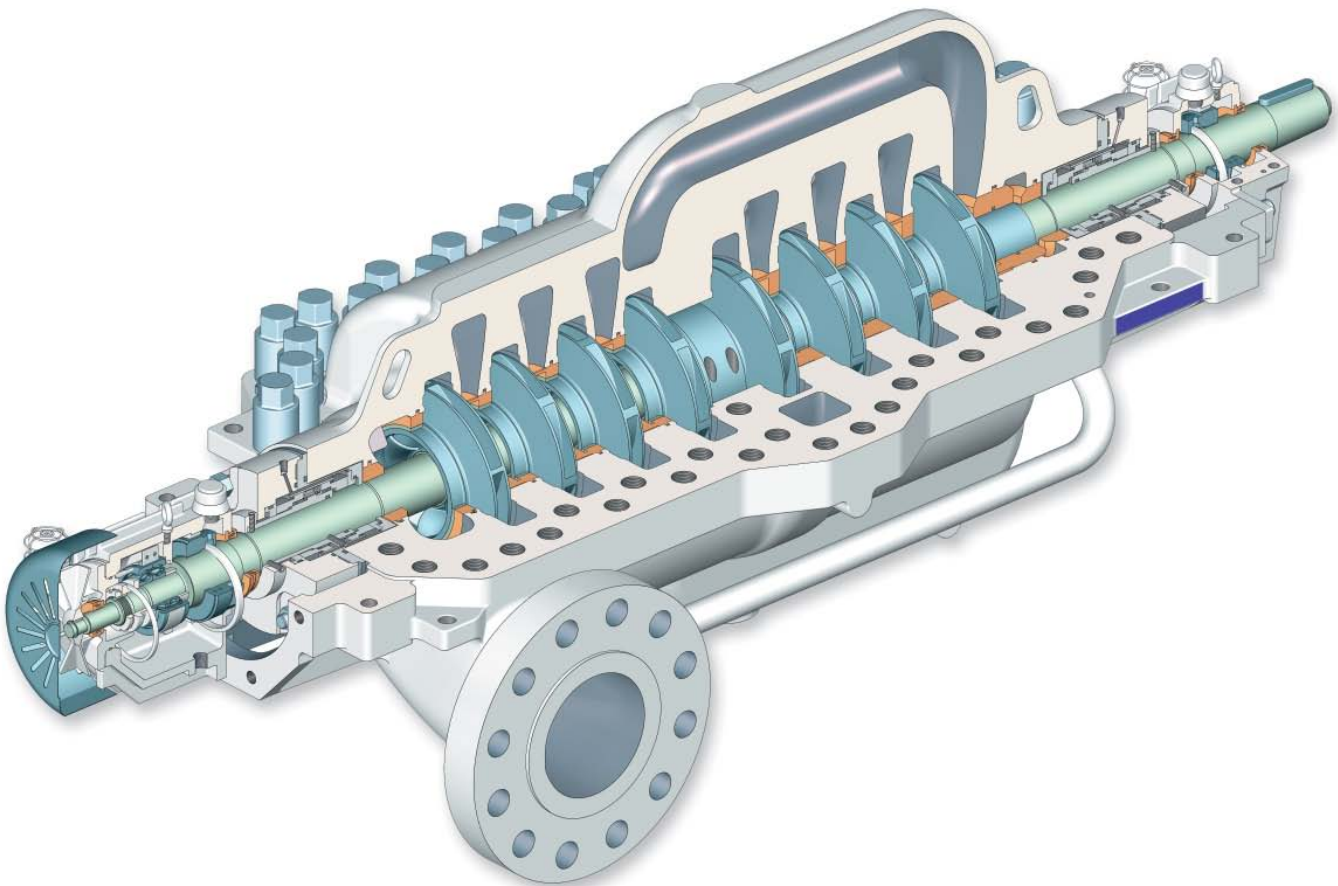


SULZER

Sulzer Pumps

MSD Axially Split Multistage Pump



The Heart of Your Process

motralec

4 rue Lavoisier . ZA Lavoisier . 95223 HERBLAY CEDEX

Tel. : 01.39.97.65.10 / Fax. : 01.39.97.68.48

Demande de prix / e-mail : service-commercial@motralec.com

www.motralec.com

Sulzer Pumps

Sulzer Pumps is a world leader in reliable products and innovative pumping solutions. Our advanced research and development, detailed process and application knowledge together with a comprehensive understanding of market demands keeps us consistently at the leading edge of technical development. Our global network of modern manufacturing and packaging facilities together with sales representatives located close to major markets provide fast responses to customer needs.

Core MSD Manufacturing Centers



Portland, USA

Sulzer Pumps has a long history of providing innovative pumping solutions to business partners in the following industries:

- q .HK @MC & @R
- q 'XCQNB@QANM /QNB
- q /TKO @MC /@ODQ
- q /NVDQ &DMDQ@SHNM
- q &DMDQ@K (MCTRSQX
- q "GDLHB@K /QNBDRR (MCTRSQX
- q 6@SDQ @MC 6@RSDV@SDQ



Leeds, UK

Extensive Applications

Oil and Gas

There are thousands of MSD pumps operating around the world. Onshore or offshore, the MSD is probably the most widely used in the world.

Hydrocarbon Processing

MSDs are found in crude charge, boiler feed and lean amine service and petrochemical plants around the globe. They are often used as power recovery turbines in hydrotreaters to save energy.

Power Generation

The MSD is the most popular safety related auxiliary feedwater condensate extraction and startup combined cycle power plants.

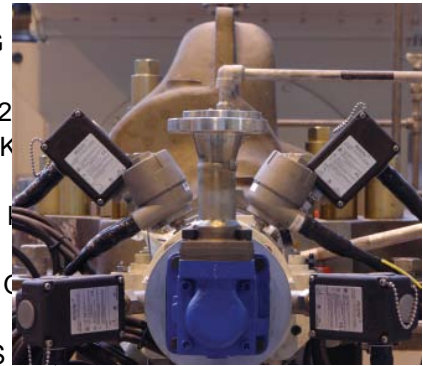
Water and Wastewater

MSD pumps are widely used as high pressure membrane feed pumps in reverse osmosis applications. They are ideal for this application.



MSD Engineered Solutions

(MCTRSQX STQMR SN 2q 4 NVQ LDCORLE @QC G
 innovative pumping solutions set HSX RNKTSHNMR /hr
 apart by outstanding engineering. 42FOL SN 42
 q #HQDBS CQHUR RNKTq SHNFGRIOQVDRSGT QD RNK
 standardized performances at A@Q ORH , 6/
 GY @MC GY @Mq -NM KDTAQHB@SHMF
 motor drive, turbine drive application experience as low
 q 5@QH@AKD RODDC CQ@ED RNKT SHNMR B@C
 including variable frequency RTODQBQHSB@K ".
 CQHUR kTHC BNTOKH MCNRC TBSF SHMLDQD"Q SNS
 and gas turbines °" °% SN °%
 q 'HFG 2ODDC 2NKTSHNMR LNSNQ NQ
 engine with gear, steam turbine
 or gas turbine



MSD pumps can be custom engineered for individual applications

Engineered for Application Flexibility

Our standardized product range
 B@M AD BNMjFTQDC NM
 A@RHR SN L@SBG SGD
 mechanical requirements of the
 most exacting customer applica-
 tion.

Standardized Materials

M@ (BTRS@SHYQHC@K BK@
 q +NV SDLODQ@STQD L@SD
 q 2NTQ RDQUHBD L@SD
 OKH@MBD VHSG - "\$,1
 ,1

q -NM LDS@KKHB VD@Q O@
 \$RDR@Q@UG@KPKDK
 allow operation with reduced
 L@SD@C@K@C@ for low sp.gr.,
 KN@URH@B@R@B@S@X KNV KTA
 NQ

&XVWRP &RQδJXUDWLRQV
 q "NMSQNKKHMFGD GD@C QHRD SN LDDS
 system limits in series and paral-
 lel operation

q "NMSQNKKHMFGD
 DEjBHDMBX SN NOSH
 DEjBHDMBHDR @MC C
 reliability

q 2HMFKD RTBSHNM HI
 GHFG @MC KNV RTBS
 speed characteristics in addition
 to double-suction impellers for
 KNV -/2'

q +NV OQDRRTQD @MC
 intermediate take-off connections
 for secondary process services

q 2HMFKD CT@K OQDF
 dual-unpressurized mechanical
 seals, including dry gas seals to
 SGD K@SDRS (2.
 seal standard

q !@KK !@KK 2KDDUD
 Pivot Shoe bearings as required
 AX SGD RODBHjB@SHNM



06' SXPSV IRU UHδQHUV DSSOLF

06' 'HVLJQ)HDWXUHV DQG %HQHǒWV

Large Case Bore

BBNLLNC@SDR NOSHNM@K
VD@Q O@QSR VHSGNTS LNC

Double Volute Construction

Precision cast hydraulic passage-
ways. Minimum radial thrust for

KDRR RG@ES CDKDBSHNM @MC KDRR AD@Q

Impellers

2GQHMJ jS /QDBHRHNMB@NS #XM@LH-
B@KKX A@K@MBDC (MCHUHCT@KKX RDBTQDC
Optional integral wear ring.

Optional Interstage Bleed-off

Connection
2HMFKD OTLO G@MCKDR LTKSHOKD kNV
streams.

Single Piece Interstage Bushing and Flow Straightener

Tongued registration. Pinned for anti-rotation at split line.

Lower NPSH Performance Available

Double suction impeller option.

Bolting on Top

No need to support a heavy hydraulic torque wrench

Ball/ball Bearings Standard

2S@MC@QC !@KK Q@CH@K #TOKDW !@KK
thrust bearings with ring oil lubrication.

Bearing Assembly

Finned carbon steel bearing hous-

HMFR 'HFG B@O@BHSX E@M NOSHNM@K

1HMF NHK KTAQHB@SHO@A@KK A@KK

NMKX NQ OTQFD LHR STongued Registration. Pinned for anti-rotation at split line.

Optional Sleeve/Ball Bearing Arrangement (shown)

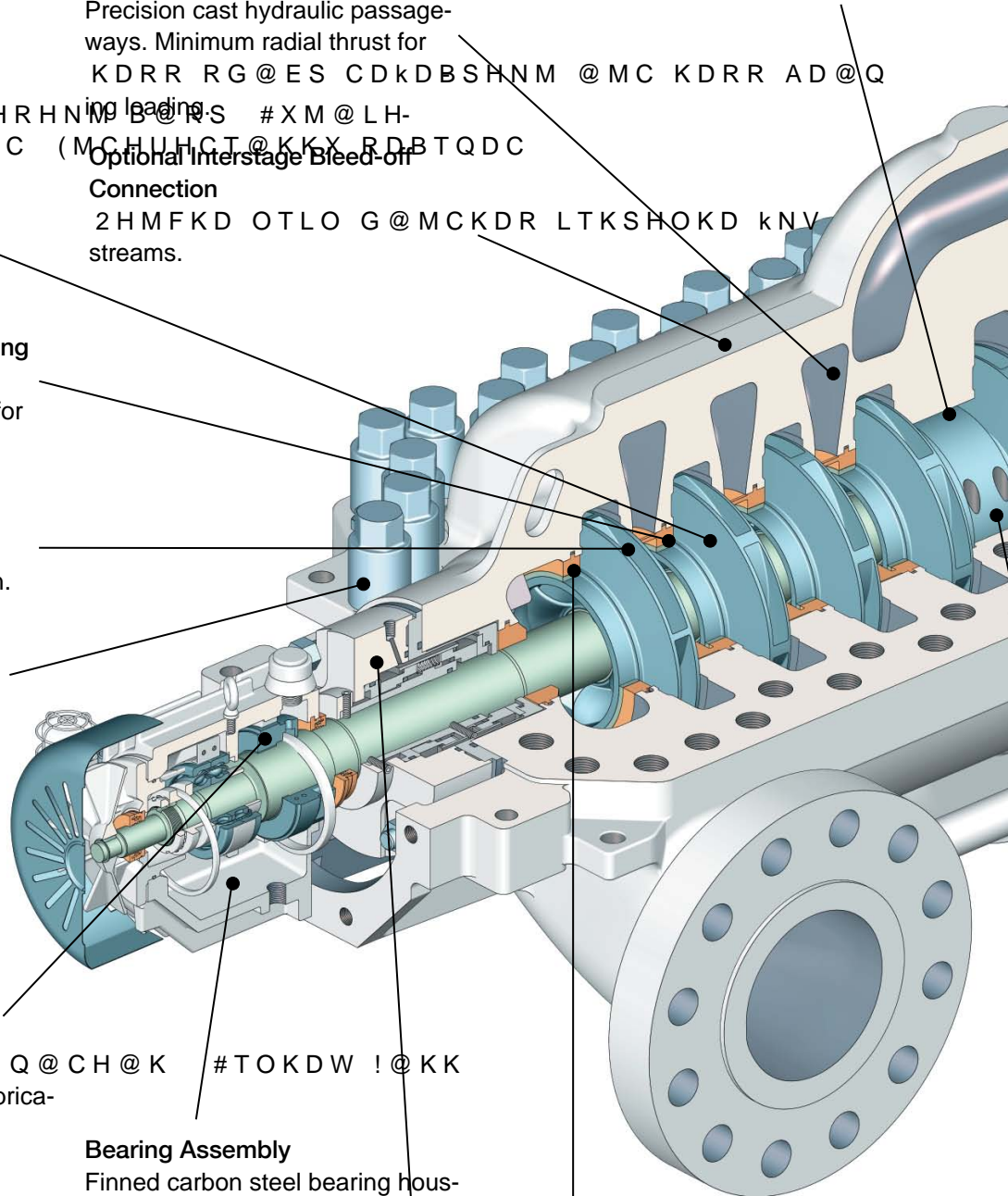
Often preferred by customers and required for higher power levels.

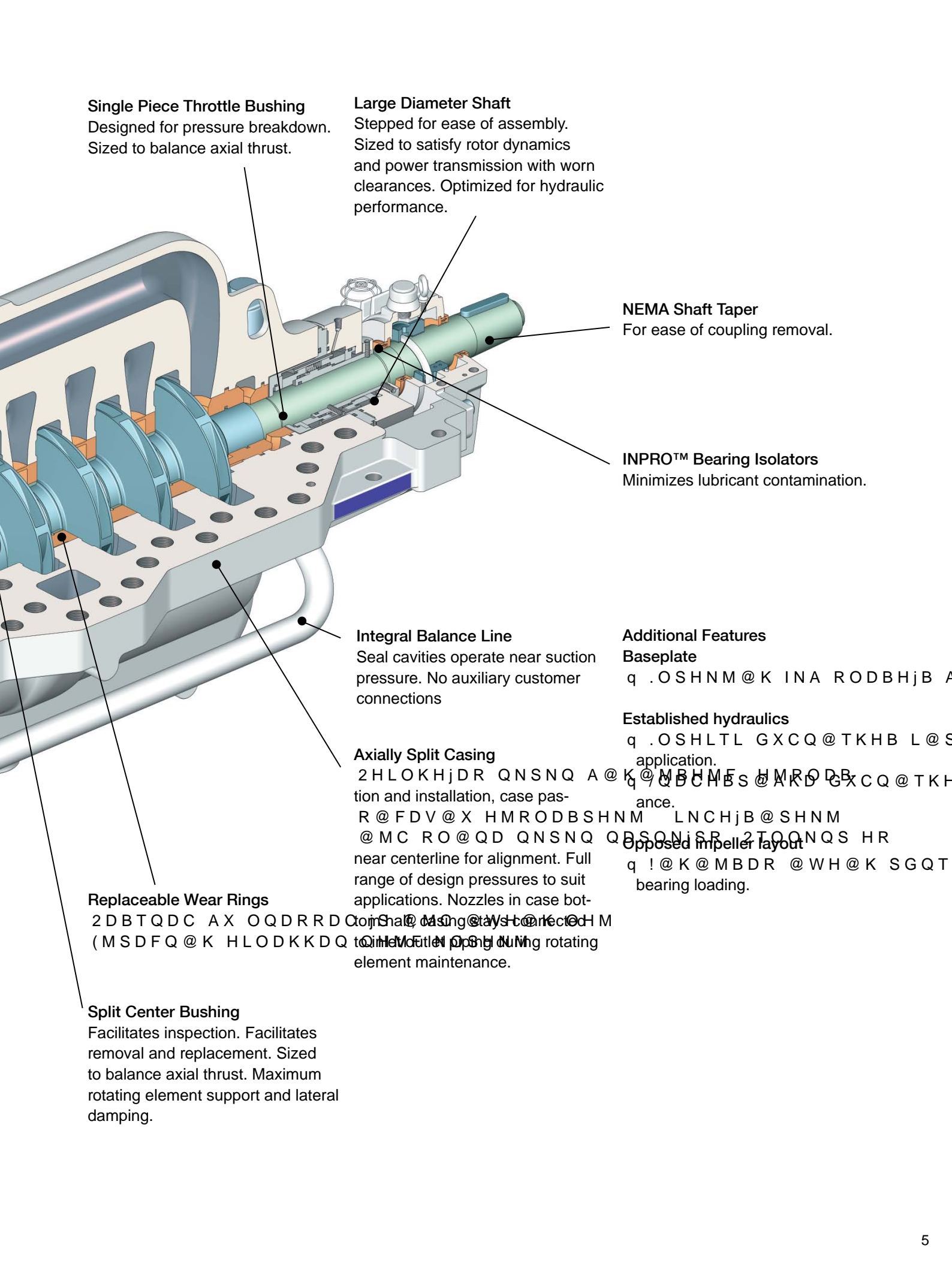
Optional Sleeve/Pivot Shoe Bearing Arrangement

'HFG RODDC GHFG ONVLOKH@MBD VHSG (2. // CHLDM-

Seal Chamber

NDLQKH@MBD VHSG (2. // CHLDM-
sions. Space for tandem and double mechanical
RD@KR \$@RX @BBD RR ENQ L@HMSDM@MBD





Single Piece Throttle Bushing
 Designed for pressure breakdown.
 Sized to balance axial thrust.

Large Diameter Shaft
 Stepped for ease of assembly.
 Sized to satisfy rotor dynamics
 and power transmission with worn
 clearances. Optimized for hydraulic
 performance.

NEMA Shaft Taper
 For ease of coupling removal.

INPRO™ Bearing Isolators
 Minimizes lubricant contamination.

Integral Balance Line
 Seal cavities operate near suction
 pressure. No auxiliary customer
 connections

Additional Features
Baseplate

q . OSHNM @ K INA RO DBHjB A

Established hydraulics

q . OSHLTL GX CQ @ TKHB L @ S
 application.

q / Q B C H B S @ AKD GX CQ @ TKH
 ance.

@ MC RO @ QD QNSNQ Q B S O N j SR 2 TOONQS HR

Opposed impeller layout

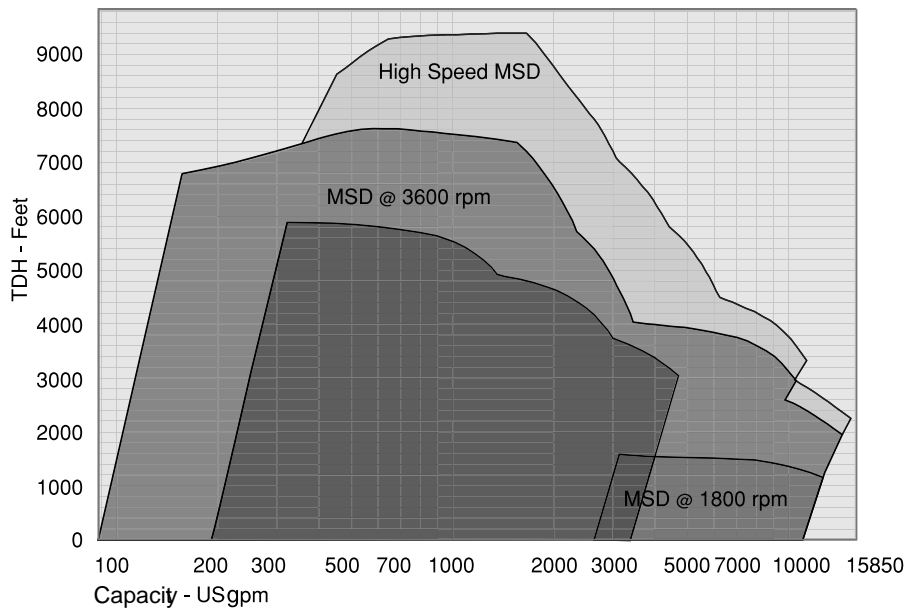
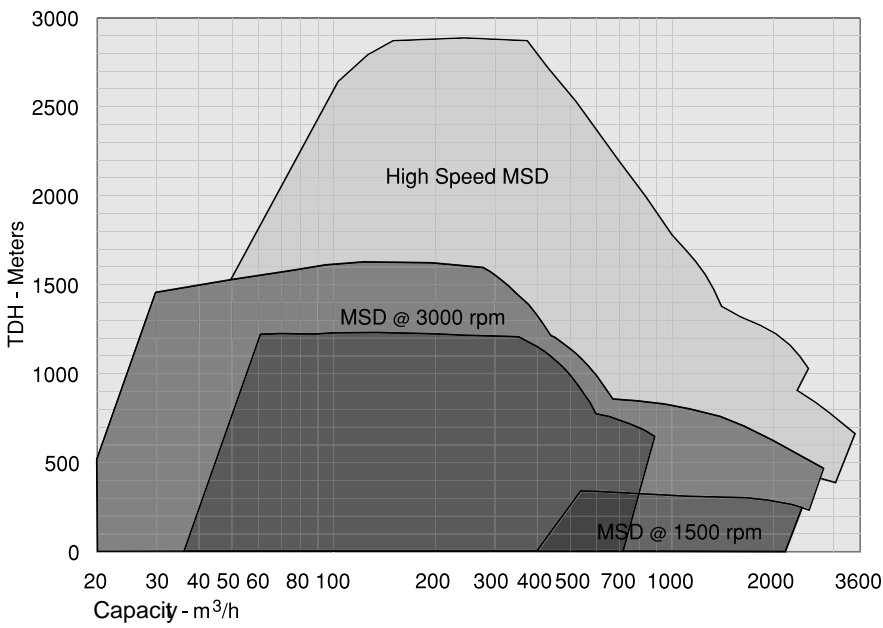
q ! @ K @ M B D R @ W H @ K S G Q T
 bearing loading.

Axially Split Casing
 2 H L O K H j D R Q N S N Q A @ K @ M B H M F H M R O D B
 tion and installation, case pas-
 R @ F D V @ X H M R O D B S H N M L N C H j B @ S H N M
 @ M C R O @ Q D Q N S N Q Q B S O N j SR 2 TOONQS HR
 near centerline for alignment. Full
 range of design pressures to suit
 applications. Nozzles in case bot-
 tom shaft misalignment correct
 O i n e V o l u m e O p e n i n g U n i t
 element maintenance.

Replaceable Wear Rings
 2 D B T Q D C A X O Q D R R D C o j n a l @ M s i n g @ A y s t o r i c t o H M
 (M S D F Q @ K H L O D K K D Q t o i n e V o l u m e O p e n i n g U n i t

Split Center Bushing
 Facilitates inspection. Facilitates
 removal and replacement. Sized
 to balance axial thrust. Maximum
 rotating element support and lateral
 damping.

MSD Performance Range



Operating Data

	50 Hz		60 Hz	
/TLO RHYDR	SN	LL	SN	HMBGDR
" @ O @ BSHDR	TO SN	GL	TO SN	42FOL
' D @ CR	TO SN	L	TO SN	EDDS
/QDRRTQDR	TO SN	A @ Q	TO SN	ORH
3DLODQ @ STQDR	TO SN	!"	TO SN	!%

Maintaining and Improving Pump Performance

Sulzer Pumps –

Customer Support Services

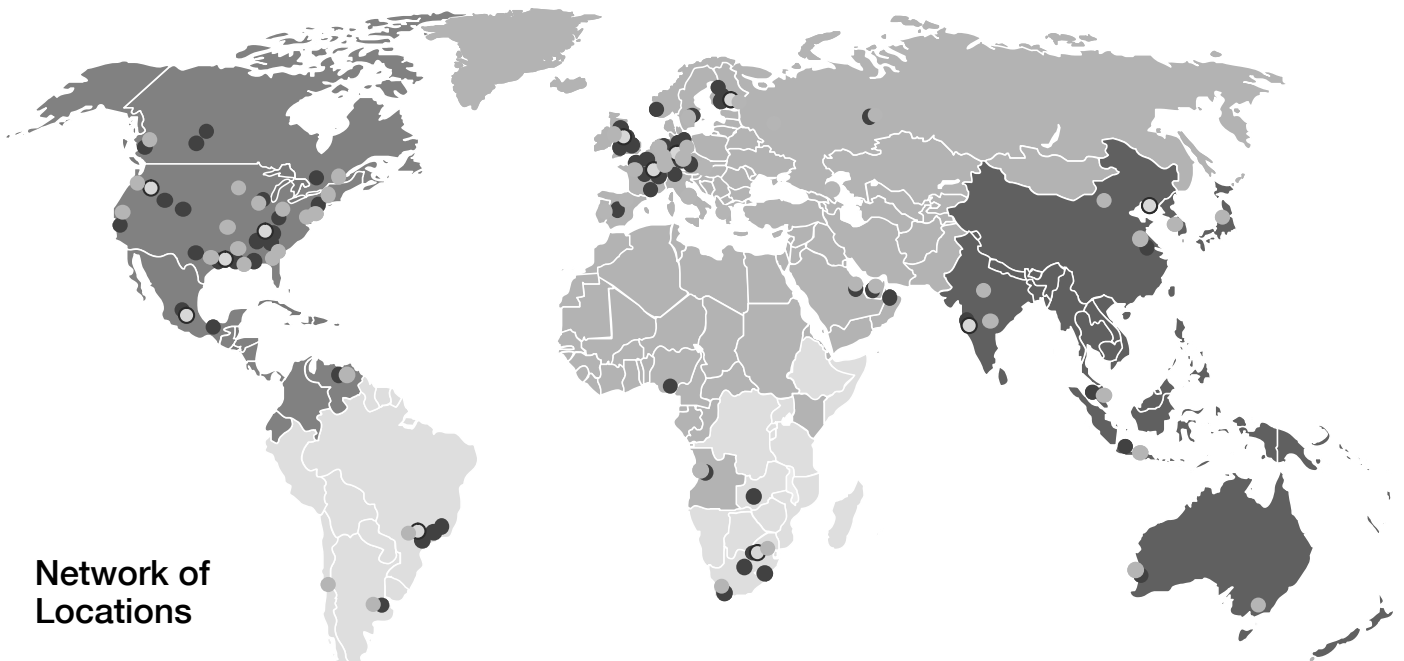
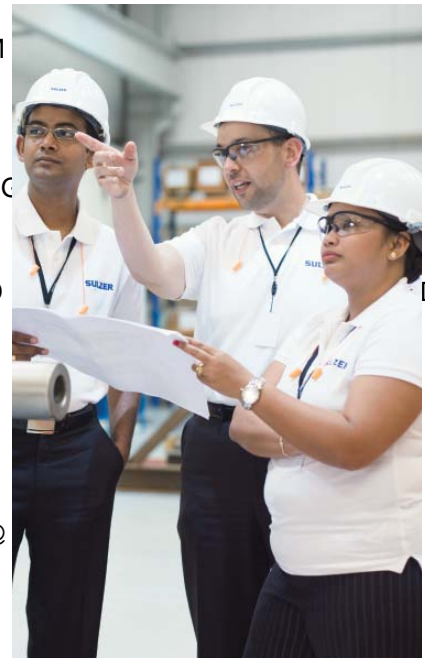
The continuous availability and high operating performance of pumps is the key target for our customer support service organization.

Through our highly experienced personnel and application knowledge, we provide a full range of innovative service solutions to our customers to keep their pumps running including:

- q 2 O @ Q D / @ Q S R
- q % H D K C 2 D Q U H B D R
- q 1 D O @ H Q 2 D Q U H B D R
- q 1 D S Q N j S R
- q , @ H M S D M @ M B D F Q
- q . O D Q @ S H N M F Q D D L D M S R

Flexibility

6 H S G R D Q U H B D R Q @ M
 supplying a spare part to operating the pump under contract, we are uniquely placed to make your O Q N B D R R Q T M R L N N S C
 team of our service specialists based at either our manufacturing E @ B H K H S H D R N Q N M D
 centers located around the world is dedicated to maintaining the performance of our customers' pumps and associated equipment. This service is not just limited to Sulzer products, all the pumps our cus- S N L D Q R N O D Q @ S D B @
 tomers use for Sulzer Pumps.



Network of Locations

○ # H U H R H N M @ K ' D @ C P T @ Q S D Q R

○ Manufacturing Facility

● " T R S N L D Q 2 T O O N Q S 2 D Q U H B D " D M S D Q " 2 2

● 2 @ K D R . E j B D

motralec

4 rue Lavoisier . ZA Lavoisier . 95223 HERBLAY CEDEX
Tel. : 01.39.97.65.10 / Fax. : 01.39.97.68.48
Demande de prix / e-mail : service-commercial@motralec.com
www.motralec.com