

THOMAS DREDGE PUMP RANGES

The Metso “Thomas” Dredge Pumps are designed for hydraulic dredging and mining applications. These rugged pumps feature extra heavy metal sections at points of extreme wear, and have the ability to pass large solid particles often encountered in aggregate mining operations. Designed for use in suction lift applications, these pumps offer optional features which allow the pumps to be engineered to meet the specific needs of the operation.

Design features

- Bearing assemblies
- Shaft seal
- Wet end
- Hydraulics

Maintenance features

- Side liners & case bores
- Armor-Lok
- Knockout ring

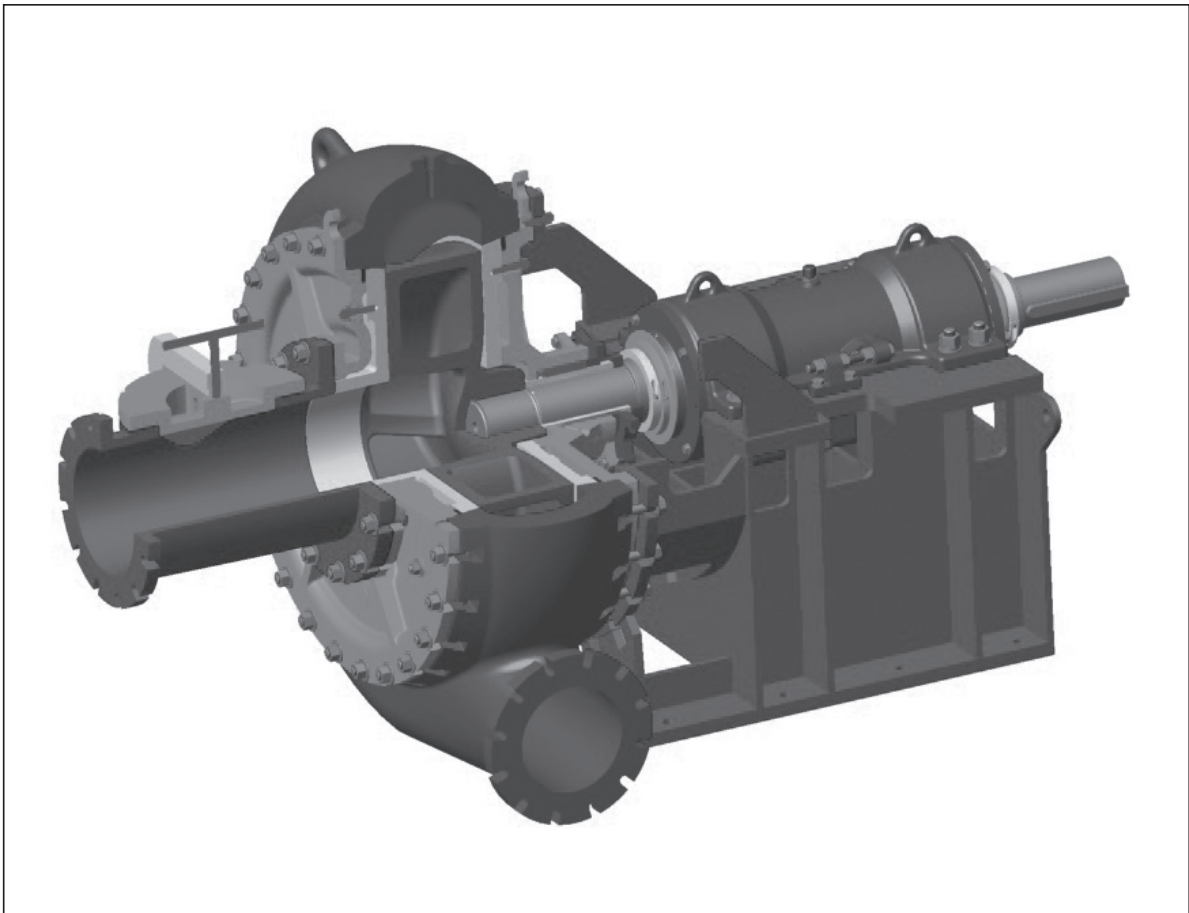


Fig. 1 METSO THOMAS SIMPLICITY DREDGE PUMP Typical cross sectional view (with full flush gland seal fitted)

PRODUCT DESCRIPTION

Details of design features

Global Bearing Assembly for Pumps F24 thru X52WD

The robust steel shaft is carried in a fixed, self aligning spherical roller bearing on the drive end, then coupled with a spherical roller thrust bearing for axial loads. For heavy radial loads, a floating caged cylindrical roller bearing is used on the hydraulic end. All this is housed in a self contained, oil lubricated cartridge assembly then mounted to a heavy duty bearing frame, which allows the cartridge to be easily replaced with a minimum of downtime. The adjustment feature for setting the impeller clearance is easy accessible.

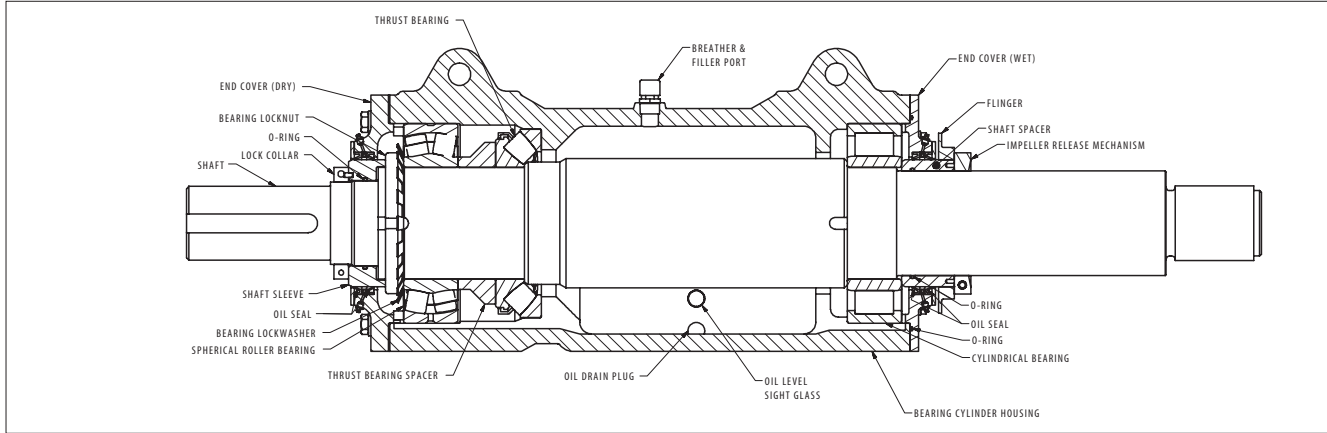


Fig. 1 X-Frame bearing section

Optional "Classic" Bearing Assembly for Pumps F24 thru X52WD

The "classic" bearing and shaft arrangement has been the mainstay of the "Thomas" pump line. The radial and thrust bearing units are housed in individual pillow blocks. The pillow blocks and shaft are mounted on a heavy adjusting plate, which by means of an adjusting screw allows the lateral adjustment of the impeller to compensate for wear. The hydraulic end radial pillow block contains a grease lubricated double row spherical roller bearing. The drive end thrust pillow block is oil lubricated, and contains two bearings, a steep angle spherical roller thrust bearing, and a double row spherical backlash bearing.

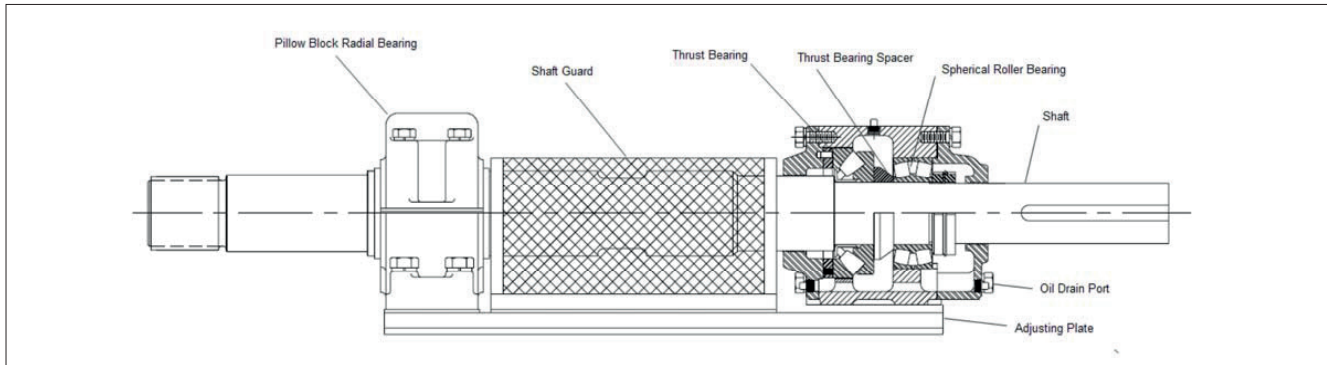


Fig. 2 "Classic" bearing assembly for pumps F24 thru X52WD

Details of design features

□ **Shaft Seal**

The standard shaft seal for the Metso Thomas dredge pump is "Full Flow" adjustable water flushed seal with packing and a lantern ring running on a replaceable steel shaft sleeve. Optional "Low Flow" and "Mechanical Seal" options are available on special request.

□ **Wet end**

The materials offered for the wet end parts provide excellent wear/abrasion resistance.

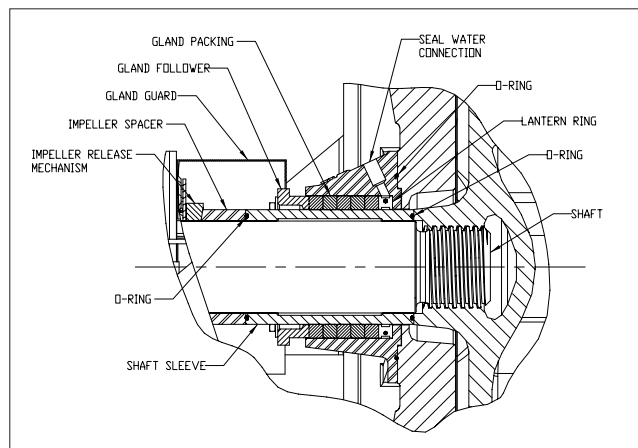


Fig. 3 "Full Flow" Shaft Seal Assembly
Typically, a "full flow" gland seal is used when dilution of the slurry being pumped is not critical.

The wet end comprises

Case (full volute), and Impeller are available in ASTM A-532, a wear resistant high chrome iron with a minimum hardness of 650 BHN, which can be used at pH values down to 2.5.

Side Liners (Suction and Bearing Side) are also offered from ASTM A-532, high chrome iron.

□ **Hydraulics**

The arrangement is of end suction design, with a heavy sectioned, one piece volute casing providing smooth, high efficient hydraulic flow and minimal radial loading. The high aspect ratio impellers have generous particle passages while generating minimum turbulence, low NPSHR and extended wear life.

Underwater Operation

Standard Metso Thomas Simplicity dredge pump series H30 thru X52WD can be arranged for operation underwater on a dredge ladder, or other underwater application. One piece bearing housings are fitted with special seals which allow for submerged operation. Wet end parts are interchangeable with the standard Dredge Pump.

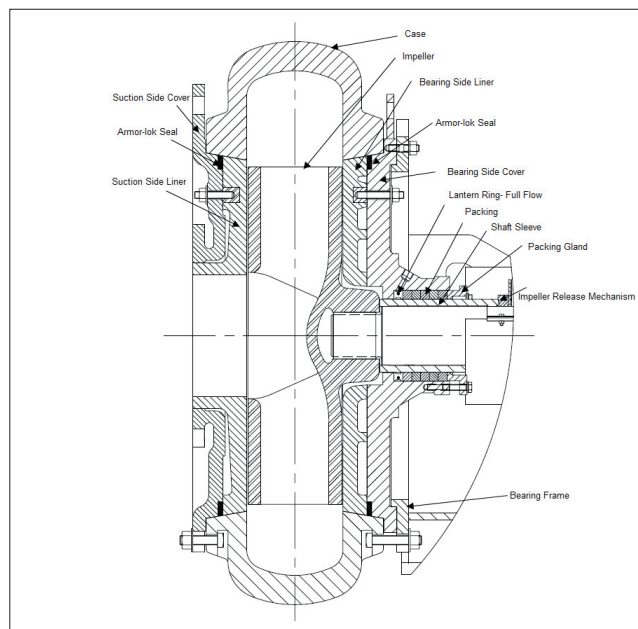


Fig. 4 Typical cross sectional view of Thomas dredge Pump Wet End

□ Maintenance Features

- The side liners and case bores are tapered, offering a near metal to metal fit. The elimination of a gap or rubber seal between the parts offers reduced wear, and easy maintenance as compared to straight bore fits.
- The “Armor-Lok” seal provides sealing, but away from the slurry flow path, allowing for a long lasting and easily maintainable seal.
- The Knock-out ring feature eliminates the problem of a difficult to remove impeller due to over tightening. This three piece tapered ring relieves the pressure on the impeller threads, and allows the impeller to be removed with ease.

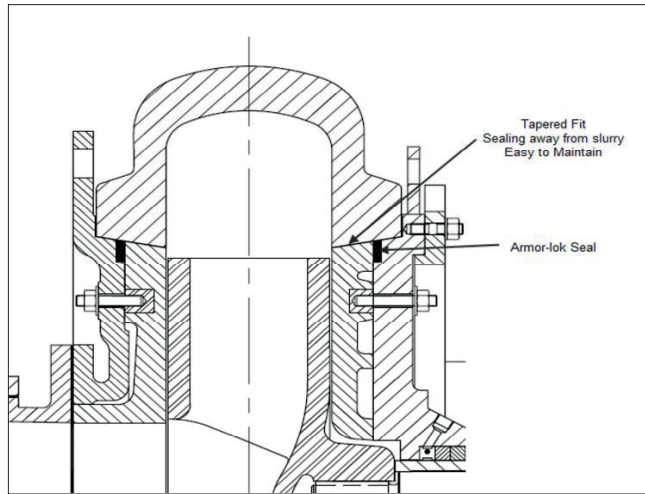


Fig. 6 Armor-Lok seal

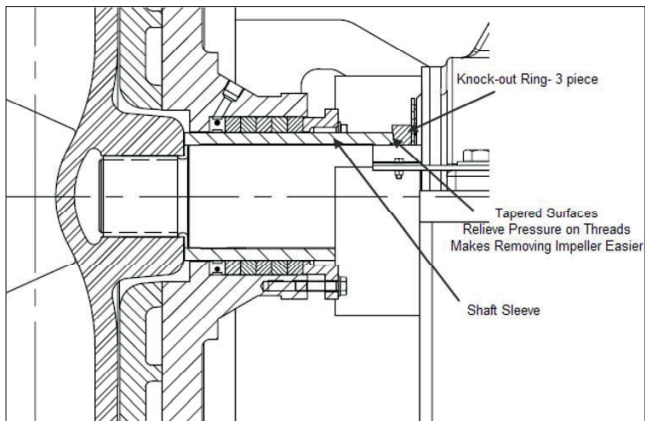


Fig. 5 Knock out ring

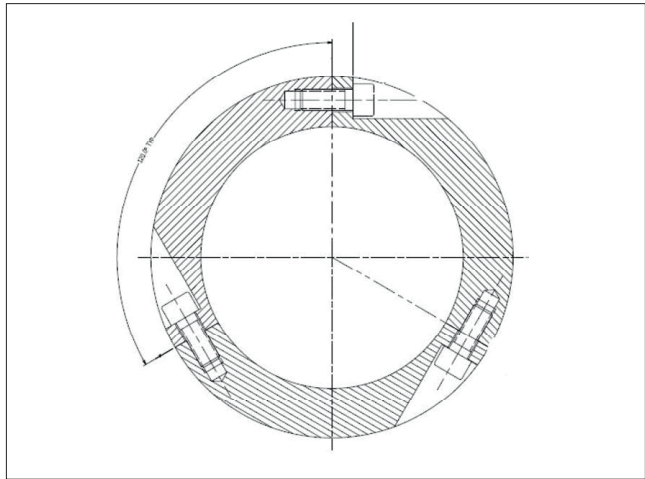


Fig. 7 Knock out ring

TECHNICAL INFORMATION – DREDGE PUMPS

Pump Name	F24	H24	H30	J30	J36	L36	L40	N40
Metso frame (Global)	750	750	750	750	900	900	1000	1000
Inlet diameter	9"	9"	10"	10"	13"	13"	15"	15"
Discharge diameter	6"	8"	8"	10"	10"	12"	12"	13.25"
Impeller diameter	24"	24"	30"	30"	36"	36"	40"	40"
Suction adapter options	9"x 6"	9"x 8"	10"x 10" 10"x 8"	10"x 12" 10"x 10"	13"x 12"	13"x 14" 13"x 12"	15"x 14" 15"x 12"	15"x 15" 15"x 14"
Maximum HP	250	250	350	350	500	500	870	870
Impeller Data								
Rotation	RH	RH	RH/LH	RH/LH	RH/LH	RH/LH	RH/LH	RH/LH
Vane options	4 vane	4 vane	3,4	3,4	3,4	3,4	3,4	3,4
Port width	4.75"	4.75"	6.25"	6.25"	7.25"	7.25"	8.5"	8.5"
Max particle	4V-4"	4V-4"	3V-6.0" 4v-5.5"	3v-6.0" 4V-5.5"	3V-6.75" 4V-5.87"	3v-6.75" 4V-5.87"	3V-8.375" 4V-6"	3V-8.375" 4V-6"
Impeller configuration	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
Standard material	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome
Case Data								
Outlet diameter	6"	8"	8"	10"	10"	12"	12"	13.25"
Volute thickness	2"	2"	3.5"	3.5"	3.125"	3.125"	3.5"	3.5"
Rotational increments	22.5 deg	22.5 deg	15 deg	15 deg	15 deg	15 deg	15 deg	15 deg
Case discharge flange	6"- 150#	8"- 150#	8"- 150#	10"- 150#	10"- 150#	12"- 150#	12"- 150#	14"- 150#
Standard material	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome
Max. working pressure	10	10	10	10	10	10	10	10
Max. test pressure	15	15	15	15	15	15	15	15
Stuffing Box Data								
Water flush connection	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"
No. of packing rings	4	4	4	4	5	5	5	5
Packing size	5/8" sq	5/8" sq	3/4" sq	3/4" sq	1" sq	1" sq	1" sq	1" sq
Flush water pressure above discharge pressure	10 psi	10 psi	10 psi	10 psi	10 psi	10 psi	10 psi	10 psi
Weights (lbs)								
Bare shaft pump	4400	4500	7350	7400	12210	12310	16000	16200
Case weight	926	1000	2100	2150	3510	3555	4900	5000
Impeller weight	430	430	765	756	1194	1194	1825	1825
Bearing/Shaft Assembly	760	760	760	760	1815	1815	2216	2216
Bearing / Shaft Data								
Thread size	3.0-.33p,dl	3.0-.33p,dl	4.0-.33d,dl	4.0-.33p,dl	5.0-.5p,dl	5.0-.5p,dl	6.0-.57p,dl	6.0-.57p,dl
Impeller release mechanism	yes	yes	yes	yes	yes	yes	yes	yes

Pump Name	P40ND	P40WD	R40WD	P46	R46	T46WD	T52WD	X52WD	Z700-1850
Metso frame (Global)	1000	1200	1200	1200	1200	1200	1400	1400	1850
Inlet diameter	15"	17.25"	17.25"	18.25"	18.25"	20"	23.25"	23.25"	800 mm
Discharge diameter	15.25"	15.25"	17.25"	15.25"	17.1875"	19.25"	19.25"	23.25"	700 mm
Impeller diameter	40"	40"	40"	46"	46"	46"	52"	52"	1850 mm
Suction adapter options	15"x 15"	17.25"x 17.25" 17.25"x 18.25"	17.25"x 17.2" 17.25"x 18.2"	18.25"x 17.2"	18.25"x 20" 8.25"x 17.25"	20"x 21.25"	23.25"x 23.25"	23.25"x 23.25"	none
Maximum HP	870	750	750	1200	1200	1200	2200	2200	3000
Impeller Data									
Rotation	RH/LH	RH/LH	RH/LH	RH/LH	RH/LH	RH/LH	LH	LH	RH
Vane options	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,5
Port width	8.5"	10.25"	10.25"	10"	10"	13"	13"	13"	13.75"
Max particle	3V-8.375" 4V-6"	3V-9.75" 4V-6.5"	3V-9.75" 4V-6.5"	3V-9.75" 4V-7.37"	3V-9.75" 4V-7.37"	3V-12.75" 4V-8.5"	3V-12.75" 4V-10"	3V-12.75" 4V-10"	3V-13.5" 5V-7"
Impeller configuration	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
Standard material	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome
Case Data									
Outlet diameter	15.25"	15.25"	17.25"	15.25"	17.1875"	19.25"	19.25"	23.25"	700mm
Volute thickness	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"
Rotational increments	15 deg	15 deg	15 deg	10 deg	10 deg	10 deg	10 deg	10 deg	10 deg
Case discharge flange	16"- 150#	16"- 150#	18"- 150#	16"- 150#	18"- 150#	20"- 150#	20"- 300#	24"- 300#	30"- 150#
Standard material	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome	High Chrome
Max. working pressure	10	10	10	10	10	10	10	10	7/10
Max. test pressure	15	15	15	15	15	15	15	15	10,5/15
Stuffing Box Data									
Water flush connection	1"	1"	1"	1"	1"	1"	1"	1"	1"
No. of packing rings	5	5	5	4	4	5	5	5	4
Packing size	1"sq	1"sq	1"sq	1"sq	1"sq	1"sq	1"sq	1"sq	1"sq
Flush water pressure above discharge pressure	10 psi	10 psi	10 psi	10 psi	10 psi	10 psi	10 psi	10 psi	10 psi
Weights (lbs)									
Bare shaft pump	16400	17630	17830	22400	22500	22400	33000	33400	62400
Case weight	5200	5207	5350	6755	6930	8650	11850	11850	24000
Impeller weight	1825	1970	1970	2310	2310	2550	3150	3150	7790
Bearing/Shaft Assembly	2216	2216	2216	3828	3828	3828	4185	4185	6660
Bearing / Shaft Data									
Thread size	6.0-.57p,dl	6.0-.57p,dl	6.0-.57p,dl	varies w/HP	varies w/ HP	varies w/HP	varies w/HP	9.0-1.0p,tl	9.5-1.0p,dl
Impeller release mechanism	yes	yes	yes	yes	yes	yes	yes	yes	yes

Subject to change without prior notice.

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