

Pioneering for You

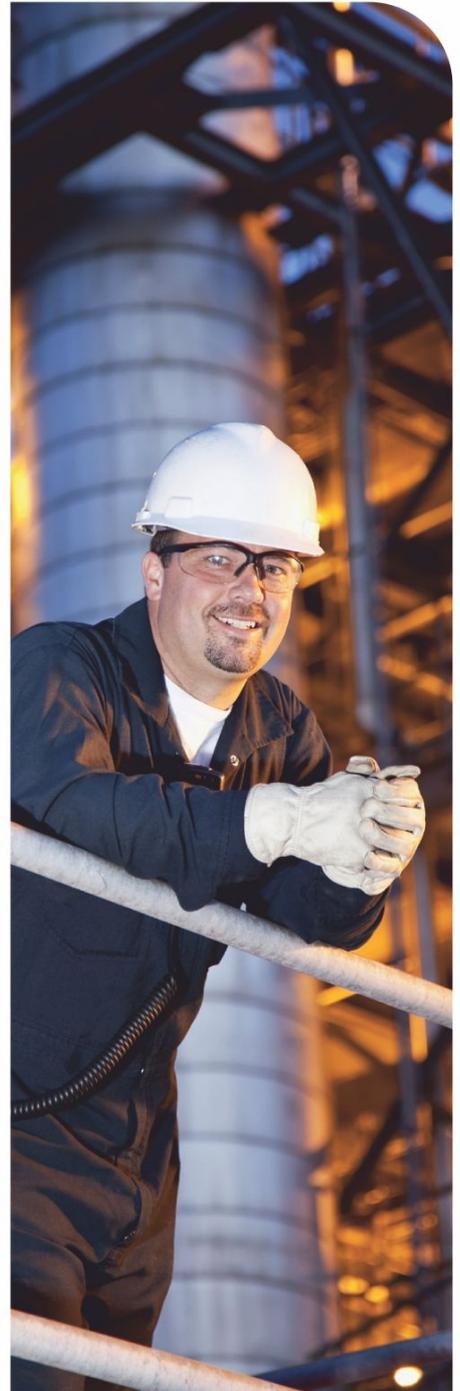
# wilo

Offer No # EPL/OFFER/INVERECO/MCCIL (A)Date :2022-10-06

Project : MMCCIN

Customer : INVERECO

Contractor : INVERECO

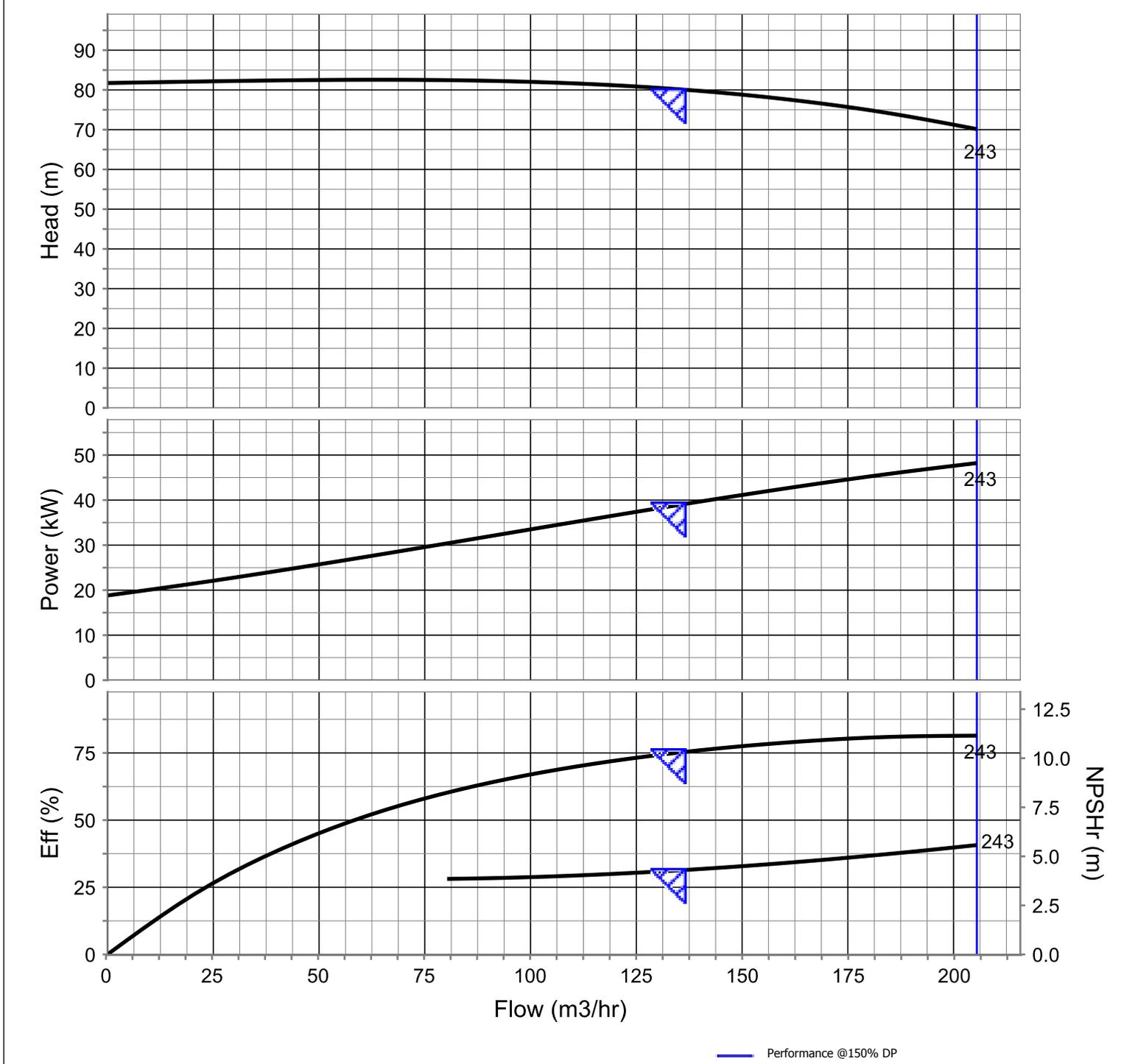


Technical DataSheet

Customer	INVERECO		Consultant	-	
Project	MMCCIN		Application	Fire Fighting	
Pump Model	MISO 80-250		Reference Curve	80-250_50_2_A_R02	
Speed	Frequency	Duty Point :		Suction :	Discharge :
2955 RPM	50 Hz	Q = 137.0 m3/hr	H = 80.0 m	125 mm	80 mm
<b>Customer Details</b>					
Address	-		Tag Number	001	
Enquiry Date	06/10/2022		Reference:	-	
Offer Date	06/10/2022		Offer No	EPL/OFFER/INVERECO/MCCIL	
<b>Operating Conditions</b>					
Capacity	137.0 m3/hr		Fluid	Water	
Head	80.0 m		Specific Gravity *	1	
NPSHA	-		Temperature	-	
Suction Pressure *	1 bar		Viscosity		
System / Pump in System	Standalone / 1		Solid Size *	-	
Total QTY	1		Frequency	50 Hz	
<b>Performance Data @DP</b>					
Efficiency	76.11 %		NPSHR	4.31 m	
Input	39.22 kW		Shut Off Head	82 m	
Max. Power	48.22 kW		Stage	1	
Speed	2955 RPM		Impeller Dia (Approx)	243 mm	
Max allowable soft solid size	4 mm		Pump Performance Std	ISO-9906-Gr2B	
<b>Performance Data @150% of DP</b>					
Flow	205.5 m3/hr		Input	48.22 kW	
Head	70.14 m		NPSH	5.57 m	
<b>Constructional Features</b>			<b>MOC</b>		
Type of Pump	End Suction		<b>Item Description</b>	<b>Specification</b>	
Mounting	Horizontal		CASING	C.I. (IS:210 Gr FG260)	
Impeller Type	Closed		IMPELLER	LTB2 (IS:318, Gr LTB2)	
Bearing (DE/NDE)	-		NECK RING	LTB5 (IS:318, Gr LTB5)	
Bearing Lubrication	Grease		SHAFT	SS ASTM A 276 CL 410	
Rotation (from coupling End)	CW		SHAFT SLEEVE	SS ASTM A 276 CL 410	
Recommended Power (Pole)	55.0 kW (2)				
Shaft Sealing	Gland				
Flange Type	ANSI B16.1 CLASS 125 FF				
<p>Notes :</p> <ol style="list-style-type: none"> <li>1.Suction Pressure more than Vapour Pressure of fluid.</li> <li>2.NPSHA&gt;NPSHR by atleast 0.5m</li> <li>3.NPSHR at impleller CenterLine / Inlet.</li> <li>4.Fluid is not aggressive towards pump components chemically / physically.</li> <li>5. * Customer to confirm.</li> </ol>					
<p>Technical matter is subjected to change without prior notice due to intensive Research &amp; Development activities</p>					
T.54, II Floor, III Avenue, Anna Nagar, Chennai - 600040					

Performance Chart

Customer	INVERECO			Liquid	Water	
Consultant	-			Specific Gravity	1	
Project	MMCCIN					
Application	Fire Fighting					
Speed	Frequency	Pump Model <b>MISO 80-250</b>			Solid Size	4 mm
<b>2955 RPM</b>	<b>50 Hz</b>	Flow	<b>137.0 m3/hr</b>	Head	<b>80.0 m</b>	Stage <b>1</b>



Input	39.22 kW	NPSHA	-	Size	Pump Nozzle	Recommended
PrimeMover Power	55.0 kW	NPSHR	4.31 m	Suction (mm)	125	200
Eff	76.11 %	Shut Off Head	82 m	Discharge (mm)	80	100

Tag Number	001	Offer No	EPL/OFFER/INVERECO/M CCIL	Prepared By/Checked By	BCB Reddy
				Date	06/10/2022

**Note :** 1.Pump Performance with ISO-9906-Gr2B 2. NPSHa should be at least 0.5 m higher than NPSHr

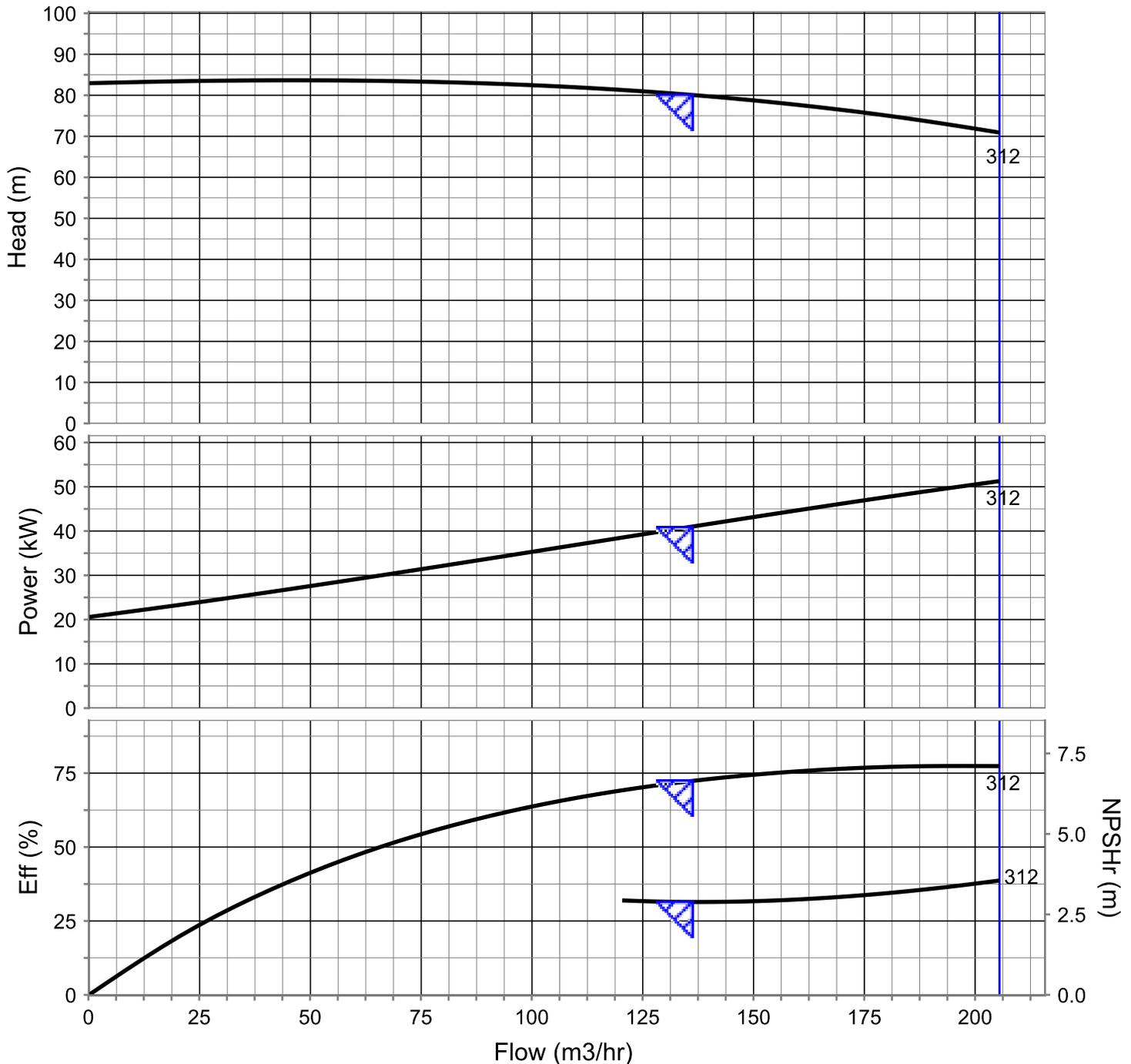


Technical DataSheet

Customer	INVERECO		Consultant	-	
Project	MMCCIN		Application	Fire Fighting	
Pump Model	MISO 100-315H		Reference Curve	100-315H_50_2A_R01	
Speed	Frequency	Duty Point :		Suction :	Discharge :
2300 RPM	50 Hz	Q = 137.0 m3/hr	H = 80.0 m	125 mm	100 mm
<b>Customer Details</b>					
Address	-		Tag Number	002	
Enquiry Date	06/10/2022		Reference:	-	
Offer Date	06/10/2022		Offer No	EPL/OFFER/INVERECO/MCCIL	
<b>Operating Conditions</b>					
Capacity	137.0 m3/hr		Fluid	Water	
Head	80.0 m		Specific Gravity *	1	
NPSHA	-		Temperature	-	
Suction Pressure *	1 bar		Viscosity		
System / Pump in System	Standalone / 1		Solid Size *	-	
Total QTY	1		Frequency	50 Hz	
<b>Performance Data @DP</b>					
Efficiency	72.55 %		NPSHR	2.89 m	
Input	41.14 kW		Shut Off Head	83 m	
Max. Power	51.28 kW		Stage	1	
Speed	2300 RPM		Impeller Dia (Approx)	312 mm	
Max allowable soft solid size	5.5 mm		Pump Performance Std	ISO-9906-Gr2B	
<b>Performance Data @150% of DP</b>					
Flow	205.5 m3/hr		Input	51.28 kW	
Head	70.91 m		NPSH	3.55 m	
<b>Constructional Features</b>			<b>MOC</b>		
Type of Pump	End Suction		<b>Item Description</b>	<b>Specification</b>	
Mounting	Horizontal		CASING	C.I. (IS:210 Gr FG260)	
Impeller Type	Closed		IMPELLER	LTB2 (IS:318, Gr LTB2)	
Bearing (DE/NDE)	3310 DRAC / 6310		NECK RING	LTB5 (IS:318, Gr LTB5)	
Bearing Lubrication	Oil		SHAFT	SS ASTM A 276 CL 410	
Rotation (from coupling End)	CW		SHAFT SLEEVE	SS ASTM A 276 CL 410	
Recommended Power (Pole)	-				
Shaft Sealing	Gland				
Flange Type	ANSI B16.1 CLASS 125 FF				
<p>Notes :</p> <ol style="list-style-type: none"> <li>1.Suction Pressure more than Vapour Pressure of fluid.</li> <li>2.NPSHA&gt;NPSHR by atleast 0.5m</li> <li>3.NPSHR at impleller CenterLine / Inlet.</li> <li>4.Fluid is not aggressive towards pump components chemically / physically.</li> <li>5. * Customer to confirm.</li> </ol>					
<p>Technical matter is subjected to change without prior notice due to intensive Research &amp; Development activities</p>					
T.54, II Floor, III Avenue, Anna Nagar, Chennai - 600040					

Performance Chart

Customer	INVERECO			Liquid	Water	
Consultant	-			Specific Gravity	1	
Project	MMCCIN					
Application	Fire Fighting					
Speed	Frequency	Pump Model <b>MISO 100-315H</b>		Solid Size	5.5 mm	
<b>2300 RPM</b>	<b>50 Hz</b>	Flow	<b>137.0 m3/hr</b>	Head	<b>80.0 m</b>	Stage <b>1</b>



— Performance @150% DP

Input	41.14 kW	NPSHA	-	Size	Pump Nozzle	Recommended
PrimeMover Power	-	NPSHR	2.89 m	Suction (mm)	125	200
Eff	72.55 %	Shut Off Head	83 m	Discharge (mm)	100	100

Tag Number	002	Offer No	EPL/OFFER/INVERECO/M CCIL	Prepared By/Checked By	BCB Reddy
				Date	06/10/2022

**Note :** 1.Pump Performance with ISO-9906-Gr2B 2. NPSHa should be at least 0.5 m higher than NPSHr

**Customer**

# Technical data

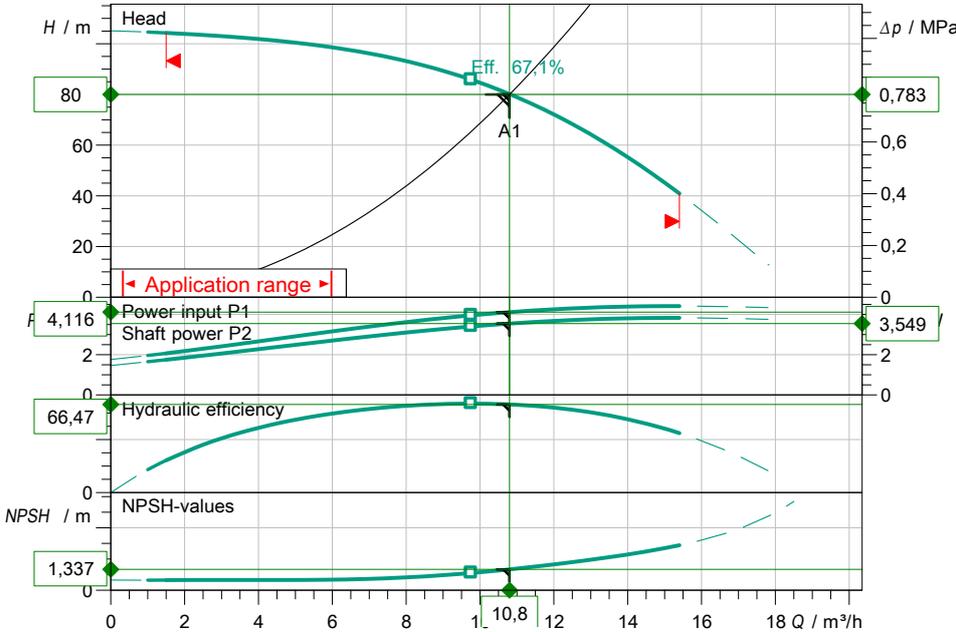
## High-pressure multistage centrifugal pump Helix FIRST V 1010-5/25/E/S/400-50

Project name: Untitled project 2022

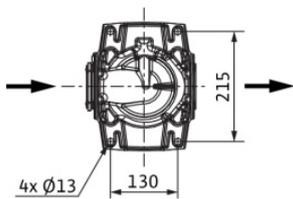
Project ID  
Installation location  
Customer pos.no

Date: 22.10.2022

### Duty chart



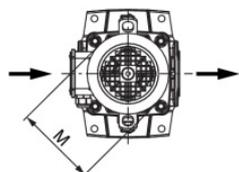
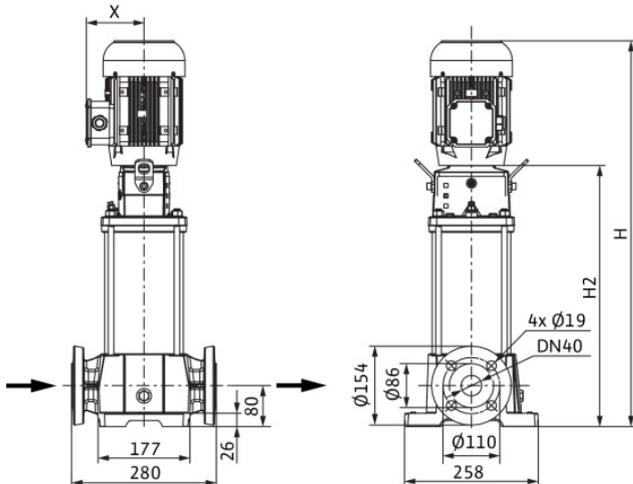
ISO 9906: 2012 3B



### Dimensions

H	992
H2	686
ØM	196
X	164

mm



### Requested data

Flow	10,80 m³/h
Head	80,00 m
Media	Water 100 %
Fluid temperature	10,00 °C
Density	998,30 kg/m³
Kin. viscosity	1,00 mm²/s

### Hydraulic data (Duty point)

Flow	10,80 m³/h
Head	80,00 m
Shaft power P2	3,55 kW
Hydraulic efficiency	66,47 %
NPSH	1,34 m

### Product data

High-pressure multistage centrifugal pump Helix FIRST V 1010-5/25/E/S/400-50	
Max. operating pressure	1,6 MPa
Inlet pressure max.	10 bar
Fluid temperature	-20 °C ... +120 °C
Max. ambient temperature	50 °C
Minimum efficiency index (MEI)	≥ 0.7

### Motordata per Motor/Pump

Motor efficiency level	IE3
Mains connection	3~ 400 V / 50 Hz
Permitted voltage tolerance	+ -10 %
Max. speed	2900 1/min
Rated power P2	4,00 kW
Rated current	7,40 A
Power factor	0,87
Efficiency	50% / 75% / 100% 86,5/88/88,1%
Degree of protection	IP55
Insulation class	F
Motor protection	no

### Fitting dimensions

Pipe connection on the suction side	DN 40, PN 25
Pipe connection on the pressure side	DN 40, PN 25

### Materials

Pump housing	5.1301/EN-GJL-250
Impeller	1.4307
Shaft	1.4301
Shaft seal	BQ7EGG
Gasket material	EPDM

### Information for order placements

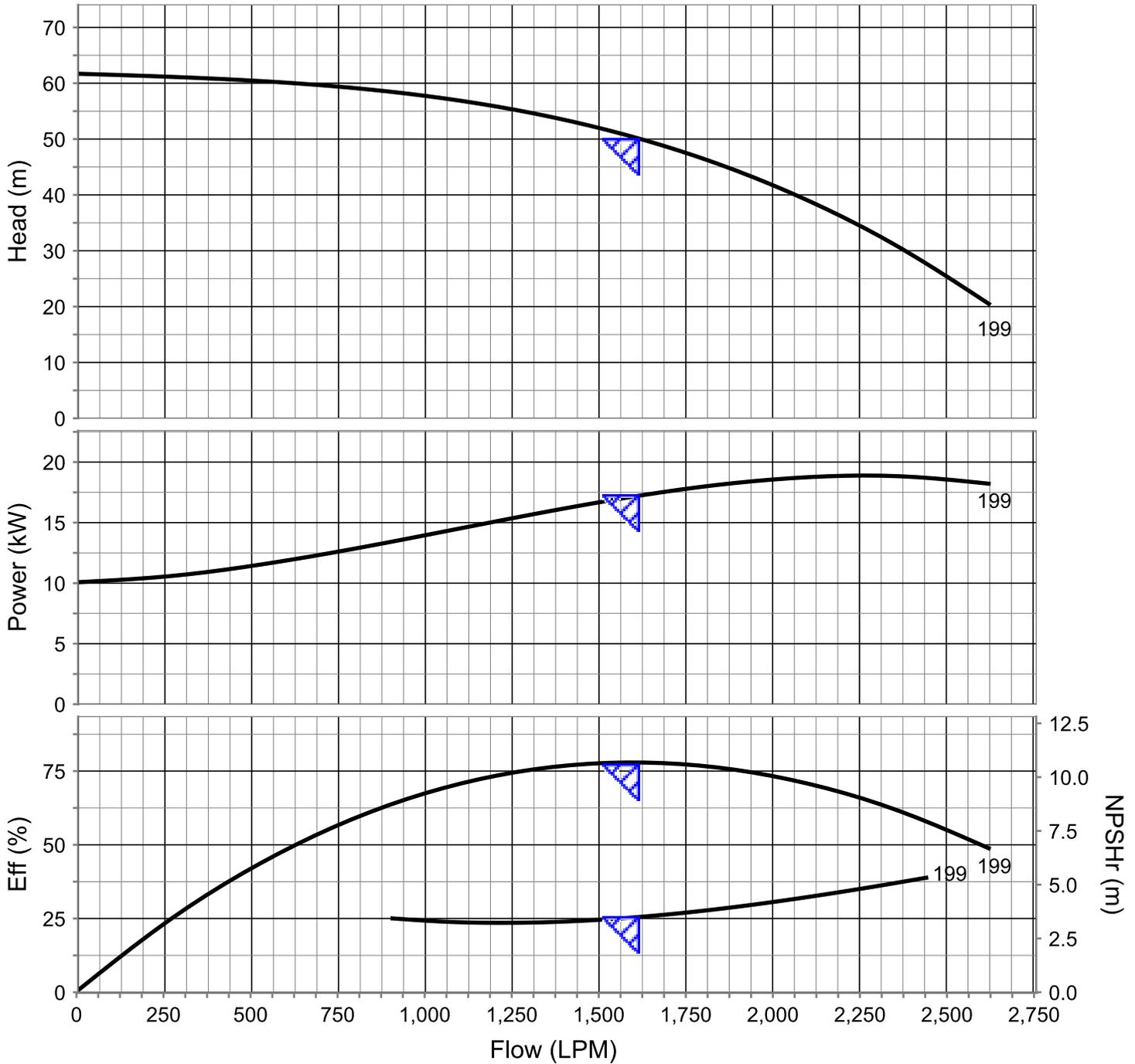
Weight approx.	60 kg
Item number	4200962

Technical DataSheet

Customer	INVERECO		Consultant	-	
Project	MMCCIN		Application	-	
Pump Model	MISO 65-200		Reference Curve	ET ISO-15-50-2-C-R01	
Speed	Frequency	Duty Point :		Suction :	Discharge :
2950 RPM	50 Hz	Q = 1620.0 LPM	H = 50.0 m	100 mm	65 mm
<b>Customer Details</b>					
Address	-		Tag Number	004	
Enquiry Date	06/10/2022		Reference:	-	
Offer Date	06/10/2022		Offer No	EPL/OFFER/INVERECO/MCCIL	
<b>Operating Conditions</b>					
Capacity	1620.0 LPM		Fluid	Water	
Head	50.0 m		Specific Gravity *	1	
NPSHA	-		Temperature	-	
Suction Pressure *	1 bar		Viscosity		
System / Pump in System	Standalone / 1		Solid Size *	-	
Total QTY	1		Frequency	50 Hz	
<b>Performance Data @DP</b>					
Efficiency	76.75 %		NPSHR	3.5 m	
Input	17.24 kW		Shut Off Head	62 m	
Max. Power	18.88 kW		Stage	1	
Speed	2950 RPM		Impeller Dia (Approx)	199 mm	
Max allowable soft solid size	6 mm		Pump Performance Std	ISO-9906-Gr2B	
<b>Constructional Features</b>			<b>MOC</b>		
Type of Pump	End Suction	<b>Item Description</b>	<b>Specification</b>		
Mounting	Horizontal	CASING	C.I. (IS:210 Gr FG260)		
Impeller Type	Closed	IMPELLER	LTB2 (IS:318, Gr LTB2)		
Bearing (DE/NDE)	-	NECK RING	LTB5 (IS:318, Gr LTB5)		
Bearing Lubrication	Grease	SHAFT	SS ASTM A 276 CL 410		
Rotation (from coupling End)	CW	SHAFT SLEEVE	SS ASTM A 276 CL 410		
Recommended Power (Pole)	30.0 kW (2)				
Shaft Sealing	Gland				
Flange Type	ANSI B16.1 CLASS 125 FF				
Notes : 1.Suction Pressure more than Vapour Pressure of fluid. 2.NPSHA>NPSHR by atleast 0.5m 3.NPSHR at impeller CenterLine / Inlet. 4.Fluid is not aggressive towards pump components chemically / physically. 5. * Customer to confirm.					
Technical matter is subjected to change without prior notice due to intensive Research & Development activities					
T.54, II Floor, III Avenue, Anna Nagar, Chennai - 600040					

Performance Chart

Customer	INVERECO				Liquid	Water	
Consultant	-				Specific Gravity	1	
Project	MMCCIN						
Application	-						
Speed	Frequency	Pump Model <b>MISO 65-200</b>			Solid Size	6	mm
<b>2950 RPM</b>	<b>50 Hz</b>	Flow	<b>1620.0 LPM</b>	Head	<b>50.0 m</b>	Stage	<b>1</b>



Input	17.24 kW	NPSHA	-	Size	Pump Nozzle	Recommended
PrimeMover Power	30.0 kW	NPSHR	3.5 m	Suction (mm)	100	150
Eff	76.75 %	Shut Off Head	62 m	Discharge (mm)	65	100

Tag Number	004	Offer No	EPL/OFFER/INVERECO/M CCIL	Prepared By/Checked By	BCB Reddy
				Date	06/10/2022

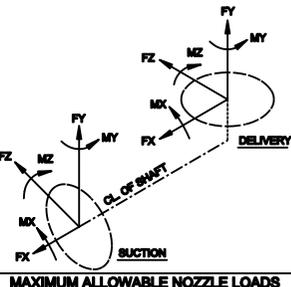
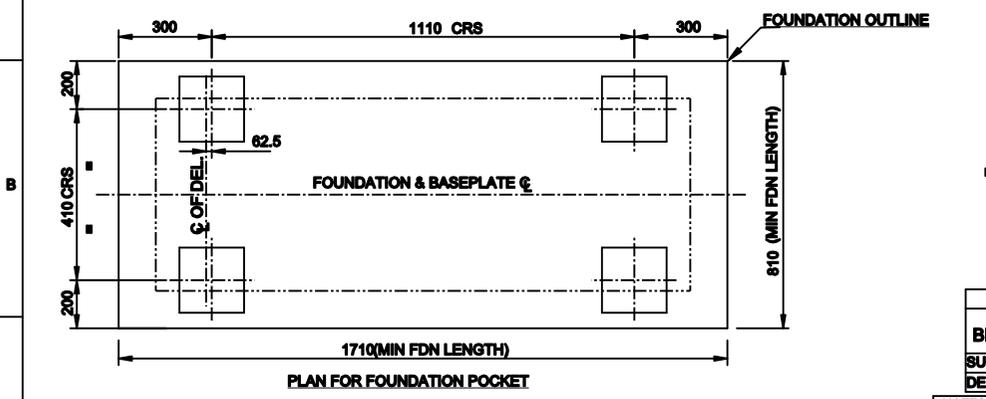
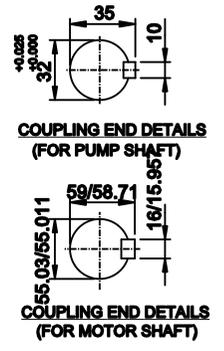
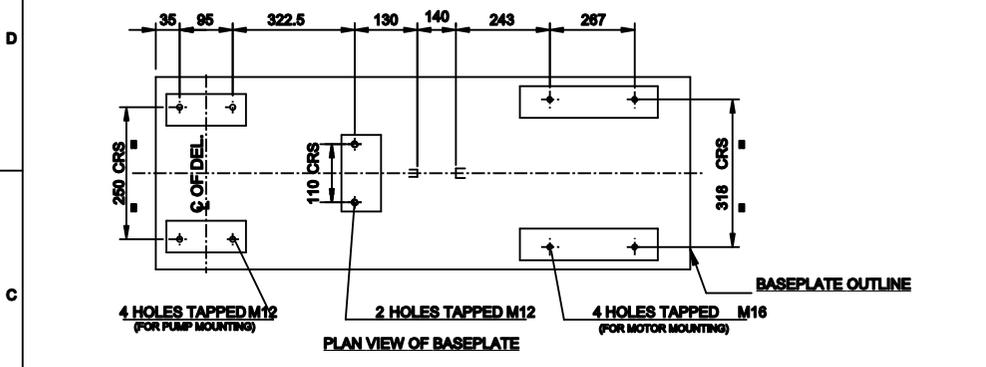
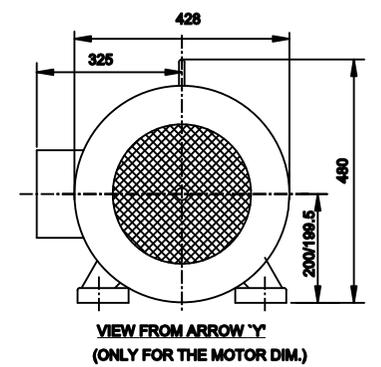
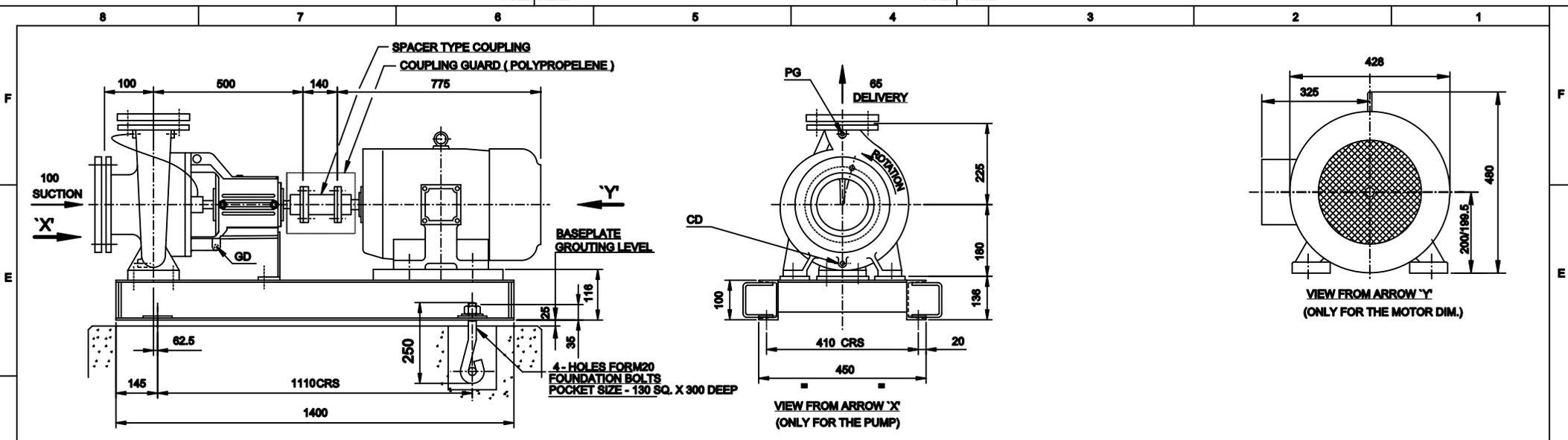
**Note :** 1.Pump Performance with ISO-9906-Gr2B 2. NPSHa should be at least 0.5 m higher than NPSHr

DO NOT SCALE. WORK TO DIMENSIONS. DEBURR AND REMOVE SHARP EDGES. DIMENSIONS IN MM. EXCEPT WHERE OTHERWISE STATED.

FIRST ANGLE PROJECTION

IF IN DOUBT, ASK I

THIS DRG. MUST NOT BE COPIED WITHOUT WRITTEN PERMISSION AND THE CONTENTS THERE OF MUST NOT BE IMPARTED TO A THIRD PARTY NOR BE USED FOR ANY UNAUTHORIZED PURPOSES. CONTRAVENTION WILL BE PROSECUTED



BRANCH	FORCES (N)			MOMENTS (N-m)		
	Fx	Fy	Fz	Mx	My	Mz
SUCTION -100	1780	1420	1160	1330	960	1000
DELIVERY-65	980	1130	710	990	435	530

FLANGE DETAILS AS PER : ANSI B16.1 CLASS 125 FF								
BRANCH	O.D.	P.C.D.	NO. & SIZE OF HOLES OFF CLS	THK	R.F. FLANGE		COMP. FLANGE	
					R.F.DIA	R.F.THK	I/DIA	THK
SUCTION -100	229	191	8-DIA 19	24	-	-	116	24
DELIVERY-65	178	140	4-M16	22	-	-	75	22

PUMP DUTY PARAMETERS	
CAPACITY	1620 LPM
NET.GEN.HEAD	50 m
SHUT OFF HEAD	61.7 m
NPSH(r)	3.5 m
EFFICIENCY	76.75 %
KW ABSORBED	17.24 (kW)
MOTOR DETAILS	
MAKE	CGL or equivalent
TYPE	Motor
RATING	30.0 (kW)
POLES	2
FRAME SIZE	200L
FULL LOAD SPEED	2960.0 (RPM)
COUPLING DETAILS	
MAKE	Rathi
TYPE & SIZE	Jaw-FlexRRS-190-140

QUOTATION/ORDER NO. EPL/OFFER/INVERECO/MCCIL			
PROJECT DATA			
CLIENT	INVERECO		
CONSULTANT			
END USER			
PROJECT	MMCCIN		
CONTRACTOR	INVERECO		
SUPPLIED BY			
TAG.NO.	004		
APPLICATION	None		
QUANTITY	1		

PG	PR GAUGE FOR DELY	3/8" BSP	1
CD	CASING DRAIN	1/2" BSP	1
GD	GLAND DRAIN	1/2" BSP	1

ITEM	CONNECTIONS DETAILS	SIZE	QTY
APPROX WEIGHT IN Kg			
SCOPE OF SUPPLY			
GD <sup>1</sup> (Kg.m <sup>2</sup> )			
BARE PUMP	58	Yes	0.148
MOTOR	252	Yes	
COUPLING	18	Yes	0.088
BASE PLATE	52	Yes	
COMPANION FLANGES	6	Yes	
DYNAMIC LOAD	494		
DYNAMIC LOAD PER FOUNDATION BOLT	124		
TOTAL WT. ( STATIC LOAD )	380		

BARE PUMP	58	Yes	0.148
MOTOR	252	Yes	
COUPLING	18	Yes	0.088
BASE PLATE	52	Yes	
COMPANION FLANGES	6	Yes	
DYNAMIC LOAD	494		
DYNAMIC LOAD PER FOUNDATION BOLT	124		
TOTAL WT. ( STATIC LOAD )	380		

T.54, II Floor, III Avenue, Anna Nagar, Chennai - 600040

**GENERAL ARRANGEMENT**  
MISO 65-200 30.0 -kw 2-Pole



NOTES :  
1 ALL CONNECTIONS ARE PLUGGED EXCEPT GD  
2 BRG : ANTI-FRICTION, LUBRICATION : GREASE  
3 DIRECTION OF ROTATION- CW ( From Drive End )

DRAWN BY RMM 06/10/2022  
CHECKED BY AK 06/10/2022  
APPROVED BY EPL/OFFER/INVERECO/MCCIL/004

SCALE- NTS		SHEET- DIN A3		REV.
DRAWING No.				
				00

*wilo*

Pioneering for You