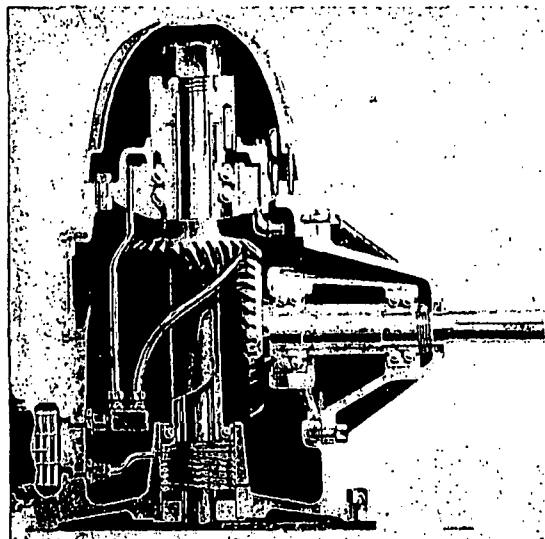




3 Cutaway of an angle gear driving head for a vertical-shaft turbine deepwell pump. The power unit connects to the horizontal shaft in two ball bearings

they are widely used in wet-pit and closed-suction systems. Drivers are mounted on the vertical axis of the pump, Fig. 1 and 2, minimizing space requirements. These pumps usually are installed with the impellers submerged, so that no priming is required, and suction problems are simplified, or practically eliminated.

Q 4—How are these pumps driven?

A—By electric motors, steam turbines or engines. Direct-drive vertical motors, Fig. 1 and 2, may have either hollow or solid shafts. Vertical-shaft turbines in a limited horsepower range are also used. Power from horizontal-shaft prime movers is transmitted through flat belt, multi-V belts, or right-angle gear drives directly coupled to the pump's vertical shaft.

Q 5—What is the performance range of these pumps?

A—Capacities vary from about 25 to 15,000 gpm or larger, for discharge heads up to about 1000 ft.

Q 6—What are the structural elements of these pumps?

A—A vertical-turbine pump contains three major assemblies, bowl B, column C, and driving head H.

Q 7—What standard construction variations are available?

A—Discharge opening may be above or below the foundation elevation. Lin shafts may be open to and lubricated by the liquid being pumped, Fig. 1, or enclosed in a tube and provided with lubrication from an outside source, Fig. 2.

Q 8—How are pump sizes listed?

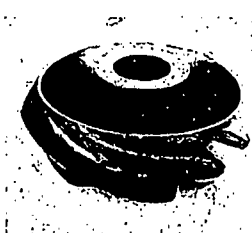
A—Since these pumps were originally designed for installation in wells, their size is usually stated in that of the well casing in which the pump can be installed. For example, a 6-in. pump has an outside diameter of about 5½ in. and will go into a 6-in. well casing. An 8-in. pump is about 7¼ in. OD and is intended to be installed in an 8-in. well casing.

Q 9—What is the bowl assembly?

A—It is the pumping element B of a vertical-turbine pump. Fig. 1 and 2. It contains the suction case, impellers, intermediate bowls and a discharge connection arranged for coupling the bowl assembly to the discharge column C. This assembly is sometimes called the working barrel or impeller section. Sizing is done by increasing pump-



4 Single-suction enclosed impeller in which waterways are shrouded



5 Single-suction semioopen impeller which has a shroud on top only

shaft length and adding the required number of duplicate intermediate bowl and impellers.

Q 10—What is the suction case?

A—This is the pump's inlet S, Fig. 1 and 2. It guides the liquid at correct velocities to the eye of the first-stage impeller. The suction case contains straight vanes, which prevent prerotation of the liquid and support the bearing housing A of the bottom pumpshaft bearing. This bearing may be grease packed or lubricated by the liquid being pumped.

Q 11—What are the intermediate bowls?

A—These are castings, Fig. 1 and 2, with diffusion vanes V, which guide liquid flow from one impeller's discharge to the suction of the next. Each bowl has bearings to support the pumpshaft. These bearings are lubricated by the liquid pumped.

Q 12—What types of column assemblies are used?

A—They may have either threaded or flanged joints. This pipe connects the bowls to the driving head and serves as the discharge pipe. It is usually furnished in lengths of about 10 ft. Line

FACTS YOU SHOULD KNOW

About the 1948 STEEL VALVE Outlook

AN ANNUAL REPORT TO STEEL VALVE USERS

A year before the war started, steel valves became difficult to obtain. One of the most critical wartime industrial commodities, steel valves have been required in large quantities for postwar construction programs.

What is the situation now? How about prices, deliveries, new design developments? These are our observations . . .

LITTLE INCREASE IN VALVE PRICES

The steel valve industry has done its share in keeping prices down. Edward selling prices, for example, are now on the average only about 10 per cent above those in effect before Pearl Harbor. It is hard to think of any durable goods industry which today serves the buyer on such a favorable price-value basis. Steel valves are real bargains—they don't hold up construction programs because of high cost.

DELIVERIES IMPROVING, BUT—

Deliveries of Edward valves, on the whole, are considerably better than they were a year ago.

Most small forged steel valves are obtainable from stock or upon short delivery.

Larger steel valves, however, continue to require fairly long lead times and undoubtedly that will be the case for all of 1948. Expansion commitments of the steam generating, petroleum and process industries are such that there is little possibility that deliveries can be shortened very much on steel valves in sizes above six inches, particularly in the higher pressure and temperature series, until well into 1949.

It is therefore still wise to place steel valve orders as far in advance as possible.

ONE WAY TO CUT INVENTORIES

Most businesses are greatly concerned about mounting inventories. Among the several causes for increased inventories, we think, is the buying of "specials." Take the case of valves: standard valves with a high degree of interchangeability require the stocking of very few repair parts; non-standard valves with trick attachments mean extra inventories for repairs and delays in receiving emergency replacements.

The steel valve industry today has a complete line of standard valves suitable for fully 99 out of 100 installations. For better deliveries, lower cost, known performance and smaller inventories, stick to the standard.

NEW DESIGNS FOR NEW SERVICES

There is, as we said, a standard valve for virtually every service today. That is another way of saying that the valve industry has kept up with the technological advancements of the power, petroleum, and the varied process industries.

For instance, take Edward. Each new Edward catalog has listed basically new valves for higher pressures and temperatures. During the past year, Edward continued to improve its original designs for pressure sealed valve bonnets, welded body-bonnet valve joints, closing mechanisms, seating systems, etc.

Not all the advancement is confined to specific valve designs, either. For instance, the continuing research of the Edward laboratories into the characteristics of flow and the economics of pressure loss has not only led to the development of the Edward Equalizer for increasing flow through valves, but also has been widely heralded as a contribution to the knowledge of the fundamentals of flow through pipes. Edward engineers have shared their findings and experience with others interested in the same problem.

MEN AT WORK

As a unit of the Rockwell Manufacturing Company, Edward has access to the combined facilities of the other Rockwell plants in all parts of the United States.

This permits more economical manufacturing, an even greater research program, fewer headaches in obtaining materials and equipment which continue in short supply—in other words, more men and minds at work on a common objective.

And right here at the Edward plant, employment is at an all-time high. Almost all the experienced Edward personnel that left for war service came back, and many new men and women have been trained. In 1947 expenditures for Edward production facilities also reached an all-time high, exceeding even our big wartime expansion programs.

Consequently we sincerely feel that we are in the best position ever to take care of your steel valve requirements in pressures from 150 psi up, in sizes from ½ in. to 16 in., for all temperatures, and for boiler room, petroleum, industrial, marine or technological service.

W. F. Crawford
President

Edward Valves, Inc. 
SUBSIDIARY OF ROCKWELL MANUFACTURING CO.
EAST CHICAGO, INDIANA