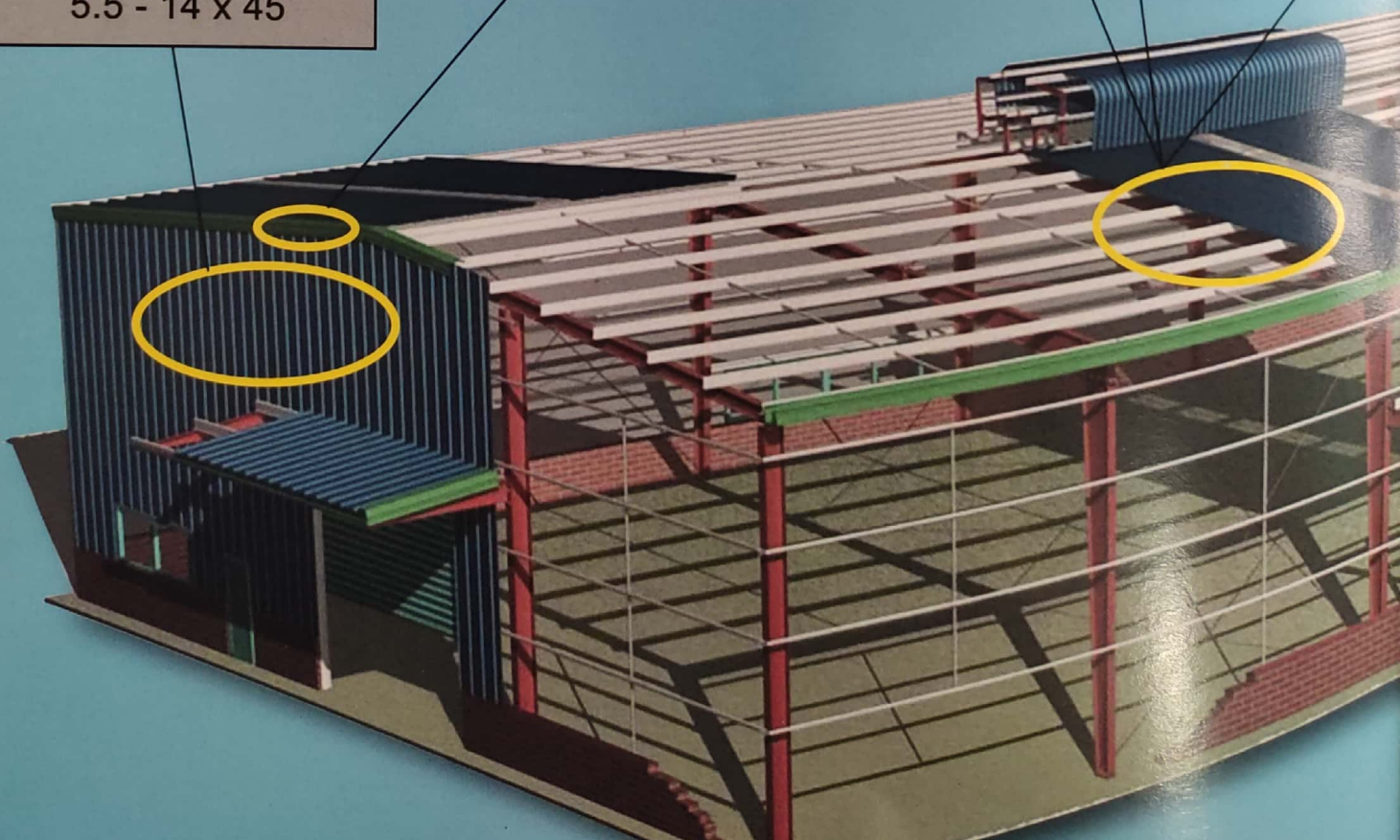
(EPDM seal)

- 5.5 - 14 x 20
- 5.5 - 14 x 25
- 5.5 - 14 x 30
- 5.5 - 14 x 35
- 5.5 - 14 x 45

**SIDE LAPPING**  
 (page 16-17)

(EPDM seal)

- 6.5 - 15 x 20

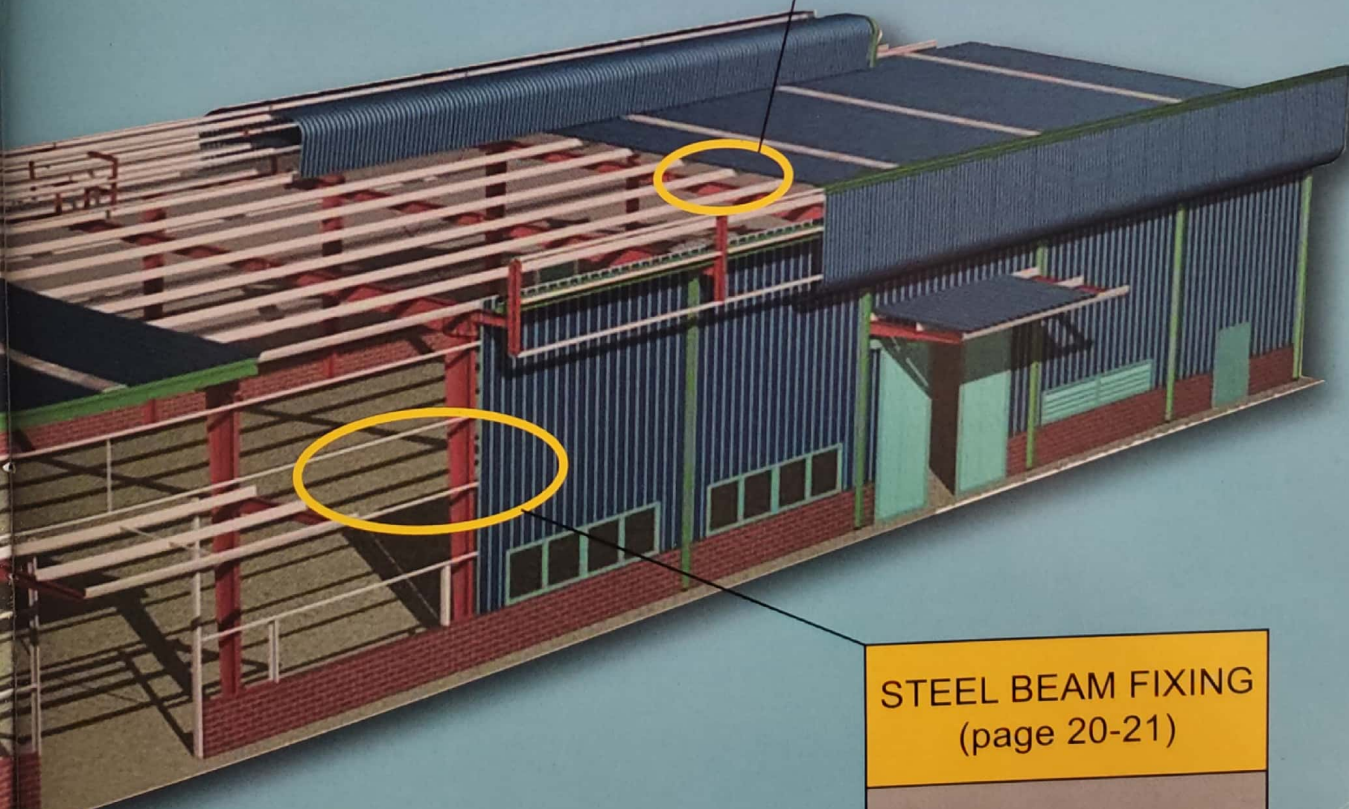


**CLIP FIXING**  
Liplock (page 14-15)

Size:  
4.8 -24 x 22

**PANEL METAL ROOF**  
FIXING (page 22-23)

Sizes:  
6.3 - 14 x 80  
6.3 - 14 x 100  
6.3 - 14 x 120  
6.3 - 14 x 130  
6.3 - 14 x 150  
6.3 - 14 x 180



**STEEL BEAM FIXING**  
(page 20-21)

Sizes:  
5.5 - 24 x 38 HEX  
5.5 - 24 x 38 WAFER

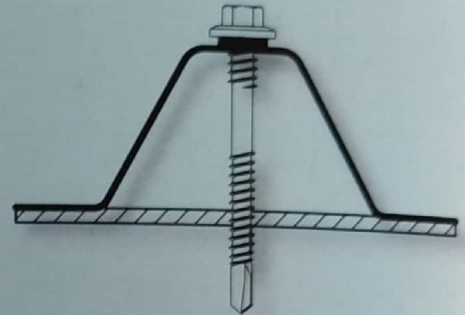
**APPLICATION**

**CREST FIXING:**

Use this screw to drill at the high position of the corrugated roof. This position avoids the water leaking of the low position.

**USED BIT:**

Hex socket 8 mm.

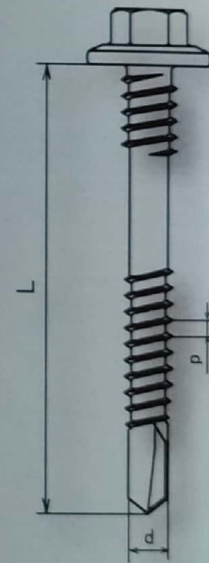


**TECHNICALITY**

Drill capacity	RPM	(*) Pull-out loads (SS400) t = 2.3 mm
Max 6 mm	2500	4.7 KN

(*) Shear strenght	Tensile strenght	Torsional strenght
8.8 KN	15.3 KN	13.2 Nm

(\*) Values in this table are used for reference only.



**SELECTION**

Gauge	Size d - p x L	Washer type	Package	Product code
#12	5.5 - 14 x 45	EPDM seal Bonded washer	400 pcs/ box 200 pcs/ box	WVN45HP WVN45HW
#12	5.5 - 14 x 50	EPDM seal Bonded washer	350 pcs/ box 200 pcs/ box	WVN50HP WVN50HW
#12	5.5 - 14 x 55	EPDM seal Bonded washer	300 pcs/ box 200 pcs/ box	WVN55HP WVN55HW
#12	5.5 - 14 x 68	EPDM seal Bonded washer	250 pcs/ box 150 pcs/ box	WVN68HP WVN68HW

## SURFACE TREATMENT

The corrosion of fasteners can be caused by sea-breeze, acids air from industry and chemical sprays or humidity in tropical areas. The corrosion of fasteners may have harmful affects on the performance of whole building.

The surface treatment on fasteners varies depending on the levels of anti-corrosion resistance. The special coating of WAKAI protects the screws against the corrosion and keeps fastenings the sheet metal tight without ruining the look.



The test result of WAKAI screws, conducted by the internationally accredited laboratories, shows that they comply with the corrosion resistance requirements of Australian Standard AS3566.2(2002). It contains:

- 2.000 hrs of neutral salt Spray test - AS 2331.3.1.
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- 1.000 hrs of humidity test - ASTM D2247.
- 15 cycles of sulfur dioxide test - DIN 50018.

Plus, 2.000 hrs of neutral salt spray test according to Japanese Industrial Standard JIS 2371NO5.

## ANTI - LEAKING

WAKAI for roof fixing is assembled with EPDM Bonded Washer with its diameter 19 mm.

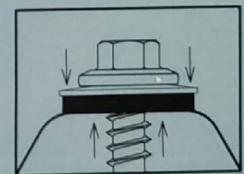
3mm-thick EPDM is high-elastic rubber. It stands high temperature and fits firmly onto the sheet metal with its large contact area. Therefore, this brings high capacity of anti-leaking.



Moreover, metal washer prevents the screw from overfastening and unscrewing by vibration of the building.

### The thread under the head:

The long screw has an double thread structure. On fastening the screw, the thread under the head brings the roof upwards while the washer pushes the roof downwards. The upward pressure made by the thread under the head may straighten or even push back the burr made on the initial drilling and prevent from leaking.



### **Advantages of the thread under the head:**

- Gives you a clear signal of fastening-up to stop driving.
- Controls over-driving.
- Prevents roof from bending down on walking on the roof.

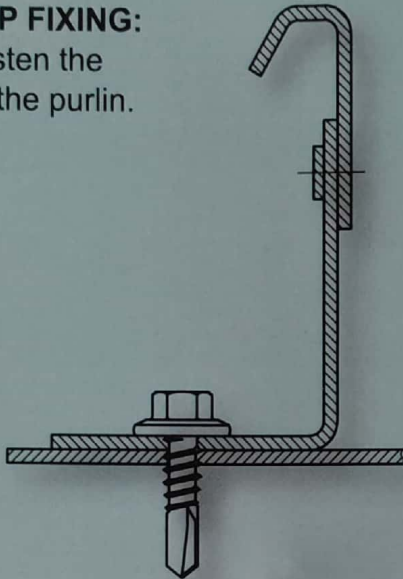
## APPLICATION

**SEAMLOCK CLIP FIXING:**

Use screws to fasten the Seamlock clip to the purlin.

**USED BIT:**

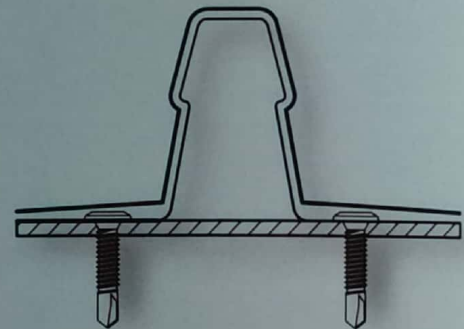
Hex socket 8 mm.

**LIPLOCK CLIP FIXING:**

Use screws to fasten the Liplock clip to the purlin.

**USED BIT:**

Phillips No.2

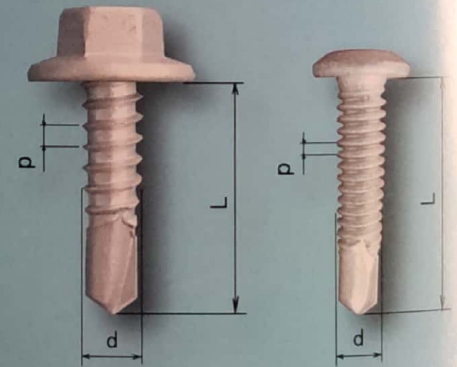


## TECHNICALITY

Drill capacity	RPM	(*) Pull-out loads (SS400) t = 2.3 mm
Max 6 mm	2500	4.7 KN

	(*) Shear	Tensile	Torsional
d 4.8	6.2 KN	11.4 KN	8.5 Nm
d 5.5	8.8 KN	15.3 KN	13.2 Nm

(\*) Values in this table are used for reference only.



## SELECTION

Roof type	Size d - p x L	Washer type	Package	Product code
Seamlock	5.5 - 14 x 20	No seal	500 pcs/ box	WVA20H0
	5.5 - 14 x 25	No seal	500 pcs/ box	WVA25H0
(With insulation)	5.5 - 14 x 30	No seal	400 pcs/ box	WVA30H0
(With insulation)	5.5 - 14 x 35	No seal	400 pcs/ box	WVA35H0
(With insulation)	5.5 - 14 x 45	No seal	400 pcs/ box	WVA45H0
Liplock	4.8 - 24 x 22	No seal	500 pcs/ box	WVA22W0

## SURFACE TREATMENT

The corrosion of fasteners can be caused by sea-breeze, acids air from industry and chemical sprays or humidity in tropical areas. The corrosion of fasteners may have harmful affects on the performance of whole building.

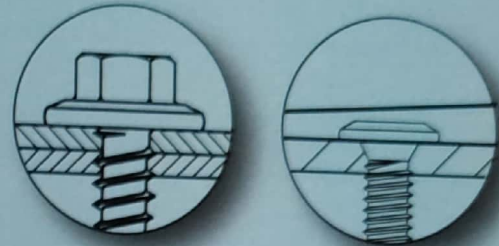
The surface treatment on fasteners varies depending on the levels of anti-corrosion resistance. The special coating of WAKAI protects the screws against the corrosion and keeps fastenings the sheet metal tight without ruining the look.

The test result of WAKAI screws, conducted by the internationally accredited laboratories, shows that they comply with the corrosion resistance requirements of Australian Standard AS3566.2(2002). It contains:

- 2.000 hrs of neutral salt Spray test - AS 2331.3.1.
  - 2.000 hrs of U.V condensation test - ASTM G154.
  - 1.000 hrs of humidity test - ASTM D2247.
  - 15 cycles of sulfur dioxide test - DIN 50018.
- Plus, 2.000 hrs of neutral salt spray test according to Japanese Industrial Standard JIS 2371NO5.

## FEATURES

Seamlock fixing screws and Liplock fixing screw's pitch are designed for best to fix clip with purlin.



Liplock fixing screw's head height is low, so does not interfere to roof steel after being used.



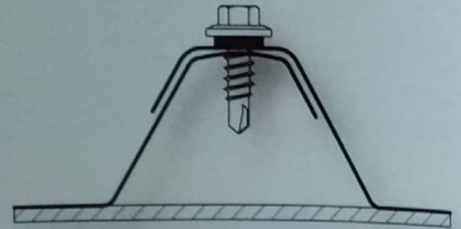
**APPLICATION**

**SIDE LAPPING:**

Use this screw to fastening side lapping (2 layers of thin sheet metal) together.

**USED BIT:**

Hex socket 8 mm.

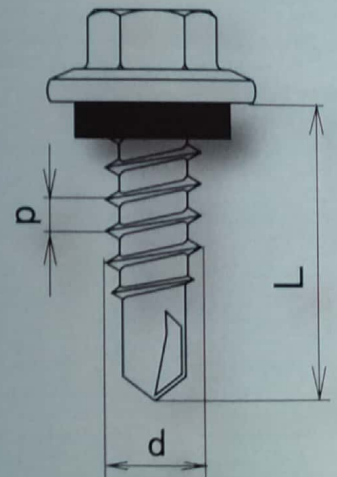


**TECHNICALITY**

Drill capacity	RPM
Max 2.5 mm	2500

(*) Shear strenght	Tensile strenght	Torsional strenght
6.4 KN	15.3 KN	12.6 Nm

(\*) Values in this table are used for reference only.



**SELECTION**

Gauge	Size d - p x L	Washer type	Package	Product code
#15	6.5 - 15 x 20	EPDM seal	500 pcs/ box	WVN20HS



# SIDE LAPPING SCREW

## SURFACE TREATMENT

The corrosion of fasteners can be caused by sea-breeze, acids air from industry and chemical sprays or humidity in tropical areas. The corrosion of fasteners may have harmful affects on the performance of whole building.

The surface treatment on fasteners varies depending on the levels of anti-corrosion resistance. The special coating of WAKAI protects the screws against the corrosion and keeps fastenings the sheet metal tight without ruining the look.



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  - 2.000 hrs of U.V condensation test - ASTM G154.
  - 1.000 hrs of humidity test - ASTM D2247.
  - 15 cycles of sulfur dioxide test - DIN 50018.
- Plus, 2.000 hrs of neutral salt spray test according to Japanese Industrial Standard JIS 2371NO5.

## FEATURES

Side lapping screw has a reduced drilling point and fastens two layers of thin sheel metal tight.



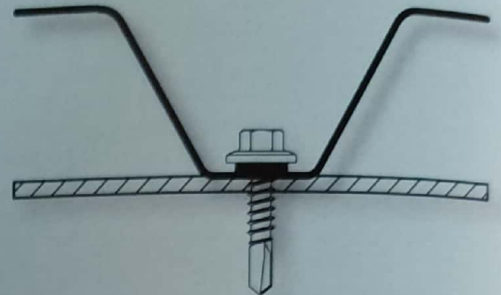
**APPLICATION**

**VALLEY FIXING:**

Use this screw to drill at the low position of the corrugated wall. This drilling position brings the tighter fastening on the corrugated wall and purlin.

In some cases, the screw is used for the low position on the roof, in this case, it should be used with EPDM bonded washer to prevent from leaking.

**USED BIT:** Hex socket 8 mm.

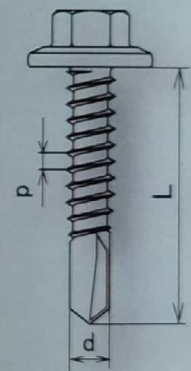


**TECHNICALITY**

Drill capacity	RPM	(*) Pull-out loads (SS400) t = 2.3 mm
Max 6 mm	2500	4.7 KN

(*) Shear strenght	Tensile strenght	Torsional strenght
8.8 KN	15.3 KN	13.2 Nm

(\*) Values in this table are used for reference only.



**SELECTION**

Size d - p x L	Washer type	Package	Product code
5.5 - 14 x 20	Use for roof	500 pcs/ box	WVN20HP
		250 pcs/ box	WVN20HW
5.5 - 14 x 25	Use for roof	500 pcs/ box	WVN25HP
		250 pcs/ box	WVN25HW
5.5 - 14 x 30	Insulation wall	400 pcs/ box	WVN30HP
	Use for roof	200 pcs/ box	WVN30HW
5.5 - 14 x 35	Insulation wall	400 pcs/ box	WVN35HP
	Use for roof	200 pcs/ box	WVN35HW
5.5 - 14 x 45	Insulation wall	400 pcs/ box	WVN45HP
	Use for roof	250 pcs/ box	WVN45HW

## SURFACE TREATMENT

The corrosion of fasteners can be caused by sea-breeze, acids air from industry and chemical sprays or humidity in tropical areas. The corrosion of fasteners may have harmful affects on the performance of whole building.

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  - 1.000 hrs of humidity test - ASTM D2247.
  - 15 cycles of sulfur dioxide test - DIN 50018.
- Plus, 2.000 hrs of neutral salt spray test according to Japanese Industrial Standard JIS 2371NO5.

## ANTI - LEAKING

WAKAI for roof fixing is assembled with EPDM Bonded Washer with its diameter 19 mm.

3mm-thick EPDM is high-elastic rubber. It stands high temperature and fits firmly onto the sheet metal with its large contact area. Therefore, this brings high capacity of anti-leaking.

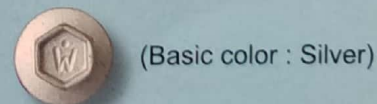


Moreover, metal washer prevents the screw from over-fastening and unscrewing by vibration of the building.

## COLOR MATCH

Wakai can make the color head to match roof-wall steel that required to increase the beauty of project.

(Not: This product needs to be ordered in advance)



**APPLICATION**

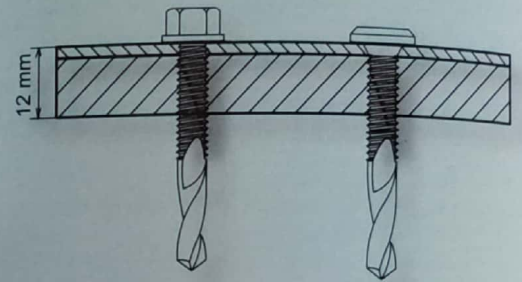
**STEEL BEAM FIXING:**

With the ability of drilling steel up to 12 mm, this screw is used to drill floor steel beams or purlins in connection with joints.

- Hex head screws: used for concrete floor.
- Wafer head screws: used for ribbed steel floor.

**USED BIT:**

- Hex head: Hex socket 8 mm.
- Wafer head: Phillip No.3.

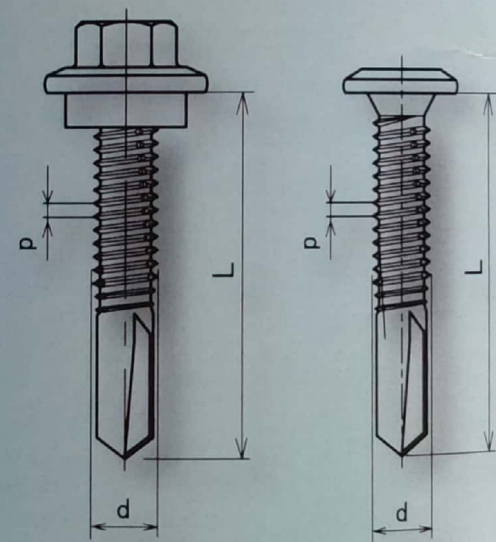


**TECHNICALITY**

Drill capacity	RPM
Max 12 mm	1800

(*) Shear strenght	Tensile strenght	Torsional strenght
8.8 KN	15.3 KN	13.2 Nm

(\*) Values in this table are used for reference only.



**SELECTION**

Size d - p x L	Header type	Washer type	Package	Product code
5.5 - 24 x 38	Hexagon	EPDM seal	400 pcs/ box	WVN38SP
5.5 - 24 x 38	Wafer	Not seal	400 pcs/ box	WVN38S0

## SURFACE TREATMENT



The test result of WAKAI screws, conducted by the internationally accredited laboratories, shows that they comply with the corrosion resistance requirements of Australian Standard AS3566.2(2002). It contains:

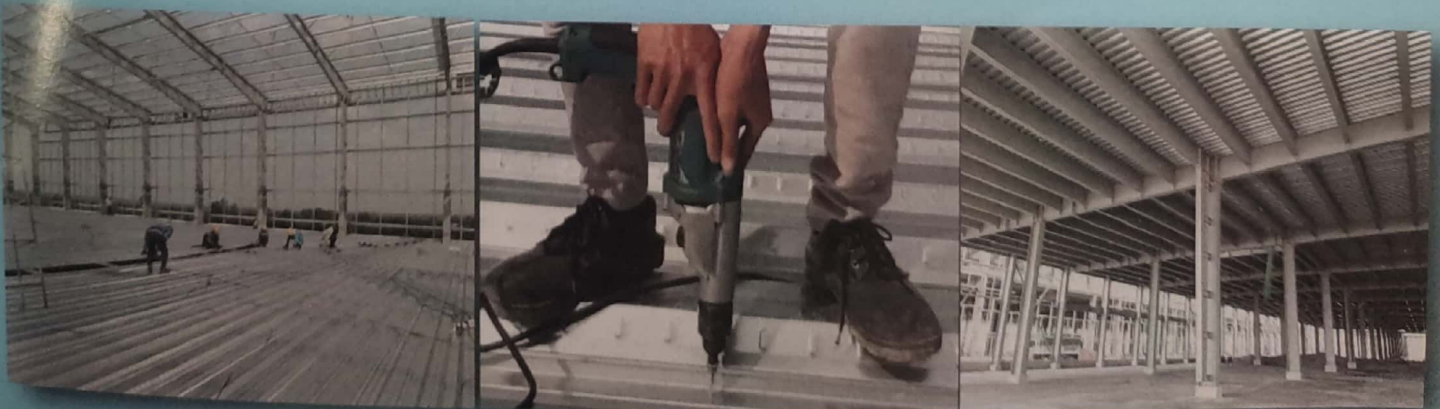
- 2.000 hrs of neutral salt Spray test - AS 2331.3.1.
  - 2.000 hrs of U.V condensation test - ASTM G154.
  - 1.000 hrs of humidity test - ASTM D2247.
  - 15 cycles of sulfur dioxide test - DIN 50018.
- Plus, 2.000 hrs of neutral salt spray test according to Japanese Industrial Standard JIS 2371NO5.

## THE CUTTERS

Due to the thickness and the hardness of steel beam, Wakai's steel beam fixing screws has 2 cutting blades:

- Large cutting blade just above the drilling point.
- Small blade on thread (called notch).

These two cutting blades combined with WAKAI's drilling capacity help faster and lighter drilling compared to conventional screws.

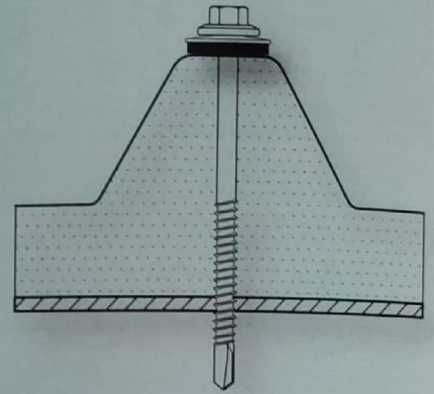


**APPLICATION**

**SANDWICH PANEL FIXING:**

WAKAI has a long screw range from 80mm to 180mm for use on steel roof of sandwich panel (PU tole).

**USED BIT:** Hex soket 8 mm.

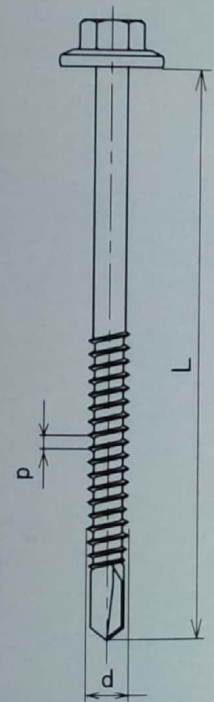


**TECHNICALITY**

Drill capacity	RPM	(*) Pull-out loads (SS400) t = 2.3 mm
Max 6 mm	2500	5.27 KN

(*) Shear strenght	Tensile strenght	Torsional strenght
10.9 KN	19.7 KN	18.5 Nm

(\*) Values in this table are used for reference only.

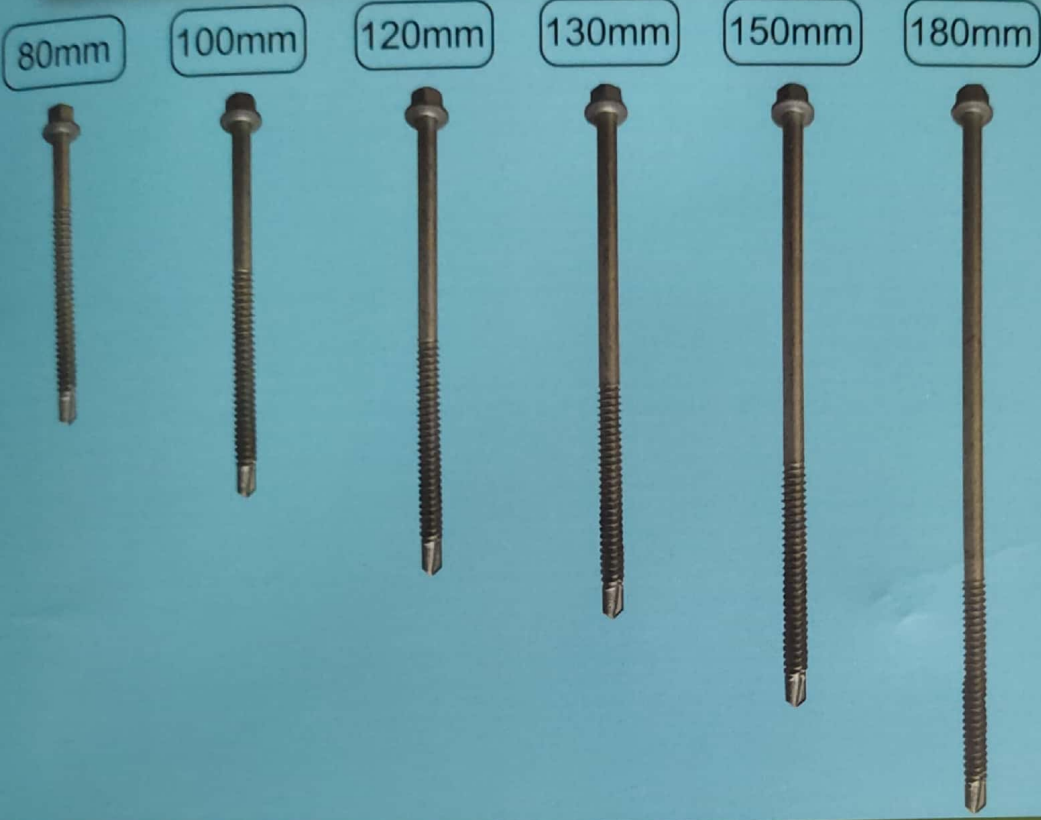


**SELECTION**

Gauge	Size d - p x L	Washer type	Package	Product code
# 14	6.3 - 14 x 80	Bonded washer 19 mm	100 pcs/ box	WVN80H0
# 14	6.3 - 14 x 100	Bonded washer 19 mm	100 pcs/ box	WVN10H0
# 14	6.3 - 14 x 120	Bonded washer 19 mm	100 pcs/ box	WVN12H0
# 14	6.3 - 14 x 130	Bonded washer 19 mm	50 pcs/ box	WVN13H0
# 14	6.3 - 14 x 150	Bonded washer 19 mm	50 pcs/ box	WVN15H0
# 14	6.3 - 14 x 180	Bonded washer 19 mm	50 pcs/ box	WVN18H0

# SANDWICH PANEL FIXING SCREWS

SUITABLE FOR THE VARIOUS THICKNESS OF SANDWICH PANEL



## ANTI - LEAKING

WAKAI for roof fixing is assembled with EPDM Bonded Washer with its diameter 19 mm. 3mm-thick EPDM is high-elastic rubber. It stands high temperature and fits firmly onto the sheet metal with its large contact area. Therefore, this brings high capacity of anti-leaking.



Moreover, metal washer prevents the screw from over-fastening and unscrewing by vibration of the building.

## THE BIG DIAMETER

Sandwich panels are heavy and requiring the large pull-out loads on the roof as well as large shear forces on the wall. To meet the requirements the diameter of WAKAI's screw is 6.3 mm and bring 20% increase in shear strength compared to conventional screws.

Dia. 6.3  
up 20%

Your reliable supporter of Fasteners from Japan

# **WAKAI**<sup>®</sup>

## **PRODUCT GUIDE**

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