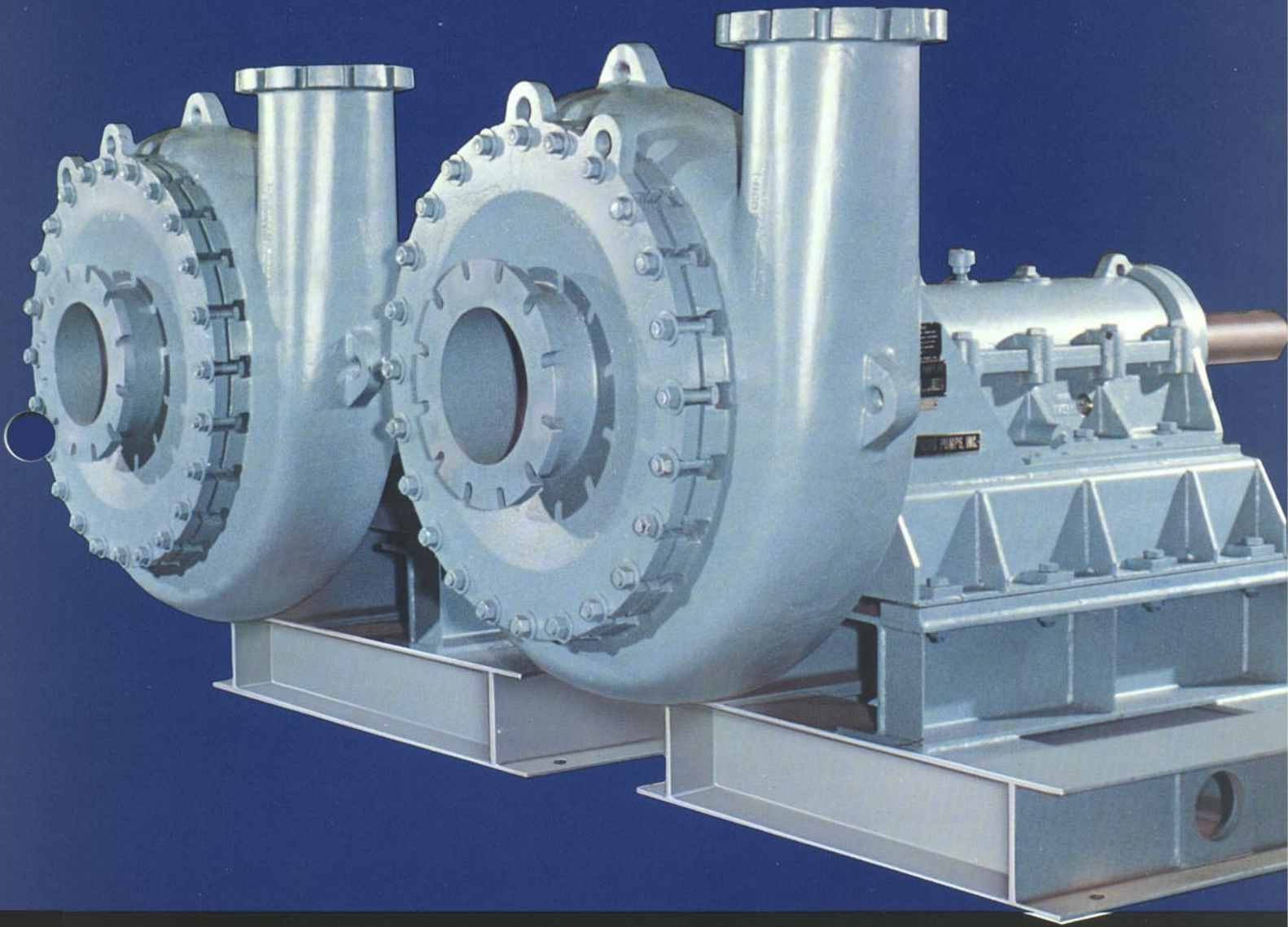


# TYPE CKX PUMP

**Effectively Handles Abrasive Slurries And Large Solids**



Goulds Pumps



**ITT Industries**  
*Engineered for life*

# CKX Slurry and Solids Pump

Engineered For Pumping Abrasive Slurries Of Coal—Fly Ash—Mill Scale—Tailings—Bottom Ash—Slag—Sand and Gravel . . .

- Capacities to 16,000 GPM; heads through 200 feet.
- Available in 4, 6, 8, 10, and 12 inch sizes.
- Designed for pumping slurries with extra-large solids.
- All-metal construction, with replaceable wear liners, to withstand abrasion.
- Cast Iron or High Chrome Iron Construction.
- Configurations and drives to suit the application.

CKX pumps use large diameter impellers for wear reducing low-speed operation. Solids of all kinds and sizes (9" sphere size in 12 CKX) are readily pumped through extra-wide flow passages. What's more, superior hydraulic design offers power-saving efficiency levels and excellent suction characteristics. In most abrasive solids-handling services, the CKX can provide the optimum combination of solids-handling ability, low power cost, and minimum pump wear.

## ABRASION-RESISTANT CONSTRUCTION

Cast iron, the standard CKX material of construction, is recommended for mildly abrasive services.

High Chrome Iron is used for more severely abrasive applications and extends the CKX pump's resistance to abrasion, mild corrosion and impact loads.

## RUGGED MECHANICAL DESIGN

The extra loads created by pumping slurries of high specific gravity are easily handled by the CKX bearing assembly. Designed for a minimum B-10 life of 25,000 hours, pump bearings are fully enclosed and sealed. Grease or oil lubrication may be specified on 4 through 8-inch pumps; larger sizes use oil only.

For extra-high pressure, the CKX-H model is offered. Using a ribbed casing, this variant is ideal for staged pump applications.

## LOW MAINTENANCE COSTS

The rugged, abrasion-resistant design of the CKX keeps maintenance and downtime at minimum levels. Routine maintenance is made easy by such features as split bearing housings, an external adjustment screw for impeller-to-suction disc liner clearance, a readily accessible stuffing box, and simple overall pump construction. Should pump problems develop that can't be handled by the customer, Goulds has fully qualified field service personnel ready to assist.

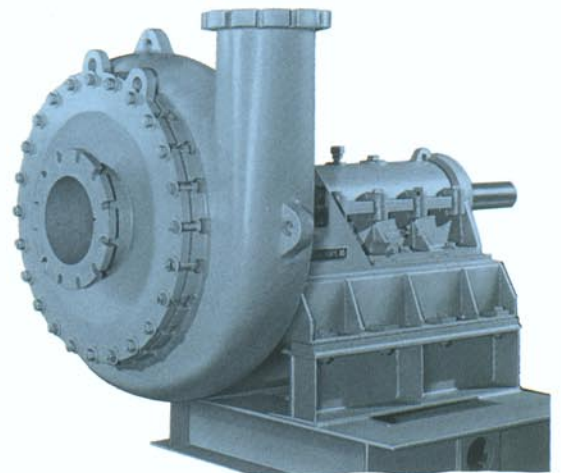
## CONFIGURATIONS AND DRIVES

The CKX can be supplied in virtually any configuration. Horizontal models are available with pump and motor bases for direct drive.

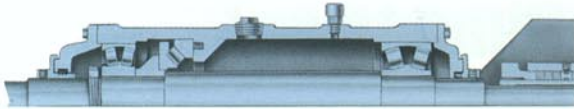
Belt driven pumps are offered with overhead or side-by-side motor mounting. Staged pump sets, turbine and gear drives, and other special designs can be supplied.

## APPLICATION ASSISTANCE

If you need to pump abrasive solids, call on your Goulds Representative. He's a pump engineer backed by Goulds Application Engineering Department.



*This Goulds horizontal 10-inch CKX solids pump is one of four to be used in an alumina plant handling an alumina hydrate slurry.*



## BEARINGS

CKX pump bearings are selected for a minimum B-10 life of 25,000 hours. A single horizontally-split housing insures accurate alignment and simplifies periodic inspection. Protection against dirt and moisture for outboard bearings is by a labyrinth-type slinger; a slinger and lip seal are used to protect bearings adjacent to stuffing box. Outboard radial and thrust bearings on 4, 6, and 8-inch sizes are ball-type, with inboard units being cylindrical roller units; grease or oil lubrication may be specified. Larger CKX pumps use oil-lubricated spherical roller bearings and a cylindrical roller thrust bearing as shown above.

## CASING

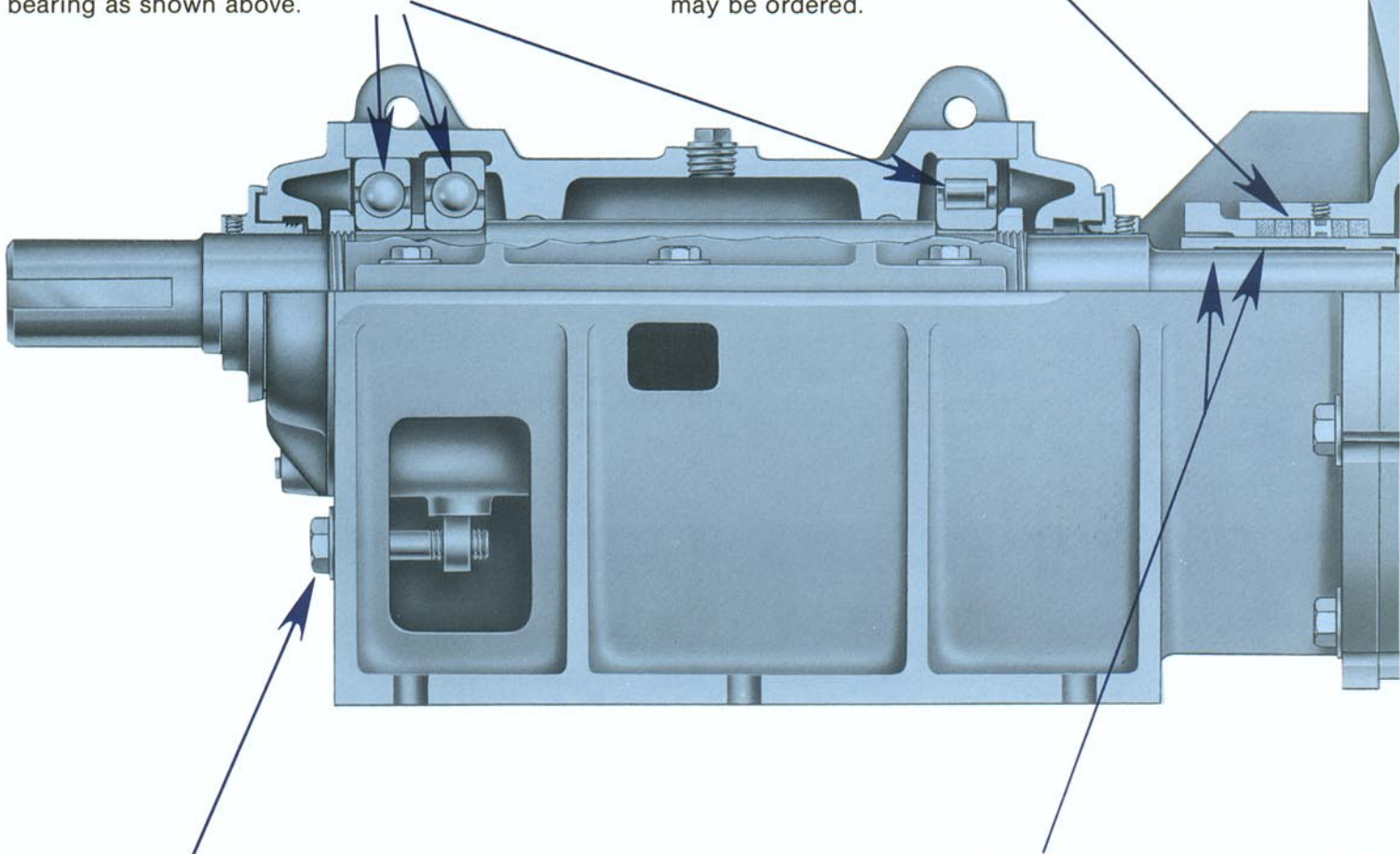
Volute-type casing is designed to permit the passage of large solids with minimum turbulence and recirculation. To combat wear, walls are extra-thick in areas most exposed to abrasion. Discharge nozzle may be set at any of 8 positions in 45° increments. Casings on the optional CKX-H model are ribbed to withstand higher pressures.

## SUC

Easily  
access  
disc fr  
ment p

## STUFFING BOX

The easy-to-reach stuffing box is supplied in a weep-type configuration as shown. For highly abrasive applications where slurry dilution is not critical, a flush-type design (seal cage on the casing side of all packing rings) may be ordered.



## WEAR ADJUSTMENT

Correct impeller-to-suction disc liner clearance is essential to meet designed performance and efficiency levels. This clearance is easily maintained using the CKX's single, external, wear-adjustment screw.

## SHAFT AND SHAFT SLEEVE

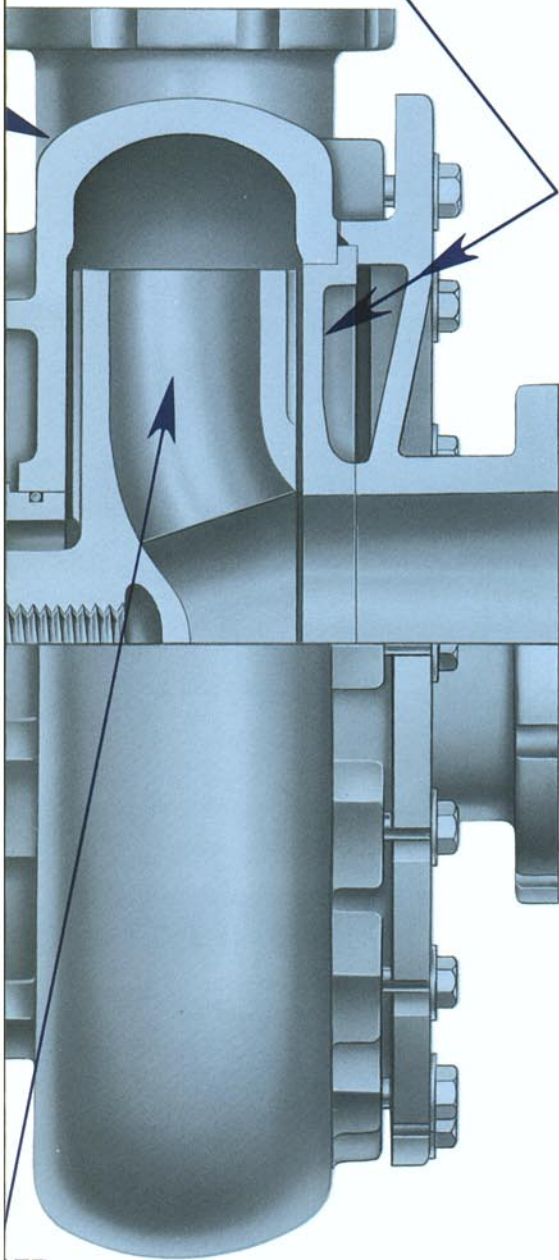
The high strength alloy steel shaft is turned and ground to close tolerances for precision alignment and bearing fit. Threaded to the pump impeller, the shaft end is fully protected. The hooked-type stainless steel shaft sleeve protects the shaft by sealing against the impeller hub and preventing damage due to abrasion in the stuffing box area.

## IMPI

Extra-  
large t  
ability  
discha  
casing  
wear r  
on de

## DN DISC & LINER

movable suction disc and liner provide protection to impeller. Liner protects the suction chamber from wear, reducing the cost of replacements.



## IMPELLER

The standard, 3-vane impeller is designed with wide passages to enhance solids-handling. Viping vanes on both the suction and discharge sides cut wear by keeping solids at the periphery. Large diameter permits efficient low-speed operation. Threaded-ends protect shaft end.

## CKX STANDARD MATERIALS OF CONSTRUCTION

PART DESIGNATION	MATERIALS OF CONSTRUCTION	
	CAST IRON	CHROMIUM IRON
100 Casing	C.I.	Chr. Iron
200 Impeller -Full dia. -Cut dia.	C.I. C.I.	Chr. Iron Chr. Iron
300 Suction Disc	C.I.	C.I.
311 Suction Disc Liner	C.I.	Chr. Iron
400 Hub Disc	C.I.	C.I.
506 Packing	Graphite Polymer	Graphite Polymer
507 Gland	C.I.	C.I.
523 Seal Cage	Teflon*	Teflon*
600 Shaft	Steel 1045	Steel 1045
214 Shaft Sleeve	416 S.S.	416 S.S.

MATERIAL SPECIFICATIONS	
C.I.	Cast Iron: ASTM A 48; classes 25 & 35
Chr. I	High Chromium Iron: ASTM A 532; Class III, Type A—Hardened
416 S.S.	Stainless Steel: AISI 416

## CKX MECHANICAL SPECIFICATIONS

IMPELLER DATA	4 CKX	6 CKX	8 CKX	10 CKX	12 CKX
Type	Enclosed	Enclosed	Enclosed	Enclosed	Enclosed
Number of Vanes	3	3	3	3	3
Diameter (Max.)	15	19.5	24.5	30	34
Maximum Solid Size	2.37	4.12	5.87	7.25	9.0
Shaft Connection	Threaded	Threaded	Threaded	Threaded	Threaded

CASING DATA	4 CKX	6 CKX	8 CKX	10 CKX	12 CKX
Type	Volute	Volute	Volute	Volute	Volute
Max. Hydro Test: CKX CKX-H	175 Lbs. 225 Lbs.	175 Lbs. 225 Lbs.	175 Lbs. 225 Lbs.	175 Lbs. 225 Lbs.	175 Lbs. 225 Lbs.
Flanges: Class Face	125 Lbs. Flat	125 Lbs. Flat	125 Lbs. Flat	125 Lbs. Flat	125 Lbs. Flat
Suc. Disc Bolts: Number Size	8 0.625	16 0.75	24 0.875	24 1	24 1

STUFFING BOX	4 CKX	6 CKX	8 CKX	10 CKX	12 CKX
Packing Size	1/2	5/8	3/4	3/4	3/4
Number of Rings	5	—	5	5	5
*Seal Water Requirements	Weep Box 10 GPM	Flush Box 20 GPM	12 Gal/Hr 30 GPM	20 Gal/Hr 75 GPM	30 Gal/Hr 150 GPM

\* Seal water supply must be at least 10 psi greater than pump discharge pressure.

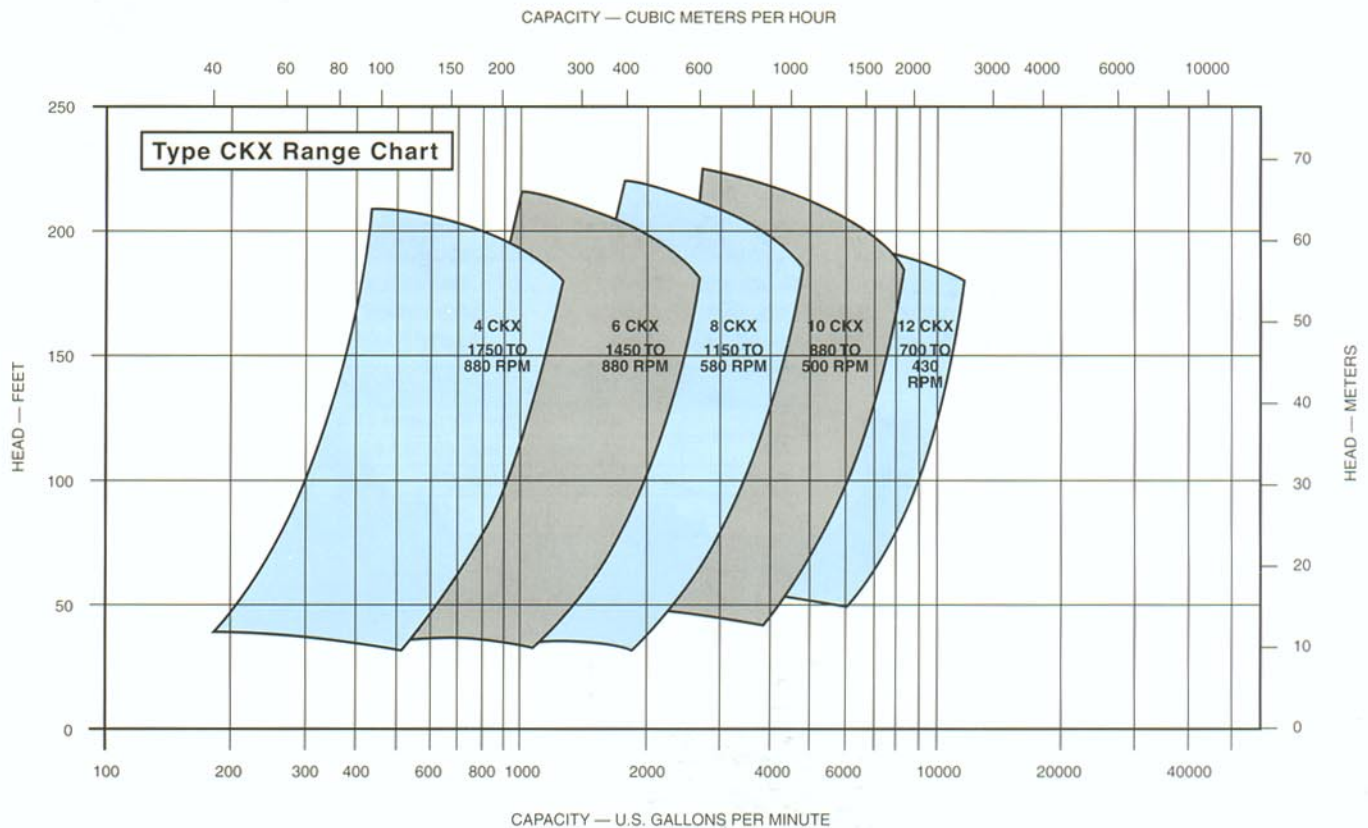
BEARINGS	4 CKX	6 CKX	8 CKX	10 CKX	12 CKX
Designation	1 FR	2 FR	3 FTH	2 AS	2 AS 2
Lubrication	Grease Standard; Oil Optional			Oil Only	
Inboard	Cylindrical Rollers (Radial Loads)			Spher. Rollers (Radial)	
Outboard	Ball-type (Radial & Thrust Loads)			Spher. Rollers (Radial) Cyl. Rollers (Thrust)	

Note: All linear dimensions are in inches.

# CUSTOM APPLIED FOR YOUR PUMPING REQUIREMENTS

Goulds CKX pumps are offered in 4 through 12 inch discharge sizes to handle the greatest possible range of slurry and solids-handling applications. Most head and capacity requirements can be met by any of several pump size/speed/impeller diameter

combinations. Multiply these by the number of materials of construction available, and the number of possible choices is even greater. Goulds will select the one combination most suited to your pumping requirements.



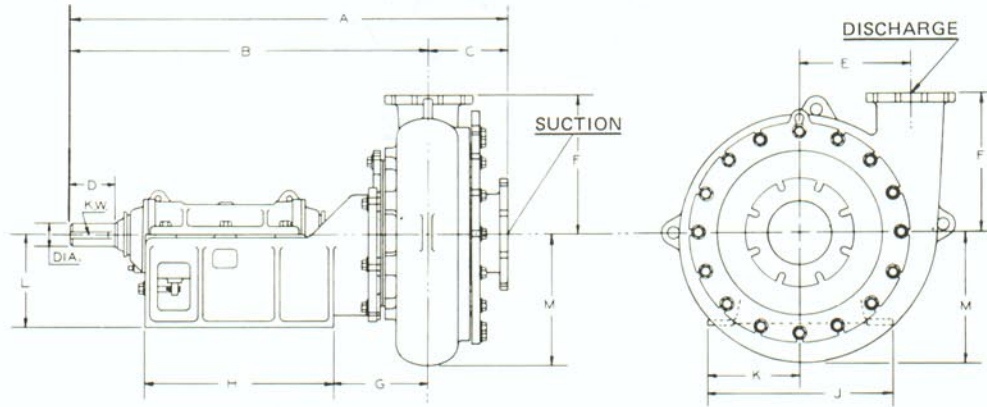
## PROVEN PERFORMANCE IN ABRASIVE APPLICATIONS

*Fracing Slurry  
Sand & Gravel  
Fly Ash  
Bottom Ash  
Red Mud  
Iron Ore Slurry  
Aglime  
Slag  
Chalk Slurry  
Potash Tailings*

*Coal Slurry  
Dredge Tailings  
Limestone Fines  
Mill Scale  
Roofing Granules  
Borax Liquor  
Copper Ore Slurry  
Lime Slurry  
Mud and Silt  
Cement Slurry*

*Bauxite Slurry  
Kaolin Clay  
Coal Refuse  
Clarifier Sludge  
Raw Beet Juice  
Coke Slurry  
Alumina Hydrate  
Phosphate Ore  
Textile Wastes  
Sand Slurry*

# Type CKX Pump Dimensions



PUMP SIZE	BEARING FRAME	MAXIMUM SOLIDS SIZE	A	B	C	D	E	F	G	H	J	K	L	M
4	1 FR	2-3/8	46-5/8	39-5/8	7	5-1/4	10-3/8	12	10-13/16	20-1/2	19	9-1/2	9-1/2	13
6	2 FR	4-1/8	55	45	10	5-9/16	13-7/8	16-1/2	12-1/2	23-5/16	23	11-1/2	11-1/2	17-1/2
8	3 FTH	5-7/8	70-1/2	58-1/2	12	7-5/8	17-5/8	21	14-1/2	32-3/8	30	15	15-1/2	28-5/8
10	2 AS	7-1/4	87-1/16	73-5/16	13-3/4	11-1/2	23-1/2	26-3/4	15-1/2	41-1/2	32	16	18	28-1/2
12	2 AS 2	9	90-5/16	75-5/16	15	11-1/2	26-3/4	27	16	42-1/2	33	16-1/2	20	33-1/2

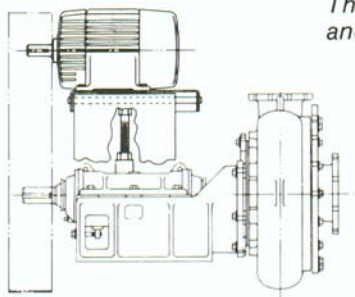
NOTE: All linear dimensions are in inches.

PUMP SIZE	SHAFT DIA.	KEY WAY	DISCHARGE				SUCTION				*DISCHARGE POSITIONS	
			I.D.	O.D.	B.C.	SLOTS	I.D.	O.D.	B.C.	SLOTS	NUMBER	INCREMENTS
4	1-7/8	1/2 x 1/4	4	9	7-1/2	8; 3/4	5	10	8-1/2	8; 7/8	8	45°
6	2-7/8	3/4 x 3/8	6	11	9-1/2	8; 7/8	8	13-1/2	11-3/4	8; 7/8	8	45°
8	3-1/2	7/8 x 7/16	8	13-1/2	11-3/4	8; 7/8	10	16	14-1/2	12; 1	8	45°
10	4-1/2	1 x 1/2	10	16	14-1/2	12; 1	12	19	17	12; 1	8	45°
12	4-1/2	1 x 1/2	12	19	17	12; 1	14	21	18-3/4	12; 1-1/8	8	45°

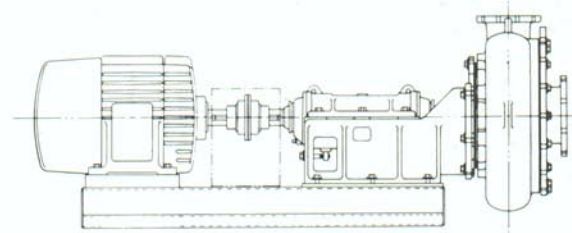
\* Pumps supplied with "vertical-up" discharge unless otherwise requested.

Construction details and dimensional data are for general information only and are subject to change without notice.

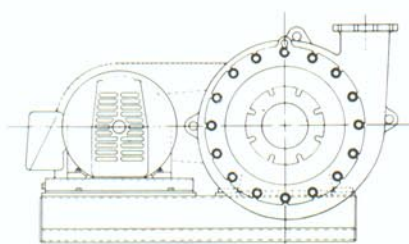
The products shown should not be operated without safety devices prescribed by applicable laws and regulations.



**CKX PUMP WITH OVERHEAD MOTOR BASE FOR BELT DRIVE**



**DIRECT-DRIVE ARRANGEMENT WITH PUMP AND MOTOR ON COMMON BASE**



**CKX ON SIDE BY SIDE BELT-DRIVE BASE**

Goulds Pumps



**ITT Industries**  
Engineered for life