



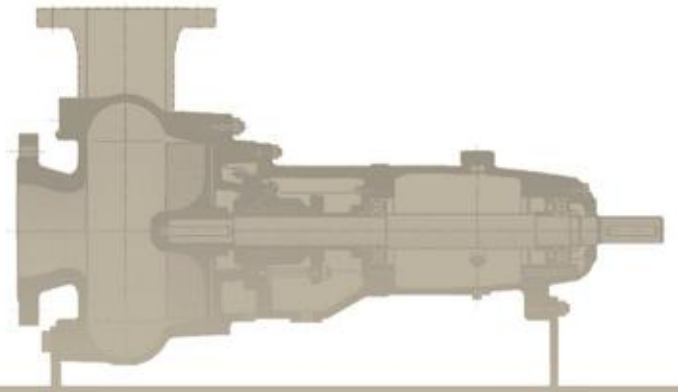
deh

NEW Toyo DEH series



www.toyopumps.com

DEH *REVOLUTIONARY*



Toyo Pumps North America's new horizontal recessed impeller vortex pump series, the DEH, is one of the most revolutionary recessed impeller pump designs available today, worldwide.

This non-clogging performer is designed to handle fluids containing large solids (up to the full diameter of the discharge); fragile solids, such as crystals, carbon and even live shellfish; abrasives; as well as long fibrous and stringy materials.

One of the most notable features of the DEH is its unique axial spiral casing design which allows solids to follow the flow path directly out of the pump. This major design benefit means that internal recirculation, which is detrimental to hydraulic efficiencies and increases pump wear, is minimized. Sacrificial wear parts are not required with this advanced design DEH. End users will also find that reduced life cycle costs are achieved whilst benefiting from lower power consumption.

The best news is that because the Toyo recessed impeller wet ends are standard across all our lines of recessed impeller pumps, from cantilevers to line-shafts to submersibles, any critical parts stocking costs can be reduced to an absolute minimum even if you are operating a number of different Toyo recessed impeller pump configurations.

The DEH is a single stage end suction, radially split casing pump, with center line discharge, incorporating the back pull-out feature. Separately mounted pump feet allow the discharge to be positioned 90° either side of the pump center-line.



The latest DEH design enhances the principal of a hydro dynamic liquid coupling to transport the pumped medium.

Fully Recessed Impeller Pumps

- High Hydraulic efficiency
- Low wear characteristics
- Large solids handling ability
- Low shear of solids
- Only 15% of pumped liquid is in contact with impeller
- Self venting casing design
- Versatility of design
- Simplicity of design
- Low Life Cycle Costs (LCC)
- Long MTBF (Mean Time Between Failures)

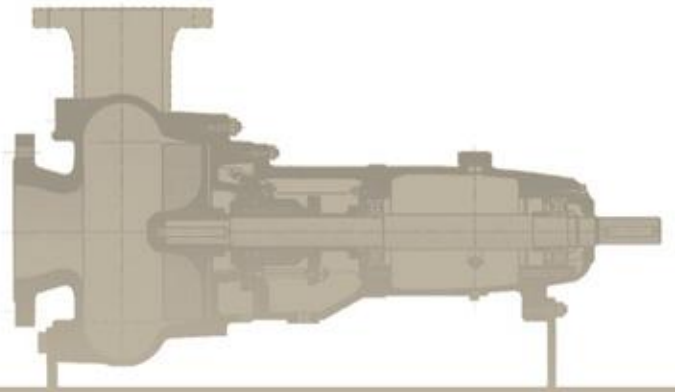
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DEH REVOLUTIONARY



MAJOR DEH ADVANTAGES

Non clogging

The recessed impeller permits an unobstructed passage through the pump casing and this allows solids up to the full diameter of the discharge to pass through without the danger of clogging. Long fibrous materials can also be handled without difficulty.

Efficiency is in the casing

The DEH pump design incorporates an axial spiral in the concentric casing which ensures that flowing solids are discharged quickly as a result reducing internal recirculation, which is detrimental to the hydraulic efficiencies and pump wear life.

Low shear = low wear

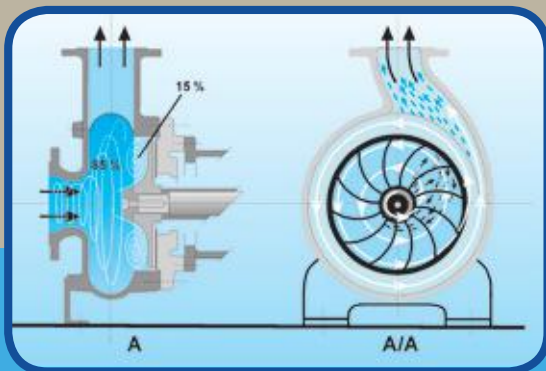
Due to the natural flow of the fluid through the pump casing and the fact that the flow is virtually isolated from the impeller (only 15% of pumped liquid is in contact with the impeller), fragile solids such as: crystals, carbons and even live shellfish can be passed through the pump with very little damage. This pump is ideally suited for low shear applications.

Simple design

The hydraulic centering of the impeller in the casing and its simple open design results in very little radial loadings on the shaft and bearings. Even under extreme conditions when wear occurs on the impeller, it is concentric and does not affect the mechanical balance of the pump.

Low running costs

Due to the improved hydraulic efficiencies of Toyo's recessed impeller pumps, they absorb less power than their competitors and the gentle pumping action contributes to the improved wear life of component parts. Time has proven that these pumps require few spare parts when compared to other makes of pumps.



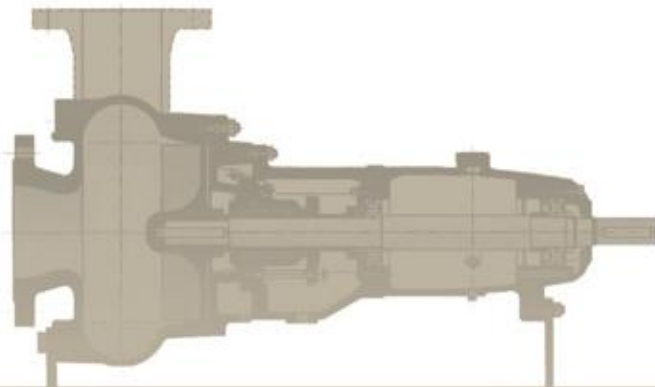
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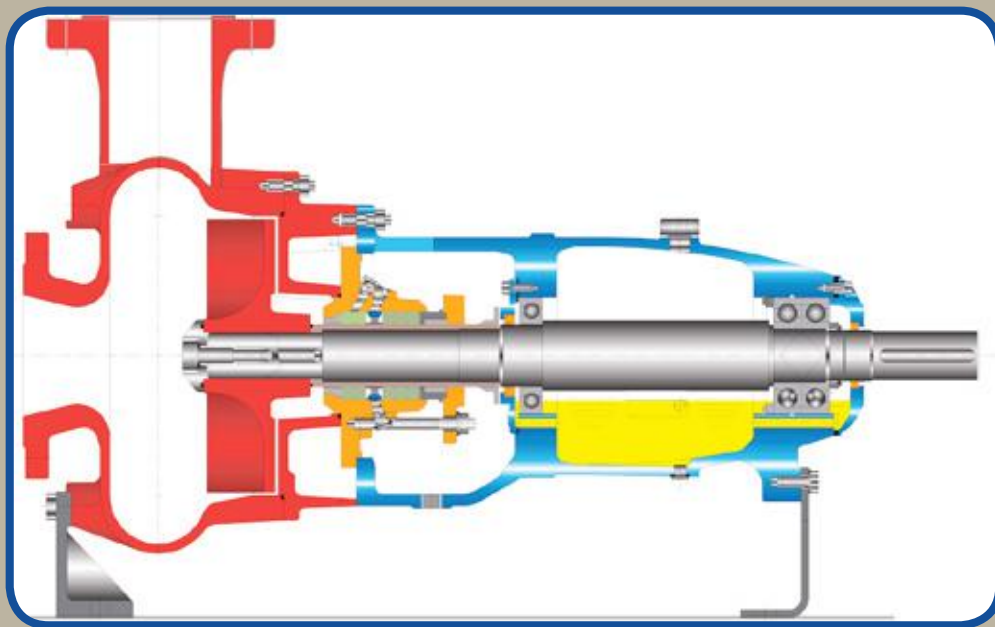


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Unwavering commitment to design enhancements means that the DEH pump is the most revolutionary recessed impeller pump on the market today.



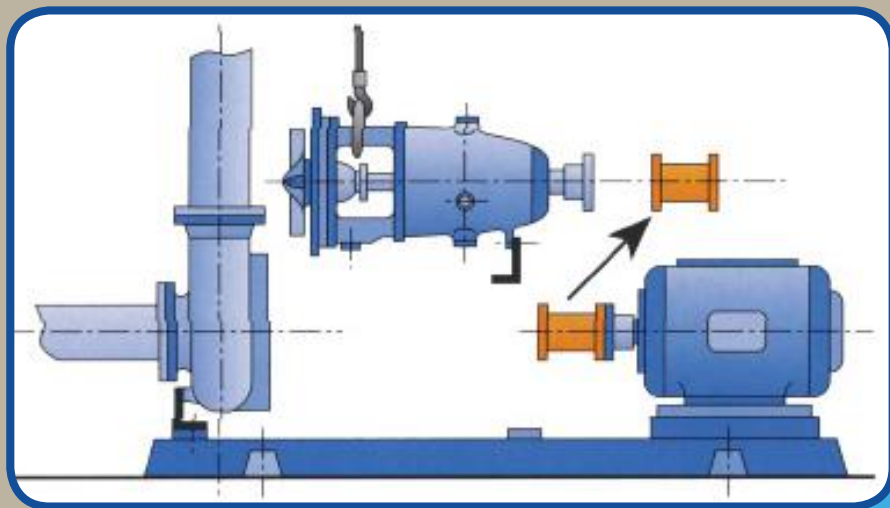
DEH ADVANTAGES



All horizontal Power frames have as standard, oil lubrication for the ball bearings. Greased bearings can be supplied on request.

Simple construction and maintenance friendly “Back pullout” feature.

The DEH pump is a single stage end suction, radially split casing pump, with centre-line discharge, incorporating the back pull-out feature.



When using a spacer coupling the complete rotating assembly can be removed easily without disconnecting suction/discharge piping or the motor.

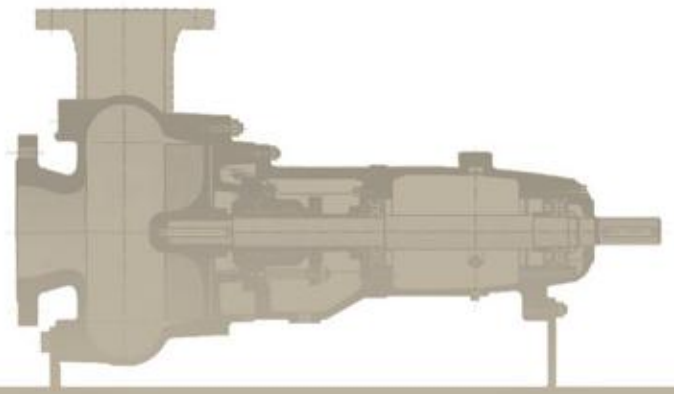
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NEW Toyo DEH series

Toyo DEH pumps come standard in High Chrome but are also available in other metallurgies upon request.



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DEH INDUSTRY

LET THE TOYO DEH SHINE IN YOUR INDUSTRY

Sugar industry

Beet and beet chip-mixtures, beet tails, cane wash water, leaves and grass with water, milk of lime at 200°F, lime sludge from the settling tanks, kieselgur, unscreened sugar juice

Building industry

Gas-concrete slurry, sand, gravel, stone and marble dust in water, creosote solutions

Textile industry

Natural and artificial fibers, dyes with sludge, fibrous waste water, fleece scouring

Fiber industry

Fiber-cement slurry, rock wool, leather fibers, glass fibers, textile-fibers, nitro-cellulose

Power plants

Ash, dust-screen sludge

Chemical industry

ABS, BPA, DAP, EPDM, EPS, HDPE, LDPE, LLDPE, MAM MDPE, MDI, MEK, MMA, OXO, PA, PET, PTA, PVC, SBR, TDA VCM, Latex, Nylon 6 & 12
Catalytic sludge's

Steel industry

Mill scale, ash-soot-slurries, coke and coal water mixtures, borax suspensions

Mining

Leached gold ore slurries, Bentonite, coal washing water, mine drainage pumps, manganese dioxide slurry, and Carbon transfer.

Cellulose industry

Semi-chemical pulp, sulphite-sulphate pulp, black-liquor, wood chips, pulp with knots, digester emptying, splinters from wood grinder

Shipbuilding

Sewage, bilge water, fish-offal

Petrochemical industry

Slops, catalytic sludge, carbolated oil, drilling sludge, raw tar with coke fines, oily water to separators

Paper industry

Un-cleaned wastepaper, straw pulp, rag pulp, defibrator pulp, Kaolin 80%, bagasse, bambus, rejects, pulper rejects

Food industry

Potato waste, peas, beans, carrots, turnips, pig food, fruit suspensions, chicken/turkey waste with feathers, live shell fish, bone meal slurry

Waste water treatment.

Raw unscreened sewage, raw sludge, digested sludge, grit channel pumps, abattoir waste water, oil municipal and industrial effluents, granulated activated carbon



deh

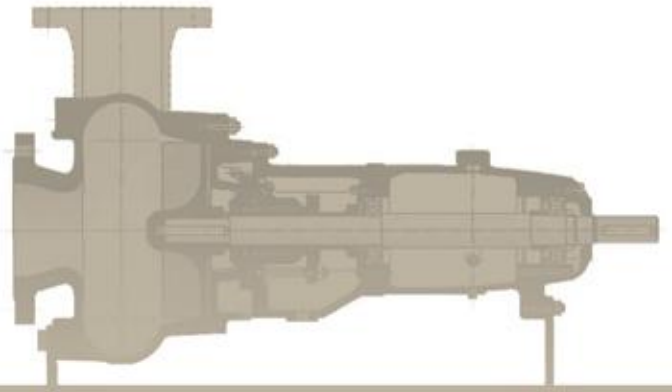
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DEH INDUSTRY



FOOD INDUSTRY

- a. DEH pumps pumping Chicken feathers, blood and waste.
- b. DEH pumps pumping Peas and water
- c. DEH pumps pumping Water with Potato slices

CHEMICAL INDUSTRY

- d. DEH pumps for PVC slurry
- e. DEH pump fitted with Eurodyn seal handling Carborundum slurry (After 12 month's operation)
- f. DEH pump fitted with Eurodyn seal handling Latex
- g. DEH pumps for SAR plant

PAPER INDUSTRY

- h. DEH pump pumping 6% paper stock.
- i. DEH pump pumping Kaolin slurry
- j. DEH pump with Eurodyn seal pumping rejects.

STEEL INDUSTRY

- k. DEH hard iron pumps pumping sintered water (10 g/l) from cast slab cooling system.
- l. DEH pumps operating in a filtration plant – Steel Plant Germany
- m. DEH pump handling ash slurry in a Steel Plant

POWER

- n. DEH pumps pumping raw tar, Chlorine, Phenol and ammonia.
- o. DEH pumps pumping coke and raw tar slurries.



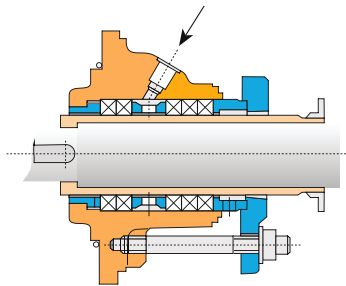
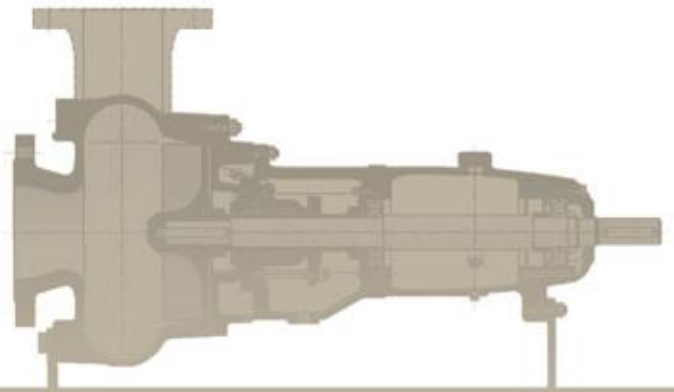
NEW Toyo DEH series



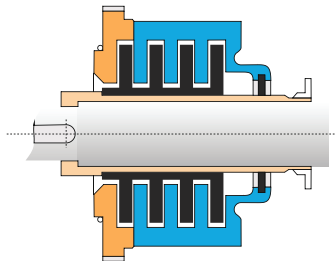
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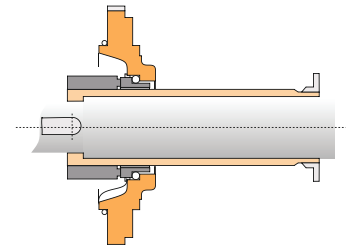
DEH SEALING SYSTEM



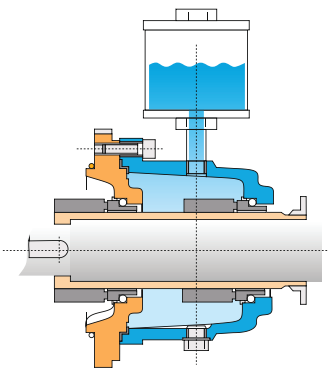
Various stuffing box arrangements available'



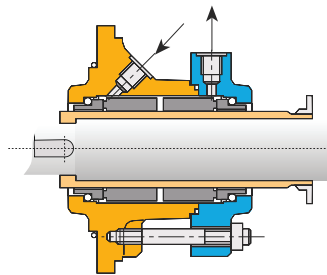
'The DEH hydrodynamic seal'



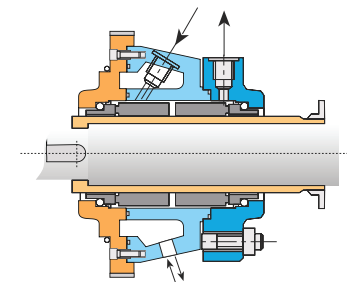
'Single mechanical seal, without sealing liquid but flushing connections are available.'



Double mechanical seal in tandem with pressureless internal sealing liquid.'



Double mechanical seal, back to back with external sealing liquid. Sealing casing with cooling and heating jacket.'



Double mechanical seal, back to back with external sealing liquid. Sealing casing with cooling and heating jacket.'

DEH SHAFT SEALING SYSTEM

The DEH's shaft seal is designed in such a way that different seal arrangements can be fitted in the same stuffing box without modification.

Advantages:

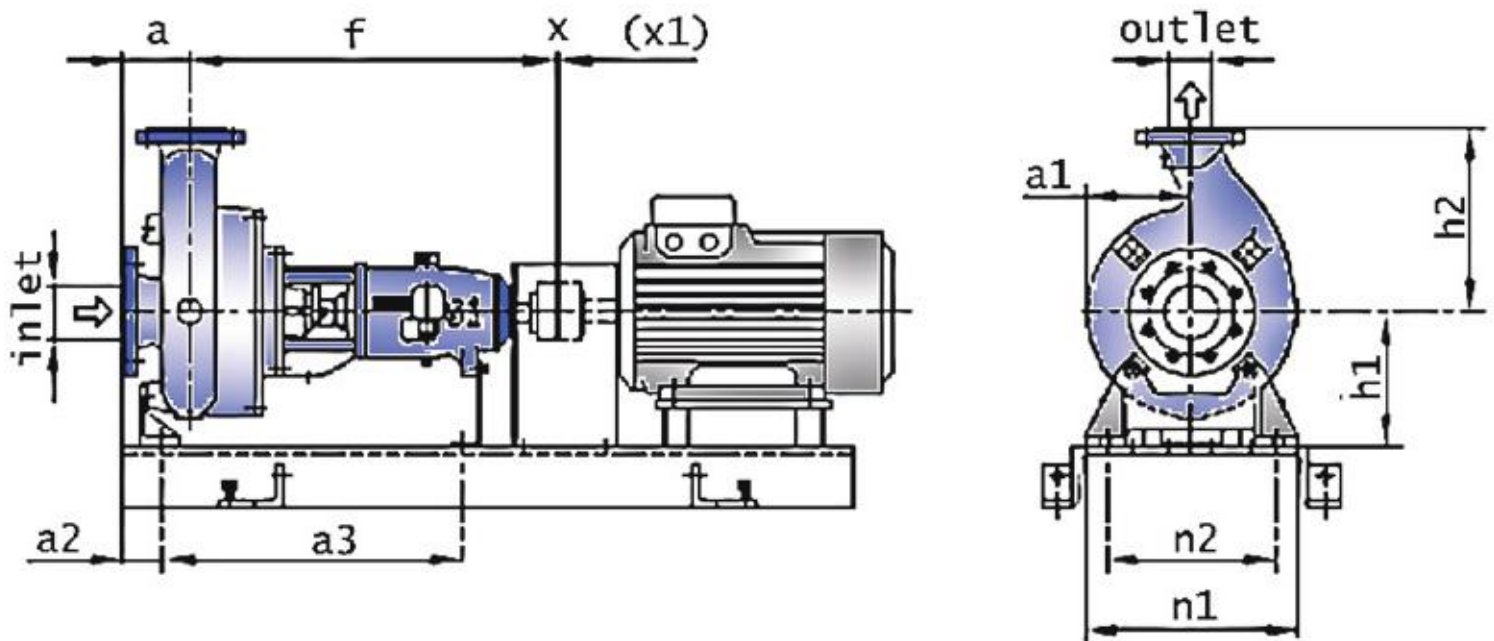
- Wider choice of shaft sealing arrangements
- The same shaft sleeve is used for most shaft seal arrangements
- Minimum number of spare parts
- Easy maintenance
- The shaft is always sealed from the pumped liquid. Therefore the shaft is always standard in high tensile steel, independent of the pump construction materials

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Pump Size		Diameters		Impeller		Pump Dimensions								
Pump	PF	INLET	OUTLET	MAX	MIN	a	a1	a2	a3	f	h1	h2	n1	n2
DEH 41-50	2	2.6	2	6.6	5.0	4	4.8	2.6	17.4	20.7	5.9	8.3	9.4	7.5
DEH 41-80	3	4	3.1	6.6	5.0	4.5	5.5	2.9	21.7	27	7.1	9.4	12.6	9.8
DEH 51-80	3	4	3.1	7.9	6.0	5	6.1	3	22	27	7.1	9.8	12.6	9.8
DEH 61-50	3	2.6	2	9.3	7.0	4	6.3	3	20.9	26.4	7.1	9.8	11	8.7
DEH 61-50	4	2.6	2	9.3	7.0	4	6.3	3	25.1	32.5	7.1	9.8	11	8.7
DEH 61-80	3	4	3.1	9.3	7.0	5	6.9	3	22	27	8.9	11.8	14.2	11
DEH 61-80	4	4	3.1	9.3	7.0	5	6.9	3	26.3	33	8.9	11.8	14.2	11
DEH 61-100	3	5	4	9.3	7.0	5.5	7.3	3.1	22.8	27.3	8.9	11.8	14.2	11
DEH 71-50	3	2.6	2	11.1	8.3	4	7.2	2.6	20.9	26	8.9	11.8	14.2	11
DEH 71-50	4	2.6	2	11.1	8.3	4	7.2	2.6	25.1	32.5	8.9	11.8	14.2	11
DEH 71-80	3	4	3.1	11.1	8.3	5	7.8	3	22.0	27	9.8	13.4	15.7	12.6
DEH 71-80	4	4	3.1	11.1	8.3	5	7.8	3	26.3	33	9.8	13.4	15.7	12.6
DEH 71-100	3	5	4	11.1	8.3	5.5	8.2	3.1	22.8	27.3	9.8	14.2	15.7	12.6
DEH 71-100	4	5	4	11.1	8.3	5.5	8.2	3.1	27.1	33.5	9.8	14.2	15.7	12.6
DEH 81-80	3	4	3.1	13.1	9.9	5	8.9	2.8	22.2	27	9.8	14	17.1	14
DEH 81-80	4	4	3.1	13.1	9.9	5	8.9	2.8	26.5	33	11	14	17.1	14
DEH 81-150	4	8	5.9	13.1	9.9	6.2	10.3	2.7	29.3	34.4	12.4	17.3	19.7	15.7
DEH 81-200	4	10	7.9	13.1	9.9	8.6	11.5	4.5	30.8	35.4	15.7	18.1	24.8	19.7
DEH 91-100	5	5	4	15.8	11.8	5.5	10.8	2.7	27.5	33.5	12.4	17	19.7	15.7

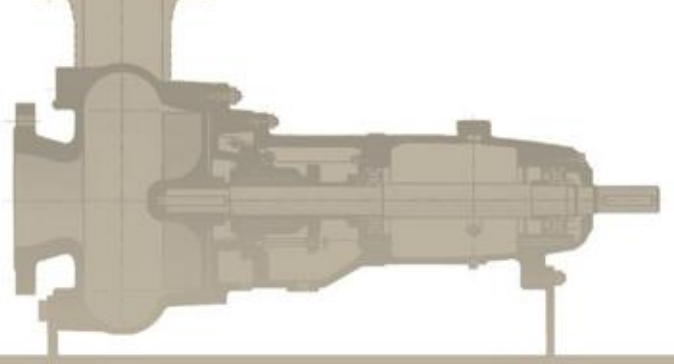
Dimensions are for estimation purposes only. Detailed drawings available upon request

DEH DIMENSIONS

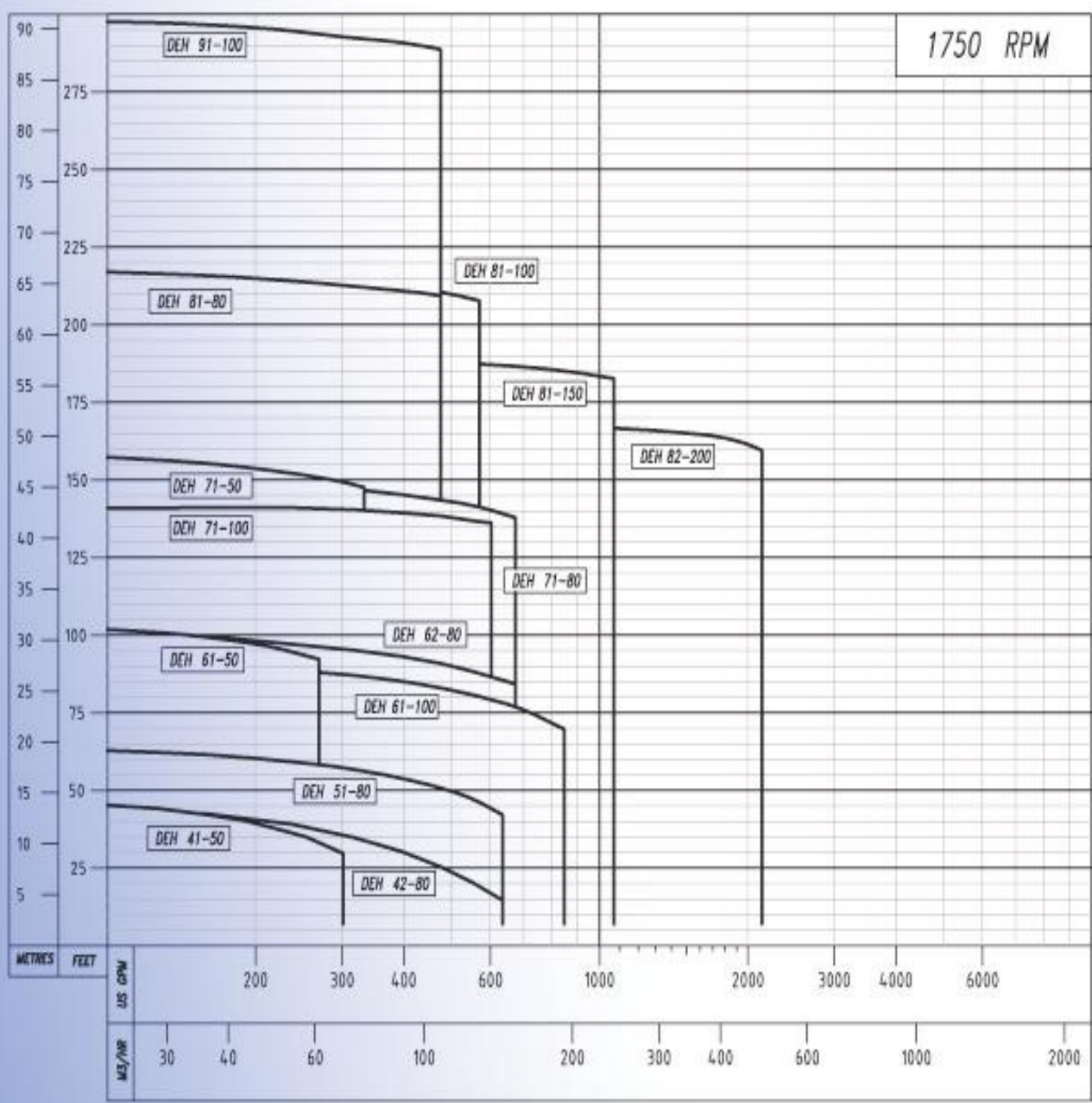
All dimensions shown are inch
For non spacer coupling arrangement X=0.125




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DEH PERFORMANCE





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TOYO PUMPS NORTH AMERICA CORPORATION
 BURNABY, BRITISH COLUMBIA
 CANADA V5C 6H2
 TEL : (804)298-1213 FAX : (604)298-7773

PUMP MODEL	DEH 41-50 to 82-200		
CURVE NUMBER	A7717	REV.	1
CAPACITIES TO:	M ³ /HR	488 @ BEP	
	U.S. GPM	2150 @ BEP	
HEAD TO:	METRES	88 @ BEP	
	FEET	288 @ BEP	

TPMA MODEL	DISCHARGE		IMPELLER	
	MM	IN.	MM	IN.
DEH 41-50	50	2	168	6.6
DEH 42-80	80	3	168	6.6
DEH 51-80	80	3	200	7.9
DEH 61-50	50	2	257	8.3
DEH 62-80	80	3	257	8.3
DEH 61-100	100	4	257	8.3
DEH 71-50	50	2	282	11.1
DEH 71-80	80	3	282	11.1
DEH 71-100	100	4	282	11.1
DEH 81-80	80	3	336	13.2
DEH 81-100	100	4	336	13.2
DEH 81-150	150	6	336	13.2
DEH 82-200	200	8	336	13.2
DEH 91-100	100	4	400	15.7

TPMA MODEL	MAX #SOLIDS	
	MM	IN.
DEH 41-50	45	1.8
DEH 42-80	72	2.8
DEH 51-80	72	2.8
DEH 61-50	45	1.8
DEH 62-80	72	2.8
DEH 71-100	85	3.75
DEH 81-50	45	1.8
DEH 71-80	72	2.8
DEH 71-100	85	3.75
DEH 81-80	72	2.8
DEH 81-100	85	3.75
DEH 81-150	135	5.3
DEH 82-200	180	7.1
DEH 91-100	85	3.75

PERFORMANCE FOR WATER @ 68°F/20°C
 AND 1.0 S.G. CORRECT FOR OTHER
 CONDITIONS AND/OR SOLIDS EFFECT

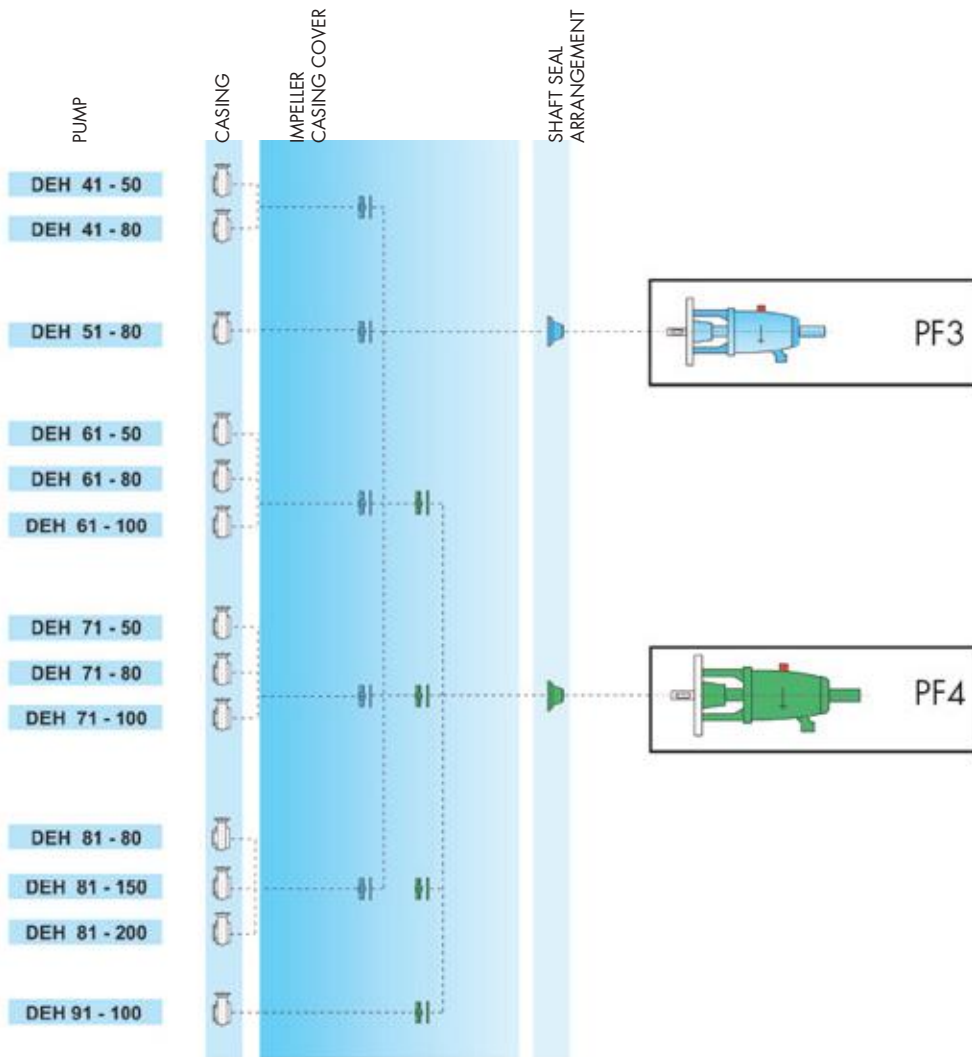
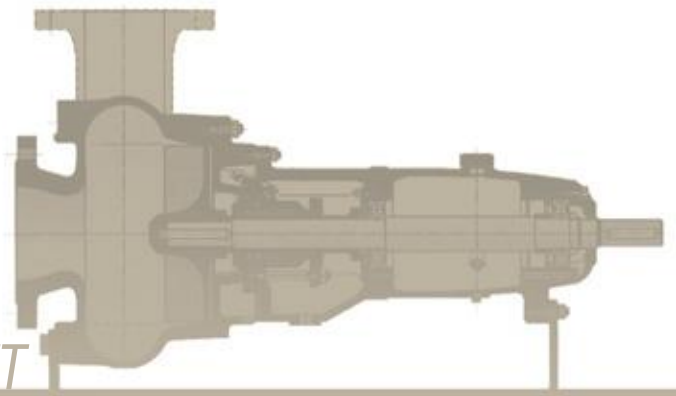
Pump sizes ending in the number '1' (as in 81-150) signify an 8 vane impeller
 Sizes ending in the number '2' (as in 82-200) signify 12 vane impellers

Thanks to the Toyo Modular Program the performance curves displayed above for the DEH are also applicable to our other recessed impeller ranges, including: our DEC (vertical cantilever) DEM (submersible) DEVO ('O' series vertical Line-Shaft) and DEV (standard series vertical Line Shaft)



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DEH PROGRAM LAYOUT



Pump designation (example) DEH 51 - 80 H 4

Series _____

Size _____

Dia. discharge flange _____

Number of poles of electric motor Design

Power Frame (PF) 5 is recommended for use with the 91-100

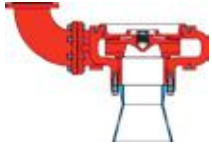
The DEH Vortex modular pump program consists of: 13 pumps of 6 different sizes with discharge diameters ranging in size from 50mm (2 inches) to 200mm (8 inches).

For each bearing housing there is only one impeller size for each pump size

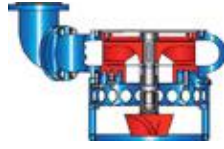


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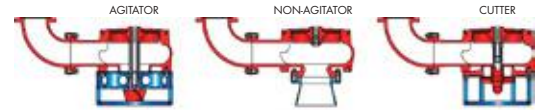
The Toyo Modular Program allows you the flexibility of using the wet ends below on various drive configurations. This advantage of the Toyo Product Line can significantly reduce spare parts inventory to an absolute minimum.



- Heavy solid handling capability
- Closed impeller
- Heavy metal sections for longer wear life
- Increased efficiencies in state of the art slurry pump design



- Heavy solid handling capability
- Closed and semi-open impellers available
- Patented Agitator Option
- Heavy metal sections for longer wear life



- Spiral casing design for increased efficiency and reduced wear
- Fully recessed impeller allows for large solids passage
- Only approx 15% of pumped liquid is in contact with impeller
- Wet end standard in High Chrome and CD4
- Patented Agitator and Chopper options available



HORIZONTAL



SUBMERSIBLE



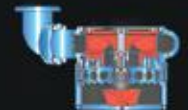
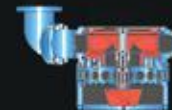
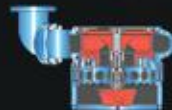
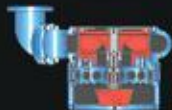
VERTICAL
CANTILEVER



LINE-SHAFT
STANDARD



LINE-SHAFT
'O' SERIES

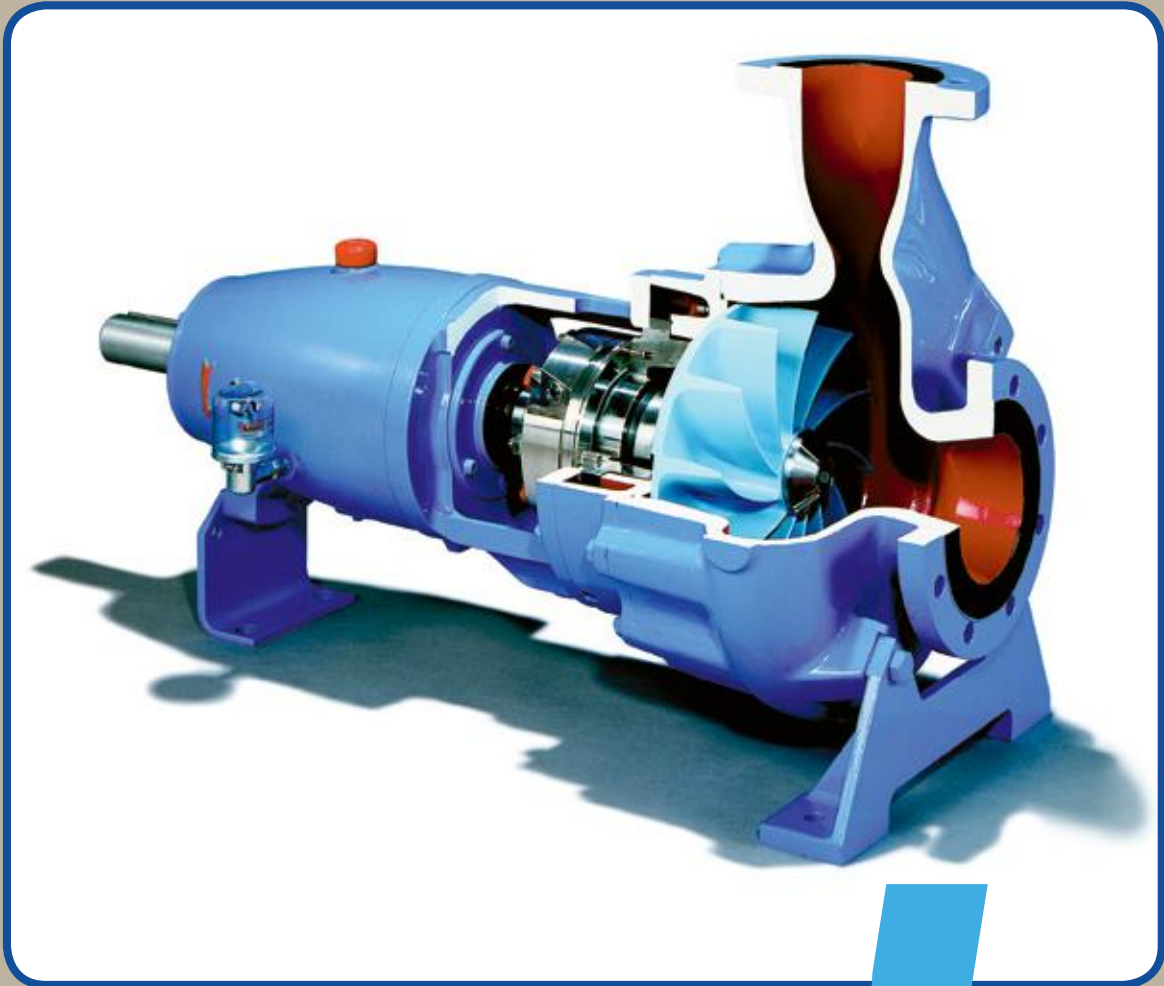
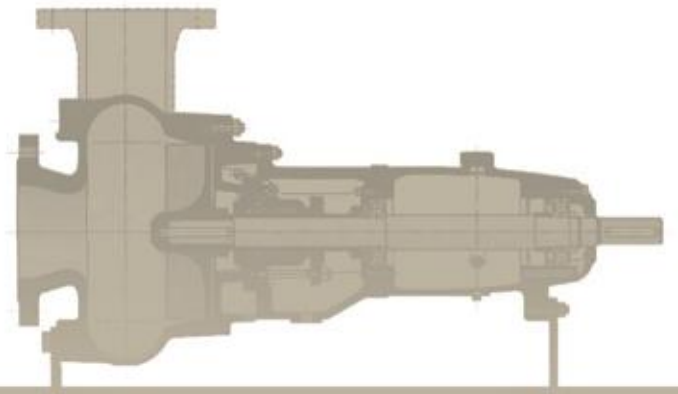


Significantly reduce spare parts inventory
to an absolute minimum.



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DEH SERIES



deh

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Canada V5C 6H2



For more information please visit
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