

REV. 8.2.036371.11.021

IF IN DOUBT, ASK

REVISIONS									
REV.	DESCRIPTION	REV. NO.	DATE	REV. ZONE	REV. CHK'D	APPV'D			
0	FOR APPROVAL	-	01/14/15	-	A.S.	F.G.	R.B.		
A	CERTIFIED	-	06/06/15	-	F.G.	A.S.	R.B.		
B	CERTIFIED	-	06/06/15	-	A.S.	F.G.	R.B.		

VICKLEY PARSONS
REVIEW STAMP
PROJECT No 400005-00445

1. REVIEWED & ACCEPTED. MANUFACTURE MAY PROCEED. ☒

2. REVIEWED & ACCEPTED & MARKED. RE-USE & RE-SUBMIT. MANUFACTURE MAY PROCEED. ☐

3. REVIEWED & ACCEPTED & MARKED. RE-USE & RE-SUBMIT. MANUFACTURE MAY PROCEED. ☐

4. REVIEW NOT REQUIRED, FOR INFORMATION ONLY. MANUFACTURE MAY PROCEED. ☐

Acceptance in any of these categories in no way releases The Contractor/Supplier of its responsibility for the due and proper performance of the Works in accordance with the Contract/Purchase Order.

Name: CESAR MENDOZA
Signed: [Signature] Date: 06/06/15

DESVIOS ADMISSÍVEIS PARA MEDIDAS SEM TOLERÂNCIAS									
Medidas de Comprimento									
MEDIDA NOMINAL	Acima de	30	120	400	1000	2000	4000	8000	12000
DESVIO ADM	Até	± 3	± 4	± 5	± 6	± 8	± 11	± 14	± 18
Medidas Angulares									
MEDIDA NOMINAL	Acima de	400	1000	Para dimensões até 30 mm a partir de 1000 mm					
DESVIO ADM	Até	400	1000						
DESVIO ADM	Gravimétrica	± 1'	± 45'	± 30'					
	Topográfica	± 18	± 13	± 9	ISO 10203 - Grau de Precisão "C"				



GENERAL NOTES:

- 1 - THE ANCHOR BOLTS NO WILL BE SUPPLIED.
- 2 - THIS GENERAL ARRANGEMENT WILL BE SUPPLIED WITH PLAN 11 AND PLAN 52.
- 3 - SERIAL NUMBER: 36371.11.01 - TAG Y-P5027A AND 36371.12.01 - TAG Y-P5027B

P.O. NUMBER:	26190	FLOW:	327.1 m³/h
END USER:	PETROECUADOR S.A	HEAD:	111 m
JOB:	-	BHP:	113 kW
PLANT:	TANQUES REFINARIA ESMERALDAS	EFFICIENCY:	78.8 %
UNIT:	-	FLUID:	3540 rpm
SERVICE:	TRANSFERENCIA DE DIESEL A LLENADERAS	TEMPERATURE:	30 °C
ITEM:	11/12	S.G.:	0.9
SERIAL No.:	NOTE 04		

CUSTOMER INFORMATION OPERATING CONDITIONS



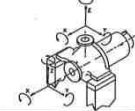
Pump Division
Brazil

STATUS OF APPROVAL FOR APPROVAL	ORDER No.	RR56371.11/12
DRAWN BY	DATE	01/14/15
CHECKED BY	DATE	01/14/15
APPROVED BY	DATE	01/14/15
DWG TITLE		
Y-P5027A/B PUMP 6HPX 12A		
DIESEL TRANSFER		
GENERAL ARRANGEMENT DRAWING		
SIZE	DRAWING NO.	REV.
A2	8.2.036371.11.021	B
SCALE	1:X	UNITS mm
		SHEET NO. 1/1



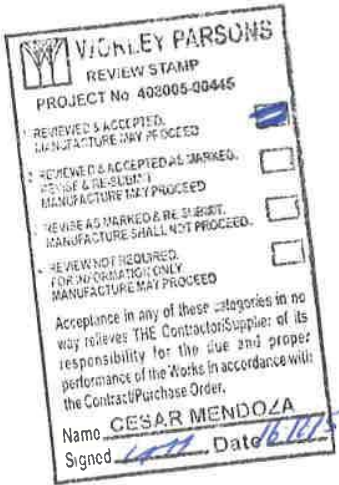
35mm DIMENSIONAL TOLERANCES, EXCEPT WHERE NOTED	APPROVAL NOTE TO CUSTOMER
1. CORRECTIONS, ALTERATIONS, ADDITIONS AND DELETIONS SHALL BE MADE BY THE CUSTOMER'S REPRESENTATIVE. THE CUSTOMER SHALL BE RESPONSIBLE FOR THE CORRECTIONS, ALTERATIONS, ADDITIONS AND DELETIONS. THE CUSTOMER SHALL BE RESPONSIBLE FOR THE CORRECTIONS, ALTERATIONS, ADDITIONS AND DELETIONS. THE CUSTOMER SHALL BE RESPONSIBLE FOR THE CORRECTIONS, ALTERATIONS, ADDITIONS AND DELETIONS.	2. THE CUSTOMER SHALL BE RESPONSIBLE FOR THE CORRECTIONS, ALTERATIONS, ADDITIONS AND DELETIONS. THE CUSTOMER SHALL BE RESPONSIBLE FOR THE CORRECTIONS, ALTERATIONS, ADDITIONS AND DELETIONS. THE CUSTOMER SHALL BE RESPONSIBLE FOR THE CORRECTIONS, ALTERATIONS, ADDITIONS AND DELETIONS.

DIRECTION OF ROTATION		LUBRICATION	
☐ CLOCKWISE	☐ COUNTER-CLOCKWISE	☐ GREASE	☐ OIL
VIEWED FROM COUPLING END		WEIGHT (kgf)	
SEALING		PUMP	332
SUPPLIED BY: ☐ FPD ☐ CUSTOMER		MOTOR	2109
QUANTITY: 01		BASEPLATE	-
SIZE: -		COUPLING	-
MATERIAL: AQ2VMG-AQ2VMG		TOTAL	-
SUCTION		DISCHARGE	-
FLANGE DATA			
AND 8" 300 lbs RF ASME B16.5		EXTERNAL DIAMETER: 320 mm	
12 HOLES Ø22.2 mm		BOLT CIRCLE: Ø259.8 mm	
BOLT CIRCLE: Ø259.8 mm		RAISED FACE LBO 125-250 mm	
DIAMETER OF THE BOSS: Ø259.8 mm		DIAMETER OF THE BOSS: 215.9 mm	
BOSS HEIGHT: 2 mm		FLANGE THICKNESS: 35 mm	
FLANGE THICKNESS: 35.7 mm			



SUCTION	4890	3760	3110	3530	1760	2580
DISCHARGE	2490	2050	3110	2300	1180	1760

POS.	QT.	AUXILIARY CONNECTIONS
A	01	RETURN MECHANICAL SEAL - 1/2"-300 S.W.
B	01	TO MECHANICAL SEAL - 1/2"-300 S.W.
C	01	CASING DRAIN - 3/4"-600 RF
D	01	FLUSHING PLAN 11 - 3/4"-800 RF
E	01	BASEPLATE DRAIN - 2"-300 NPT
F	01	PUMP VENT - 3/4"-800 RF
DA	04	DRAIN BEARING HOUSING - 1/2" NPT
LB	04	BREATH AND OIL INLET HOLE - 1/4" NPT
L7	02	CONSTANT LEVEL OILER - 1/4" NPT

	DRAWING		N°: 8.4.036371.11.003						
	CLIENT: TESCA INGENIERIA DEL ECUADOR		SHEET: 1 of 2						
	JOB: TANQUES REFINARIA ESMERALDA								
	AREA: DIESEL TRANSFER								
TITLE: Y-P5027A/B – PUMP PERFORMANCE CURVE									
TECHNICAL RESPONSABLE LUIZ CARLOS GALVES CREA N°: 200200064-2		CONTRACT N°: 26190		FLOWSERVE N°: 8.4.036371.11.003 ELECTR FILE N°: 8.4.036371.11.003=A.DOC					
INDEX OF REVISION									
REV.	DESCRIPTION AND/ OR REVISED SHEETS								
0	FOR APPROVAL								
A	CERTIFIED								
									
									
	REV. 0	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H
DATE	12/05/14	18/11/15							
DESIGN	FBQ	FBQ							
EXECUTION	A.SANTORO	A.SANTORO							
CHECK	F.GONÇ	F.GONÇ							
APPROVAL	R.BAMBINO	R.BAMBINO							

Handwritten signature



DRAWING

Nº

8.4.036371.11.003

REV.

A

JOB:

TANQUES REFINARIA ESMERALDA

SHEET:

2 of 2

TITLE:

Y-P5027A/B – PUMP PERFORMANCE CURVE

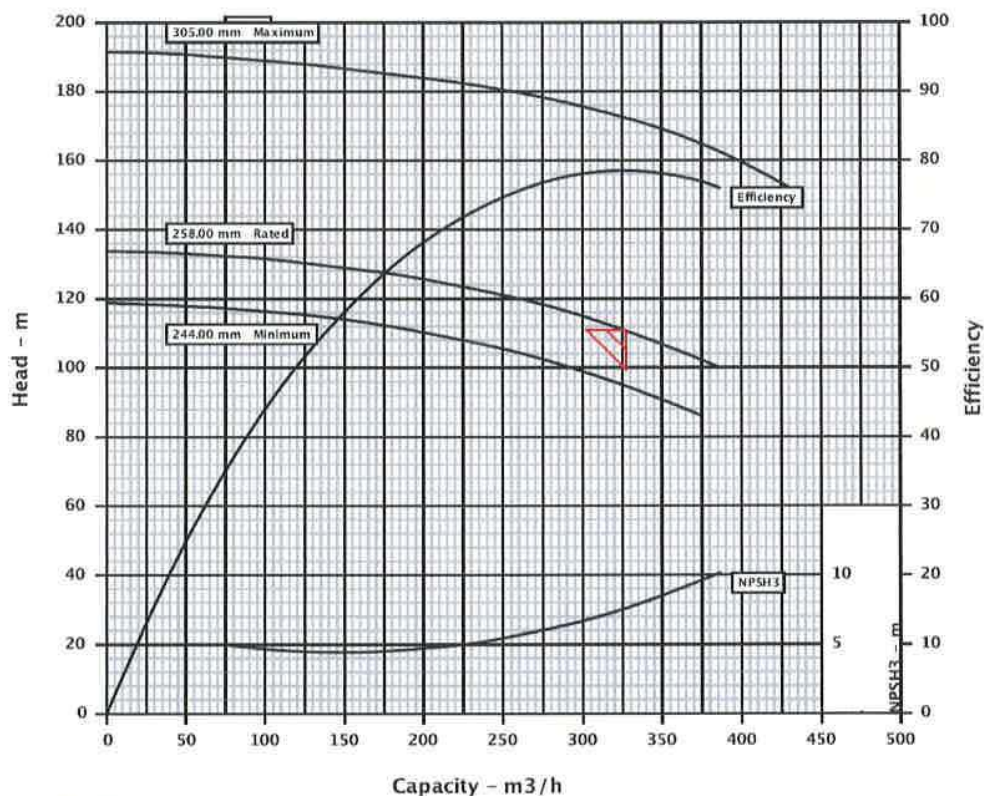
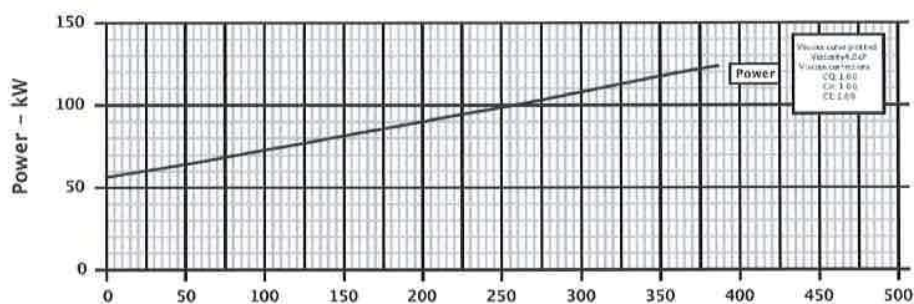


Pump size & type : 6HPX12A
Based on curve no. : 6HPX12A-1-1
Number of stages : 1

Customer : TESCA S.A. Ingeniería ...
Item number : Y-P5027 A/B
Service : Transferencia de Diesel
Flowserve reference : 263858477
Date : March 23, 2015

Capacity : 327.1 m3/h
Head : 111.00 m
Specific gravity : 0.900
Pump speed : 3540 rpm
Test tolerance : API 610 11th Edition

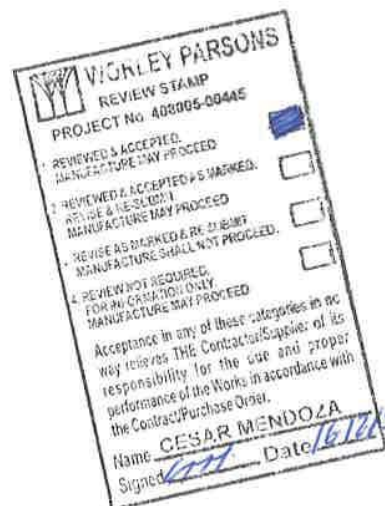
CURVES ARE APPROXIMATE. PUMP IS GUARANTEED FOR ONE SET OF CONDITIONS: CAPACITY, HEAD, AND POWER.



	DATA SHEET		Nº: 8.4.036371.11.029
	CLIENT: TESCA INGENIERIA DEL ECUADOR		SHEET: 1 of 2
	JOB: TANQUES REFINARIA ESMERALDA		
	AREA: DIESEL TRANSFER		
TITLE: Y-P5027A/B – PUMP DATA SHEET			
TECHNICAL RESPONSABLE LUIZ CARLOS GALVES CREA Nº: 200200064-2		CONTRACT Nº: 26190	FLOWSERVE Nº: 8.4.036371.11.029 ELECTR FILE Nº: 8.4.036371.11.029-B.DOC

INDEX OF REVISION

REV.	DESCRIPTION AND/ OR REVISED SHEETS
0	FOR APPROVAL
A	CERTIFIED
B	CERTIFIED



	REV. 0	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H
DATE	12/05/14	10/09/15	23/09/15						
DESIGN	FBQ	FBQ	FBQ						
EXECUTION	A.SANTORO	A.SANTORO	A.SANTORO						
CHECK	F.GONÇ.	F.GONÇ.	F.GONÇ.						
APPROVAL	R.BAMBINO	R.BAMBINO	R.BAMBINO						

Ant



DATA SHEET

Nº

8.4.036371.11.029

REV.

B

JOB:

TANQUES REFINARIA ESMERALDA

SHEET:

2 of 2

TITLE:

Y-P5027A/B – PUMP DATA SHEET

Job Nr.	14-EC-00076	Item Nº.	
Purchase Order Nr.	26190		
Requisition Nr.			
Inquiry Nr.			
Date	10/24/2014	Rev.	0
Sheet	1/1		

CENTRIFUGAL PUMP
DATA SHEET

FPD No. 8.4.036371.11.029

Flowserve do Brasil Ltda., Rio de Janeiro / RJ

APPLICABLE TO

Proposal ☐Purchase ☒As Built ☐

For	Petroecuador S.A.	Site	
Unit	Tanques Refinaria Esmeralda	Service	Transferência de Diesel a Usinadoras
Nr. Pumps req'd.	02	Nr. Motors req'd.	02
		Item Nr.	11/12
		Provided by	FLOWERVE
		Mount. by	FLOWERVE
		Nr. Turbines req'd.	
		Item Nr.	
		Provided by	
		Mount. by	
Furnisher	F S G	Type and Size	6HPX-12A
		Serial Nr.	See note 01

OPERATING CONDITIONS

Liquid	Diesel 2/ Diesel Premium	Flow, m³/h	Normal	272.6	Rated	327.1
		Disch. Pressure, MPa		0.961		
PT, °C	Nor. 30	Max. 36	Suction Pressure, MPa	0.113 max	Rated	0.056
SP. GR. at PT	0.847		Diff. Pressure, MPa	0.905		
Vap. Press. at PT	0.00019		Diff. Head, m	111		
Visc. at PT, cP	3,999		NPSH available, m	19.6		
Corr. / Eros. Caused by						

PERFORMANCE

Proposal Curve Nr.	263858477
RPM	3540
NSPHr (water)	7.6 m
EFF. %	78.8
BHP Rated	113 kW
Max. BHP Rated IMP	124 kW
Max. Head Rated IMP	133.88 m
Min. Continuous Flow	14.8 m³/h
Rotation	CCW (Viewed from coupling end)

CONSTRUCTION

Flange	Size	Rating	Type	Location
Suction	8"	300#	RF	END
Discharge	6"	300#	RF	TOP
Standard:	API 610 ed11th			
Finish:				
Case Mounting:	☒ Center Line ☐ Foot ☐ Vertical ☐ Bracket			
Split:	☒ Axial ☐ Radial			
Volute:	☒ Single ☐ Double ☐ Between Bearings			
Pressure:	☒ Max. Allow 41.38 KPa g, 30 °C			
	☒ Hydrostatic Test 6207 KPa g			
Connections:	☒ Vent ☒ Drain ☐ Gage			
Impeller Dia.:	☒ Rated 258 ☒ Max. 305 ☒ Type CLOSED			
Bearings Type:	☒ Radial 6216 ☒ Thrust 7314 BECBM			
Lubrication:	☐ Grease ☒ Oil RING OIL			
Coupling:	☒ Manufact. THOMAS ☒ Model SERIE 71			
Packing:	☐ Material ☐ Size / Qty. of Rings			
Mechanical Seal:	☒ Manufact. EAGLEBURGMANN API Code C2A2A115Z			
	☒ Manufact. Code AQ2VMG-AQ2VMG			

TESTS

☐ Non-Wit Perf	☒ Wit. Perf
☒ Non-Wit Hydro	☐ Wit. Hydro
☐ NPSH req'd	☐ Wit. NPSH
☒ Shop Test	☒ Final Inspection
☐ Dismant. & Insp. after test	

MATERIALS

API Class	S 6
Casing	A216 Gr WCB
Impeller	A487 CA6NM
Casing wearing rings	A426 CP-Cr15
Impeller wearing rings	A426 CP-Cr15
Shaft	A 434 Gr4140
Shaft Sleeve	
Baseplate	A-36

AUXILIARY PIPING

☐ C. W. Pipe Plan	
☐ Total cooling injection req'd. m³/h	☐ Sight F.I. req'd
☐ Packing cooling inj. req'd. m³/h	kg/cm²
☐ Seal Flush Pipe Plan	☐ S.S.; ☐ steel
☐ External Seal Flush Fluid m³/h	kg/cm²
☐ Auxiliary Seal Quench Fluid	☐ Bearing Lube Flow Press

MOTOR DRIVER

HP	200	RPM	3570	Volts / Phases / Cycles	4160V 3/ 60
Manufact.	Go Energy	Bearing	6315ZC3	Lube	
Type		Casing Nr.	509LS	Insul.	F
ENC	TEFC	Temp. rise	°C	Nominal AMPs	-A
Vertical:	☐ Hollow Shaft ☐ Solid Shaft	Locked Rotor AMPs	-A	Thrust Capacity:	

APPROX. WEIGHTS (kg)

☒ Pump 332	☐ Base	☒ Motor 2109	☐ Turbine	☐ Coupling
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NOTES: 01 - 36371.11.01 for pump A and 36371.12.01 for pump B

	ORIGINAL		REV. A		REV. B		REV. C		REV. D	
	BY	DATE	BY	DATE	BY	DATE	BY	DATE	BY	DATE
ISSUED	A.S.	12/05/14	A.S.	10/05/15	A.S.	23/09/15				
VERIFIED	F.G.	12/05/14	F.G.	10/05/15	F.G.	23/09/15				
APPROVED	R.B.	12/05/14	R.B.	10/05/15	R.B.	23/09/15				

