

Selection of the Proper Heat Treatment

VESSEL industrial bits are classified according to five main heat treatment classes based on our long-time research data. The selection of the proper heat treatment is important in securing the longest life for bits, but it may require some trial and error to select the proper heat treatment for a particular application.

In general, if your bits tend to get broken or chip-off, a bit with less hardness such as "G" will be selected. If your bits wore quickly, choose a harder bit such as "H" or "X".

If any excessive shock is given to the tops of your bits according to the connecting condition of the products or types of the tightening tools, select a bit with less hardness.

X — H — G — E — S

High ← Bit hardness → Low

However, bits may often break or get worn due to various factors such as different operations, different torque values and different power tool settings (different tightening structures or using an unnecessarily high torque).



HEAT TREATMENT CLASS	SCREWS TO BE FASTENED	TYPE OF FIELD
X HIGHEST HARDNESS	PRECISION SCREWS, AUTOMATIC MOUNTING SCREWS, CONNECTING SCREWS	ASSEMBLY OF PRECISE EQUIPMENT, AUTOMATIC MACHINE SCREWING OF LIGHT ELECTRICAL APPLIANCE, HOUSING
H HIGH HARDNESS	WOOD SCREWS, MACHINE SCREWS, SELF-TAPPING SCREWS, SELF-DRILLING SCREWS	ASSEMBLY OF LIGHT ELECTRICAL APPLIANCE & AUDIO EQUIPMENT, BUILDING & WOODWORKING
G STANDARD HARDNESS	TAPPING SCREWS, MACHINE SCREWS	ASSEMBLY OF CAR, MACHINE PARTS & WINDOW DOOR SASHES

VESSEL supplies "E" and "S" -type bits with low hardness for heavy works. They are ideal for the tools with high impact.

Joining	Type of fastening tool	Bit hardness
Rigid joining, screw fastening <ul style="list-style-type: none"> Resistance is low at first but increases rapidly the instant the screw head sits. Requires comparatively little time to fasten. 	Fastening by compact power screwdrivers and automatic screw fastening machine (Low torque work)	→ X
	Torque control type/Deceleration type pneumatic screwdrivers and power screwdrivers (Medium torque work)	→ H
	Oil pulse and impact type pneumatic screwdrivers and rechargeable impact screwdrivers (High torque work)	→ G
Flexible joining (packing inserted) and resin tapping and fastening <ul style="list-style-type: none"> Resistance increases with every turn of the screw. Resistance increases even after seating. Requires comparatively little time to fasten. 	Fastening by compact power screwdrivers and automatic screw fastening machine (Low torque work)	→ X
	Oil pulse, impact and other types of pneumatic screwdrivers and rechargeable impact screwdrivers (Medium to high torque work)	→ G
Fastening of drill screws and tapping screws <ul style="list-style-type: none"> Resistance is felt as the screw penetrates. Resistance lessens momentarily only to increase after seating. Requires a comparatively long time to fasten. 	Power screwdrivers and reduction type pneumatic screwdrivers (Medium torque work)	→ H
	Oil pulse, impact and other types of pneumatic screwdrivers and rechargeable impact screwdrivers (High torque work)	→ G
Wood screw fastening <ul style="list-style-type: none"> At first, resistance is low, but then it increases as the screw penetrates. Requires a comparatively long time to fasten. 	Power screwdriver with screw feeder (Low torque work)	→ X
	Oil pulse and impact type pneumatic screwdrivers and rechargeable impact screwdrivers (High torque work)	→ H

Order-Made Bits

VESSEL produces bits for a wide and diversified range of screw fastening situations. At present, 703 VESSEL bits are standard compliant; we even have bits of shapes and sizes for overseas markets. But, if these standard compliant bits do not meet user needs, our production engineers will make bits to order based on provided specifications. VESSEL's extensive experience is backed by the desire of our users to grow and develop. Reason being that users look at bit shape, quality and durability with a critical eye. Not only can VESSEL produce different lengths and hardness by changes in heat treatment but we can also flexibly manufacture bits for automatic assembly machine, special configuration screws or any need.

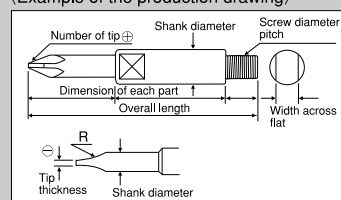
HOW TO ENQUIRE AND ORDER SPECIAL ITEM

In case you cannot find your application in our standard selections, we offer special-make bits. In order to avoid misunderstanding on its application, you are kindly requested to inform us on following specific points.

Samples of concerned bits Screws to be fastened with Drawings of particular bits

However, if you need change only the overall length or hardness of our standard selections, the samples and drawings are not required.

◁Example of the production drawing▷



※Necessary information

Overall length, shank diameter, shank length, outer diameter, number of tip, tip thickness, distance between opposite sides of hex. head, surface treatment, heat treatment classification

