

Pioneering for You

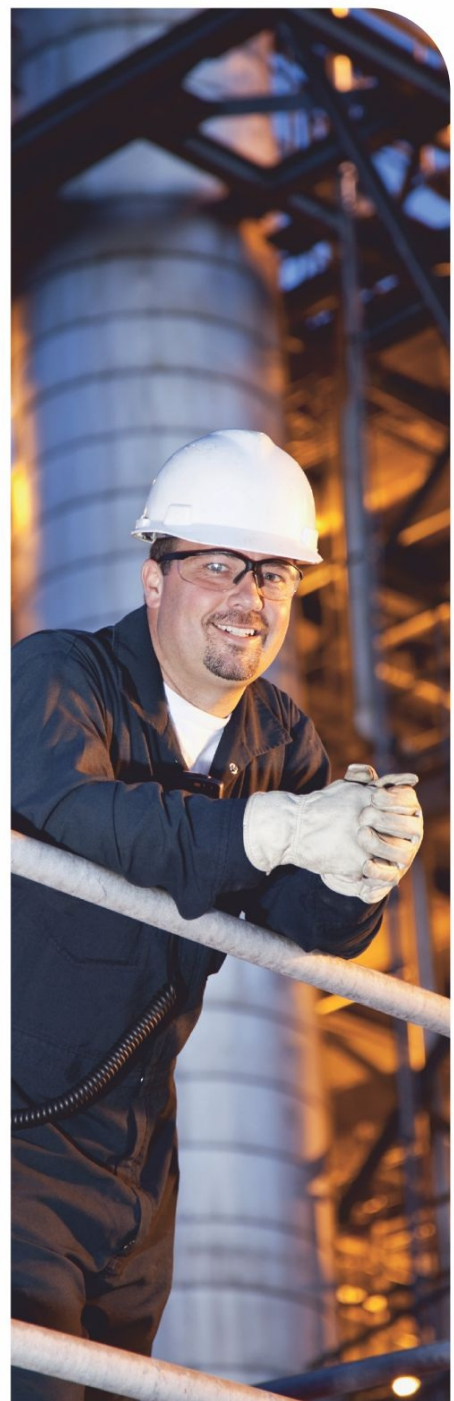
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Offer No # EPL/OFFER/INVERECO/MCCIL (A) Date :2022-10-06

Project : MMCCIN

Customer : INVERECO

Contractor : INVERECO

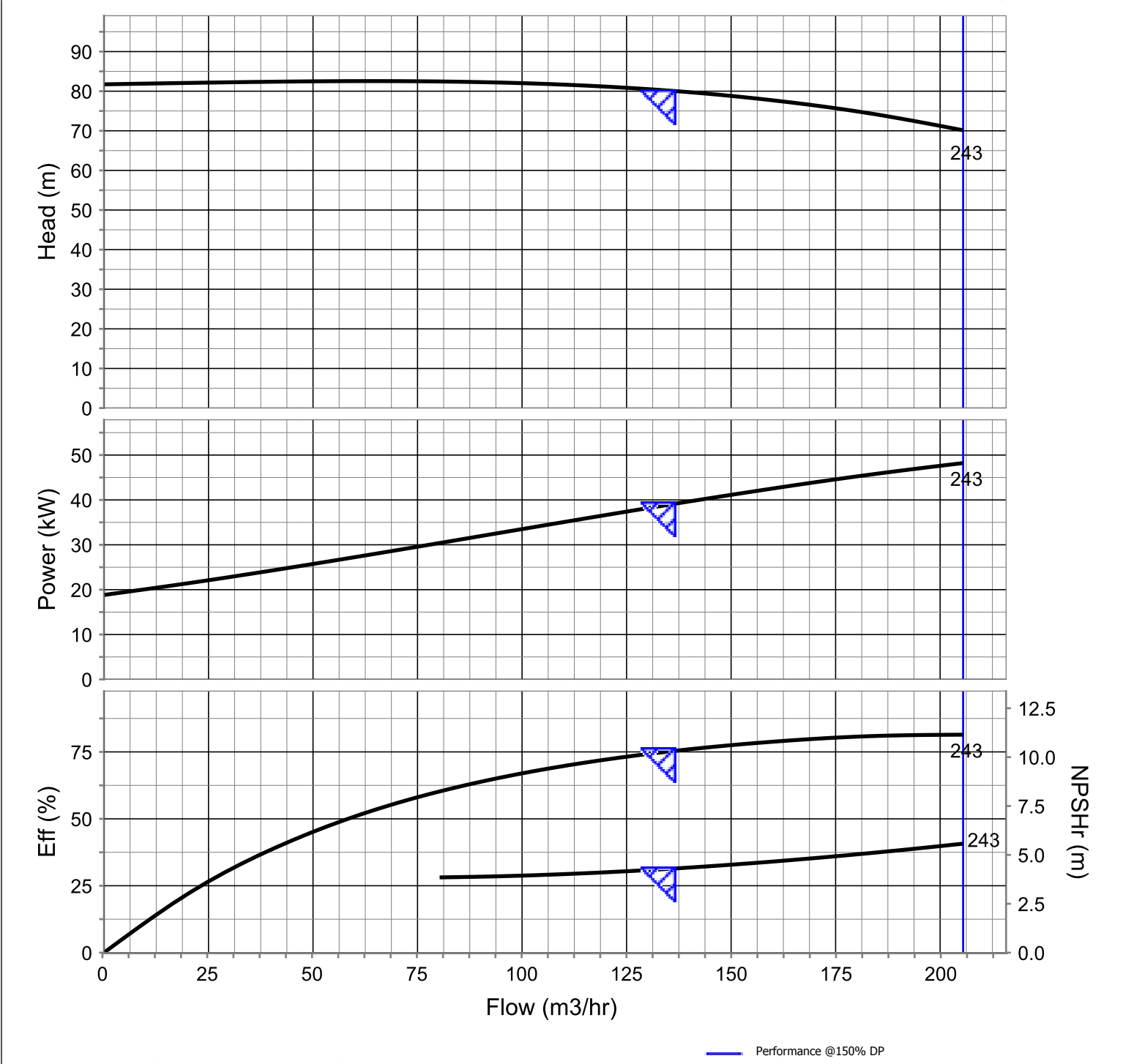


## Technical DataSheet

Customer	INVERECO		Consultant	-	
Project	MMCCIN		Application	Fire Fighting	
Pump Model	MISO 80-250		Reference Curve	80-250_50_2_A_R02	
Speed 2955 RPM	Frequency 50 Hz	Duty Point : Q = 137.0 m3/hr      H = 80.0 m	Suction : 125 mm	Discharge : 80 mm	
Customer Details					
Address	-		Tag Number	001	
Enquiry Date	06/10/2022		Reference:	-	
Offer Date	06/10/2022		Offer No	EPL/OFFER/INVERECO/MCCIL	
Operating Conditions					
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	
Performance Data @DP					
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	
Performance Data @150% of DP					
Flow	205.5 m3/hr		Input	48.22 kW	
Head	70.14 m		NPSH	5.57 m	
Constructional Features			MOC		
Type of Pump	End Suction	Item Description	Specification		
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				
Notes :					
1.Suction Pressure more than Vapour Pressure of fluid.					
2.NPSHA>NPSHR by atleast 0.5m					
3.NPSHR at impleller 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	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

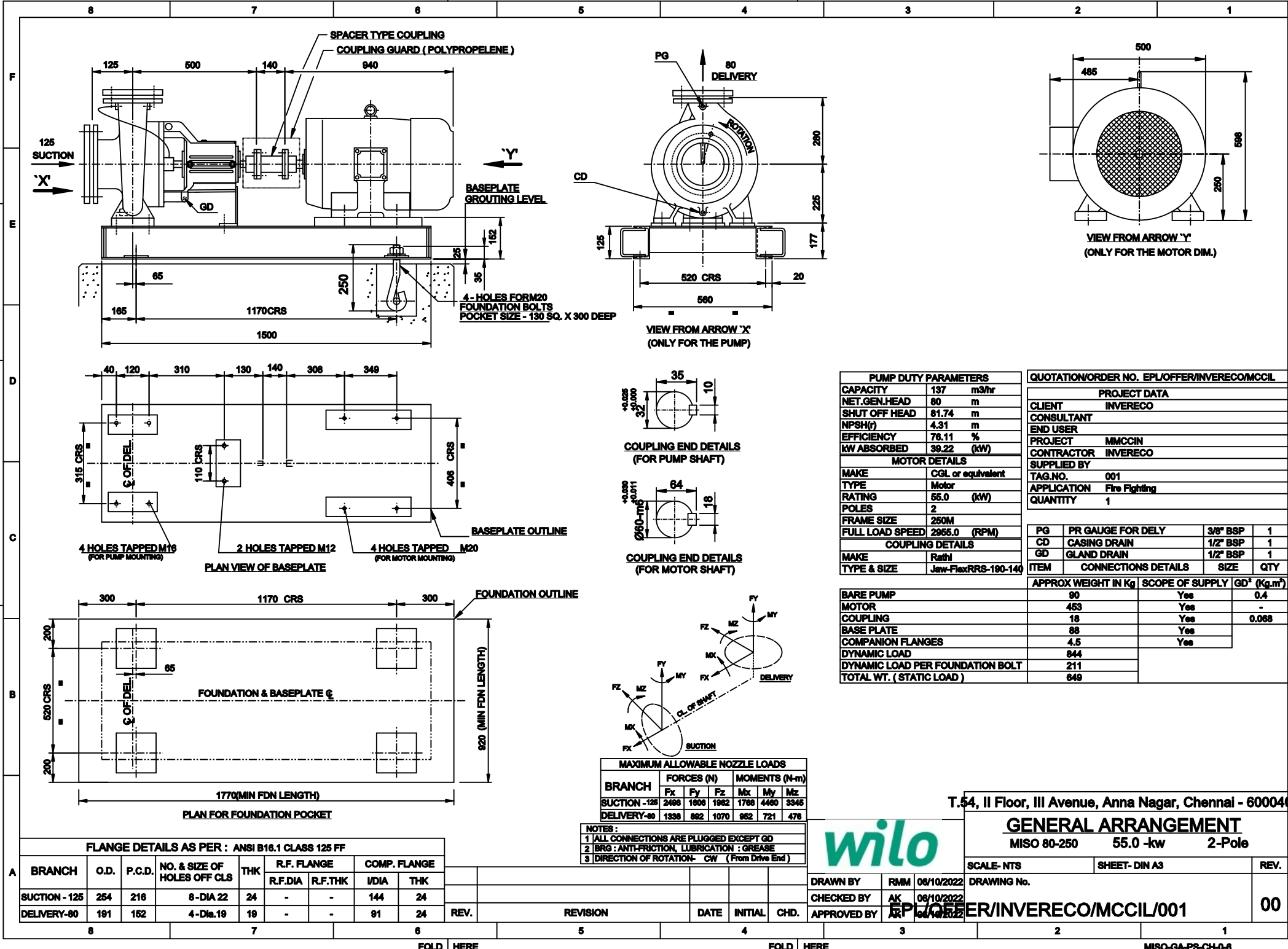
Technical matter is subjected to change without prior notice due to intensive Research & Development activities Reference: 80-250\_50\_2\_A\_R02

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DIMENSIONS IN MM. EXCEPT WHERE  
OTHERWISE STATED.



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MISO-GA-PS-CH-0-6

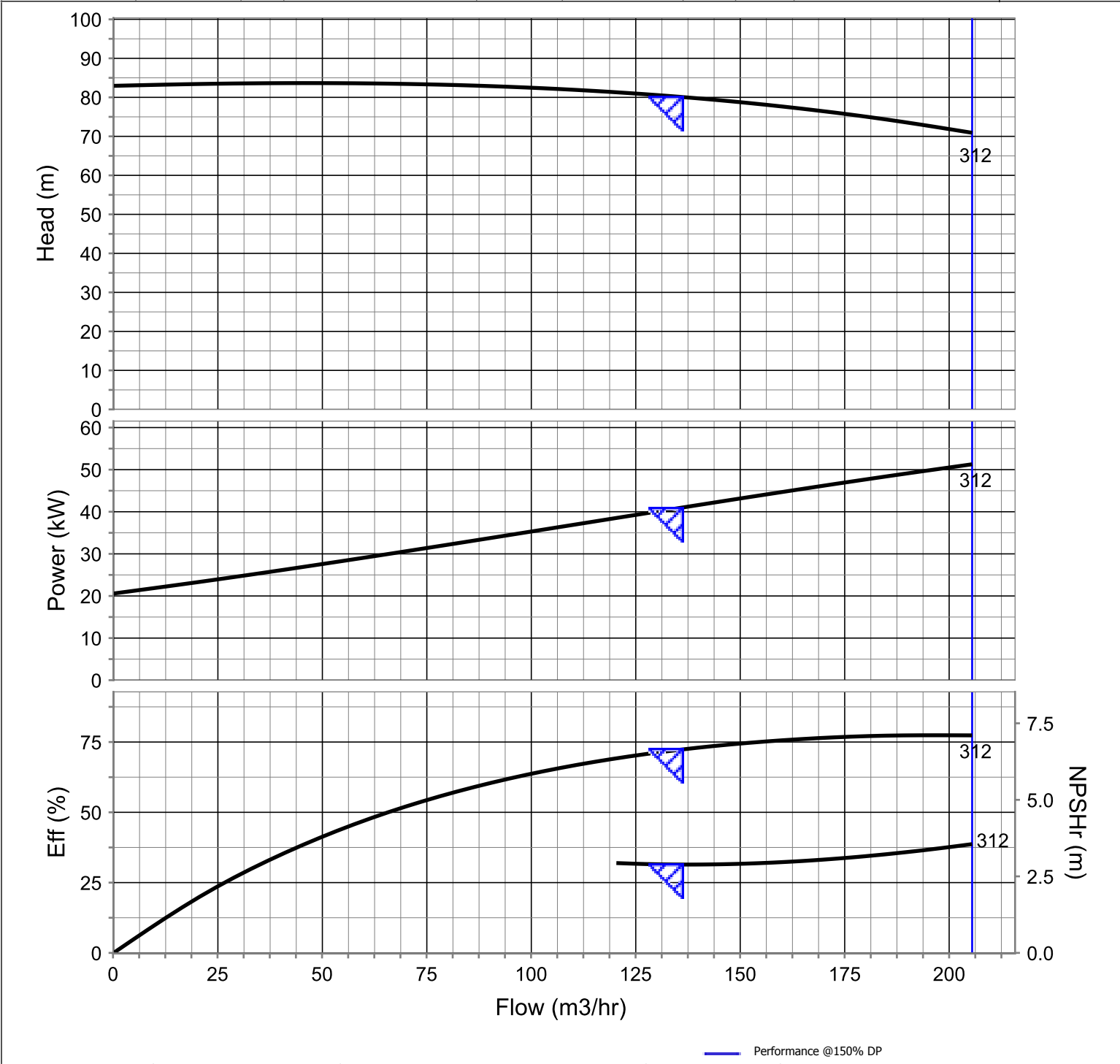
New

## 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	
Customer Details											
Address		-			Tag Number		002				
Enquiry Date		06/10/2022			Reference:		-				
Offer Date		06/10/2022			Offer No		EPL/OFFER/INVERECO/MCCIL				
Operating Conditions											
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				
Performance Data @DP											
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				
Performance Data @150% of DP											
Flow		205.5 m3/hr			Input		51.28 kW				
Head		70.91 m			NPSH		3.55 m				
Constructional Features						MOC					
Type of Pump		End Suction			Item Description		Specification				
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									
Notes :											
1.Suction Pressure more than Vapour Pressure of fluid.											
2.NPSHA>NPSHR by atleast 0.5m											
3.NPSHR at impleller 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	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>



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

Technical matter is subjected to change without prior notice due to intensive Research & Development activities

Reference: 100-315H\_50\_2A\_R01

## Technical data

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

Project name

Untitled project 2022

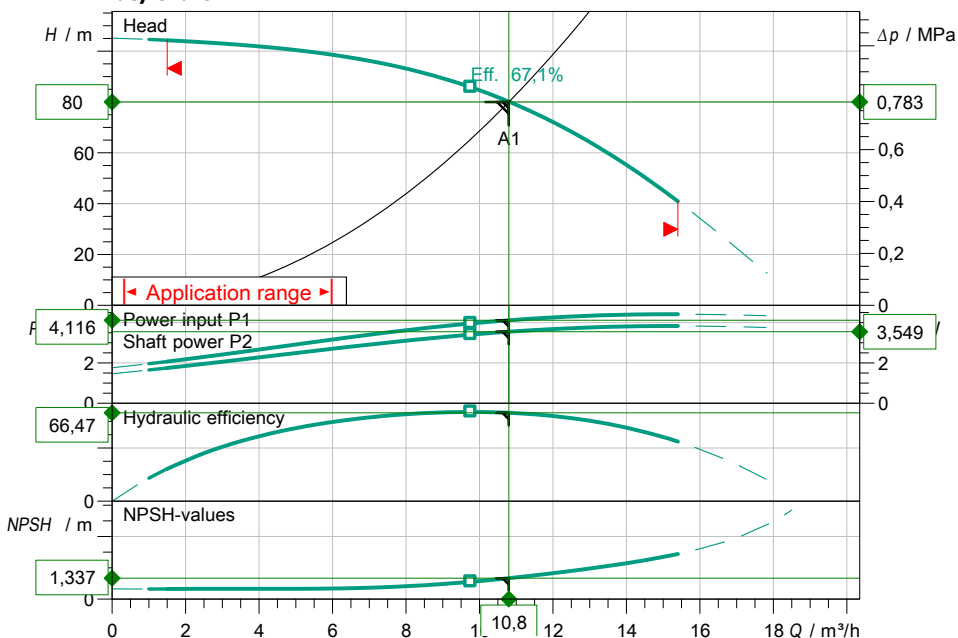
Project ID

Installation location

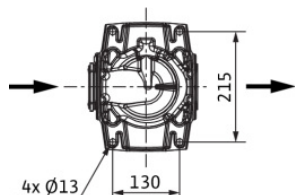
Customer pos.no

Date 22.10.2022

#### Duty chart



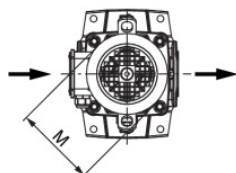
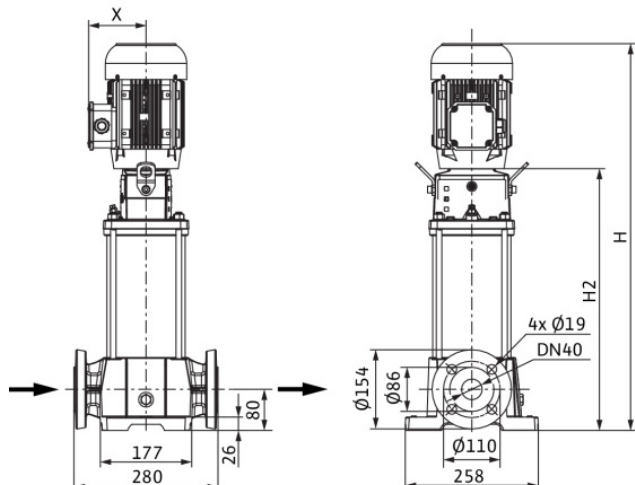
ISO 9906: 2012 3B



#### 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%
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

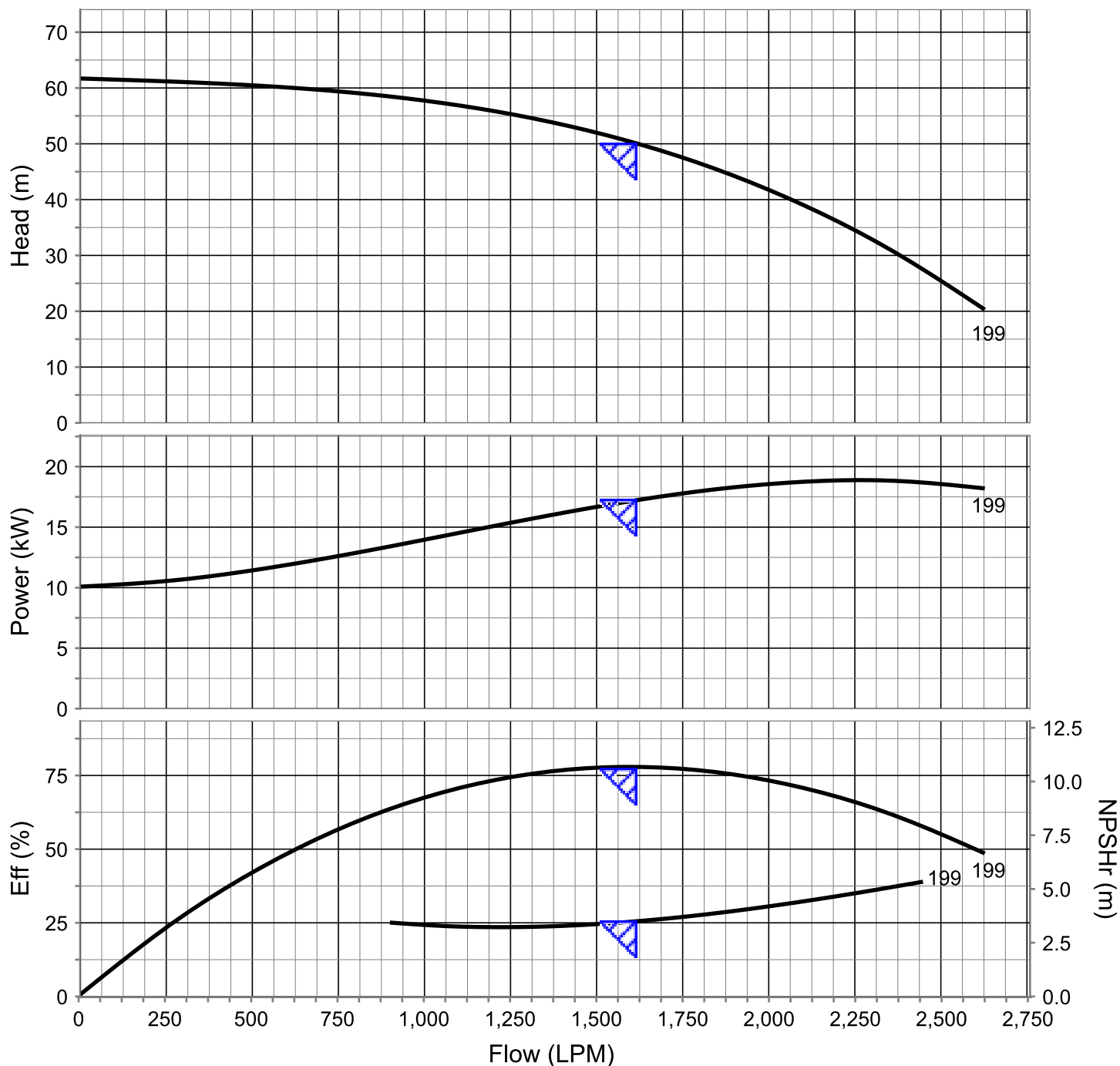
Weight approx.	60 kg
Item number	4200962

## 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
Customer Details					
Address	-		Tag Number	004	
Enquiry Date	06/10/2022		Reference:	-	
Offer Date	06/10/2022		Offer No	EPL/OFFER/INVERECO/MCCIL	
Operating Conditions					
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	
Performance Data @DP					
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	
Constructional Features			MOC		
Type of Pump	End Suction	Item Description	Specification		
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 impleller CenterLine / Inlet.					
4.Fluid is not aggressive towards pump components chemically / physically.					
5. * Customer to confirm.					
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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

Technical matter is subjected to change without prior notice due to intensive Research & Development activities

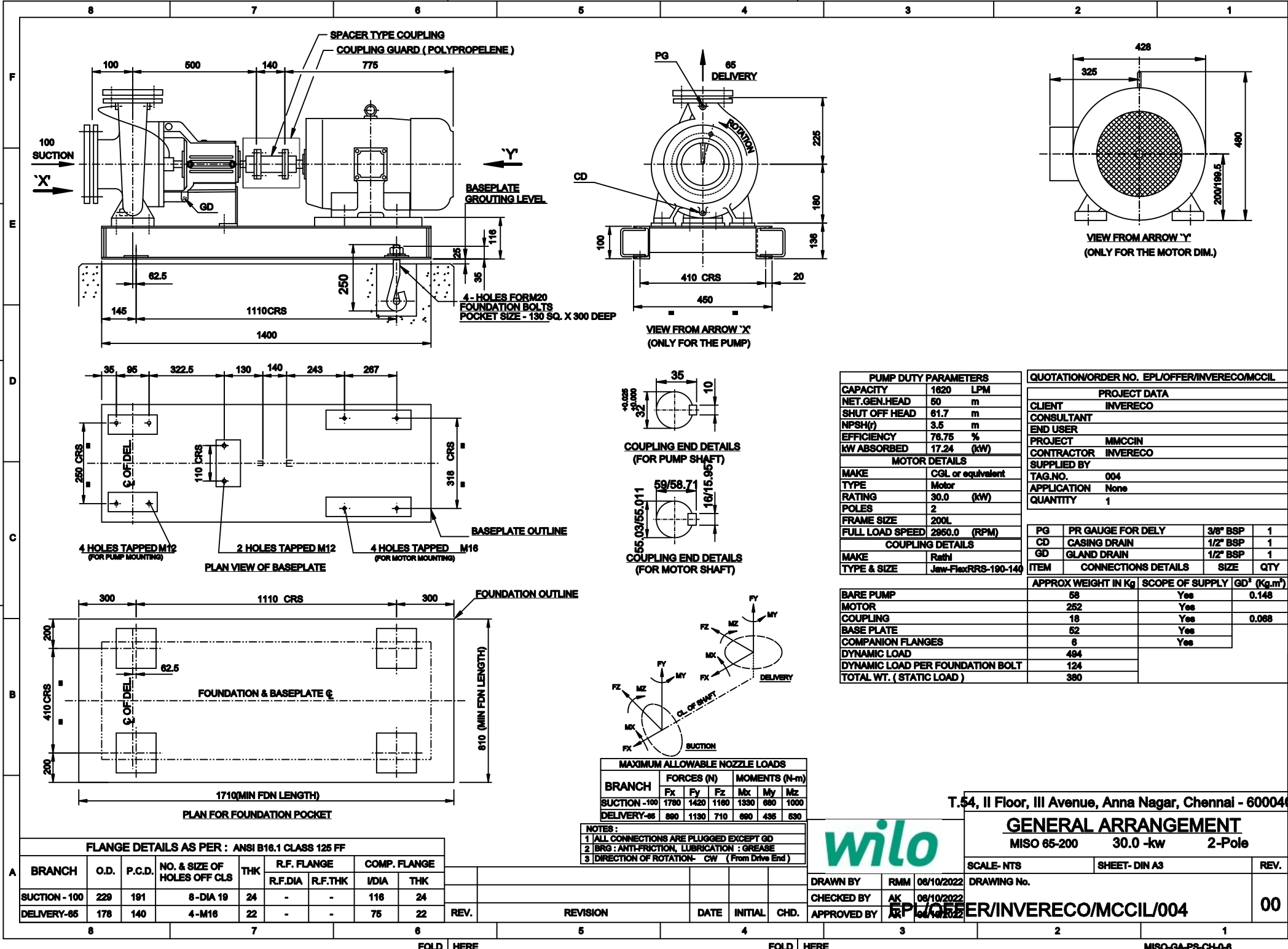
Reference: ET ISO-15-50-2-C-R01

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FIRST ANGLE PROJECTION

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MAXIMUM ALLOWABLE NOZZLE LOADS						
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	690	435	530

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

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	Jew-FlexRRS-190-140	

BARE PUMP	58	Yes	0.148
MOTOR	252	Yes	
COUPLING	18	Yes	0.068
BASE PLATE	52	Yes	
COMPANION FLANGES	6	Yes	
DYNAMIC LOAD	494		
DYNAMIC LOAD PER FOUNDATION BOLT	124		
TOTAL WT. ( STATIC LOAD )	380		

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> )			
58 Yes 0.148			
252 Yes			
18 Yes 0.068			
52 Yes			
6 Yes			

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

GENERAL ARRANGEMENT

MISO 65-200 30.0 -kw 2-Pole

SCALE- NTS SHEET- DIN A3 REV.

DRAWING No.

DRAWN BY RMM 06/10/2022

CHECKED BY AK 06/10/2022

APPROVED BY EPL/OFFER/INVERECO/MCCIL/004

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