

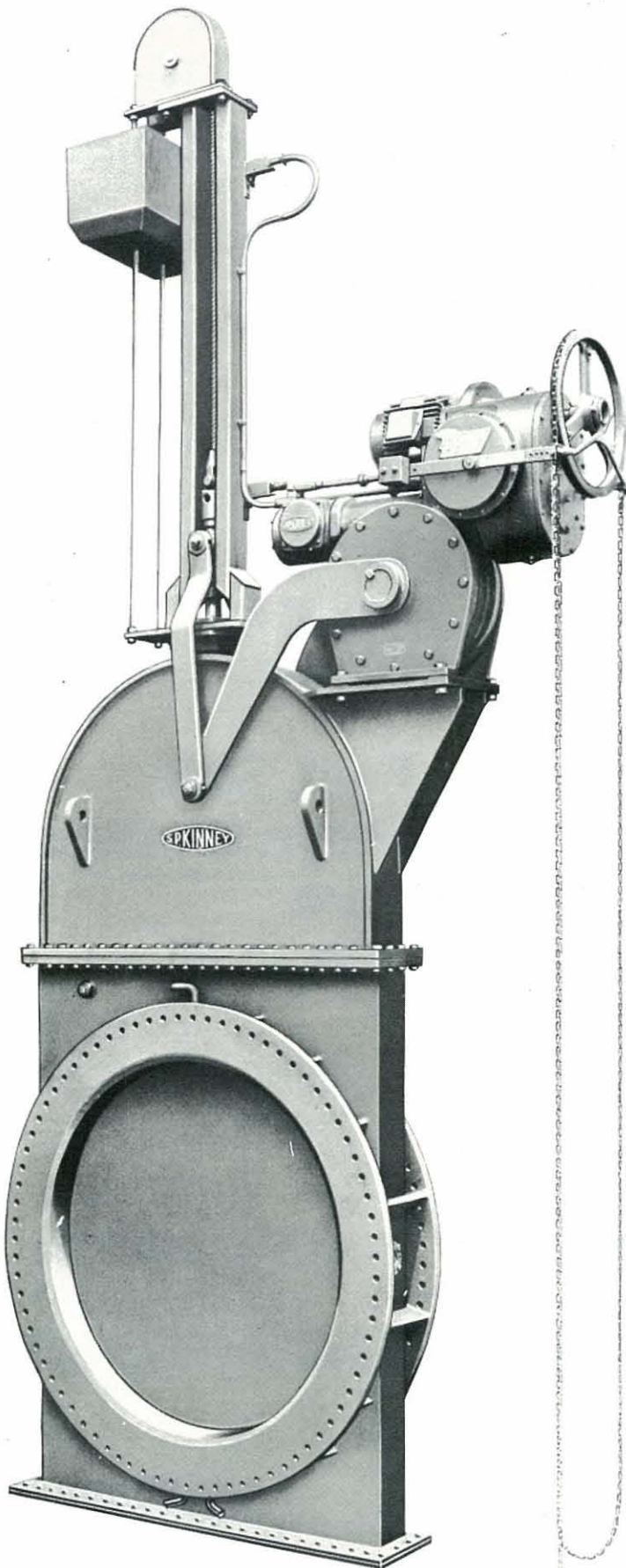
Kinney Water-Cooled Burner Valve*

**for
Blast Furnace
Stoves**

**Fast, Safe
Stove Changing
from
Gas to Blast**

*Patented

Kinney Water-Cooled Burner Valve



Stove changing from "gas" to "blast" is now fast and safe, because of the Kinney Water-Cooled Burner Valve which has replaced the conventional burner door on many blast furnace stoves. The valve opens or closes in 10 seconds to complete the stove changing cycle, and incorporates electromechanical methods which insure maximum safety of operation. A number of patented features are incorporated in the valve. Completely steel fabricated and self-supporting, it adapts to all installations requiring minimum space; needs no costly and restrictive pits or foundations. It is available in sizes from 30" through 72", designed for 50 psi working pressure and rated for 2800°F flame impingement.

The Kinney Burner Valve consists of a water-cooled disc, moving vertically within a valve body (water cooled) and bonnet, and other supporting members and mechanisms which maintain a smooth, exact seating and nonstick release of the disc.

The disc is flange-mounted to a hollow ground stainless steel stem which is attached to a manifold at the other end. The top of the stem is also connected by a lever and link system, complete with bearings, to the output shaft of a Kinney "Power Drive" — or other acceptable actuator. The Kinney "Power Drive" is designed for heavy-duty equipment and is motor protected by a built-in torque device and externally mounted limit switches; has motor overload relays for safety, and a hand or chainwheel and declutch lever for manual operation in case of a power failure. It is interchangeable with other actuators of similar specifications.*

A tubular box frame guide — a part of the superstructure — gives positive lateral control to the valve stem outside of the bonnet. A captive counterweight, safely confined on two fixed guiderods, attached to the valve stem manifold by a wire rope, and equal to the combined weight of the disc and cooling water, keeps the actuator torque output requirements to a minimum, and offers a fail-safe condition in case of a malfunction or power failure.

*Manual, air or hydraulic drive also available.

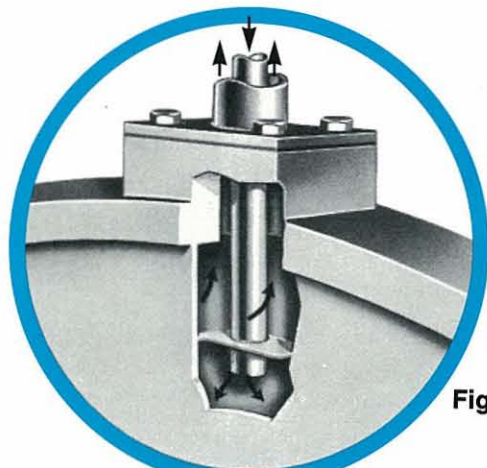


Figure 1

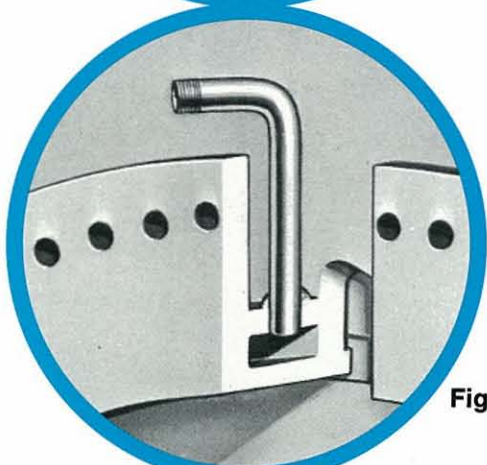


Figure 2

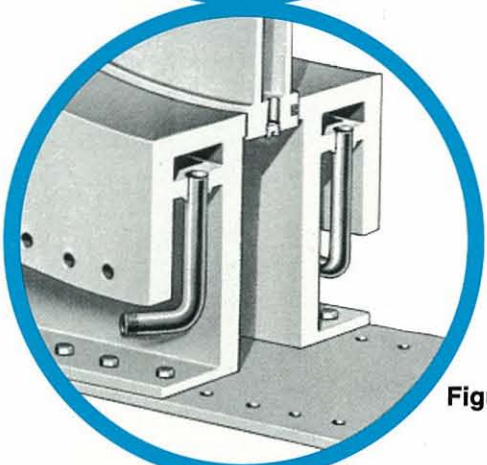


Figure 3

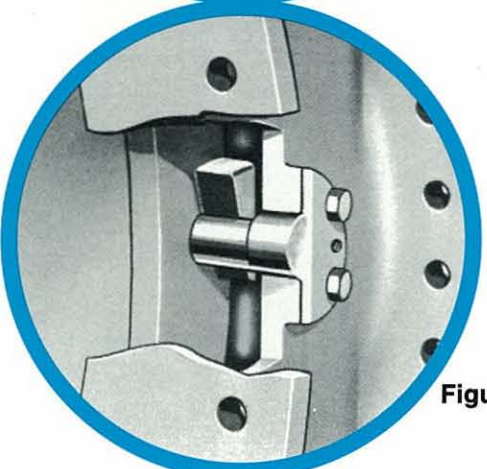


Figure 4

VALVE SEAT COOLING

The two integral seats of the valve body are also water-cooled (see Fig. 3). Water enters the cooling jackets and discharges through piping connections at the base of the valve. The jackets are constantly vented at the top (Fig. 2) to eliminate possible air accumulation which could cause a vapor lock. The vents also provide a visual indication of the cooling water flow.

DISC SEATING

Particular attention is paid to the accurate and positive seating of the disc. Both the disc and valve body have welded stainless steel seats, polished ground for positive shut-off. An exclusive position seating is accomplished through externally adjustable eccentrics, (Fig. 4) located at the center line of the valve body. In closing, wedges on the disc make contact with the eccentrics at the extended point of disc travel, positioning the disc on the body seat. Stove pressure is utilized for additional seating pressure.

A reverse action occurs for the opening cycle. At no time is the disc wiping the body seat, assuring extended seat life. A silicone rubber seal is incorporated in the disc for an absolute tight shut-off when the valve is used with a Kinney Retractable Tube Burner which eliminates burning through the valve (see cut-away drawing of disc on Page 5).

Seats are provided on both sides of the disc and body. Since only one body seat is used, a simple rotation of the body 180° makes available the unused seating surface.

SECURE STEM-DISC ATTACHMENT

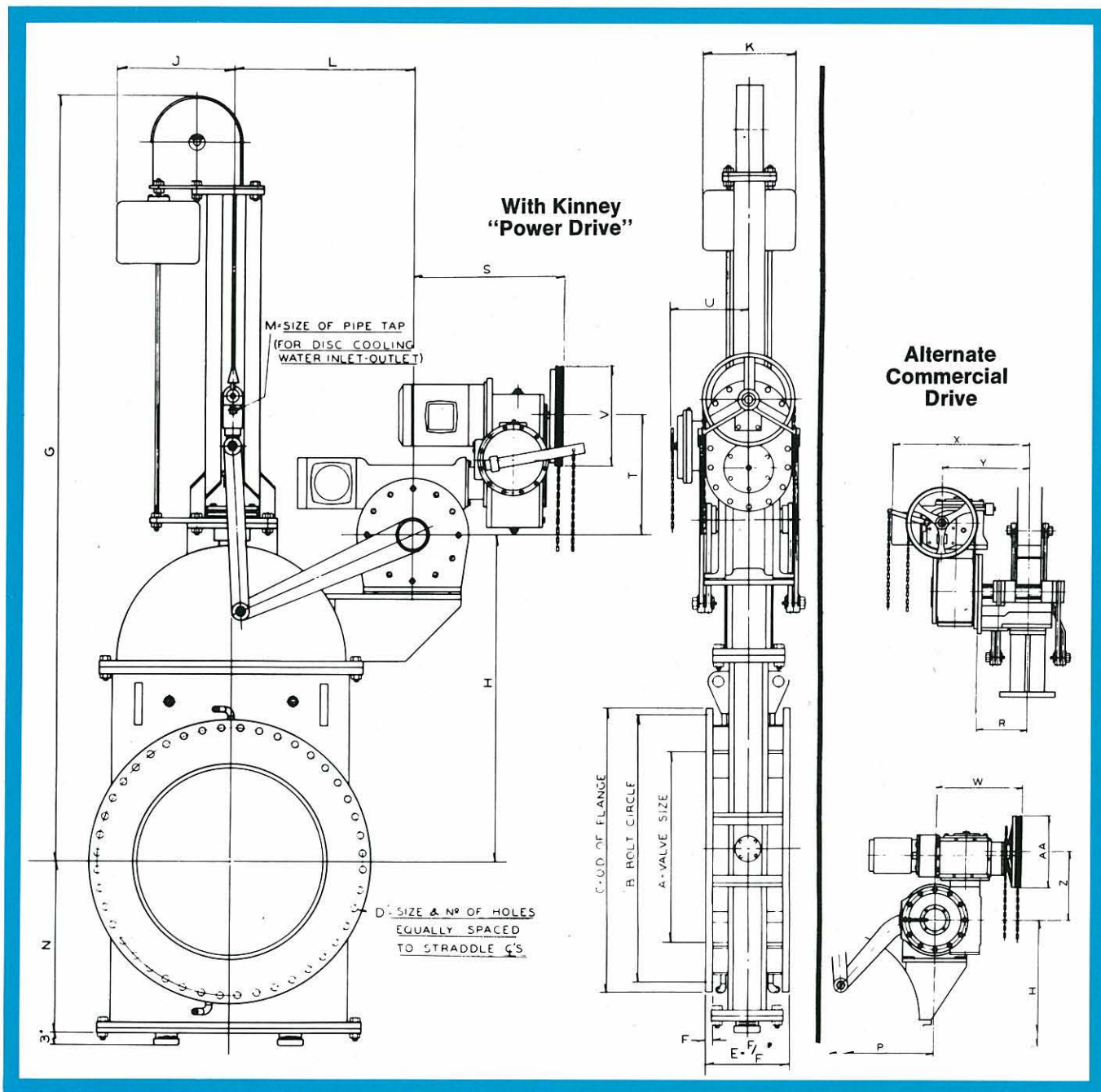
A stainless steel adapter plate is welded to the stem (Fig. 1) and secured to the disc with stainless steel hexagon bolts.

FLUSHING AND CLEANOUT

The Kinney Burner Valve provides an extra large clean-out arrangement. This collecting area helps isolate the deposited dirt and moisture entrainment from the blast furnace gas—away from the valve seating surfaces; a major cause of seat deterioration or improper seating. Ample flushout connections are provided for recommended periodic flushing.

Each Kinney Burner Valve is completely assembled and thoroughly tested before leaving the factory; is shipped as an assembled unit, ready for installation. Lifting lugs are provided on each side of the valve body for convenient handling. Valve flanges are concentrically machined and have sufficient holes for standard bolts to maintain an airtight connection. Each valve is supplied with installation, maintenance and spare parts manuals.

As with all Kinney products, the valve is completely Kinney designed and engineered, manufactured under the most rigid quality control system in the industry, and is backed by efficient and reliable Kinney service.



COOLING WATER REQUIREMENTS

WATER REQUIRED (gpm) @ 35 psi min. pressure

VALVE SIZE	VALVE DISC	EACH VALVE JACKET	SEAT*
30"	30	13	13
36"	40	15	15
42"	50	18	18
48"	60	20	20
54"	80	25	25
60"	100	30	30

*W/removable in-the-line seat only (see Page 6)

M — Size of Cooling Water Connections (1 inlet and 1 outlet pipe tap for disc; 2 inlet and 2 outlet connections for body).

D — Size and Number of Holes in Body Flange, equally spaced to straddle center line.

+ — Can be varied to suit customer design.

** — Add 8" to this face-to-face dimension for removable in-the-line seat.

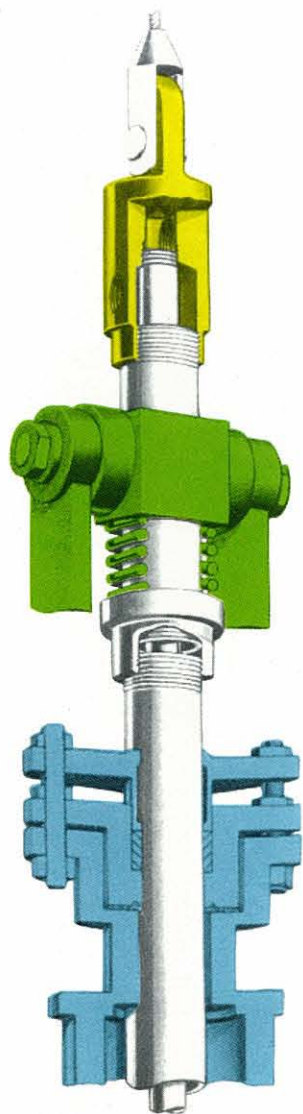
TABLE II

DIMENSIONS (Inches) for Water-Cooled Burner Valves, Sizes 30" to 60"

A	B+	C+	D+	E**	F	G	H	J	K	L	M
30	45	48½	(32) 1½	16	1¼	132	59½	23	18	32	1
36	51½	54½	(44) 1½	16	1¼	148	63¾	22¾	18	32	1
42	57½	61	(44) 1½	16	1½	162	72½	24	23¼	35	1
48	67½	70½	(48) 1½	16	1½	180	83¾	23¼	23¼	35	1
54	70	73	(52) 1½	16	1½	195½	91¾	23¼	26½	40	1¼
60	74	78½	(76) 1½	16	1½	226½	104½	23¼	26½	40	1¼

Note: Also Available in 72" Size. Dimensions on request.

A	N	P	R	S	T	U	V	W	X	Y	Z	AA
30	28½	24	12½	28¾	21½	16	18	22¾	34¼	20¾	17¼	12
36	33¼	26	12¾	28¾	21½	16	18	22¾	34¼	20¾	17¼	18
42	36½	26	12½	30¾	23	16	18	24¾	35¾	21¾	19¾	18
48	43¾	31	12½	30¾	23	16	18	24¾	35¾	21¾	19¾	18
54	42½	40	15	31¾	25	16	24	24¾	37¾	24¾	20¼	24
60	48	40	15	31¾	25	16	24	29¾	39¾	25¾	27¼	24



Manifold — Contains inlet and outlet pipe taps for disc cooling water supply; connects stem to counterweight.

Yoke — Levers from the actuator connect here. Bronze guide rollers, aligned to the tubular box frame, eliminate lateral stem motion, assuring smooth stem operation and minimum wear. A disc compression spring, located below the manifold, absorbs the actuator over-travel on the closing cycle and provides accurate setting of the externally mounted limit switches, wired in series with the actuator gear train limit switches for safe stove valve sequencing. Compression of the spring leaves a gap between the yoke and the manifold enabling the actuator to attain full motor speed, adding a hammer blow action for relieving a jammed disc should this condition develop. This patented feature assures extended actuator life, with reduced downtime and maintenance costs.

Packing Gland and Stuffing Box — Special adjustable packing here maintains a tight seal between the valve bonnet and stem without sticking. The roller-on-tubular-box guide prevents uneven distribution of packing load—a common cause of packing failures. Steel scrapers are included for polished stem action and packing protection.



Cooling water for the disc travels from a port in the manifold, through a copper pipe inside the valve stem and into the disc. Vanes in the disc circulate the water in a spiral. The water then discharges upward between the outside of the copper pipe and the inside of the stem back through another manifold port. Stay bolts in the disc permit it to withstand an internal cooling water pressure of 150 psi. This design provides maximum cooling efficiencies with a minimum amount of water and pressure.



For face-to-face dimensions, add 8" to those shown for the standard model, page 4. All other dimensions are identical to the standard model.

Kinney Water-Cooled Burner Valve with an IN-THE-LINE Removable Water-Cooled Seat*

This special model has all the advantages of the standard Kinney Burner Valve, is constructed and operates the same, with one difference: it has a removable water-cooled seating ring which can be easily replaced to provide a new seating surface. The seating ring is clamped in valve body at five points by stationary wedges and a clamping frame. Seat clamping pressure is controlled by two (2) set screws which extend through the valve bonnet. A silicone rubber seal is incorporated to provide a positive seal between the cooling ring and the valve body. The seat can be easily replaced without removing the entire valve from line—all done without disturbing any part of the valve or main lining. See your Kinney sales engineer for complete details.

*Patented



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