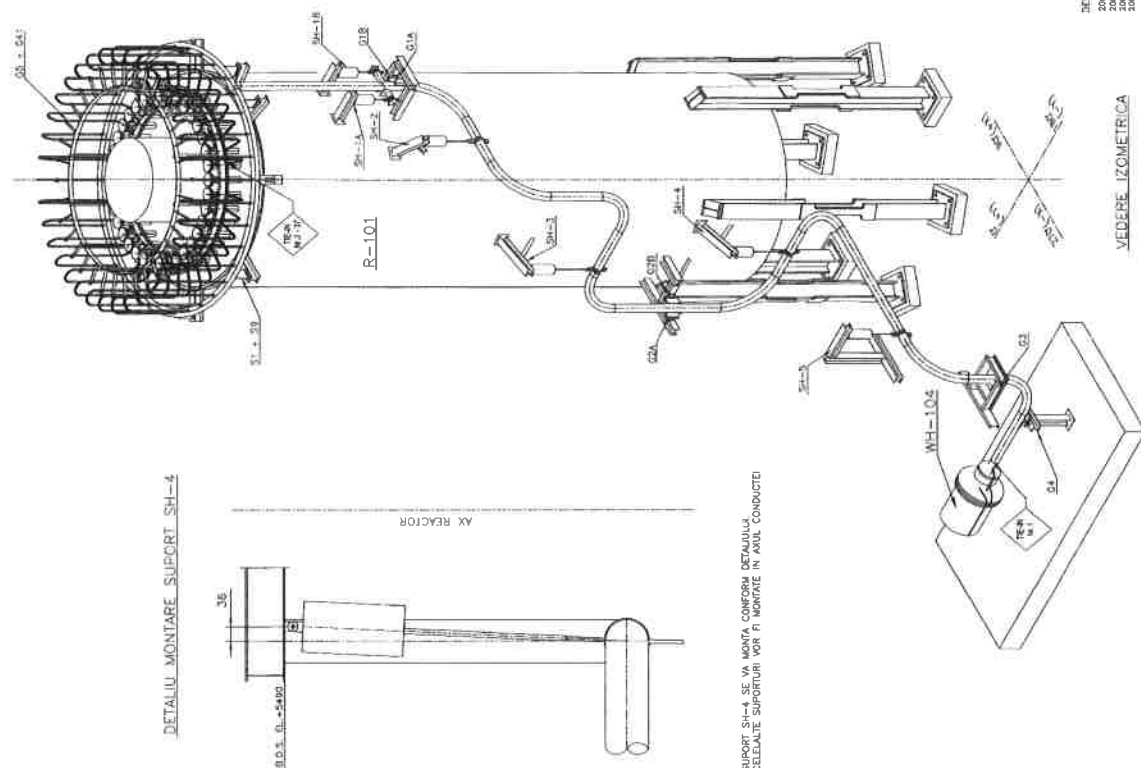




VEDERE IZOMETRICA

[illegible]

SCHEMA DE INCADRARE:

000020-30-170-001-LC	-	PLAN LEGĂTURI CONDUCTE	6-PG-303-1N10-574;
000020-30-140-001-S1	-	SCHEMA IZOMETRICA	6-PG-304-1N10-574;
000020-30-150-001-03	-	PLAN DETALII SUPORTURI PIR. CONDUCTE;	
000020-30-150-001-55	-	PLAN DETALII SUPORTURI SUDATIE PIR. CONDUCTE;	

Nota 1:
EL: ±0,00 s-a considerat partea superioară a fundației suporturilor
reacționări R-101;

Nota 2:
Suportul existent se va ajusta la montaj astfel încât să se asigure coliniaritatea
entre axul conductei și axul scheletului R9-R-104.



SPECIFICATIA DE ARCURI

INLOCUIRE SISTEM DE CONDUCTE

SIS 7 - 6"- PG 303/304

INSTALATIA: FABRICA DE HIDROGEN 1

PROIECT NUMAR: 20029

CLIENT: SC PETROTEL-LUKOIL SA



Revizia	Data	Descriere	Elaborat	Verificat	Aprobat
0	06.2020	Emis pentru construire	CGE <i>Chire</i>	AEM <i>AEM</i>	RDC <i>RDC</i>



DRMU-1619-09.02.23

DETALII ALE REVIZIILOR

Rev.	Locul modificarii	Scurta descriere a modificarii
0	Nu se aplica	Nu se aplica



DRMU-1619-09.02.23

MARCA SUPT CU ARC / SPRING HANGER TAG: SH-1
TIP SUPT CU ARC / SPRING HANGER TYPE: VARIABLE / VARIABLE
MARIME SUPT CU ARC / SPRING HANGER SIZE: LISEGA 211318 (SAU ECHIVALENT)
CANTITATE / QUANTITY: 2

INCARCARE LA MONTAJ / COLD LOAD (N):	800
INCARCARE IN OPERARE / HOT LOAD (N):	1000
DEPLASARE VERTICALA MAXIMA / MAX. VERTICAL DISPLACEMENT (mm):	-50
DEPLASARE ORIZONTALA MAXIMA / MAX. HORIZ. DISPLACEMENT (X) (mm):	5
DEPLASARE ORIZONTALA MAXIMA / MAX. HORIZ. DISPLACEMENT (Y) (mm):	-9
RIGIDITATE ARC / SPRING RATE (N/cm):	4.1
DIAMETRU EXTERIOR CONDUCTA / PIPE OUTSIDE DIAMETER (mm):	114.3
MATERIAL CONDUCTA / PIPE MATERIAL:	B-407 N08120
TEMPERATURA TEAVA / PIPE TEMPERATURE (°C):	871
DECALARE LA MONTAJ / INSTALLATION OFFSET (mm):	0
SPATIUL DISPONIBIL / AVAILABLE SPACE (mm):	939

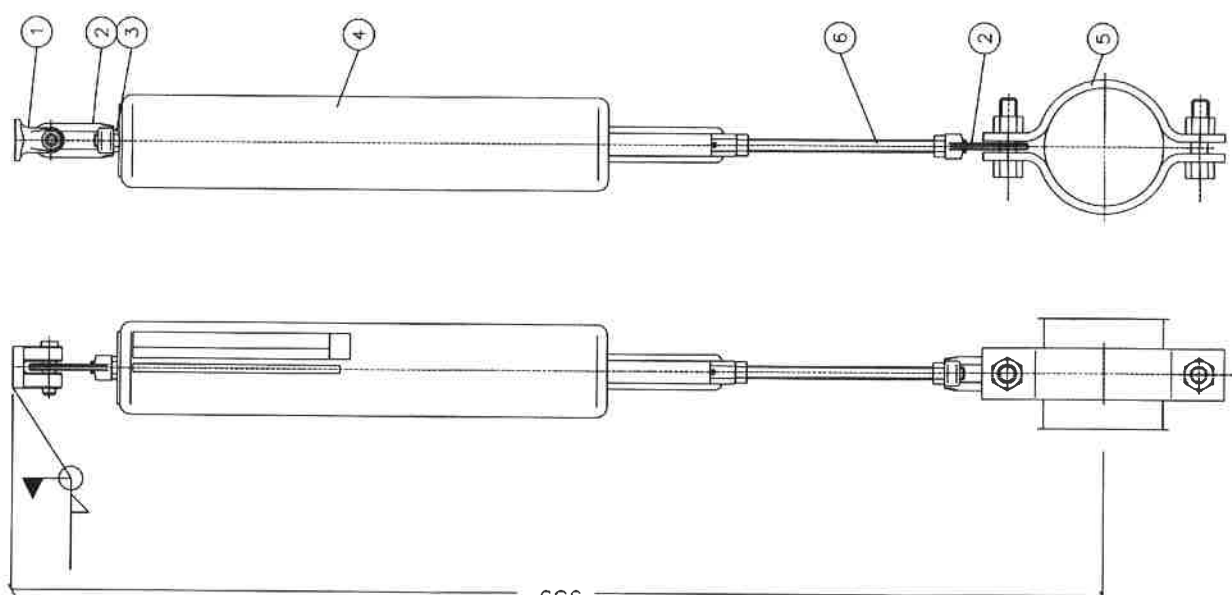
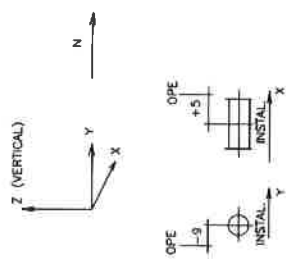
NOTES

1. MATERIALELE VOR FI ALESE DE VENDOR / MATERIALS BY SPRING VENDOR
2. TOATE COMPONENTELE VOR FI FURNIZATE DE VENDORUL DE SUPT CU ARC / ALL ITEMS TO BE SUPPLIED BY SPRING VENDOR UNLESS OTHERWISE SPECIFIED
3. VENDORUL TREBUIE SA GARANTEZE CA TOATE ELEMENTELE COMPONENTE SUNT CORESPUNZATORAE PENTRU INCARCARE SI TEMPERATURILE DATE / SPRING HANGER VENDOR TO ENSURE ALL DETAILS ARE COMPATIBLE WITH THE GIVEN LOADS AND TEMPERATURE
4. TIELE VOR FI FURNIZATE CU 150mm MAI MARI PENTRU AJUSTARE LA MONTAJ / THREADED RODS SHALL BE SUPPLIED 150mm LONGER FOR ADJUSTMENTS IN SITE

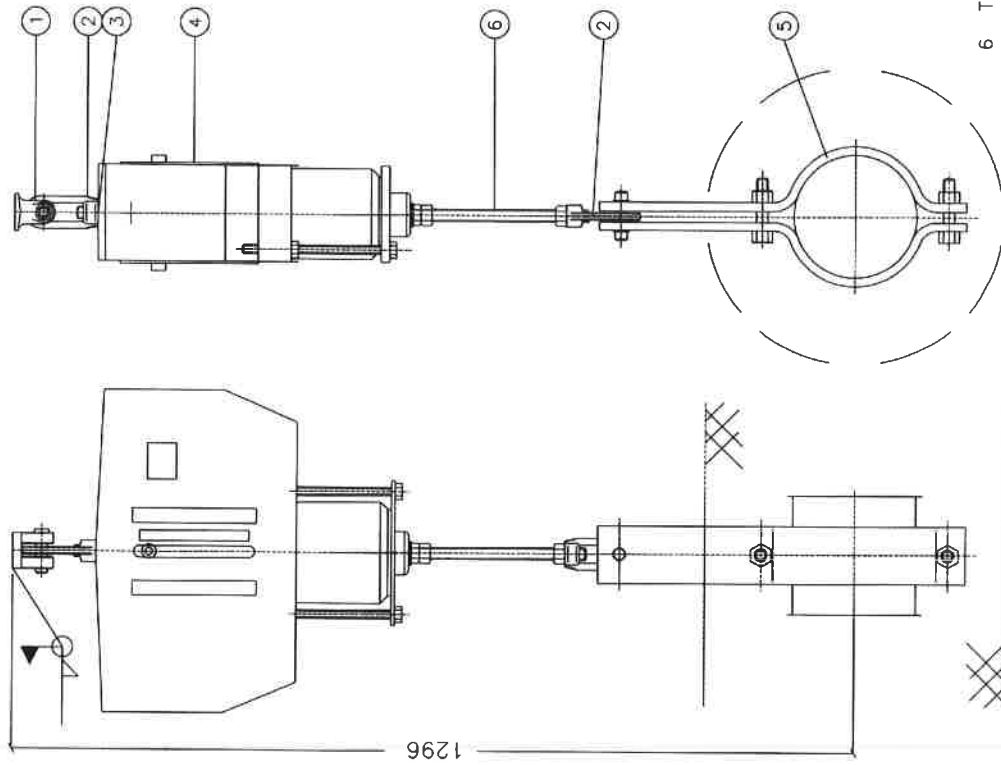
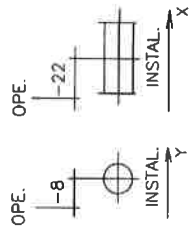
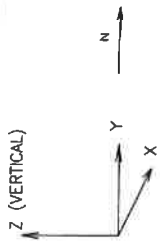
Rev.	Date	Description	CGE	AEM	RDC
0	16.06.2020	EMIS PENTRU CONSTRUCTIE			
Project:			Drawn	Checked	Approved
INLOCUIRE CONDUCTE SIS 7-6"-PG-303/304					
FABRICA DE HIDROGEN Nr. 1					

Title: SPECIFICATIE SUPTURI CU ARC (SPRING DATA SHEET)

Drawn: CGE	Scale: NA	Client Nr: -	Dwg. Nr: 20029-30-23A-001-SA
Date: 16.06.2020			
		SC PETROTEL LUKOIL S.A.	
		Sheet: 3/7	Format: A3
		Rev.: 0	



- 6 Threaded rod
- 5 Two bolt clamp
- 4 Variable spring hanger
- 3 Threaded stud
- 2 Eye nut
- 1 Weld-on clevis / w bolt



- 6 Threaded rod
- 5 Three bolt clamp
- 4 Constant hanger
- 3 Threaded stud
- 2 Eye nut
- 1 Weld-on clevis /w bolt

MARCA SUPTOR CU ARC / SPRING HANGER TAG: SH-2
TIP SUPTOR CU ARC / SPRING HANGER TYPE: CONSTANT / CONSTANT
MARIME SUPTOR CU ARC / SPRING HANGER SIZE: LISEGA 1132/5 (SAU ECHIVALENT/OR EQUIVALENT)
CANTITATE / QUANTITY: 1

INCARCARE LA MONTAJ / COLD LOAD (N):	4400
INCARCARE IN OPERARE / HOT LOAD (N):	4400
DEPLASARE VERTICALA MAXIMA / MAX. VERTICAL DISPLACEMENT (mm):	-68
DEPLASARE ORIZONTALA MAXIMA / MAX. HORIZ. DISPLACEMENT (X) (mm):	-22
DEPLASARE ORIZONTALA MAXIMA / MAX. HORIZ. DISPLACEMENT (Y) (mm):	-8
RIGIDITATE ARC / SPRING RATE (N/cm):	-
DIAMETRU EXTERIOR CONDUCTA / PIPE OUTSIDE DIAMETER (mm):	168.3
MATERIAL CONDUCTA / PIPE MATERIAL:	B-407 N08120
TEMPERATURA TEAVA / PIPE TEMPERATURE (°C):	871
DECALARE LA MONTAJ / INSTALLATION OFFSET (mm):	0
SPATIUL DISPONIBIL / AVAILABLE SPACE (mm):	1296

NOTES

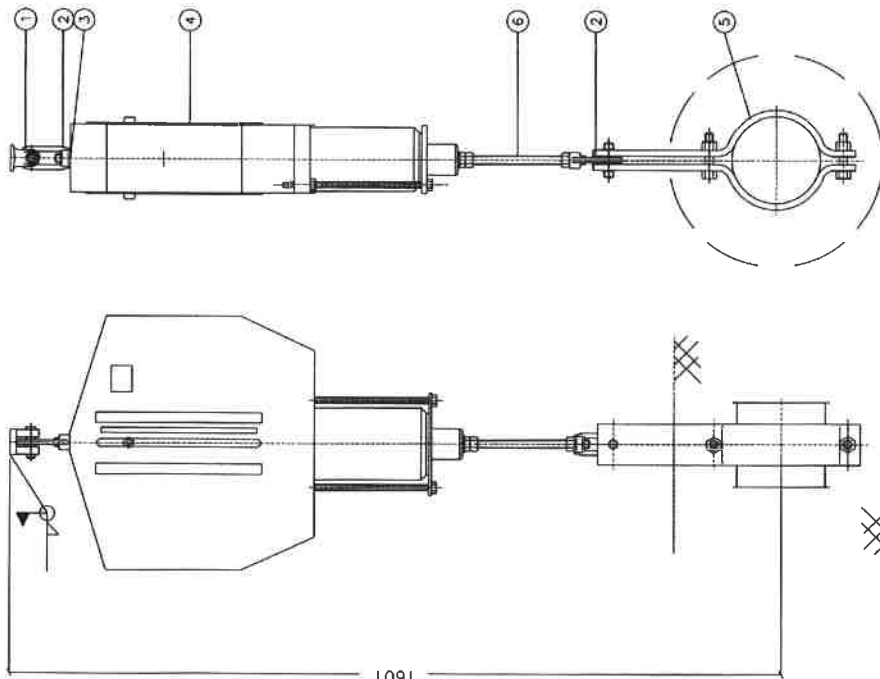
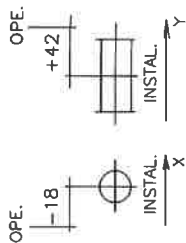
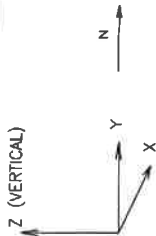
1. MATERIALELE VOR FI ALESE DE VENDOR / MATERIALS BY SPRING VENDOR
2. TOATE COMPONENTELE VOR FI FURNIZATE DE VENDORUL DE SUPTOR CU ARC / ALL ITEMS TO BE SUPPLIED BY SPRING VENDOR UNLESS OTHERWISE SPECIFIED
3. VENDORUL TREBUIE SA GARANTEZE CA TOATE ELEMENTELE COMPONENTE SUNT CORESPUNZATORAE PENTRU INCARCARILE SI TEMPERATURILE DATE / SPRING HANGER VENDOR TO ENSURE ALL DETAILS ARE COMPATIBLE WITH THE GIVEN LOADS AND TEMPERATURE
4. TIELE VOR FI FURNIZATE CU 150mm MAI MARI PENTRU AJUSTARE LA MONTAJ / THREADED RODS SHALL BE SUPPLIED 150mm LONGER FOR ADJUSTMENTS IN SITE

Rev.	Date	Description	CGE	AEM	RDC
0	16.06.2020	EMIS PENTRU CONSTRUCTIE	CGE	AEM	RDC
Project:			Drawn	Checked	Approved

Project: INLOCUIRE CONDUCTE SIS 7-6"-PG-303/304
FABRICA DE HIDROGEN Nr. 1

Title: SPECIFICATIE SUPTORI CU ARC (SPRING DATA SHEET)

Drawn: CGE	Scale: NA	Client N°: -	Dwg. N°: 20029-30-23A-001-SA
Date: 16.06.2020			
S.C. PETROTEL		Sheet: 4/7	
LUKOIL SA		Format: A3	
		Rev.: 0	



- 6 Threaded rod
- 5 Three bolt clamp
- 4 Constant hanger
- 3 Threaded stud
- 2 Eye nut
- 1 Weld-on clevis /w bolt

MARCA SUPTOR CU ARC / SPRING HANGER TAG: SH-3
TIP SUPTOR CU ARC / SPRING HANGER TYPE: CONSTANT / CONSTANT
MARIME SUPTOR CU ARC / SPRING HANGER SIZE: LISEGA 113315 (SAU ECHIVALENT/OR EQUIVALENT)
CANTITATE / QUANTITY: 1

INCARCARE LA MONTAJ / COLD LOAD (N): 4050
INCARCARE IN OPERARE / HOT LOAD (N): 4050
DEPLASARE VERTICALA MAXIMA / MAX. VERTICAL DISPLACEMENT (mm): -96
DEPLASARE ORIZONTALA MAXIMA / MAX. HORIZ. DISPLACEMENT (X) (mm): -18
DEPLASARE ORIZONTALA MAXIMA / MAX. HORIZ. DISPLACEMENT (Y) (mm): +42
RIGIDITATE ARC / SPRING RATE (N/cm): -
DIAMETRU EXTERIOR CONDUCTA / PIPE OUTSIDE DIAMETER (mm): 168.3
MATERIAL CONDUCTA / PIPE MATERIAL: B-407 N08120
TEMPERATURA TEAVA / PIPE TEMPERATURE (°C): 871
DECALARE LA MONTAJ / INSTALLATION OFFSET (mm): 0
SPATIUL DISPONIBIL / AVAILABLE SPACE (mm): 1601

NOTES

1. MATERIALELE VOR FI ALESE DE VENDOR / MATERIALS BY SPRING VENDOR
2. TOATE COMPONENTELE VOR FI FURNIZATE DE VENDORUL DE SUPTOR CU ARC / ALL ITEMS TO BE SUPPLIED BY SPRING VENDOR UNLESS OTHERWISE SPECIFIED
3. VENDORUL TREBUIE SA GARANTEZE CA TOATE ELEMENTELE COMPONENTE SUNT CORESPUNZATORAE PENTRU INCARCARILE SI TEMPERATURILE DATE / SPRING HANGER VENDOR TO ENSURE ALL DETAILS ARE COMPATIBLE WITH THE GIVEN LOADS AND TEMPERATURE
4. TIELE VOR FI FURNIZATE CU 150mm MAI MARI PENTRU AJUSTARE LA MONTAJ / THREADED RODS SHALL BE SUPPLIED 150mm LONGER FOR ADJUSTMENTS IN SITE

Rev.	Date	Description	CGE	AEM	RDC
0	16.06.2020	EMIS PENTRU CONSTRUCTIE	CGE	AEM	RDC
			Drawn	Checked	Approved

Project: INLOCUIRE CONDUCTE SIS 7-6"-PG-303/304
FABRICA DE HIDROGEN Nr. 1

Title: SPECIFICATIE SUPTORI CU ARC (SPRING DATA SHEET)

Drawn: CGE	Scale: NA	Client N°: -	Dwg. N°: 20029-30-23A-001-SA
Date: 16.06.2020			
SC PETROTEL LUMAIL S.A.			Sheet: 5/7 Format: A3 Rev.: 0

MARCA SUPTOR CU ARC / SPRING HANGER TAG: SH-4
TIP SUPTOR CU ARC / SPRING HANGER TYPE: CONSTANT / CONSTANT
MARIME SUPTOR CU ARC / SPRING HANGER SIZE: LISEGA 113315 (SAU ECHIVALENT/OR EQUIVALENT)
CANTITATE / QUANTITY: 1

INCARCARE LA MONTAJ / COLD LOAD (N): 3950
INCARCARE IN OPERARE / HOT LOAD (N): 3950
DEPLASARE VERTICALA MAXIMA / MAX. VERTICAL DISPLACEMENT (mm): -122
DEPLASARE ORIZONTALA MAXIMA / MAX. HORIZ. DISPLACEMENT (X) (mm): +76
DEPLASARE ORIZONTALA MAXIMA / MAX. HORIZ. DISPLACEMENT (Y) (mm): -12
RIGIDITATE ARC / SPRING RATE (N/cm): -
DIAMETRU EXTERIOR CONDUCTA / PIPE OUTSIDE DIAMETER (mm): 168.3
MATERIAL CONDUCTA / PIPE MATERIAL: B-407 N08170
TEMPERATURA TEAVA / PIPE TEMPERATURE (°C): 871
DECALARE LA MONTAJ / INSTALLATION OFFSET (mm): -36 (PE AXA X / ON X AXIS)
SPATIUL DISPONIBIL / AVAILABLE SPACE (mm): 1330

NOTES

1. MATERIALELE VOR FI ALESE DE VENDOR / MATERIALS BY SPRING VENDOR
2. TOATE COMPONENTELE VOR FI FURNIZATE DE VENDORUL DE SUPTOR CU ARC / ALL ITEMS TO BE SUPPLIED BY SPRING VENDOR UNLESS OTHERWISE SPECIFIED
3. VENDORUL TREBUIE SA GARANTEZE CA TOATE ELEMENTELE COMPONENTE SUNT CORESPUNZATORAE PENTRU INCARCARILE SI TEMPERATURILE DATE / SPRING HANGER VENDOR TO ENSURE ALL DETAILS ARE COMPATIBLE WITH THE GIVEN LOADS AND TEMPERATURE
4. TIELE VOR FI FURNIZATE CU 150mm MAI MARI PENTRU AJUSTARE LA MONTAJ / THREADED RODS SHALL BE SUPPLIED 150mm LONGER FOR ADJUSTMENTS IN SITE

Rev	Date	Description	CGE	AEM	RDC
0	16.06.2020	EMIS PENTRU CONSTRUCTIE	Drawn	Checked	Approved

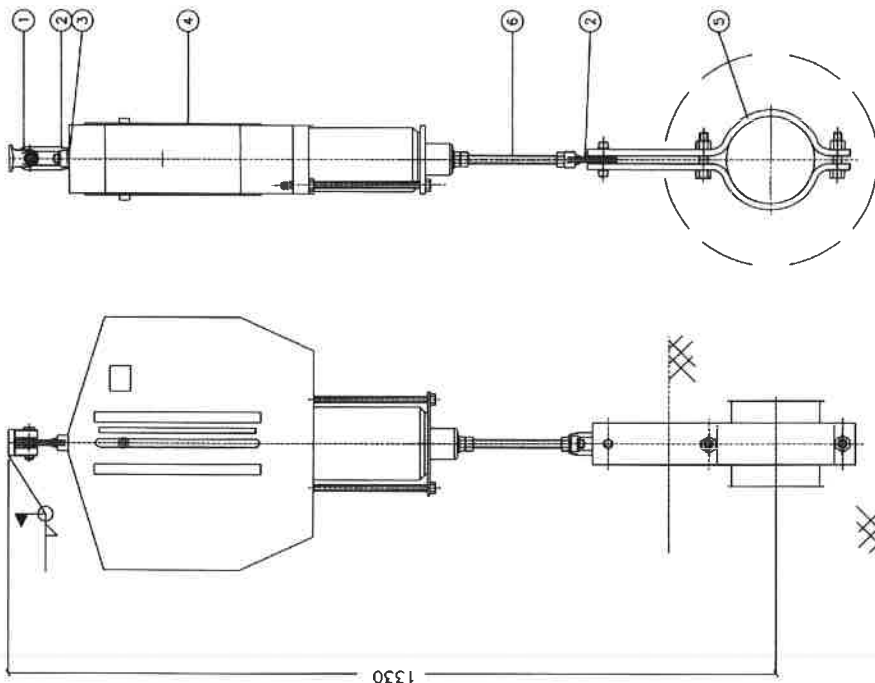
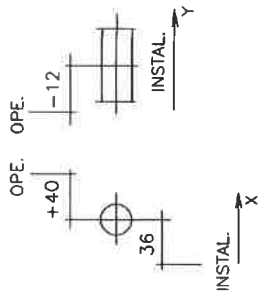
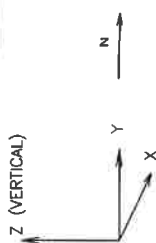
Project: INLOCUIRE CONDUCTE SIS 7-6"-PG-303/304
FABRICA DE HIDROGEN Nr. 1

Title: SPECIFICATIE SUPTORI CU ARC (SPRING DATA SHEET)

Drawn: CGE	Scale: NA	Client N°: -	Dwg. N°: 20029-30-23A-001-SA
Date: 16.06.2020			
Sheet: 6/7			Format: A3
Rev.: 0			



THE BADGER COMPANY



- 6 Threaded rod
- 5 Three bolt clamp
- 4 Constant hanger
- 3 Threaded stud
- 2 Eye nut
- 1 Weld-on clevis /w bolt

MARCA SUPORT CU ARC / SPRING HANGER TAG:	SH-5
TIP SUPORT CU ARC / SPRING HANGER TYPE:	VARIA
MARIME SUPORT CU ARC / SPRING HANGER SIZE:	USEG
CANTITATE / QUANTITY:	1

INCARCARE LA MONTAJ / COLD LOAD (N):	4.300
INCARCARE IN OPERARE / HOT LOAD (N):	3930
DEPLASARE VERTICALA MAXIMA / MAX. VERTICAL DISPLACEMENT (mm):	+17
DEPLASARE ORIZONTALA MAXIMA / MAX. HORIZ. DISPLACEMENT (X) (mm):	+4.1
DEPLASARE ORIZONTALA MAXIMA / MAX. HORIZ. DISPLACEMENT (Y) (mm):	-52
RIGIDITATE ARC / SPRING RATE (N/cm):	333
DIAMETRU EXTERIOR CONDUCTA / PIPE OUTSIDE DIAMETER (mm):	168.3
MATERIAL CONDUCTA / PIPE MATERIAL:	B-407
TEMPERATURA TEAVA / PIPE TEMPERATURE (°C):	871
DECALARE LA MONTAJ / INSTALLATION OFFSET (mm):	0
SPATIU DISPONIBIL / AVAILABLE SPACE (mm):	1317

NOTES

1. MATERIALELE VOR FI ALESE DE VENDOR / MATERIALS BY SPRING VENDOR
2. TOATE COMPONENTELE VOR FI FURNIZATE DE VENDORUL DE SUPTOR CU ARC / ALL ITEMS TO BE SUPPLIED BY SPRING VENDOR UNLESS OTHERWISE SPECIFIED
3. VENDORUL TREBUIE SA GARANTEZE CA TOATE ELEMENTELE COMPONENTE SUNT CORESPUNZATORAE PENTRU INCARCARILE SI TEMPERATURILE DATE / SPRING HANGER VENDOR TO ENSURE ALL DETAILS ARE COMPATIBLE WITH THE GIVEN LOADS AND TEMPERATURE
4. TIJELE VOR FI FURNIZATE CU 150mm MAI PENTRU AJUSTARE LA MONTAJ / THREADED RODS SHALL BE SUPPLIED 150mm LONGER FOR ADJUSTMENTS IN SITE

[illegible]

Project: INLOCUIRE CONDUITE SIS 7-6"-PG-303/304

FABRICA DE HIDROGEN Nr. 1

File: SPECIFICATIE SUPTURI CU ARC (SPRING DATA SHEET)

Drawn: CGE	Scale: NA	Client N°: —	Dwg. N°: 20029-30-23A-001-SA
Date: 16.06.2020			



THE B



S.C. PETROTEL
LUKOIL S.A.

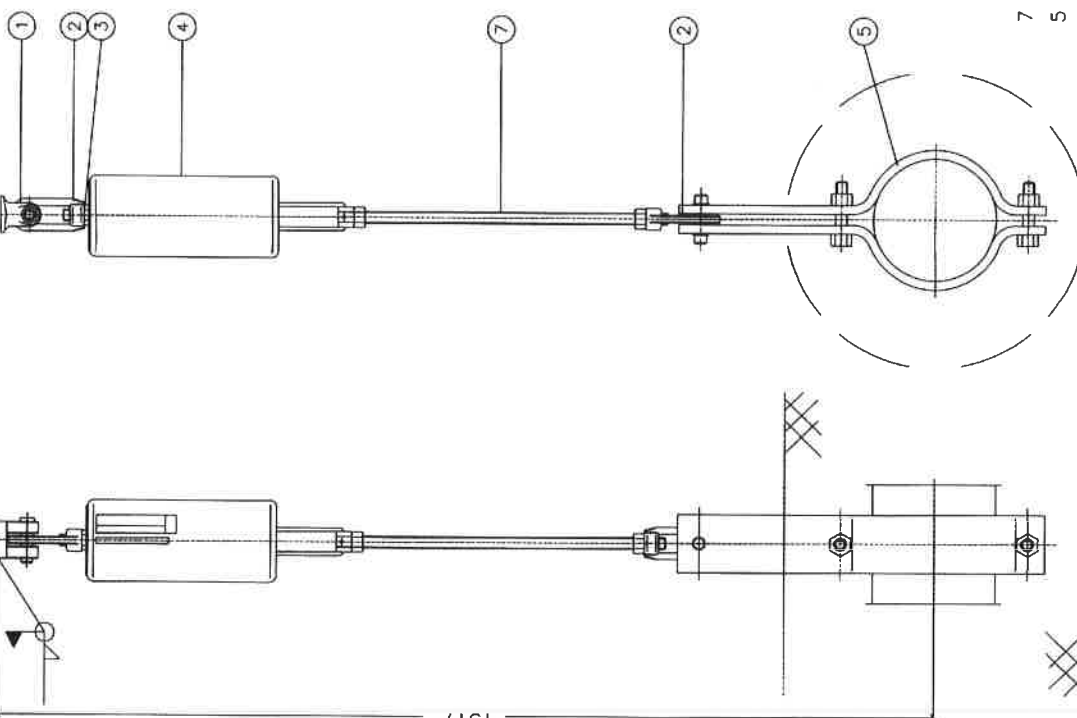
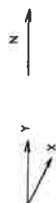
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Rev.: 0

Format: A3

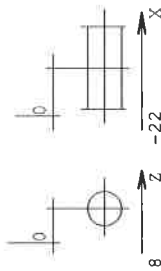
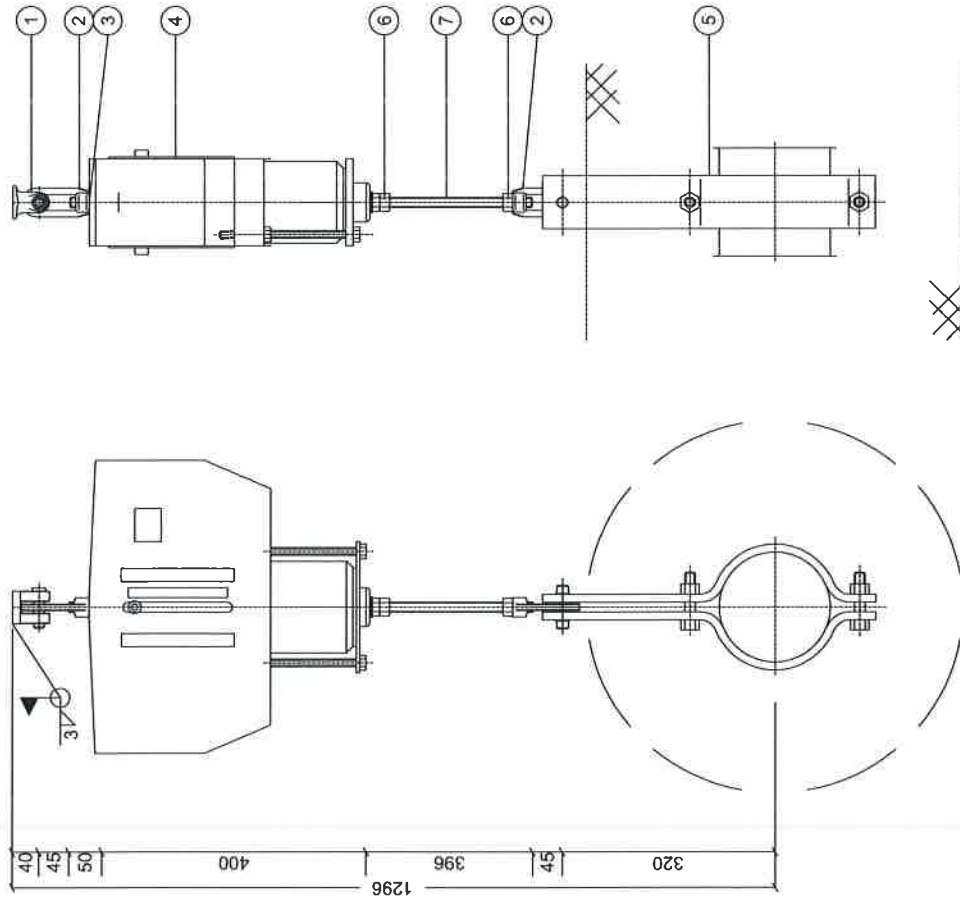
This Budget is Confidential

2 (VERTICAL)



- 7 Threaded rod
- 5 Three bolt clamp
- 4 Variable spring hanger
- 3 Threaded stud
- 2 Eye nut
- 1 Weld-on clevis / w bolt

This drawing must not be copied, lent or used in whole or part without the written consent of THE BADGER COMPANY



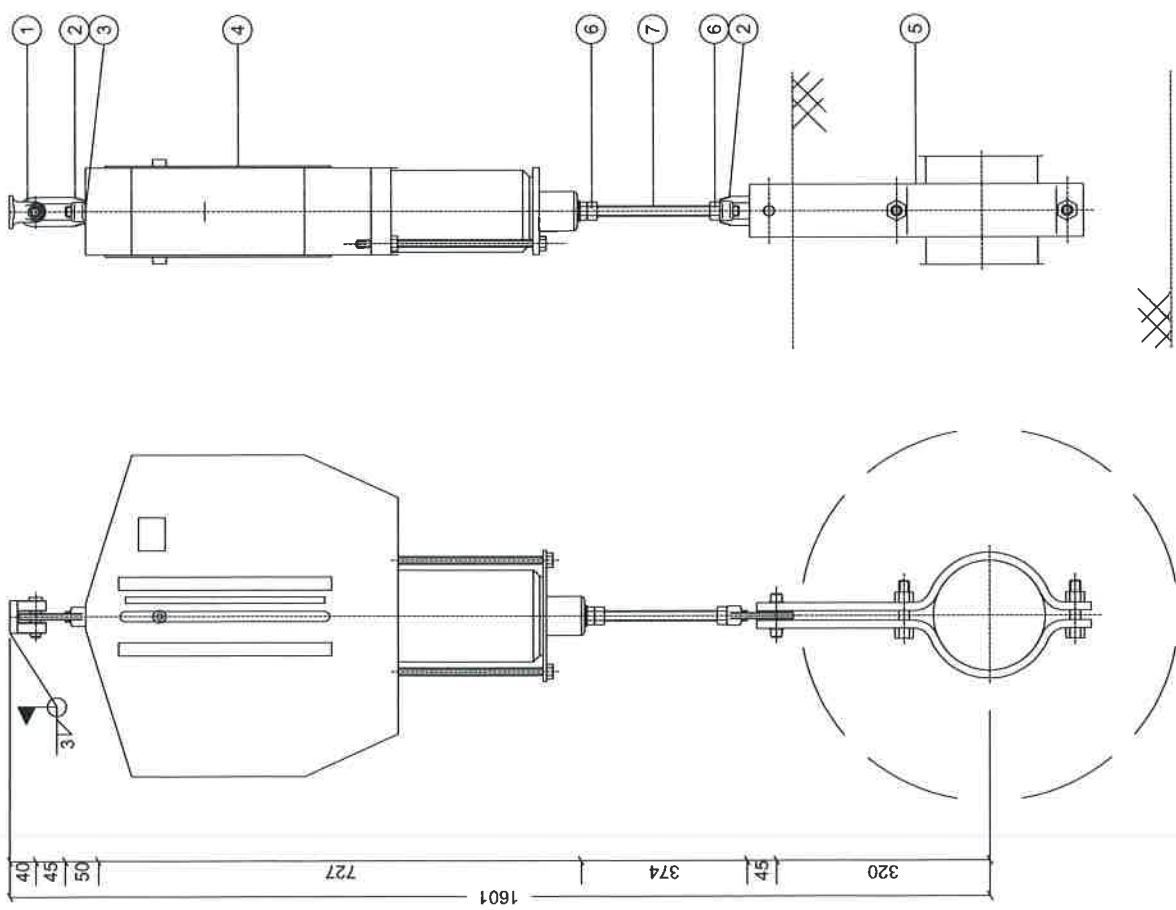
Pipe clamp is selected for a load inclined at an angle of 2°

* Alternatively ASTM A387 Grade 91 will be supplied

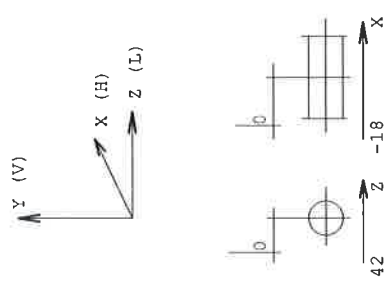
Pos.	Description	Type	mm	Qty	kg	Material
8	Pressassembly	941100		1	0.00	
7	Threaded rod	673213	(396)	1	0.65	S235JR
6	Hexagonal nut	633928	M16	2	0.06	Gr. 8
5	Three bolt clamp	431759	D168.3	1	9.10	X10CrMoVNb9-
4	Constant hanger	113215		1	27.00	
3	Threaded stud	673113	50	1	0.07	S235JR
2	Eye nut	603912		2	0.40	P 250 GH
1	Weld-on clevis /w bolt	733913		1	0.40	S355J2
					37.68	

Pos. Description	Type	mm	Qty	kg Material
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SE-02	Input F(C) = F(H) =	4.40 kN* 4.50 kN		 LISEGA
	F(P) =	4.50 kN		
	later.= horiz.= vert.=	8 mm -22 mm -68 mm		Customer : PETROTEL LUKOIL Plant / System : P.O. N° :
	Ø OD = Insul = Temp. = ΔF =	168.3 mm 200 mm 650 °C 0 %		LISEGA Offer N° : 0-8-0 0 LICAD Dwg.- N° 407-3-29153 Rev.
	tot Tvl = Preset= tri Tvl =	90 mm 10 mm -68,20 mm		PIPESUPPORT CONSULT M.Ghergut Drawing N° :
			Project manager	01/02/2023
				Checked:



DRMU-1619-09.02.23

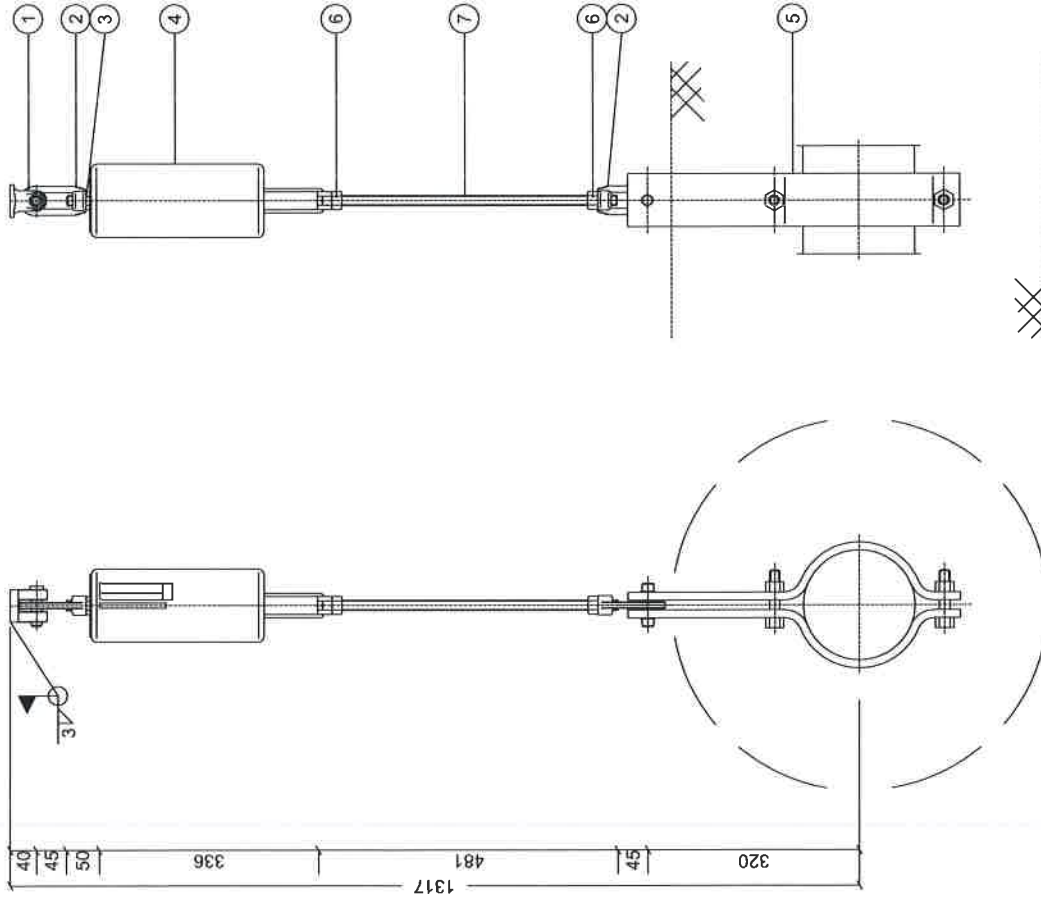


Pipe clamp is selected for a load inclined at an angle of 2°
* Alternatively ASTM A387 Grade 91 will be supplied

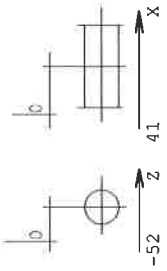
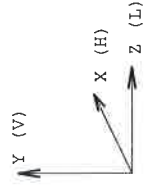
8 Preassembly	941100		1	0.00
7 Threaded rod	673213	(374)	1	0.65 S235JR
6 Hexagonal nut	633928	M16	2	0.06 Gr. 8
5 Three bolt clamp	431759	D168.3	1	9.10 X10CrMoVNB9
4 Constant hanger	113315		1	43.00
3 Threaded stud	673113	50	1	0.07 S235JR
2 Eye nut	603912		2	0.40 P 250 GH
1 Weld-on clevis /w bolt	733913		1	0.40 S355J2
				53.68

Pos. Description	Type	mm	Qty	kg	Material
------------------	------	----	-----	----	----------

SH-03		Input F (C) = F (H) =	4.05 kN 4.15 kN	 LISEGA	
F (P) =		4.15 kN			
later.= horiz.= vert.=		42 mm -18 mm -96 mm			
Ø OD = Insul= Temp.= ΔF =		168.3 mm 200 mm 650 °C 0 ¢			
tot Tvl = Preset= tri Tvl =		201 mm 52 mm -96.62 mm			
Customer : PETROTEL LUKOIL Plant / System : P.O. N° : Order no. :		LISEGA Offer N° : 0-8-0 0 LICAD Dwg.- N° 408-3-29153 PIPESUPPORT CONSULT M.Ghergut Drawing N° : Project manager 01/02/2023		Rev. Checked:	



DRMU-1619-09.02.23



Pipe clamp is selected for a load inclined at an angle of 4°
* Alternatively ASTM A387 Grade 91 will be supplied

Pos. Description	Type	mm	Qty	kg	Material
9 Preset and blocking with	919212		1	0.00	
8 Pressassembly	941100		1	0.00	
7 Threaded rod	673213	(481)	1	0.65	S235JR
6 Hexagonal nut	633928	M16	2	0.06	Gr. 8
5 Three bolt clamp	431759	D168.3	1	9.10	X10CrMoVNb9-
4 Variable spring hanger	213218		1	6.00	
3 Threaded stud	673113	50	1	0.07	S235JR
2 Eye nut	603912		2	0.40	P 250 GH
1 Weld-on clevis /w bolt	733913		1	0.40	S355J2
				16.68	

SH-05

Input F(C) = 4.30 kN
F(H) = 3.89 kN
F(C) = 4.40 kN
F(P) = 4.40 kN

later.= -52 mm
horiz.= 41 mm
vert.= 17 mm

Ø OD = 168.3 mm
Insul= 200 mm
Temp.= 650 °C
ΔF = 13 %
Spring rate = 33.3 N/mm
tot Tvl = 100 mm
Preset= 81 mm
tri Tvl = 15.31 mm

Customer : LISEGA Offer N° :
PETROTEL LUKOIL 0-8-0 0
Plant / System :

P.O. N° :

Order no.:

Rev.:
LICAD Dwg.- N°
409-3-29153

PIPESUPPORT CONSULT
M.Ghergut
Drawing N° :

Project manager 01/02/2023
Checked: