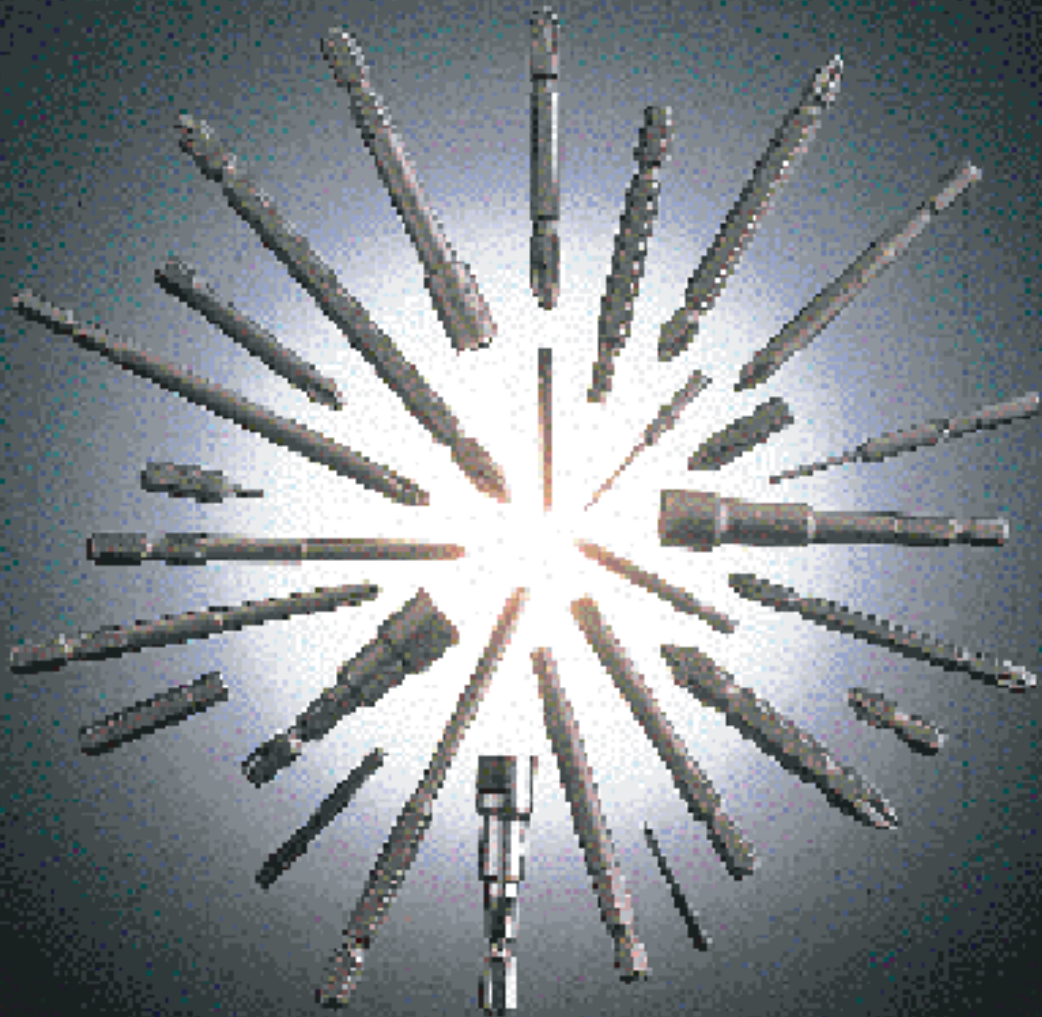


**VESSEL**®

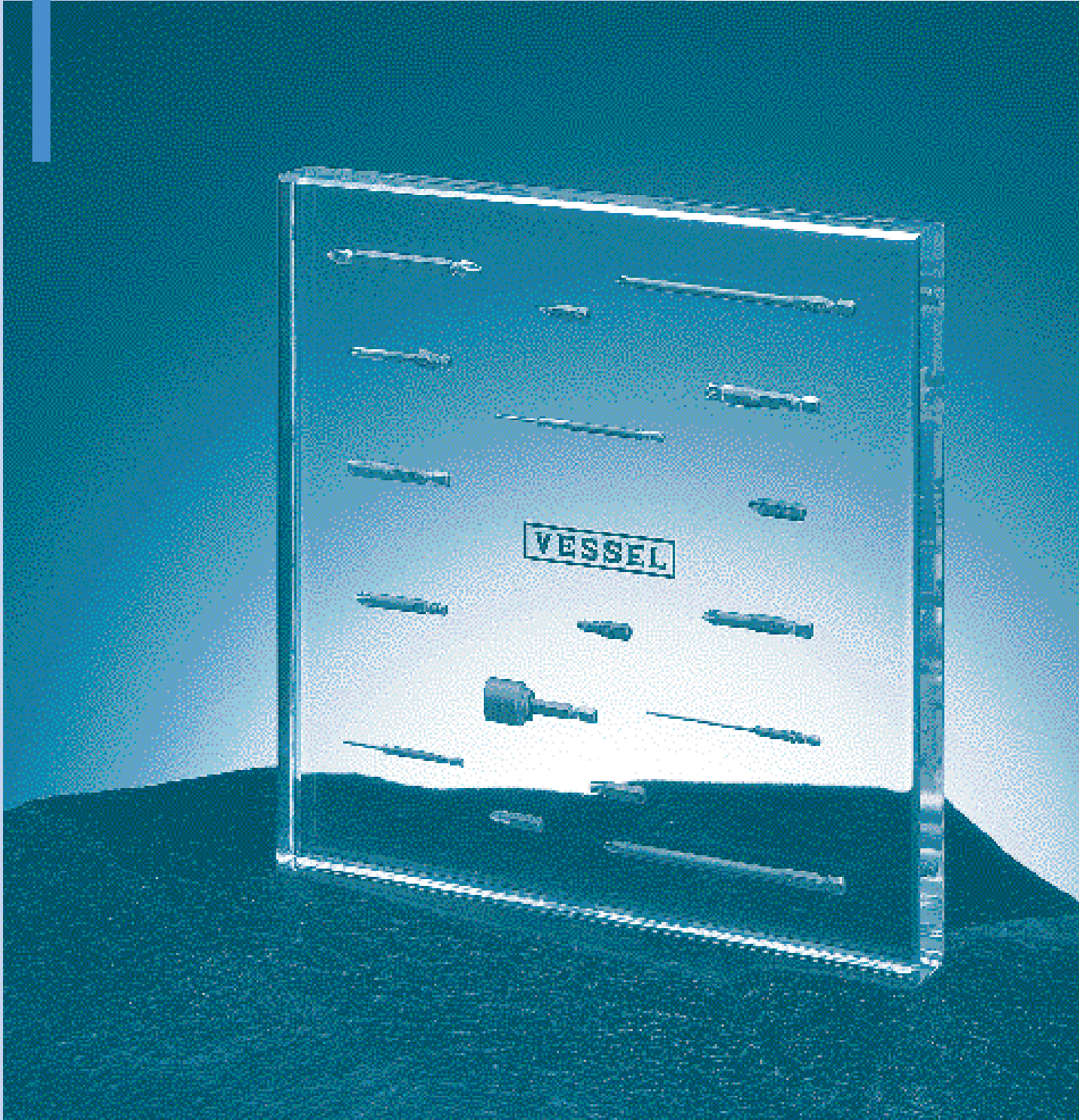


**A SUCCESSION OF IMAGINATIVE MANAGEMENT PRACTICES AND TECHNIQ**

# **INDUSTRIA BITS**

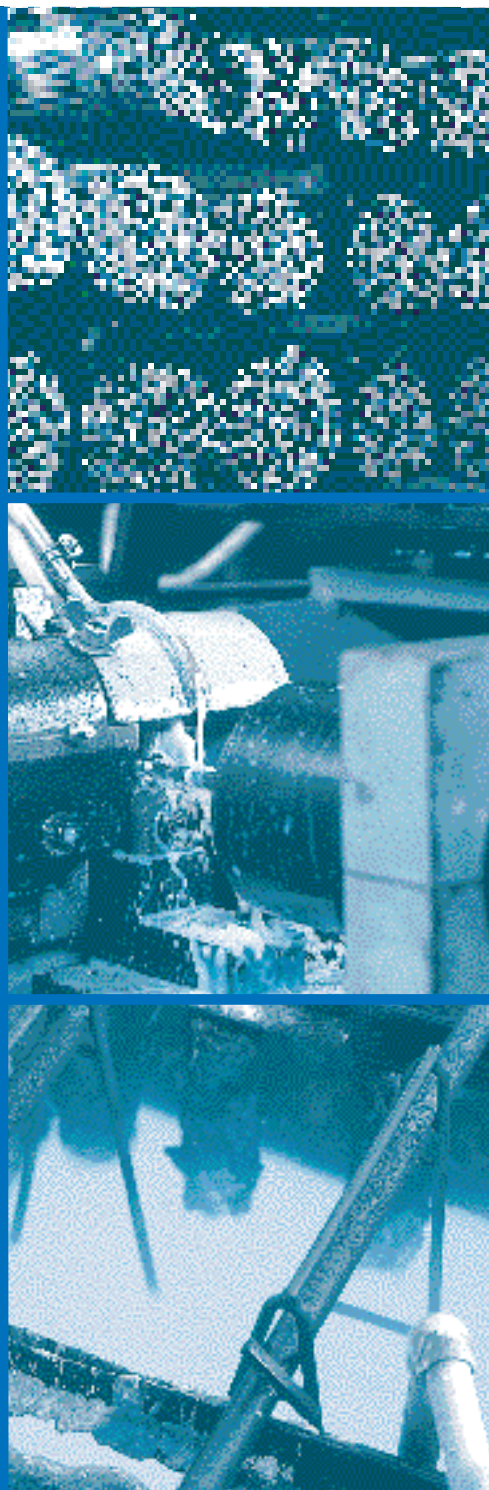
**USERS' CATALOGU**

# VESSEL INDUSTRIAL



WE OFFER A WIDE SELECTION OF PRODUCTS,  
AND A CONSULTATION SERVICE FOR YOUR SELE

# BITS



P.1~P.6 BITS FOR PRECISION SCREWS

P.7~P.8 DOUBLE END INSERT BITS & HOLDERS

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BITS FOR PRECISION SCREWS

DOUBLE END INSERT BITS & HOLDERS

SCREW SHANK DRIVE BITS & HOLDERS

DOUBLE END POWER BITS

INSERT BITS

POWER BITS

BIT HOLDERS & FINDER SLEEVES

SOCKET BITS NUT SETTERS

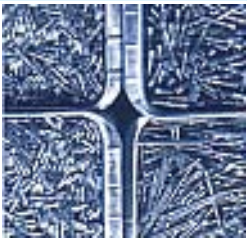
EXTENSIONS & ADAPTERS

BITS FOR HAND TOOLS

IMPACT SOCKETS & OTHERS

GOLD COLOUR BITS SERIES

LECTION OF THE APPROPRIATE BITS.



# INTRODUCTION

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## THE COMPANY

VESSEL embarked on the development of industrial bits in 1954. Since then, we have constantly put our efforts into improving our manufacturing processes, to produce an ever-improving line of industrial bits. Our motto is : "FAST PRODUCTION & DELIVERY of EXCELLENT BITS, made of HIGH GRADE MATERIALS, with SUPERIOR TIP CONFIGURATIONS through UNSURPASSED HEAT TREATMENT."

Effective, secure fastening of screws is indispensable in improved work efficiency and increased reliability in mass production assembly factories. Good bits play a vital role in improved product quality and cost reduction.

We offer a wide range of high quality industrial bits with the quickest possible delivery. The accurately machined tip configuration of VESSEL bits will match any screw heads perfectly. Our materials and heat treatment methods are carefully selected for the greatest durability. We offer a wide selection of products, and a consultation service to help you select and use the appropriate VESSEL bits. We assure reliability with our



## MATERIALS

VESSEL knows that the quality of our bits first upon correct selection of materials. For this reason, we are developing a variety of bit materials to meet diverse needs. We blend elements such as Carbon, Silicon, Magnesium, Nickel, Chrome, Molybdenum and Vanadium into our steels, and drawing forth their inherent characteristics through our long experience with heat treatment processes. Therefore, the tips of our highly durable bits are wear and shock resistant, as well as functionally well designed.



## ACCURACY

Accuracy of size and shape are essential in the manufacture of precision bits. Therefore our bit materials are stocked as bars, before being machined or shaped. This reduces the possibility of changes due to heat treatment or stress in the manufacturing process. Not only shaping accuracy but also uniform quality is exceptionally high.

Even an excellent bit would still be useless if it did not fit the screw head.

Therefore our pursuit of accuracy begins with our consultations with the manufacturing engineers at our customer's factories. We work with our customers, because we know that we must manufacture bits which fit



## QUALITY CONTROL

All of our bits are manufactured under our stringent quality control system in order to produce the most accurate and durable industrial bits available.

The processing conditions of each production lot are recorded in detail.

This record of the heat treatment process for each run is filed for 10 years, to be used to locate any source of possible problems, and to help us improve the process. The products from each run are sample-tested before shipment.

They are subjected to various tests for dimensions, hardness and torsion torque.



## VESSEL GUARANTEE

All VESSEL products are precision engineering to various standards, and the products are in warranty against either defective materials and/or workmanship when used for the purpose for which they were designed.

VESSEL ensures that every product supplied is manufactured and tested to the relevant quality and production standards such as JIS and DIN requirements.



# GENERAL INFORMATION

## SELECTION OF THE PROPER HEAT TREATMENT

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.

If your bits tend to get broken or chip-off, switch to a bit with less hardness. If your bits wore quickly, choose a harder bit. However, bits may often break or get worn due to various factors such as different operators, different torque values and different power tool settings.

VESSEL industrial bits are classified according to three main heat treatment classes; "X", "H" and "G".

APPLICATIONS HEAT TREATMENT CLASS	SCREWS TO BE FASTENED	TYPE OF WORK	TYPE OF FIELD
<b>X</b> HIGHEST HARDNESS	HIGH-HARDNESS SCREWS SUCH AS TAP SCREWS, SELF-DRILLING TAP SCREWS	LIGHT & LOW TORQUE WORK BY TORQUE CONTROL AIR S/DRIVER, ELECTRIC S/DRIVER, AUTOMATIC SCREW FASTENING DEVICE, FOR EXAMPLE	AUTOMATIC ASSEMBLY OF PRECISE EQUIPMENT & AUDIO EQUIPMENT
<b>H</b> HIGH HARDNESS	MEDIUM-HARD SCREWS SUCH AS TAP SCREWS	MEDIUM & LOW TORQUE WORK BY SPEED- REDUCING AIR S/DRIVERS & ELECTRIC S/DRIVER, FOR EXAMPLE	ASSEMBLY & DISASSEMBLY OF HOME ELECTRIC APPLIANCES & ASSEMBLY OF COMMUNICATION EQUIPMENT & AUDIO EQUIPMENT
<b>G</b> STANDARD HARDNESS	STANDARD HARDNESS SCREWS SUCH AS SMALL MACHINE SCREWS & WOOD SCREWS	HEAVY DUTY WORK INCLUDING HIGH TORQUE & HIGH IMPACT APPLICATIONS, ESPECIALLY USEFUL WITH IMPACT TYPE AIR S/DRIVER	AUDIO PARTS, MACHINE PARTS, WOODEN MOULDINGS SUCH AS WINDOW DOOR SASHES & FURNITURE

In general, high torque applications require "G" hardness to withstand twisting and resist breakage.

The "H" hardness is for medium torque applications, and this class is most common and should be selected for normal application.

The "X" hardness is most suitable for low torque applications, particularly if hardened screws are used.

In addition to above three classes, low hardness "E" and lowest hardness "S" are also available for use in heavy duty work where high impact is anticipated.

Dimensions and specifications are subject to be changed without notice in advance.



# GENERAL INFORMATION

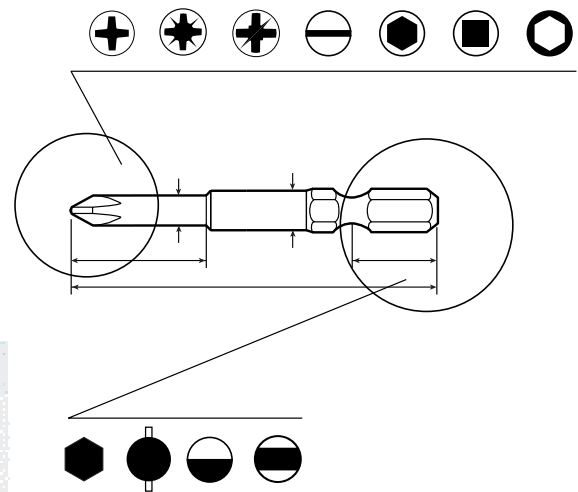
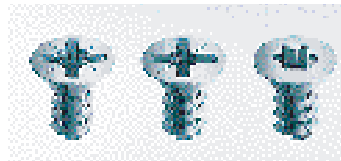
## HOW TO ENQUIRE AND ORDER SPECIAL ITEM

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.

1. samples of the concerned bits
2. screws to be fastened with
3. drawings of particular bits
4. relative technical features  
(heat treatment class, finishing, etc...)

If samples and/or drawings are not available, following information is required for accurate quotation and/or production.

- a. shape & size of tip
- b. diameter of shank
- c. length of reduced part of shank
- d. overall length
- e. shape & size of drive part
- f. other special requests



## FOR SAFETY USE

### BITS

- Avoid over-torque, over-load.
- Do not idle tool in free speed with bit attached to it.
- Do not use hand tool bits for power tools.
- Before tools put on services for installing or replacing bits, be sure to disconnect the power supply. Otherwise these tools may operate accidentally during their replacement or come off during operation, resulting in accidents. This is very dangerous.
- During the operation, the bits and screws are heated due to friction, therefore, do not touch them.

### IMPACT SOCKETS

- Be sure to use our specified O-rings and socket pins.  
(Use of only retainers is not sufficient enough to hold the socket.)
- Do not use hand tool sockets to power tools.

## TROUBLE SHOOTING GUIDE

Though bits are classified as consuming items, proper usage secures the longer life. Wrong application may cause or ruin the life of concerned bits. Your careful study on following is required for the long and efficient use of the bits.

CHIPPED-OFF (BRITTLE)	
CAUSE	REMEDY
POOR QUALITY SCREWS (DIMENSIONS OF RECESSED PART ARE NOT PRECISELY MADE)	CHOOSE QUALITY SCREWS (JIS, DIN, ISO, etc)
SIZE/SHAPE OF RECESSED PART OF SCREW AND POINT SIZE/ SHAPE OF BIT DOES NOT MATCH EACH OTHER	MATCH THE SIZE/SHAPE EACH OTHER
HARDNESS OF BIT IS NOT APPROPRIATE FOR THE APPLICATION	USE LOWER HARDNESS BIT
BIT APPLIED INTO SCREW HEAD AT IMPROPER ANGLE	APPLY THE BIT INTO THE SCREW HEAD AT RIGHT ANGLE
WORN-OUT ANVIL OF FASTENING TOOL	REPLACE THE ANVIL
OVER-TORQUE APPLIED	CHECK REQUIRED TORQUE FOR THE APPLICATION, AND USE APPROPRIATE FASTENING TOOL
OVER-LOAD (UNNECESSARY CONTINUED OPERATION AFTER FASTENING JOB COMPLETED)	STANDARD FASTENING TIME FOR A SCREW BY APPROPRIATE TOOLS IS 2-3 SECONDS. WHEN LONGER FASTENING TIME NEEDED, BIGGER TORQUE TOOL IS RECOMMENDED.
LIFT UP THE TOOL WITH THE BIT TURNING FROM SCREW AFTER FASTENED	DISCONTACT OFF THE SCREW AFTER THE TOOL TURNING CEASED
INCOMPLETE BIT INSERTION TO SCREW HEAD	MAKE SURE TO INSERT THE TIP OF APPROPRIATE BIT TO SCREW HEAD BEFORE RUNNING

WORN-OUT QUICKLY	
CAUSE	REMEDY
POOR QUALITY SCREWS (DIMENSIONS OF RECESSED PART ARE NOT PRECISELY MADE)	CHOOSE QUALITY SCREWS (JIS, DIN, ISO, etc)
SIZE/SHAPE OF RECESSED PART OF SCREW AND POINT SIZE/ SHAPE OF BIT DOES NOT MATCH EACH OTHER	MATCH THE SIZE/SHAPE EACH OTHER
HARDNESS OF BIT IS NOT APPROPRIATE FOR THE APPLICATION	USE HARDER BIT
LIFT UP THE TOOL WITH THE BIT TURNING FROM SCREW AFTER FASTENED	DISCONTACT OFF THE SCREW AFTER THE TOOL TURNING CEASED
INCOMPLETE BIT INSERTION TO SCREW HEAD	MAKE SURE TO INSERT THE TIP OF RIGHT POINT SIZE OF BIT TO THE SCREW HEAD BEFORE RUNNING