

Date/Datum: 20 Aug, 2015

Customer Client Auftraggeber	SANTOS LTD	Order No No commande Bestell nr	229 -1040745A	Fisher Ref Réf. Fisher Fisher ref.	229 -1040745A 000003 1325636
Tag No No repère Kenn Nr	8510-XV-00036	Serial No No de série Serien Nr	21475268		
Type Type Baureihe	VIRGO TMBV BETTIS G7132-	Size Dimension Nennweite	20"	Rating Classe Druckstufe	CL900

We hereby certify, that the material described above has been tested and complies with the terms of the contract.

Nous certifions que la livraison susnommée a été vérifiée et est conforme aux stipulations de l'acceptation de la commande.

Wir bestätigen, dass die obengenannte Lieferung geprüft wurde und den vereinbarungen der Auftragsbestätigung entspricht.

Dimension & visual check Satisfactory / Satisfaisant / Zufriedenstellend

Contrôle visuel & dimensionnel

mass & Sichtprüfung

Function test Satisfactory / Satisfaisant / Zufriedenstellend

Essai de fonctionnement

Funktionsprüfung

This unit meets the metallurgical requirement of NACE as indicated below. Environmental restrictions may apply to wetted parts and/or boltings.

Cet appareil répond aux exigences métallurgiques de la norme NACE cochée ci-dessous. Les restrictions environnementales peuvent s'appliquer aux pièces en contact avec le fluide et/ou à la boulonnerie.

Dieses Gerät erfüllt die metallurgischen Anforderungen des angekreuzten NACE Standard. Umwelt-Einschränkungen können für Medium berührte Teile und/oder Verschraubungen gelten.

- ☐ NACE MR0175 / ISO 15156-2009 / Suivant NACE MR0175 / ISO 15156-2009 / Nach NACE MR0175 / ISO 15156-2009
- ☐ NACE MR0175-2002 / Suivant NACE MR0175-2002 / Nach NACE MR0175-2002
- ☐ MR0175-2003 / Suivant NACE MR0175-2003 / Nach NACE MR0175-2003
- ☐ MR0103-2012 / Suivant NACE MR0103-2012 / Nach NACE MR0103-2012

Pressure and leak tests /Epreuves de résistance et essais d'étanchéité / Druck und Dichtheitsprüfung

	Water/ Eau/ Wasser Air/Air/Luft Nitrogen/ Azote/Stickstoff Helium	Pressure (gauges)/ Pression/ Druck	Test duration/ Durée/ Prüfdauer	Result conform to / Résultat conforme à/ Ergebnis	Allowable Leakage / Fuite Tolérée / Zulässige Leckage	Actual Leakage / Fuite Relevée / Gemessene Leckage	Customer Note/ Note Client/ Kunde Anmerkung
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Material test certificates /Certificats matières / Bescheinigungen über Werkstoffprüfungen Certificat de reception 3.1

Description/Description/Bezeichnung	Material/Matériaux/Werkstoff	Heat No/No Coulée/Charge Nr
8510-XV-00036	20" CL900 VIRGO TMBV VALVE	AS2749

External Inspection/ Inspection extérieur / Externe Inspektion

Works Inspection/ L'expert de l'usine/ Werkssachverständiger

Mark Nelson -- QA DOCUMENTATION TECH

Mark Nelson

Customer Client Auftraggeber	SANTOS LTD	Order No No commande Bestell nr	229 -1040745A	Fisher Ref Réf. Fisher Fisher ref.	229 -1040745A 000003 1325636
Tag No No repère Kenn Nr	8510-XV-00036	Serial No No de série Serien Nr	21475268		
Type Type Baureihe	VIRGO TMBV BETTIS G7132-	Size Dimension Nennweite	20"	Rating Classe Druckstufe	CL900

We hereby certify, that the material described above complies with the requirement of the order.

Nous certifions que la livraison susnommée a été vérifiée et est conforme aux stipulations de l'acceptation de la commande.

Wir bestätigen, dass die obengenannte Lieferung den Vereinbarungen der Auftrag entspricht.

The following parts were made from materials complying ASTM, ASME, EN or other Standard specifications.

La matière des composants est conforme aux normes ASTM, ASME, EN ou autres normes.

Der Werkstoff der nachstehenden Bauteile entspricht den Anforderungen des ASTM, ASME, EN Norm oder anderen Normen.

Part/ Pièce / Teil	Material / Matériaux / Werkstoff
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Works Inspection/ L'expert de l'usine/ *Werkssachverständiger*
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Date/Datum: 20 Aug, 2015

Customer Client <i>Auftraggeber</i>	SANTOS LTD	Order No No commande <i>Bestell nr</i>	229 -1040745A	Fisher Ref Réf. Fisher <i>Fisher ref.</i>	229 -1040745A 000003 1325636
Tag No No repère <i>Kenn Nr</i>	8510-XV-00036	Serial No No de série <i>Serien Nr</i>	21475268		
Type Type <i>Baureihe</i>	VIRGO TMBV BETTIS G7132-	Size Dimension <i>Nennweite</i>	20"	Rating Classe <i>Druckstufe</i>	CL900

	Water/ Eau/ Wasser Air/Air/Luft Nitrogen/ <i>Azote/Stickstoff</i> <i>Helium</i>	Pressure (gauges)/ <i>Pression/ Druck</i>	Test duration/ <i>Durée/</i> <i>Prüfdauer</i>	Result conform to <i>/ Résultat conforme</i> <i>à/ Ergebnis</i>	Allowable Leakage / Fuite <i>Tolérée /</i> <i>Zulässige</i> <i>Leakage</i>	Actual Leakage / Fuite <i>Relevée / Gemessene</i> <i>Leakage</i>	Customer Note/ Note <i>Client/ Kunde</i> <i>Anmerkung</i>
Valve Link Test	AIR						

External Inspection/ Inspection extérieur / *Externe Inspektion*

Works Inspection/ L'expert de l'usine/ *Werkssachverständiger*

Mark Nelson -- QA DOCUMENTATION TECH

Mark Nelson

Customer SANTOS LTD Client <i>Auftraggeber</i>		Order No 229 -1040745A No commande <i>Bestell nr</i>		Fisher Ref 229 -1040745A Réf. Fisher 000003 <i>Fisher ref.</i> 1325636	
Tag No 8510-XV-00036 No repère <i>Kenn Nr</i>			Serial No 21475268 No de sérle <i>Serien Nr</i>		
Type VIRGO TMBV Type BETTIS G7132- <i>Baureihe</i>		Size 20" Dimension <i>Nennweite</i>		Rating CL900 Classe <i>Druckstufe</i>	

☒ Welders and welding procedures are qualified in accordance with ASME, Boiler and Pressure Vessel code section IX and all personnel performing nondestructive examinations are qualified to ASNT / SNT-TC-1A.

☐ This product is registered in Canada under CRN:

Additional Statements:

Works Inspection/ L'expert de l'usine/ *Werkssachverständiger*
Mark Nelson -- QA DOCUMENTATION TECH

Mark Nelson

ValveLink Custom Report

August 17, 2015

13:46:47

FLOWSCAN
Steven McDonald
Emerson Process Management
Wetherill Park

8510-XV-00036

DVC6200 SIS

HART Tag Name XV00036
Valve Style Rotary
Actuator Style Piston - Sgl w/ Spring
Instrument S/N 0021475268
Valve S/N 0021475268
Firmware Revision 6
Hardware Revision 2

Instrument Configuration [8510-XV-00036] - Basic

13 Aug 2015 15:11:00 Factory

Initial Setup

Control Mode Analog (RSP)
Restart Cont. Analog (RSP)
Mode
Zero Power Valve Closed
Condition
Valve Style Rotary Shaft
Actuator Style Piston - Sgl w/ Spring
Relay Type Relay A or C
Feedback RShaft End Array
Connection
Travel Sensor Clockwise / Away From
Motion Top of Instrument
Aux Terminal Push Button Partial
Mode Stroke Test
Partial Stroke Valve Open
Start Pt.
Local Autocal Disabled
Button

Inputs

Temperature Units C
Analog Input Units mA

General

HART Tag XV00036
Message
Descriptor 20/VIRGO/BETTIS
Date 08/13/15
Valve Serial Number 0021475268
Instrument Serial 0021475268
Number
Polling Address 0

Input Characterization

Input Characteristic Linear

Pressure

Pressure Units kPa
Max Supply Pressure 550.9 kPa

Outputs

HART Variable Assignments

Primary Variable Input Current
(PV)
Secondary Travel Setpoint
Variable (SV)
Tertiary Variable Pressure A
(TV)
Quaternary Travel
Variable (QV)

Output Terminal Configuration

Function Disabled
Fail Signal Transmitter Low /
Switch Open

Transmitter Configuration

Transmitter 4mA = Valve Closed
Output

0-1A Switch Configuration

Limit Switch Trip 50
Point (%)
Alert Switch Not Configured
Source
Switch Closed Below Trip Point /
Alert Not Active

Tuning

Travel Control

Travel Control Tuning Set Expert
Proportional 8.5
Velocity 4
MLF 50
Enable Integral Control No
Integral Gain (reps/min) 9.4

Integral Settings

Integral Dead Zone (%) 0.26
Integral Limit (%) 50

Pressure Control

Pressure Control Tuning Set C
Proportional 2.2
Enable Integral Control Yes
Integral Gain (reps/sec) 0.1

SIS / Partial Stroke

Partial Stroke

Enable Disabled
Partial Stroke Press 211.7 kPa
Limit
Max. Travel 14.5
Movement (%)
Test Speed 0.06%/s
Test Pause Time 30 sec
Auto Test Interval 0 days 0 hours
0 minutes
Start PST on Loop Disabled
Current Trigger

SIS Options

DVC Power Up Auto Reset
Action on Failed test Step Back

Travel/Pressure Control

Travel/Pressure Control

Travel / Pressure Select Travel
Low Limit/Cutoff Select Cutoff
Low Limit/Cutoff Point 50
High Limit/Cutoff Select Cutoff
High Limit/Cutoff Point 50

End Point Press. Control

End Point Control Enable Disabled
Pressure Set Point 492.5
kPa
Pressure Saturation Time 45
(sec)

Dynamic Response

Set Point Rate Limits

SP Rate Open (%/sec) 0
SP Rate Close (%/sec) 0

Set Point Filter

Lag Time (sec) 0

Instrument Configuration [8510-XV-00036] - Alerts**13 Aug 2015 15:11:00 Factory****Deviation & Other Alerts**

Travel Dev Alert Enable	Yes
Travel Dev Alert Pt (%)	9.99
Travel Dev Time (sec)	10
Pressure Dev Alert Enable	Yes
Pressure Dev Alert Pt	13.8 kPa
Pressure Dev Time (sec)	29.98
Drive Signal Alert Enable	Yes
Supply Pressure Alert Enable	Yes
Supply Pressure Alert Point	34.5 kPa

Travel Alerts

Tvl Alert Low Enable	No
Tvl Alert High Enable	No
Tvl Alert Low Low Enable	No
Tvl Alert High High Enable	No
Low Point (%)	-25
High Point (%)	125
Low Low Point (%)	1
High High Point (%)	98.97
Deadband (%)	1
Tvl Limit/Cutoff Low Enable	No
Tvl Limit/Cutoff High Enable	No

Travel History Alerts

Cycle Count Alert Enable	No
Cycle Count Alert Point	500000
Cycle Count	0
Trav Acc Alert Enable	No
Tvl Accum Alert Pt (%)	500000
Travel Accumulator (%)	0
Cycle Cnt/Tvl Accum Deadband	1
(%)	

Self Test Shutdown

Flash Integrity Failure	No
Minor Loop Sensor Failure	No
Reference Voltage Failure	No
Critical NVM Failure	No
Non-Critical NVM Failure	No
Temperature Sensor Failure	No
Travel Sensor Failure	No
Drive Current Failure	No
Loop Current Validation	No
Program Flow Failure	No
SIS Hardware Shutdown Failure	No

Alert Record and Commands

Instrument Clock	13 AUG 2015
	15:10
Alert Record Enable	Yes
Alert Record Not Empty	No
Enable	
Alert Record Full Enable	No
Burst Mode Enable	No
Burst Command	3

Informational Status

Inst Time Invalid Enable	No
Cal in Progress Enable	No
Autocal in Progress Enable	No
Diag in Progress Enable	No
Diag Data Avail Enable	No
Integrator Sat High Enable	No
Integrator Sat Low Enable	No
Pressure Fallback Enable	Yes
LCP Trip Enable	No
SIS Locked in Safety Position Enable	No

Electronic Alerts

Shutdown Activated Alert Enable	Yes
Non-Critical NVM Alert Enable	Yes
Output Circuit Alert Enable	Yes

Instrument Configuration [8510-XV-00036] - Spec Sheet**13 Aug 2015 15:11:00 Factory****Spec Sheet Units**

Travel Units	deg
Length Units	mm
Area Units	mm2
Torque Units	kgf.m
Spring Rate Units	kgf/mm

Valve

Valve Mfg.	VIRGO
Valve Model	TMBV
Size	20 in
Class	900
Rated Travel	90.0 deg
Actual Travel	90.0 deg
Stem Diameter	0.0 mm
Packing Type	
Inlet Pressure	0.0 kPa
Outlet Pressure	0.0 kPa
Dynamic Torque	0.0 kgf.m
Breakout Torque	0.0 kgf.m

Trim

Seat Type	VITON
Leak Class	
Port Diameter	0.0 mm

Actuator

Actuator Mfg.	Bettis
Actuator Model	G-Series
Actuator Size	G7x32
Effective Area	516128.03
	mm2
Air	
Lower Bench Set	0.0 kPa
Upper Bench Set	0.0 kPa
Nominal Supply	0.0 kPa
Pressure	
Spring Rate	0.0 kgf/mm
Lever Style	Scotch Yoke
Lever Arm Length	171.45 mm

Accessories

Volume Booster	Other
Solenoid Valve	None
Position Transmitter	None
Limit Switch, Valve Open	None
Limit Switch, Valve Closed	None

Status Monitor [8510-XV-00036]

13 Aug 2015 14:55:37 Factory

Monitor		Alerts			
		Alert	Enabled	Actual	Alert Point
Input Current	12.01 mA	Travel High	OFF	No	99.88 %
Travel Set Point	100.00 %	Travel Low	OFF	No	99.88 %
Travel	99.88 %	Travel High High	OFF	No	99.88 %
Travel Deviation	0.13 %	Travel Low Low	OFF	No	99.88 %
Pressure A	498.75 kPa	Travel Deviation	OFF	Yes	0.13 %
Pressure B	-1.61 kPa	Cycle Count High	OFF	No	17 cycles
A Minus B	500.36 kPa	Travel Accumulator High	OFF	No	937 %
B Minus A	-500.36 kPa	Drive Signal Out of Range	OFF	Yes	75.81 %
Supply Pressure	499.25 kPa	Supply Pressure Low	OFF	Yes	499.25 kPa
Drive Signal	75.81 %	Configuration Changed	OFF	Yes	
Tvl Press State	Tvl	Loop Current Validation Alert	OFF	No	
Control Mode	Analog (RSP)	Internal Sensor Out of Limits	OFF	Yes	
Instrument Mode	In Service	Variable Out of Range	OFF	Yes	
Burst Mode	No	In Calibration Mode	OFF	No	
Travel Count	724	Tripped by LCP	OFF	No	
Cycle Count	17 cycles	LCP Communication Failure	OFF	Yes	
Travel Accumulator	937 %	Auto Tvl Cal Failed	OFF	No	
Input Characteristic	Linear	Diagnostic in Progress	OFF	No	
Relay Adjustment	N/A	SIS Hardware Shutdown Failure	OFF	Yes	
Temperature	19.44 C	Excessive Writes to NVM	OFF	Yes	
Max Recorded Temp	23.81 C	Program Flow Failure	OFF	Yes	
Min Recorded Temp	18.69 C	Minor Loop Sensor Failure	OFF	Yes	
Run Time		Output Circuit Failure	OFF	Yes	
Number of Powerups	15	Travel Sensor Failure	OFF	Yes	
		Temperature Sensor Failure	OFF	Yes	
		Pressure Sensor Failure	OFF	Yes	
		Drive Current Failure	OFF	Yes	
		Critical NVM Failure	OFF	Yes	
		Flash Integrity Failure	OFF	Yes	
		Reference Voltage Failure	OFF	Yes	
		Alert Record Not Empty	OFF	No	
		Alert Record Full	OFF	No	
		Integrator Saturated High	OFF	No	
		Integrator Saturated Low	OFF	No	
		Shutdown Activated	OFF	Yes	
		SIS Valve Stuck	OFF	Yes	
		End Point Pressure Control Deviation	OFF	Yes	-6.25 kPa
		Non-Critical NVM Failure	OFF	Yes	
		Instrument Time Invalid	OFF	No	
		Diagnostic Data Available	OFF	No	
		SIS Locked in Safety Position	OFF	No	
		Travel Limit/Cutoff High	OFF	No	
		Travel Limit/Cutoff Low	OFF	No	
		Pressure Fallback Active	OFF	Yes	
Device					
Message					
Descriptor	20/VIRGO/BETTIS				
Instrument Serial Number	0021475268				
Instrument Family	DVC6200				
Device Type	130a				
HART Universal Revision	5				
Hardware Revision	2				
Device Revision	1				
Firmware Revision	6				
Firmware Date	20 May 2013				
Device ID	10830246				
Instrument Level	SIS				
Pressure Sensor	Yes				
Valve Serial Number	0021475268				
Valve Style	Rotary Shaft				
Actuator Style	Piston - Sgl w/ Spring				
Relay Type	Relay A or C				
Last Travel Calibration Type	Factory				
Status of Last Travel Cal	Success				
Calibration Person					
Calibration Date	13 Aug 2015				

Status Monitor [8510-XV-00036]**13 Aug 2015 14:54:30 Factory**

Monitor		Alerts			
		Alert	Enabled	Actual	Alert Point
Input Current	19.98 mA	Travel High	OFF	No	99.88 %
Travel Set Point	100.00 %	Travel Low	OFF	No	99.88 %
Travel	99.88 %	Travel High High	OFF	No	99.88 %
Travel Deviation	0.13 %	Travel Low Low	OFF	No	99.88 %
Pressure A	508.75 kPa	Travel Deviation	OFF	Yes	0.13 %
Pressure B	-1.55 kPa	Cycle Count High	OFF	No	17 cycles
A Minus B	510.30 kPa	Travel Accumulator High	OFF	No	937 %
B Minus A	-510.30 kPa	Drive Signal Out of Range	OFF	Yes	100.50 %
Supply Pressure	509.25 kPa	Supply Pressure Low	OFF	Yes	509.25 kPa
Drive Signal	100.50 %	Configuration Changed	OFF	Yes	
Tvl Press State	Tvl	Loop Current Validation Alert	OFF	No	
Control Mode	Analog (RSP)	Internal Sensor Out of Limits	OFF	Yes	
Instrument Mode	In Service	Variable Out of Range	OFF	Yes	
Burst Mode	No	In Calibration Mode	OFF	No	
Travel Count	726	Tripped by LCP	OFF	No	
Cycle Count	17 cycles	LCP Communication Failure	OFF	Yes	
Travel Accumulator	937 %	Auto Tvl Cal Failed	OFF	No	
Input Characteristic	Linear	Diagnostic in Progress	OFF	No	
Relay Adjustment	N/A	SIS Hardware Shutdown Failure	OFF	Yes	
Temperature	19.50 C	Excessive Writes to NVM	OFF	Yes	
Max Recorded Temp	23.81 C	Program Flow Failure	OFF	Yes	
Min Recorded Temp	18.69 C	Minor Loop Sensor Failure	OFF	Yes	
Run Time		Output Circuit Failure	OFF	Yes	
Number of Powerups	15	Travel Sensor Failure	OFF	Yes	
		Temperature Sensor Failure	OFF	Yes	
		Pressure Sensor Failure	OFF	Yes	
		Drive Current Failure	OFF	Yes	
		Critical NVM Failure	OFF	Yes	
		Flash Integrity Failure	OFF	Yes	
		Reference Voltage Failure	OFF	Yes	
		Alert Record Not Empty	OFF	No	
		Alert Record Full	OFF	No	
		Integrator Saturated High	OFF	No	
		Integrator Saturated Low	OFF	No	
		Shutdown Activated	OFF	Yes	
		SIS Valve Stuck	OFF	Yes	
		End Point Pressure Control Deviation	OFF	Yes	-16.25 kPa
		Non-Critical NVM Failure	OFF	Yes	
		Instrument Time Invalid	OFF	No	
		Diagnostic Data Available	OFF	No	
		SIS Locked in Safety Position	OFF	No	
		Travel Limit/Cutoff High	OFF	No	
		Travel Limit/Cutoff Low	OFF	No	
		Pressure Fallback Active	OFF	Yes	
Device					
Message					
Descriptor	20/VIRGO/BETTIS				
Instrument Serial Number	0021475268				
Instrument Family	DVC6200				
Device Type	130a				
HART Universal Revision	5				
Hardware Revision	2				
Device Revision	1				
Firmware Revision	6				
Firmware Date	20 May 2013				
Device ID	10830246				
Instrument Level	SIS				
Pressure Sensor	Yes				
Valve Serial Number	0021475268				
Valve Style	Rotary Shaft				
Actuator Style	Piston - Sgl w/ Spring				
Relay Type	Relay A or C				
Last Travel Calibration Type	Factory				
Status of Last Travel Cal	Success				
Calibration Person					
Calibration Date	13 Aug 2015				

Status Monitor [8510-XV-00036]**13 Aug 2015 14:53:27 Factory**

Monitor		Alerts			
		Alert	Enabled	Actual	Alert Point
Input Current	16.00 mA	Travel High	OFF	No	16.89 %
Travel Set Point	100.00 %	Travel Low	OFF	No	16.89 %
Travel	16.89 %	Travel High High	OFF	No	16.89 %
Travel Deviation	83.11 %	Travel Low Low	OFF	No	16.89 %
Pressure A	295.00 kPa	Travel Deviation	ON	Yes	83.11 %
Pressure B	-1.55 kPa	Cycle Count High	OFF	No	17 cycles
A Minus B	296.55 kPa	Travel Accumulator High	OFF	No	853 %
B Minus A	-296.55 kPa	Drive Signal Out of Range	OFF	Yes	100.50 %
Supply Pressure	297.75 kPa	Supply Pressure Low	OFF	Yes	297.75 kPa
Drive Signal	100.50 %	Configuration Changed	OFF	Yes	
Tvl Press State	Tvl	Loop Current Validation Alert	OFF	No	
Control Mode	Analog (RSP)	Internal Sensor Out of Limits	OFF	Yes	
Instrument Mode	In Service	Variable Out of Range	OFF	Yes	
Burst Mode	No	In Calibration Mode	OFF	No	
Travel Count	2915	Tripped by LCP	OFF	No	
Cycle Count	17 cycles	LCP Communication Failure	OFF	Yes	
Travel Accumulator	853 %	Auto Tvl Cal Failed	OFF	No	
Input Characteristic	Linear	Diagnostic in Progress	OFF	No	
Relay Adjustment	N/A	SIS Hardware Shutdown Failure	OFF	Yes	
Temperature	19.50 C	Excessive Writes to NVM	OFF	Yes	
Max Recorded Temp	23.81 C	Program Flow Failure	OFF	Yes	
Min Recorded Temp	18.69 C	Minor Loop Sensor Failure	OFF	Yes	
Run Time		Output Circuit Failure	OFF	Yes	
Number of Powerups	15	Travel Sensor Failure	OFF	Yes	
		Temperature Sensor Failure	OFF	Yes	
		Pressure Sensor Failure	OFF	Yes	
		Drive Current Failure	OFF	Yes	
		Critical NVM Failure	OFF	Yes	
		Flash Integrity Failure	OFF	Yes	
		Reference Voltage Failure	OFF	Yes	
		Alert Record Not Empty	OFF	No	
		Alert Record Full	OFF	No	
		Integrator Saturated High	OFF	No	
		Integrator Saturated Low	OFF	No	
		Shutdown Activated	OFF	Yes	
		SIS Valve Stuck	OFF	Yes	
		End Point Pressure Control Deviation	OFF	Yes	197.50 kPa
		Non-Critical NVM Failure	OFF	Yes	
		Instrument Time Invalid	OFF	No	
		Diagnostic Data Available	OFF	No	
		SIS Locked in Safety Position	OFF	No	
		Travel Limit/Cutoff High	OFF	No	
		Travel Limit/Cutoff Low	OFF	No	
		Pressure Fallback Active	OFF	Yes	
Device					
Message					
Descriptor	20/VIRGO/BETTIS				
Instrument Serial Number	0021475268				
Instrument Family	DVC6200				
Device Type	130a				
HART Universal Revision	5				
Hardware Revision	2				
Device Revision	1				
Firmware Revision	6				
Firmware Date	20 May 2013				
Device ID	10830246				
Instrument Level	SIS				
Pressure Sensor	Yes				
Valve Serial Number	0021475268				
Valve Style	Rotary Shaft				
Actuator Style	Piston - Sgl w/ Spring				
Relay Type	Relay A or C				
Last Travel Calibration Type	Factory				
Status of Last Travel Cal	Success				
Calibration Person					
Calibration Date	13 Aug 2015				

Status Monitor [8510-XV-00036]
13 Aug 2015 14:52:50 Factory

Monitor		Alerts			
		Alert	Enabled	Actual	Alert Point
Input Current	8.01 mA	Travel High	OFF	No	0.02 %
Travel Set Point	0.00 %	Travel Low	OFF	No	0.02 %
Travel	0.02 %	Travel High High	OFF	No	0.02 %
Travel Deviation	0.02 %	Travel Low Low	OFF	No	0.02 %
Pressure A	0.27 kPa	Travel Deviation	OFF	Yes	0.02 %
Pressure B	-1.55 kPa	Cycle Count High	OFF	No	16 cycles
A Minus B	1.82 kPa	Travel Accumulator High	OFF	No	837 %
B Minus A	-1.82 kPa	Drive Signal Out of Range	OFF	Yes	0.00 %
Supply Pressure	504.00 kPa	Supply Pressure Low	OFF	Yes	504.00 kPa
Drive Signal	0.00 %	Configuration Changed	OFF	Yes	
Tvl Press State	Tvl	Loop Current Validation Alert	OFF	No	
Control Mode	Analog (RSP)	Internal Sensor Out of Limits	OFF	Yes	
Instrument Mode	In Service	Variable Out of Range	OFF	Yes	
Burst Mode	No	In Calibration Mode	OFF	No	
Travel Count	3364	Tripped by LCP	OFF	No	
Cycle Count	16 cycles	LCP Communication Failure	OFF	Yes	
Travel Accumulator	837 %	Auto Tvl Cal Failed	OFF	No	
Input Characteristic	Linear	Diagnostic in Progress	OFF	No	
Relay Adjustment	N/A	SIS Hardware Shutdown Failure	OFF	Yes	
Temperature	19.38 C	Excessive Writes to NVM	OFF	Yes	
Max Recorded Temp	23.81 C	Program Flow Failure	OFF	Yes	
Min Recorded Temp	18.69 C	Minor Loop Sensor Failure	OFF	Yes	
Run Time		Output Circuit Failure	OFF	Yes	
Number of Powerups	15	Travel Sensor Failure	OFF	Yes	
		Temperature Sensor Failure	OFF	Yes	
		Pressure Sensor Failure	OFF	Yes	
		Drive Current Failure	OFF	Yes	
		Critical NVM Failure	OFF	Yes	
		Flash Integrity Failure	OFF	Yes	
		Reference Voltage Failure	OFF	Yes	
		Alert Record Not Empty	OFF	No	
		Alert Record Full	OFF	No	
		Integrator Saturated High	OFF	No	
		Integrator Saturated Low	OFF	No	
		Shutdown Activated	OFF	Yes	
		SIS Valve Stuck	OFF	Yes	
		End Point Pressure Control Deviation	OFF	Yes	492.23 kPa
		Non-Critical NVM Failure	OFF	Yes	
		Instrument Time Invalid	OFF	No	
		Diagnostic Data Available	OFF	No	
		SIS Locked in Safety Position	OFF	No	
		Travel Limit/Cutoff High	OFF	No	
		Travel Limit/Cutoff Low	OFF	No	
		Pressure Fallback Active	OFF	Yes	
Device					
Message					
Descriptor	20/VIRGO/BETTIS				
Instrument Serial Number	0021475268				
Instrument Family	DVC6200				
Device Type	130a				
HART Universal Revision	5				
Hardware Revision	2				
Device Revision	1				
Firmware Revision	6				
Firmware Date	20 May 2013				
Device ID	10830246				
Instrument Level	SIS				
Pressure Sensor	Yes				
Valve Serial Number	0021475268				
Valve Style	Rotary Shaft				
Actuator Style	Piston - Sgl w/ Spring				
Relay Type	Relay A or C				
Last Travel Calibration Type	Factory				
Status of Last Travel Cal	Success				
Calibration Person					
Calibration Date	13 Aug 2015				

Status Monitor [8510-XV-00036]**13 Aug 2015 14:52:11 Factory**

Monitor		Alerts			
		Alert	Enabled	Actual	Alert Point
Input Current	4.00 mA	Travel High	OFF	No	0.09 %
Travel Set Point	0.00 %	Travel Low	OFF	No	0.09 %
Travel	0.09 %	Travel High High	OFF	No	0.09 %
Travel Deviation	0.09 %	Travel Low Low	OFF	No	0.09 %
Pressure A	2.96 kPa	Travel Deviation	OFF	Yes	0.09 %
Pressure B	-1.61 kPa	Cycle Count High	OFF	No	16 cycles
A Minus B	4.57 kPa	Travel Accumulator High	OFF	No	837 %
B Minus A	-4.57 kPa	Drive Signal Out of Range	OFF	Yes	0.00 %
Supply Pressure	507.00 kPa	Supply Pressure Low	OFF	Yes	507.00 kPa
Drive Signal	0.00 %	Configuration Changed	OFF	Yes	
Tvl Press State	Tvl	Loop Current Validation Alert	OFF	No	
Control Mode	Analog (RSP)	Internal Sensor Out of Limits	OFF	Yes	
Instrument Mode	In Service	Variable Out of Range	OFF	Yes	
Burst Mode	No	In Calibration Mode	OFF	No	
Travel Count	3364	Tripped by LCP	OFF	No	
Cycle Count	16 cycles	LCP Communication Failure	OFF	Yes	
Travel Accumulator	837 %	Auto Tvl Cal Failed	OFF	No	
Input Characteristic	Linear	Diagnostic in Progress	OFF	No	
Relay Adjustment	N/A	SIS Hardware Shutdown Failure	OFF	Yes	
Temperature	19.38 C	Excessive Writes to NVM	OFF	Yes	
Max Recorded Temp	23.81 C	Program Flow Failure	OFF	Yes	
Min Recorded Temp	18.69 C	Minor Loop Sensor Failure	OFF	Yes	
Run Time		Output Circuit Failure	OFF	Yes	
Number of Powerups	15	Travel Sensor Failure	OFF	Yes	
		Temperature Sensor Failure	OFF	Yes	
		Pressure Sensor Failure	OFF	Yes	
		Drive Current Failure	OFF	Yes	
		Critical NVM Failure	OFF	Yes	
		Flash Integrity Failure	OFF	Yes	
		Reference Voltage Failure	OFF	Yes	
		Alert Record Not Empty	OFF	No	
		Alert Record Full	OFF	No	
		Integrator Saturated High	OFF	No	
		Integrator Saturated Low	OFF	No	
		Shutdown Activated	OFF	Yes	
		SIS Valve Stuck	OFF	Yes	
		End Point Pressure Control Deviation	OFF	Yes	489.54 kPa
		Non-Critical NVM Failure	OFF	Yes	
		Instrument Time Invalid	OFF	No	
		Diagnostic Data Available	OFF	No	
		SIS Locked in Safety Position	OFF	No	
		Travel Limit/Cutoff High	OFF	No	
		Travel Limit/Cutoff Low	OFF	No	
		Pressure Fallback Active	OFF	Yes	
Device					
Message					
Descriptor	20/VIRGO/BETTIS				
Instrument Serial Number	0021475268				
Instrument Family	DVC6200				
Device Type	130a				
HART Universal Revision	5				
Hardware Revision	2				
Device Revision	1				
Firmware Revision	6				
Firmware Date	20 May 2013				
Device ID	10830246				
Instrument Level	SIS				
Pressure Sensor	Yes				
Valve Serial Number	0021475268				
Valve Style	Rotary Shaft				
Actuator Style	Piston - Sgl w/ Spring				
Relay Type	Relay A or C				
Last Travel Calibration Type	Factory				
Status of Last Travel Cal	Success				
Calibration Person					
Calibration Date	13 Aug 2015				

ValveLink Custom Report

August 17, 2015

13:46:47

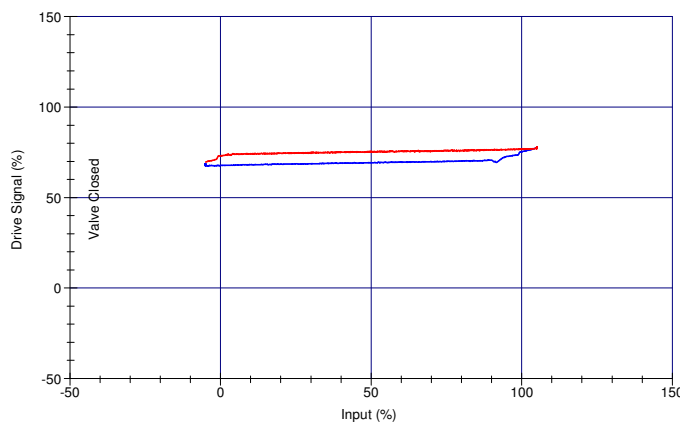
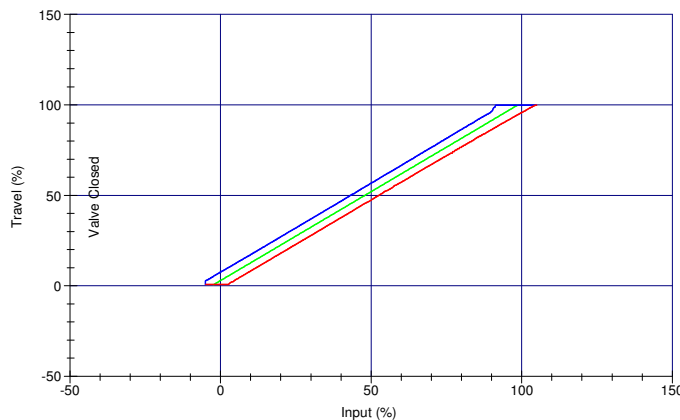
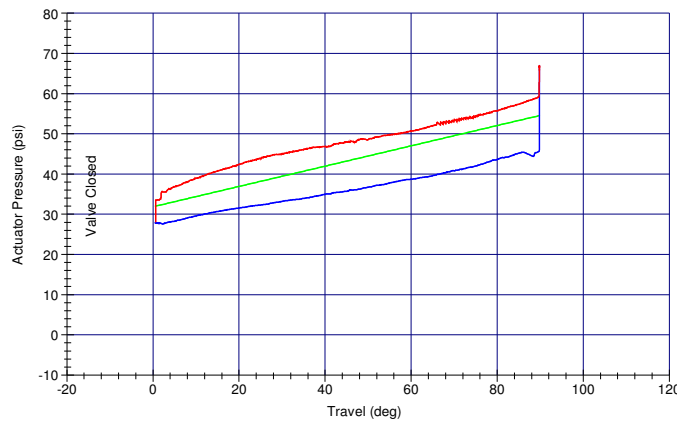
FLOWSCAN

Steven McDonald

Emerson Process Management

Wetherill Park

Total Scan [8510-XV-00036]



13 Aug 2015 15:04:19
Factory

Inputs

Input Start: -5.0 %
Input End: 105.0 %
Scan Time: 200.0 sec
Collection Interval: 150.0 msec.

Analyzed Data

Avg. Dynamic Error: 9.27%
Min. Dynamic Error: 8.89%
Max. Dynamic Error: 10.02%
Dyn. Linearity (Ind.): 0.23%
Zero Ranged Travel at: 3.54 mA
Full Ranged Travel at: 19.81 mA
Average Torque: 31709 lbf.in
Minimum Torque: 24873 lbf.in
Maximum Torque: 34939 lbf.in
Spring Rate: 1714.04 lbf/in
Bench Set: 31.84 - 54.56 psi

Configuration

Tuning

Travel Tuning Set: Expert

Gains

Proportional: 8.50
Velocity: 4.00
MLF: 50.00

Integral Settings

Integral Control: Disabled
Integral Gain (reps/min) 9.4

Notes

Total Scan [8510-XV-00036] - Spec Sheet

13 Aug 2015 15:04:19 Factory

Valve

Manufacturer: VIRGO
Type: TMBV
Size: 20 in
Class: 900
Rated Travel: 90.00000 deg
Actual Travel: 90.00000 deg
Shaft Diameter: 0.00000 mm
Packing Type:
Inlet Pressure: 0.0000 kPa
Outlet Pressure: 0.0000 kPa
Dynamic Torque: 0.0000 kgf.m
Breakout Torque: 0.0000 kgf.m

Trim

Seat Type: VITON
Leakage Class:
Port Diameter: 0.00000 mm

Accessories

Volume Booster: Other
Quick Release: None
Solenoid Valve: None
Position Transmitter: None
Limit Switch, Valve Closed: None
Limit Switch, Valve Open: None

Actuator

Manufacturer: Bettis
Type: G-Series
Size: G7x32
Effective Area: 516128.03125 mm²
Air:
Bench Set: 0.0000 kPa-0.0000 kPa
Nominal Supply Pressure: 0.0000 kPa
Spring Rate: 0.00000 kgf/mm
Style: Scotch Yoke
Lever Arm Length: 171.45000 mm

ValveLink Custom Report

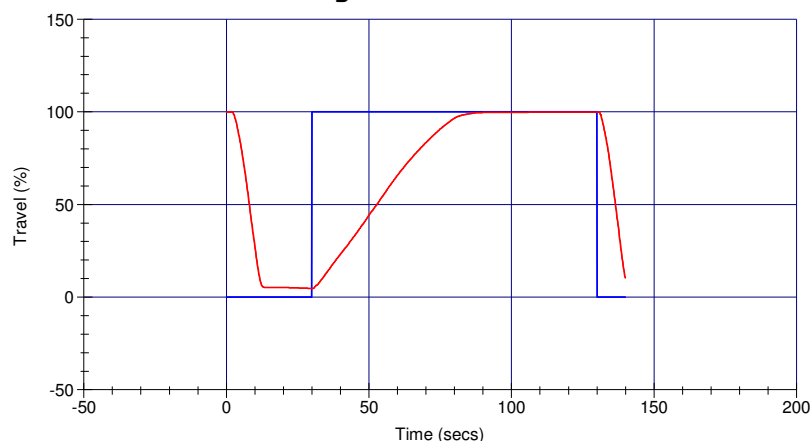
August 17, 2015

13:46:47

FLOWSCAN
Steven McDonald
Emerson Process Management
Wetherill Park

Step Response [8510-XV-00036]

13 Aug 2015 15:13:21



Analyzed Data

Not A Performance Test

Configuration

Tuning

Travel Tuning Set: Expert

Gains

Proportional: 8.50

Velocity: 4.00

MLF: 50.00

Integral Settings

Integral Control: Disabled

Integral Gain (reps/min) 9.4

Notes

Analyzed Data (all times in seconds)

Step	End Point (%)	Ramp Time	Collection Time	Gain	Dead Time	OverShoot (%)	Error (%)	Time63	Time86	Stroke Time
1	0	0	30	0.95	3.44	0.0	4.69	8.89	10.88	12.53
2	100	0	100	0.95	0.55	0.0	0.16	30.29	41.15	52.92
3	0	0	10	0.89	2.0	0.0	10.42	6.97	8.78	-

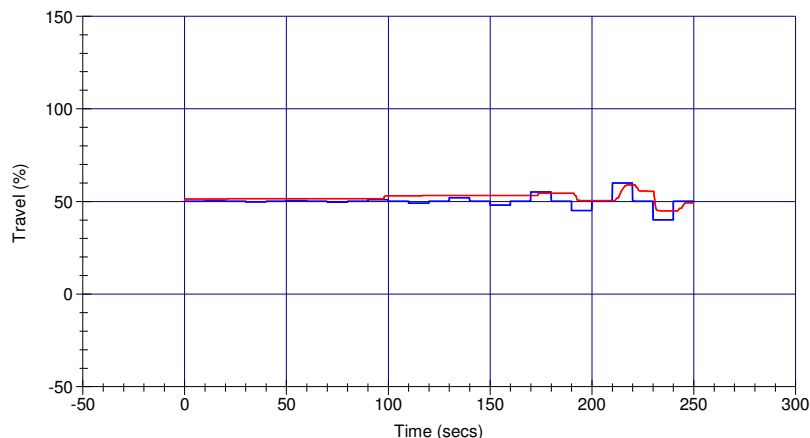
ValveLink Custom Report

August 17, 2015
13:46:47

FLOWSCAN
Steven McDonald
Emerson Process Management
Wetherill Park

Step Response [8510-XV-00036]

13 Aug 2015 15:10:42 Factory



Analyzed Data

Deadband (%): NA

Configuration

Tuning

Travel Tuning Set: Expert

Gains

Proportional: 8.50

Velocity: 4.00

MLF: 50.00

Integral Settings

Integral Control: Disabled

Integral Gain (reps/min) 9.4

Notes

Analyzed Data (all times in seconds)

Step	End Point (%)	Ramp Time	Collection Time	Gain	Dead Time	OverShoot (%)	Error (%)	Time63	Time86	Stroke Time
1	50	0	10	-	-	-	-	-	-	-
2	50.25	0	10	-	-	-	-	-	-	-
3	50	0	10	-	-	-	-	-	-	-
4	49.75	0	10	-	-	-	-	-	-	-
5	50	0	10	-	-	-	-	-	-	-
6	50.5	0	10	-	-	-	-	-	-	-
7	50	0	10	-	-	-	-	-	-	-
8	49.5	0	10	-	-	-	-	-	-	-
9	50	0	10	-	-	-	-	-	-	-
10	51	0	10	1.53	7.77	0.0	1.97	7.94	8.12	-
11	50	0	10	-	-	-	-	-	-	-
12	49	0	10	-	-	-	-	-	-	-
13	50	0	10	-	-	-	-	-	-	-
14	52	0	10	-	-	-	-	-	-	-
15	50	0	10	-	-	-	-	-	-	-
16	48	0	10	-	-	-	-	-	-	-
17	50	0	10	-	-	-	-	-	-	-
18	55	0	10	-	-	-	-	-	-	-
19	50	0	10	-	-	-	-	-	-	-
20	45	0	10	0.8	1.01	0.0	5.46	2.37	2.87	-
21	50	0	10	-	-	-	-	-	-	-
22	60	0	10	0.85	1.73	0.0	1.09	4.69	5.77	-
23	50	0	10	-	-	-	-	-	-	-
24	40	0	10	1.06	0.53	0.0	4.86	0.99	1.45	-
25	50	0	10	0.44	1.96	0.0	0.72	4.77	5.79	-

PST/SIS Diagnostics [8510-XV-00036]

13 Aug 2015 14:30:06

*Demand during PST

Inputs

Input Start: 100.0 %
Input End: 90.0 %
Stroke Speed: 1%/s
Test Pause Time: 5 sec
Collection Interval: 150.0 msec.

Analyzed Data

Avg. Dynamic Error: NA
Min. Dynamic Error: NA
Max. Dynamic Error: NA
Dyn. Linearity (Ind.): NA
Zero Ranged Travel at: NA
Full Ranged Travel at: NA
Average Torque: NA
Minimum Torque: NA
Maximum Torque: NA
Spring Rate: NA
Bench Set: NA
PST/SIS Demand during PST;
Diagnostic Time Approximated
status: AUX Terminal
PST/SIS Diagnostic
initiated by: Data uploaded by
Task Type: Calibration/Config
Last Demand Stroke did not reach
Stroke Time: seat
Last Demand 01 Jan, 1980
Stroke Date: 00:00:00
Triggered 13 Aug 2015
Event - 14:30:30
Demand
Stroke:

Configuration

Tuning

Travel Tuning Set: Expert

Gains

Proportional: 8.50

Velocity: 4.00

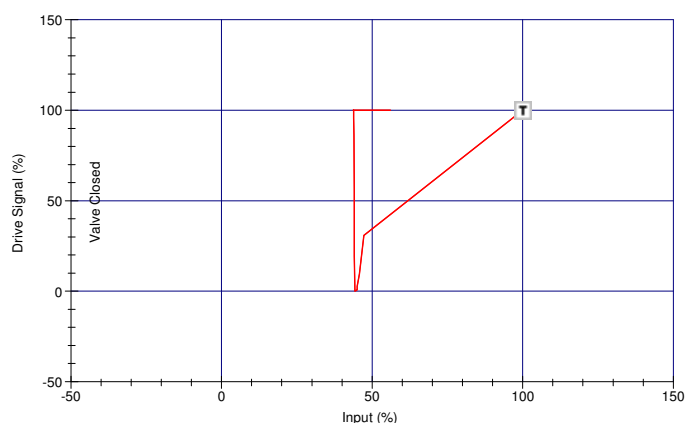
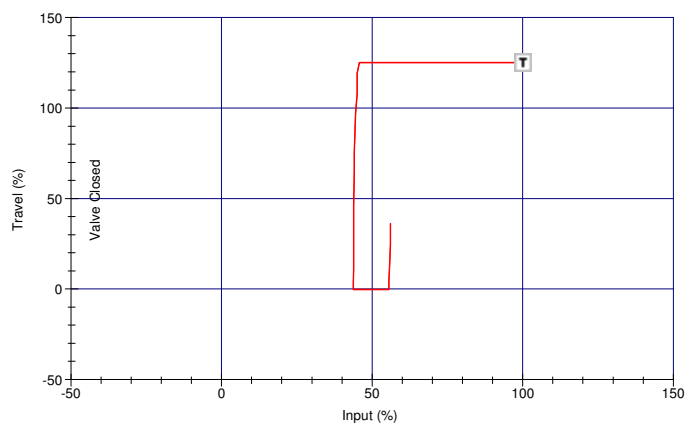
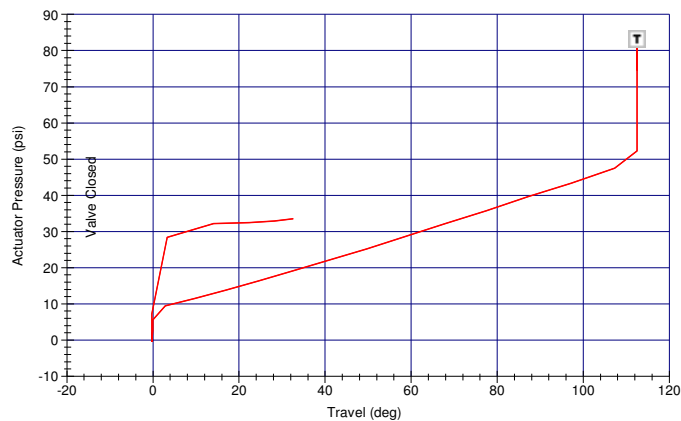
MLF: 50.00

Integral Settings

Integral Control: Disabled

Integral Gain (reps/min) 9.4

Notes



PST/SIS Diagnostics [8510-XV-00036] - Spec Sheet

13 Aug 2015 14:30:06 *Demand during PST

Valve

Manufacturer: VIRGO
Type: TMBV
Size: 20 in
Class: 900
Rated Travel: 90.00000 deg
Actual Travel: 90.00000 deg
Shaft Diameter: 0.00000 mm
Packing Type:
Inlet Pressure: 0.0000 kPa
Outlet Pressure: 0.0000 kPa
Dynamic Torque: 0.0000 kgf.m
Breakout Torque: 0.0000 kgf.m

Trim

Seat Type: VITON
Leakage Class:
Port Diameter: 0.00000 mm

Accessories

Volume Booster: Other
Quick Release: None
Solenoid Valve: None
Position Transmitter: None
Limit Switch, Valve Closed: None
Limit Switch, Valve Open: None

Actuator

Manufacturer: Bettis
Type: G-Series
Size: G7x32
Effective Area: 516128.03125 mm2
Air:
Bench Set: 0.0000 kPa-0.0000 kPa
Nominal Supply Pressure: 0.0000 kPa
Spring Rate: 0.00000 kgf/mm
Style: Scotch Yoke
Lever Arm Length: 171.45000 mm

Customer Santos Limited	P.Order 073-025630	Client Item 002	Q.ty 1	Virgo Job AUV700001	Item 2
Valve type S.E. BALL VALVE	Size 20	Class 900	Serial 7503	Valve code / tag 8510-XV-00036	
Operator BARE STEM	Operator Model N/A	Operator Manufactured by N/A	Operator serial number N/A		

PRESERVATION OF VALVE(s)

Preservation of valve carried out in compliance with procedure nr. PPI-01-AUV700001-700002 rev. 0
and P.O. Requirements
Inspection Result : **SATISFACTORY**
Date of inspection : see below

PROTECTION OF VALVE(s)

Protection of valve carried out in compliance with procedure nr. PPI-01-AUV700001-700002 rev. 0
and P.O. Requirements
Inspection Result : **SATISFACTORY**
Date of inspection : see below

TAGGING AND MARKING OF VALVE(s)

Tagging and Marking of valve carried out in compliance with
 • Procedure Nr. PO09-WI04 rev. 0
 • API 6D ☐ API 6A
 • MSS-SP-25
 and P.O. Requirements
 Inspection Result : **SATISFACTORY**
 Date of inspection : see below

PACKING OF VALVE(s)

Packing of valve carried out in compliance with procedure nr. PPI-01-AUV700001-700002 rev. 0
and P.O. Requirements
Inspection Result : **SATISFACTORY**
Date of inspection : see below

Notes :

Emerson Process Management Virgo Valves srl Q.C. Department	Customer's Inspector	Customer's Inspector	Third Party Inspection
EMERSON PROCESS MANAGEMENT VIRGO VALVES SRL			
Date 23/04/2015	Date	Date	Date

Form-PO23FM04r0



Emerson Process Management Virgo Valves srl
Via Sicilia 96 20020 Magnago (MI) T +39 0331 308211 F +39 0331 306299

Customer Santos Limited	P.Order 073-025630	Client Item 002	Q.ty 1	Virgo Job AUV700001	Item 2
Valve type S.E. BALL VALVE	Size 20	Class 900	Serial 7503	Valve code / tag 8510-XV-00036	
Operator BARE STEM	Operator Model N/A	Operator Manufactured by N/A		Operator serial number N/A	

VISUAL & DIMENSIONAL CHECK

Visual and Dimensional inspection carried out to verify compliance of the subject product to the drawing nr. C14AUV700001002

Inspection output : The product fully comply with the above mentioned drawing.

Inspection Result : SATISFACTORY

MARKING CHECK

Marking check to comply with Standards

- API 6D
- MSS-SP-25

carried out with satisfactory results.

Inspection output : Marking of product fully comply with the above mentioned Standards

Inspection Result : SATISFACTORY

Notes :

Emerson Process Management Virgo Valves srl Q.C. Department	Customer's Inspector	Customer's Inspector	Third Party Inspection
EMERSON PROCESS MANAGEMENT VIRGO VALVES SRL			
Date <u>18/04/2015</u>	Date	Date	Date

Form-PO23FM01r0



Emerson Process Management Virgo Valves srl
Via Sicilia 96 20020 Magnago (MI) T +39 0331 308211 F +39 0331 306299

Customer Santos Limited	P.Order 073-025630	Client Item 002	Q.ty 1	Virgo Job AUV700001	Item 2
Valve type S.E. BALL VALVE	Size 20	Class 900	Serial 7503	Valve code / tag 8510-XV-00036	
Operator BARE STEM	Operator Model N/A	Operator Manufactured by N/A		Operator serial number N/A	
Factory Acceptance Test Procedure Nr. FAT-01-AUV700001/700002 REV. 0					

Test Description	PRESSURE TEST REQUIREMENTS			
	Min. Test Pressure (Bar)	Holding Time	Acceptance Criteria	Test result
BODY Test Hydrostatic	233	30	No Visible Leakage	Satisfactory
SEAT one side Test Hydrostatic	171	5	API 6D / ISO 5208 RATE D	Satisfactory
SEAT other side Test Hydrostatic	171	5	API 6D / ISO 5208 RATE D	Satisfactory
SEAT one side Test Pneumatic	6	5	API 6D / ISO 5208 RATE D	Satisfactory
SEAT other side Test Pneumatic	6	5	API 6D / ISO 5208 RATE D	Satisfactory

Notes : Test fluid is clean potable water with chloride content 30 ppm maximum, added with 8+10% corrosion inhibitor.

Emerson Process Management Virgo Valves srl Q.C. Department	Customer's Inspector	Customer's Inspector	Third Party Inspection
EMERSON PROCESS MANAGEMENT VIRGO VALVES SRL			
Date 18/04/2015	Date	Date	Date

Form-PO23FM03



Emerson Process Management Virgo Valves srl
Via Sicilia 96 20020 Magnago (MI) T +39 0331 308211 F +39 0331 306299

Document Nr	Rev.	Date	Page/of
MLT AUV700001-2	0	16/04/2015	1/1

Customer Santos Limited	P.Order 073-025630	Client Item 002	Q.ty 1	Virgo Job AUV700001	Item 2
Valve type S.E. BALL VALVE	Size 20	Class 900	Serial 7503	Valve code / tag 8510-XV-00036	
Operator BARE STEM	Operator Model N/A	Operator Manufactured by N/A			

Part name	Material	Heat n°	Manufacturer	MTR Certif. Nr.	Notes
Body	A105N	AS2749	QIUBAO	B2014-0821	NA
Closures	A105N	AS2749	QIUBAO	B2014-0822	NA
Seats	A182 F6A	14JS4379	GASKET SUZHOU	1030027956/40 201411260-1i	TCC 0,15 mm
Ball	A182 F51	AS9174	QIUBAO	2014-6156	TCC 0,15 mm
Stem	A479 UNS S31803	FR9084	QIUBAO	B2014-0833	NA
Studs	A193 B7M	AA3087	PRESSBOLT	3047701 page 41 of 41	NA
Nuts	A194 7M	45129	PRESSBOLT	3047458 page 32 of 37	NA
Gland Plate	A105N	AS2749	QIUBAO	B2014-0823	NA

Notes: Material for wetted parts in compliance with NACE MR01.75 LATEST EDITION

Emerson Process Management Virgo Valves Srl - DECLARATION OF CONFORMITY

We declare that the subject materials have been manufactured and fully comply with the Purchase Order requirements the applicable contractual documents, specifications, and drawings.

Emerson Process Management Virgo Valves srl Q.C. Department	Customer's Inspector	Customer's Inspector	Third Party Inspection
EMERSON PROCESS MANAGEMENT VIRGO VALVES SRL			
Date 16/04/2015	Date	Date	Date

Form-PO00FM1 r1



Emerson Process Management Virgo Valves srl
Via Sicilia 96 20020 Magnago (MI) T +39 0331 308211 F +39 0331 306299



QIUBAO VALVE CO.,LTD.
MATERIAL TEST CERTIFICATE

QB/CX11.02 REV.D

Customer	EMERSON PROCESS MANAGEMENT VIRGO VALVE SRL	Certificate Type	EN10204: 3.1	Certificate No.	B2014-0821
P.O Number	VEU011846	Customer Standard	MDS-A00 REV.3	Certificate Date	2014/12/22
Material Spec.	ASTM A105-13	Material	A105	Product Name	Body

1. Production Description

No.	Heat No.	Item No.	Size&Class	Part Number	Drawing Number	Raw Material/Heat No.	Forging Ratio	Qty.
1	AS2749	8	20"900#	AUV700001BAX20900010A00000	BAX2090001	1309-08010	3.1:1	1
2	AS2749	20	18"600#	AUV700001BAX18600010A00000	BAX1860001	1309-08010	3.1:1	1
3								
4								
5								

2. Chemical Composition (%)

No.	Heat No.	Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	V	Nb	N
		Min		0.80	0.15									
		Max	0.23	1.30	0.30	0.025	0.020	0.30	0.40	0.12	0.35	0.03	0.02	
1	AS2749		0.194	1.025	0.207	0.002	0.011	0.019	0.028	0.001	0.075	0.003	0.003	
2	AS2749		0.194	1.025	0.207	0.002	0.011	0.019	0.028	0.001	0.075	0.003	0.003	
3														
4														
5														
No.	Heat No.	Element	Nb+Ta	Al	Ti	W	Co	Fe	B	Cr+Mo	CE	Mn/C	Cu+Ni+Cr+Mo+V	PREN
		Min												
		Max		0.05						0.32	0.43		1.00	
1	AS2749			0.042						0.02	0.38		0.126	
2	AS2749			0.042						0.02	0.38		0.126	
3														
4														
5														

3. Heat Treatment Process

No.	Heat No.	H.T Lot No.	Heat Treatment	Temp. (°C)	Hold Time(hrs)	Cooling Medium	Temp. (°C)	Hold Time(hrs)	Cooling Medium	Temp. (°C)	Hold Time(hrs)	Cooling Medium
1	AS2749	JG112409-102	Quenching & Tempering	900	5.5	Water	600	7	Air			
2	AS2749	JG112516-102	Quenching & Tempering	900	4	Water	600	5.5	Air			
3												
4												
5												

4. Mechanical Properties

No.	Heat No.	Item	Tensile Test					Hardness	Impact Test		5. Corrosion Test		6. Ferrite Content Test
			Tensile (MPa)	Yield0.2 % (MPa)	EL.2" (%)	Roa. (%)	HBW	Specimen Size(Akv): 10×10×55mm		°C	ASTM G48 Mothed A (g/m ²)		ASTM E562 (%)
		Min	485	250	22	30	147	Single Value (J)	Min:				-
		Max					187	Average Value (J)	Min:				-
1	AS2749		525	355	32.5	70	154						
2	AS2749		560	405	33	71	153						
3													
4													
5													

1. We certify that, above material is manufactured, Inspected and tested. Found meets to PO requirements and Material Specification for ASTM A105-13 A105 and Comply to NACE MR-0175/ISO15156-2009 for Hardness.

2. Material used is free from radioactive contamination

3. Supplier Code: SFQ000001.

4. Steelmaking: Fully killed+EF+AOD.

EMERSON PROCESS MANAGEMENT
VIRGO VALVES SRL



Quality Inspector xuwenbing

Q.A Manager

Add: Dongou Industrial Estate, Onbei Town, Yongjia County, Zhejiang Province, China Tel: 0086-577-67377183 Fax: 0086-577-67377177 Http: www.qiubaovalve.com Email: quality@qiubaovalve.com



QIUBAO VALVE CO.,LTD.
MATERIAL TEST CERTIFICATE

QB/CX11.02 REV.D

Customer	EMERSON PROCESS MANAGEMENT VIRGO VALVE SRL	Certificate Type	EN10204: 3.1	Certificate No.	B2014-0822
P.O Number	VEU011846	Customer Standard	MDS-A00 REV.3	Certificate Date	2014/12/22
Material Spec.	ASTM A105-13	Material	A105	Product Name	Closure

1. Production Description

No.	Heat No.	Item No.	Size&Class	Part Number	Drawing Number	Raw Material/Heat No.	Forging Ratio	Qty.
1	AS2749	22	20"900#RF	AUV700001BC120900010A0000	BC12090001	1309-08010	3.1:1	2
2	AS2749	10	18"600# RF	AUV700001BC118600010A0000	BC11860001	1309-08010	3.1:1	2
3								
4								
5								

2. Chemical Composition (%)

No.	Heat No.	Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	V	Nb	N
		Min		0.80	0.15									
		Max	0.23	1.30	0.30	0.025	0.020	0.30	0.40	0.12	0.35	0.03	0.02	
1	AS2749		0.194	1.025	0.207	0.002	0.011	0.019	0.028	0.001	0.075	0.003	0.003	
2	AS2749		0.194	1.025	0.207	0.002	0.011	0.019	0.028	0.001	0.075	0.003	0.003	
3														
4														
5														
No.	Heat No.	Element	Nb+Ta	Al	Ti	W	Co	Fe	B	Cr+Mo	CE	Mn/C	Cu+Ni+Cr+Mo+V	PREN
		Min												
		Max		0.05						0.32	0.43		1.00	
1	AS2749			0.042						0.02	0.38		0.126	
2	AS2749			0.042						0.02	0.38		0.126	
3														
4														
5														

3. Heat Treatment Process

No.	Heat No.	H.T Lot No.	Heat Treatment	Temp. (°C)	Hold Time(hrs)	Cooling Medium	Temp. (°C)	Hold Time(hrs)	Cooling Medium	Temp. (°C)	Hold Time(hrs)	Cooling Medium
1	AS2749	JG112409-102	Quenching & Tempering	900	5.5	Water	600	7	Air			
2	AS2749	JG112516-102	Quenching & Tempering	900	4	Water	600	5.5	Air			
3												
4												
5												

4. Mechanical Properties

Mechanical Properties										5. Corrosion Test		Content Test		
No.	Heat No.	Item	Tensile Test				Hardness	Impact Test			-	-	-	
			Tensile (MPa)	Yield0.2 % (MPa)	EL.2" (%)	Roa. (%)	HBW	Specimen Size(Akv): 10×10×55mm		℃	ASTM G48 Mothed A (g/m ²)	ASTM E562 (%)		
			Min	485	250	22	30	147	Single Value (J)	Min:			-	
			Max					187	Average Value (J)	Min:			-	
1	AS2749		525	355	32.5	70	154							
2	AS2749		560	405	33	71	153							
3														
4														
5														

1. We certify that, above material is manufactured, Inspected and tested. Found meets to PO requirements and Material Specification for ASTM A105-13 A105 and Comply to NACE MR-0175/ISO15156-2009 for Hardness.

2. Material used is free from radioactive contamination

3. Supplier Code: SFQ000001.

4. Steelmaking: Fully killed+EF+AOD.

EMERSON PROCESS MANAGEMENT
VIRGO VALVES SRL

Quality Inspector xuwenbing

Q.A Manager



Add: Donggou Industrial Estate, Oubei Town, Yongjia County, Zhejiang Province, China Tel: 0086-577-67377183 Fax: 0086-577-67377177 Http://www.qiubaovalve.com E-mail: quality@qiubaovalve.com



Gasket(Suzhou) Valve Components Co., Ltd.
add Plant No 6, Jining Industrial Park, 88 Jining East
Road, Weifang, SIP, China 215121

tel: +86 512 87770862
fax: +86 512 87770863

Info@gasketsuzhou.cn - www.gasketsuzhou.cn

Esteemed
EMERSON PROCESS MANAGEMENT
VIRGO VALVES SRL
VIA SICILIA 96 z.i.
I-20020 MAGNAGO MI

UNI EN ISO 10204 2.1 符合性声明/CONFORMITY DECLARATION UNI EN ISO 10204 Type 2.1

采购订单号/Or.n: 1030027956/ 40

SEATS

单位 UM	数量 Quantity	编码 Code	项目描述/规格 Description/Dimension	您的确认项目/您的订单 Your Confirm/Item Yr-Order
ST	2	PVS	SB24 574,00 471,00 64,00 20" F6A CL2 06.11.2014 PVT- Customer drawing BAY2090001 drw. rev. R01 Size 20" GRZ mat. F6A CL2 PV treatment - PV ENP - class 900 PV spec. -	VEU011842 BAY20900010A30000

EMERSON PROCESS MANAGEMENT
VIRGO VALVES SRL

Code 13/2578

1) 序列号/ Serial Number:

2014-20"-6215 - 2014-20"-6216

2) 原材料证书号/Raw material certificate N°

201411260-1i

按照/in according to UNI EN ISO 10204 3.1 声明

3) 其它/Other

.....证书签发日期/Certificate emission date

03.12.2014

备注/ Note: 材料无放射性污染/Material free from radioactive contamination

我们有责任保证所附订单的产品与客户的需求是一致的。

We declare on our responsibility that the products regarding enclosed order are in conformity with what requested.hina.

本证书由系统自动生成，无图章和签署。/THIS CERTIFICATE IS GENERATED AUTOMATICALLY FROM OUR SYSTEM SO NO TO STAMP AND SIGN



Jiangyin Dongsheng Flange Co., Ltd

MATERIAL CERTIFICATE According to EN 10204 Type:3.1

client:Gasket(Suzhou)Valve Components Co.,Ltd
Address: Plant No.6, Jinling Industrial Park, Weiting, SIP, China

Material Grade: F6A CL2
Carry out the standard: ASTM A182
NACE MR0175/ISO15156-2009

Certificate NO.: 201411260-1i

P.O. NO.		Item	Heat NO.	Heat Treat Batch NO.	Description	Items of test		Test Specimen				Mechanical properties of test				Impact Test Charpy V-notch size:	Hardness			
								Temp.		Gage Length	Dia	Tensile	Yield	Elong.	Red.					
						P.O. Qty	Delivery Qty	°C	mm								Mpa	(Rp0.2)Mpa	%	%
4000024073	50	14JS4379	14DS1122	18" (508*433*68-472.7*30)	2	2	20°C	50mm	RT	≥585	≥580	≥18	≥55	1. Single Specimen ≥ 2. Average of 3 Spec ≥ 3. Average =	Test temperature Energy Value(J)	1	2	3	4	
4000024073	60	14JS4379	14DS1122	20" (568*484*68-527.7*30)	2	2	20°C	50mm	20°C	755	635	31.00	62.00			179	189	177		
4000024073	70	14JS4379	14DS1122	20" (577*468*67-532.7*28)	2	2	20°C													
4000024073	80	14JS4379	14DS1122	20" (568*484*68-527.7*30)	2	2	20°C													

Chemical Properties(%)

Chemical Properties(%)														Heat Treatment									
C	Si	Mn	P	S	NI	Cr	Mo	Cu	Nb	V	Al	CE	Method	Temp.(°C)	Holding Time (h)	Furnace Type	Cooling Method						
Standard Analysis	≤0.15	≤1.0	≤0.04	≤0.03	≤0.5	11.5-13.5							Normalize	950°C	2.5	Electric	Air cooling						
Heat Analysis	0.103	0.5	0.025	0.002	0.48	12.68							Temper	720°C	4	Electric	Air cooling						
Product Analysis	0.1	0.506	0.024	0.002	0.49	12.69							Temper	640°C	6	Electric	Air cooling						
Result														Remarks									
Method																							
NDT/ 无损检测														EMERSON PROCESS MANAGEMENT VIRGO VALVES SRL 									
□ 目视 VT																							
■ 着色 PT																							
□ 磁粉 MT																							
□ 射线 RT																							
■ 超声 UT																							

EMERSON PROCESS MANAGEMENT
VIRGOVALVES SRL

1. Visual and dimensional inspection of the material herein has been manufactured, tested and inspected in accordance with specification and meets the requirements of ASTM A182 F6A CL2 and NACE MR0175/ISO15156-2009. Material processed EF-AOD

Date: 2014-11-26

Inspected: Liuyongping

Check: zhouluxia



QIUBAO VALVE CO.,LTD.
MATERIAL TEST CERTIFICATE

QB/CX11.02
REV.D

Customer	EMERSON PROCESS MANAGEMENT VIRGO VALVE SRL	Certificate Type	EN10204 3.1	Certificate No.	2014-6156
P.O Number	VEU011846	Customer Standard	MDS-Z16 REV.3	Certificate Date	2014/12/20
Material Spec.	ASTM A182-14	Material	F51	Product Name	Balls

1. Production Description

No.	Heat No.	Item No.	Size&Class	Part Number	Drawing Number	Raw Material/Heat No.	Forging Ratio	Qty.
1	AS9174	24	20"900#	AUV700001BAR20900010 Z16000	BAR2090001	CH141111-6	3.1:1	1
2								
3								
4								
5								

2. Chemical Composition (%)

No.	Heat No.	Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	V	Nb	N
		Min						21.00	4.50	2.50				0.08
		Max	0.03	2.00	1.00	0.020	0.030	23.00	6.50	3.50				0.20
1	AS9174		0.026	1.256	0.590	0.000	0.024	21.930	5.220	3.350				0.169
2														
3														
4														
5														
No.	Heat No.	Element	Nb+Ta	Al	Ti	W	Co	Fe	B	Cr+Mo	CE	Mn/C	Cu+Ni+Cr+Mo+V	PREN
		Min												35.00
		Max												
1	AS9174													35.689
2														
3														
4														
5														

3. Heat Treatment Process

No.	Heat No.	H.T Lot No.	Heat Treatment	Temp. (°C)	Hold Time(hrs)	Cooling Medium	Temp. (°C)	Hold Time(hrs)	Cooling Medium	Temp. (°C)	Hold Time(hrs)	Cooling Medium
1	AS9174	JG120140	Solution treated and quenched	1020	5.5	Water						
2												
3												
4												
5												

4. Mechanical Properties

No.	Heat No.	Item	Tensile Test				Hardness	Impact Test		5. Corrosion Test		6. Ferrite Content Test
			Tensile (MPa)	Yield 0.2 % (MPa)	EL.2" (%)	Roa. (%)	HBW	Specimen Size(Akv): 10×10×55mm	°C	ASTM G48 Moethed A (g/m ²)		ASTM E562 (%)
			Min	620	450	25	45	Single Value (J)	Min:			35
		Max					271	Average Value (J)	Min:			65
1	AS9174		720	580	36.5	69	204			-		49
2												
3												
4												
5												

1. We certify that, above material is manufactured, Inspected and tested. Found meets to PO requirements and Material Specification for ASTM A182-14 F51 and Comply to NACE MR-0175/ISO15156-2009 for Hardness.

2. Material used is free from radioactive contamination

3. Supplier Code: SFQ000001.

4. Steelmaking: EF+AOD.

EMERSON PROCESS MANAGEMENT
VIRGO VALVES SRL
CODE 13/2668



Quality Inspector xuwenbing

Q.A Manager

Add: Dongou Industrial Estate, Oubei Town, Yongjia County, Zhejiang Province, China Tel: 0086-577-67377183 Fax: 0086-577-67377177 Http: www.qiubaovalve.com E-mail: quality@qiubaovalve.com



球豹阀门有限公司
QIUBAO VALVE CO.,LTD

金相检测报告

METALLOGRAPHIC TEST REPORT

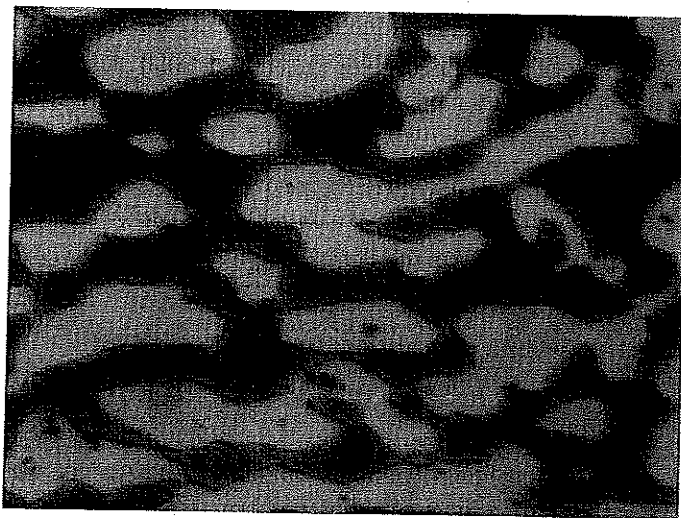
样品名称Specimen Name	ASTM A182 F51	报告编号Report No	QB/MR20141209001
测试标准Test Standard	ASTM E562	设备名称Equipment Name	MX-6R
炉号Heat No/HT Batch No	AS9174	分析类型Metallographic Type	ferrite Content Test
检测地点 Place of Test	Metallographic Lab	环境条件Environmental Conditions	22℃

检测结果Test Result

取来样的纵向剖面，镶嵌、磨抛、化学试剂侵蚀后在显微镜下观察：试样基体组织为奥氏体+铁素体。试样之铁素体含量约为49%，奥氏体含量约为51%。

The longitudinal direction specimen was cut from the submitted sample and observed under microscope after it was polished and etched by hot basic potassium ferricyanide aqueous solution for few minutes. Microstructure of the specimen is austenite and ferrite. Amount of the ferrite is about 49% and amount of austenite is about 51%.

试样图片Specimen Picture:



400×

测试者Teste:

审核Reviewed by



日期Date: 2014-12-9

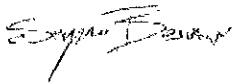
公司地址：浙江省永嘉县瓯北镇东瓯工业园区礁下段

电话:0577-67377183

传真:0577-67377177

Add.:Dongou Industry Area Oubei Town Yongjia County of Zhejiang,China

E-mail:quality_dept@qiubaovalve.com

		CERTIFICATO DI CONFORMITA' CERTIFICATE OF CONFORMITY	
Cliente / Customer : EMERSON PROCESS MANAGEMENT VIRGO VALVES SRL		Commessa / Int. Order n°: 11395 D.D.T. / C.M.R. : 468	
Q.tà / No. Parts : Nr. 3		Q.tà controllata / No. Parts tested : Nr. 3	
Ordine cliente / Customer P.O. : P.O.: MAC012132 C.ORD.194/15		Data ordine / P.O. Date : P.O.: 19/03/15, C/O: 25/03/15	
Oggetto / Item : Nr. 1 BALL 20" 900 A182 F51 UNS S31803 TCC/150 - HEAT N°AS9174 Nr. 2 SEAT 20" 900 A182 F6a CL.2 TCC/150 - HEAT N°14JS4379		Disegno / Drawing n° : COD.AUV7000001BAR20900010Z16800 COD.AUV7000001BAY20900010A30800	
LAVORAZIONE / PROCESS: RIPORTO IN CARBURO DI TUNGSTENO IN ACCORDO A MPP / TUNGSTEN CARBIDE COATING ACCORDING TO MPP: 03887 REV. 00; 03918 REV. 00 RILIEVI / RELIEF : DIMENSIONALE / DIMENSIONAL : DELLA ZONA METALLIZZATA / OF THE COATING ZONE CONFORME / CONFORM 100% VISIVO / VISUAL : PULIZIA ASSENZA DI AMMACCATURE / CLEANLINESS LACK OF DENT CONFORME / CONFORM 100% ALLEGATI ALLA PRESENTE / ATTACHED : - CERTIFICATO POLVERE / POWDER CERTIFICATE WOKA 3652 LOTTO / BATCH 504-S-10/3 - MD_07_07 COMMESSA / INTERNAL ORDER 11395 CERTIFICATO CONFORME ALLA NORMA / CERTIFICATE IN COMPLIANCE WITH STANDARD EN 10204 3.1			
Osservazioni / Remarks : EMERSON CERT. N°4			
Firma operatore/operator signature :/...../.....		Data/date :/...../.....	
Firma Assicurazione qualità Quality Assurance signature : 		Data/date : 27/04/2015	

EMERSON PROCESS MANAGEMENT
 VIRGO VALVES SRL



QIUBAO VALVE CO.,LTD.

MATERIAL TEST CERTIFICATE

QB-CX11-02 REV.D

Customer	EMERSON PROCESS MANAGEMENT VIRGO VALVE SRL	Certificate Type	EN10204 3.1	Certificate No.	B2014-0833
P.O Number	VEU011846	Customer Standard	MDS-G51 REV.4	Certificate Date	2014-12-22
Material Spec.	ASTM A479/A479M-05	Material	S31803	Product Name	Stem

1. Production Description

No.	Heat No.	Item No.	Size&Class	Part Number	Drawing Number	Raw Material/Heat No.	Forging Ratio	Qty.
1	FR9084	12	20"900#	AUV700001BBB20900010G31000	BBB2090001	ZJGF1410-1661	4:1	1
2								
3								
4								
5								

2. Chemical Composition (%)

No.	Heat No.	Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	V	Nb	N
		Min						21.00	4.50	2.50				0.08
		Max	0.03	2.00	1.00	0.020	0.030	23.00	6.50	3.50				0.20
1	FR9084		0.022	1.091	0.280	0.012	0.027	22.89	4.68	3.00				0.164
2														
3														
4														
5														
No.	Heat No.	Element	Nb+Ta	Al	Ti	W	Co	Fe	B	Cr+Mo	CE	Mn/C	Cu+Ni+Cr+Mo +V	PREN
		Min												35.00
		Max												
1	FR9084													35.44
2														
3														
4														
5														

3. Heat Treatment Process

No.	Heat No.	H.T Lot No.	Heat Treatment	Temp. (°C)	Hold Time(hrs)	Cooling Medium	Temp. (°C)	Hold Time(hrs)	Cooling Medium	Temp. (°C)	Hold Time(hrs)	Cooling Medium
1	FR9084	JG112601-202	Solution treated and quenched	1040	3.5	Water						
2												
3												
4												
5												

4. Mechanical Properties

No.	Heat No.	Item	Tensile Test				Hardness	Impact Test			Sec. Corrosion Test		Content Test
			Tensile (MPa)	Yield0.2 % (MPa)	EL.2" (%)	Ro. (%)	HBW	Specimen Size(Akv): 10×10×55mm		°C	-	-	400x
											ASTM G48		ASTM E562
			Min	620	450	25		Single Value (J)		Min:		Mothed A (g/m²)	(%)
		Max				271	Average Value (J)		Min:			35	
1	FR9084		750	590	42		220				-	60	
2												48	
3													
4													
5													

1 We certify that, above material is manufactured, Inspected and tested. Found meets to PO requirements and Material Specification for ASTM A479/A479M-05 S31803 and Comply to NACE MR-01 75/ISO15156-2009 for Hardness.

2 Material used is free from radioactive contamination

3 Supplier Code SFQ000001

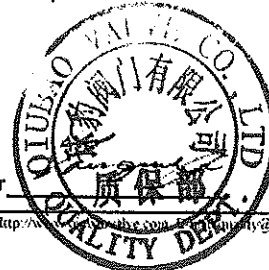
4 Steelmaking EF+AOD

EMERSON PROCESS MANAGEMENT
VIRGO VALVES SRL

CODE 13/2662

Quality Inspector xuwenbing

Q.A Manager



Add Dongou Industrial Estate, Dubei Town, Yongjia County, Zhejiang Province, China Tel:0086-577-67377183 Fax:0086-577-67377177 Http://www.qiubaovalve.com Email:quality@qiubaovalve.com



Pressbolt s.r.l. con unico socio
Partita Iva 03231770136
Via dell'Artigianato, 12 - 22078 - Turate (CO)
Tel. +39 02 96.97.98.50 - Fax +39 02 96.97.98.29
email qualita@pressbolt.com

EMERSON PROCESS MANAGEMENT VIRGO VALVES SRL
VIA SICILIA, 96
20020 - MAGNAGO(MI)

Inspection Certificate EN 10204 3.1

Number	Rev.	Date
3047701	0	22 Jan 2015

Your Order		Our References	
Number	VEU011909 of 22 Nov 2014	Number	2405801
Reference			
Item	8 - AUV700001 57TR26080C300	Item	80
Job		Shipping ref.	2500653 of 22 Jan 2015

Standard			
ASTM A193/A193M - 10a - ASME SA193/SA193M Ed.2010 B7M ASME II part A ed 2010			
NACE MR 0103 Ed 2010 MR 0175 ed 2009 - ISO 15156			
PED EUROPEAN DIRECTIVE 97/23/EC A% according to 5.65SQR(Speciment Area)			
Item Description	Heat Treatment		
STUDBOLT ANSI B16.5 FL	QUENCHED AND TEMPERED 620 C		
A/SA 193 B7M			
2.1/4"-8 UNX0260			
Heat	Quantity	Lot	Job PB
AA3087	44	P1242641	0000330326

Chemical Analysis '%'								
Required	C	Mn	Si	P	S	Cr	Mo	
Actual	0.37 - 0.49 .410	0.65 - 1.1 .790	0.15 - 0.35 .250	max 0.035 .009	max 0.04 .024	0.750 - 1.2 .940	0.15 - 0.25 .170	
Tensile Test								
Required	Rm " Mpa"			Rp02 " Mpa"		A " % "		Z " % "
Actual	min 690 745			min 550 667		min 18 18.61		min 50 57.04
Required	Elongation % EN 5 D							
Actual	min 14 % 16.4							
Required	Hardness " HB "							
Actual	200 - 235 222;213;208							
Mechanical tests are longitudinal performed: at the center for product diameter 1.1/2"- 40mm or less; at mid of radius for product diameter over 1.1/2" - 40mm.								
Macroetch Examination								
Positive			Visual and dimensional test			Positive		

Hardness: 100 % electromagnetic testing

We state that the bolting material were manufactured, sampled, tested and inspected in accordance with the specification and any supplementary requirements or other requirements designated in the purchase order or contract and it was found to meet those requirements

EMERSON PROCESS MANAGEMENT
VIRGO VALVES SRL

Code B5451

Quality Control

PRESSBOLT

Pressbolt s.r.l. con unico socio
Partita Iva 03231770136
Via dell'Artigianato, 12 - 22078 - Turate (CO)
Tel. +39 02 96.97.98.50 - Fax +39 02 96.97.98.29
email qualita@pressbolt.com

EMERSON PROCESS MANAGEMENT VIRGO VALVES SRL
VIA SICILIA, 96
20020 - MAGNAGO(MI)

Inspection Certificate EN 10204 3.1

Number	Rev.	Date
3047458	0	15 Jan 2015

Your Order		Our References	
Number	VEU011909 of 22 Nov 2014	Number	2405801
Reference			
Item	7 - AUV700001 57DA00080D300	Item	70
Job		Shipping ref.	2500374 of 15 Jan 2015

Standard			
ASTM A194/A194M - 10a - ASME SA194/SA194M Ed.2010 GR.7M ASME II part A ed 2010 add 2011 NACE MR 0103 Ed 2010 MR 0175 ed 2009 - ISO 15156 PED EUROPEAN DIRECTIVE 97/23/EC			
Item Description	Heat Treatment		
HEAVY HEX NUT H=d ANSI B18.2.2. Tab 9 A/SA 194 7M 2.1/4"-8 UN			
Heat	Quantity	Lot	Job PB
45129	44	P1219841	0000327668

Chemical Analysis "% "								
	C	Mn	Si	P	S	Cr	Mo	
Required	0.37 - 0.49	0.65 - 1.1	0.15 - 0.35	0.035	0.04	0.75 - 1.2	0.15 - 0.25	
Actual	0.41	0.81	0.31	0.016	0.004	1.02	0.21	
		Hardness " HB "			HB after T.T. 24h		Impact Test -73 C "J"	
Required		med <= 235 HB			159		min 20J min med 27J	
Actual		207;234			198;220		52;60;120	
Mechanical tests are longitudinal performed: at the center for product diameter 1.1/2" - 40mm or less; at mid of radius for product diameter over 1.1/2" - 40mm.								
Macroetch Examination		Positive	Visual and dimensional test		Positive			

Hardness: 100 % electromagnetic testing

We state that the bolting material were manufactured, sampled, tested and inspected in accordance with the specification and any supplementary requirements or other requirements designated in the purchase order or contract and it was found to meet those requirements

EMERSON PROCESS MANAGEMENT
VIRGO VALVES SRL
CODE B5450





QIUBAO VALVE CO.,LTD.

MATERIAL TEST CERTIFICATE

QB-CX11.02 REV.D

Customer	EMERSON PROCESS MANAGEMENT VIRGO VALVE SRL	Certificate Type	EN10204: 3.1	Certificate No.	B2014-0823
P.O Number	VEU011846	Customer Standard	MDS-A00 REV.3	Certificate Date	2014/12/22
Material Spec.	ASTM A105-13	Material	A105	Product Name	Gland

1. Production Description

No.	Heat No.	Item No.	Size&Class	Part Number	Drawing Number	Raw Material/Heat No.	Forging Ratio	Qty.
1	AS2749	9	30" 150#	AUV700001BBS30100010A00000	BBS3010001	1309-08010	3.1:1	1
2	AS2749	11	22"900#	AUV700001BBS22900010A00000	BBS2290001	1309-08010	3.1:1	1
3								
4								
5								

2. Chemical Composition (%)

No.	Heat No.	Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	V	Nb	N
		Min		0.80	0.15									
		Max	0.23	1.30	0.30	0.025	0.020	0.30	0.40	0.12	0.35	0.03	0.02	
1	AS2749		0.194	1.025	0.207	0.002	0.011	0.019	0.028	0.001	0.075	0.003	0.003	
2	AS2749		0.194	1.025	0.207	0.002	0.011	0.019	0.028	0.001	0.075	0.003	0.003	
3														
4														
5														
No.	Heat No.	Element	Nb+Ta	Al	Ti	W	Co	Fe	B	Cr+Mo	CE	Mn/C	Cr+Ni+Cr+Mo+V	PREN
		Min												
		Max		0.05						0.32	0.43		1.00	
1	AS2749			0.042						0.02	0.38		0.126	
2	AS2749			0.042						0.02	0.38		0.126	
3														
4														
5														

3. Heat Treatment Process

No.	Heat No.	H.T Lot No.	Heat Treatment	Temp. (°C)	Hold Time(hrs)	Cooling Medium	Temp. (°C)	Hold Time(hrs)	Cooling Medium	Temp. (°C)	Hold Time(hrs)	Cooling Medium
1	AS2749	JG112516-102	Quenching & Tempering	900	4	Water	600	5.5	Air			
2	AS2749	JG112516-102	Quenching & Tempering	900	4	Water	600	5.5	Air			
3												
4												
5												

4. Mechanical Properties

No.	Heat No.	Item	Tensile Test				Hardness	Impact Test		5. Corrosion Test		6. Ferrite Content Test	
			Tensile (MPa)	Yield 0.2 % (MPa)	EL.2" (%)	Roa. (%)		Specimen Size(Akv): 10×10×55mm		ASTM G48 Method A (g/m ²)		ASTM E562 (%)	
			Min	485	250	22	30	147	Single Value (J)	Min:			
			Max					187	Average Value (J)	Min:			
1	AS2749			560	405	33	71	153					
2	AS2749			560	405	33	71	153					
3													
4													
5													

1. We certify that, above material is manufactured, Inspected and tested. Found meets to PO requirements and Material Specification for ASTM A105-13 A105 and Comply to NACE MR-0175/ISO15156-2009 for Hardness.

2. Material used is free from radioactive contamination

3. Supplier Code: SPQ000001.

4. Steelmaking: Fully killed+EF+AOD.

EMERSON PROCESS MANAGEMENT
VIRGO VALVES SRL



Quality Inspector xuwenbing

Q.A Manager

Add: Dongou Industrial Estate, Oubei Town, Yongjia County, Zhejiang Province, China Tel: 0086-577-67377183 Fax: 0086-577-67377177 Http://www.qiubaovalve.com E-mail: quality@qiubaovalve.com

Magnetic Particle Inspection Report

N° MT-AUV700001-2

page 1 of 1

Customer

Santos Limited

P.Order

073-025630

Client Item

002

Q.ty

1

Virgo Job

AUV700001

Item

2

Valve type

S.E. BALL VALVE

Size

20

Class

900

Valve code / tag

8510-XV-00036

WET MAGNETIC PARTICLE EXAMINATION TO VIRGO PROC. MTI-02-VE Rev.02

Subject	Material	Heat n°
Body	A105N	AS2749
Closures	A105N	AS2749

surface status : Machined ☒ Ground ☐ Welded ☐
 Powder : Dry ☐ Wet ☒ Fluorescent ☐
 Powder type : Flaw-Findr BW2 colour : Black
 MT equipment : Prods ☐ Yoke SN. S3407 ☒
 current : A.C. ☐ D.C. ☒ Distance : 75 - 200 mm

note

Test Result : SATISFACTORY

EMERSON PROCESS MANAGEMENT

VIRGO VALVES SRL
 Magnago Valves srl
 LEVICO PND
 UNI EN ISO 9712
 MT PT-MT
 Felice Nichilo

Date

02/04/15

Customer's Inspector

Date

Third Party Inspection

Date



Emerson Process Management Virgo Valves srl
 Via Sicilia 96 20020 Magnago (MI) T +39 0331 308211 F +39 0331 306299

Customer Santos Limited P.Order 073-025630 Client Item 002 Virgo Job AUV700001		Valve type S.E. BALL VALVE Size 20 Class 900 Valve code / tag 8510-XV-00036 Serial 7503	
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Specifica Nr. - Specification No. ASTM A388/B16,34	Identificazione - Identification AS2749	Procedura e Rev. - Proced. and Rev. UT-01-VE REV. 01
Materiale - Material A105N	Condizioni Superficiali - Surface Conditions roughing and machining	Trattamento Termico - Heat Treatment Quenched and tempered

Descrizione del prodotto - Description of Product BODY	Marca Apparecchio e SN - Equipment Trade Mark and SN USM-GO - Sn: USMGO11050035
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Pos Posit.	Fabbricante sonda Probe's Manufact.	Tipo Sonda Type of Probe	Numero Serie Serial Number	Dimensioni Dimensions	Frequenza Frequency	Angolo Angle	Long. Long.	Trasv. Transv.
1	GE B2S	Straight-beam	59982	24 mm	2Mhz	0°	x	/
2	IMG TA 45-2	Angle-beam	7112	14X14 mm	2Mhz	45°	/	x

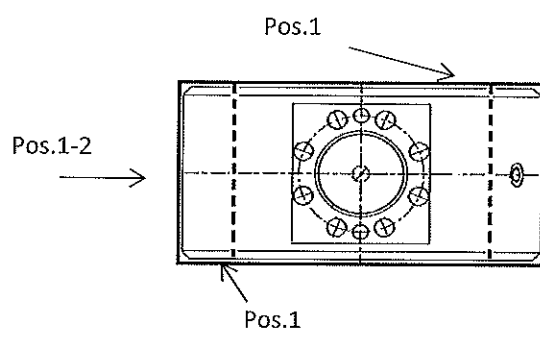
Pos Posit.	Blocco Calibrazione Calibration Block	Distanza Distance	Regolaz. Amplific. Amplificat. Setting	Amplific. Esame Amplific. Exam.	Applificaz. Valutaz Amplif. Evaluation	Cavo Cable	Lunghezza Length
1	Sample for curves DAC	DAC Max 600mm	45,7 dB 80% echo	+6dB	45,7 dB	RG174 LEMO00-LEMO1 single	2MT
2	Sample for curves DAC	DAC Max 220 mm	38,5 dB 80% echo	+6dB	38,5 dB	RG174 LEMO00-LEMO1 single	2MT

Accoppiante Couplant Oil Sa 30 / Gel Fyp NDT Italiana	Esito Esame Inspection Result ☒ Soddisfacente Satisfactory	☐ Non Soddisfacente Not Satisfactory
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Note - Notes

No recording indications has been found

Schizzo - Sketch



Emerson Process Management Virgo Valves EMERSON PROCESS MANAGEMENT 2nd LEVEL S.N.T. TO 141-97 Method II LEVEL ASNT - UT - MT CIC PND UNI/EN ISO 9712 UT - MT - VT Giacomo Dell'Agnello	Customer's Inspector Data-Date 26/03/15	Third Party Inspection Data-Date
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Customer

Santos Limited

P.Order

073-025630

Client Item

001-002

Q.ty

2

Virgo Job

AUV700001

Virgo Item

1-2

Valve type

S.E. BALL VALVE

Size

18"-20"

Class

600-900

Valve Tag

8510-XV-00014/8510-XV-00036

Component	Base Material	Heat n°	Checked Elements (%) (required Values)				Detected Values (%) (average)			
Stem 18"600	A564 Tp. 630 H1150D	FR7040	Cr:	Ni:	Cu:		Cr:	Ni:	Cu:	
			15,00 ÷ 17,50	3,00 ÷ 5,00	3,00 ÷ 5,00		15,29	4,33	3,54	
Stem 20"900	A479 UNS S31803	FR9084	Cr:	Ni:	Mo:		Cr:	Ni:	Mo:	
			21,00 ÷ 23,00	4,50 ÷ 6,50	2,50 ÷ 3,50		22,60	5,68	3,34	
Seats 18"600/ 20"900	A182 F6A	14JS4379	Cr:				Cr:			
			11,50 ÷ 13,50				12,70			
Ball 18"600	A182 F316	AS6805	Cr:	Ni:	Mo:		Cr:	Ni:	Mo:	
			16,00 ÷ 18,00	10,00 ÷ 14,00	2,00 ÷ 3,00		17,37	10,67	2,11	
Ball 20"900	A182 F51	AS9174	Cr:	Ni:	Mo:		Cr:	Ni:	Mo:	
			21,00 ÷ 23,00	4,50 ÷ 6,50	2,50 ÷ 3,50		22,07	5,54	3,07	

NOTE: IN ACCORDANCE WITH PMI PROCEDURE N° PMI-01-AUV700001-700002
Instrument used : NITON XL2 Serial No. 61061
Test result : SATISFACTORY

EMERSON PROCESS MANAGEMENT

Emerson Process Management Virgo

QUALITY INSPECTOR

CQ 02

Felice Nichilo

Date

13.4.15

Customer's Inspector

Date

Third Party Inspection

Date



Emerson Process Management Virgo Valves srl
Via Sicilia 96 20020 Magnago (MI) T +39 0331 308211 F +39 0331 306299

Form-PO23FM06r1