

# Existing Equipment Integrity Assessment Report

Date July 2023

Page 1 of 1

Inspect Date: July 27, 2023	Client: Yoho Resources	District: Inga, BC	LSD: 10-19-087-23W6
Facility:	Client Ref #	IRM Ref #	P004
Equipment #: BPV-066729	Description: 1st Stage Aerial Cooler	Jur# A0552588	CRN: T4387.213
MFR: Air-X-Changers	Mfr S/N: 055572.3	Mfr Date: 2005	Status: Operating

Fit for Service: Yes      Suitable for Service: Yes      PSV meets Code: Yes      PSV set at or below MAWP: Yes  
 Online PSV Inspection has been completed: Yes  
 PSV Capacity Verified: N/A  
 Repair / Alteration / PSV Calibration Required: No

## Current Inspection Results

2023-07 VE UT completed by RJC  
 VE | The caulking around the piping to building interface has failed.  
 UT | No concerns noted  
 PSV | No concerns noted

Assessment completed by Aaron Bischoff | UT readings above Nom-C.A and MIL tolerance Tmin (12.5%),. No issues on concerns noted. 5 year / 60 month acceptable. VE reviewed; no major concerns noted. AJB.  
 VE reviewed; no major concerns noted. AJB.

## Past PSV Servicing Results

SN 496603-16-A10 serviced 2020-09 by Unified Valve. PSV Service report reviewed using PSV assessment calculator. PSV serviced by Unified Valve Fort St John. No issues or concerns at time of servicing, suggested interval of 5 years / 60 months. AJB

## Past Inspection History Results

No historical inspections

## NEXT NDE & Inspection Methods

<input checked="" type="checkbox"/> VE 2028	<input type="checkbox"/> VI	<input checked="" type="checkbox"/> UT 2028	<input checked="" type="checkbox"/> BW
<input type="checkbox"/> WF	<input type="checkbox"/> LF	<input type="checkbox"/> ET	<input type="checkbox"/> HIC
<input type="checkbox"/> CREEP	<input type="checkbox"/> BHN	<input type="checkbox"/> CDR	<input type="checkbox"/> MFL
Other:			

## Previous Inspection Plan

No historical ITP

## Next Inspection Plan

Expected damage mechanisms and locations: General Erosion / Corrosion. Localized pitting possible.  
 Primary Areas of degradation: Bottom head and piping elbows.  
 NDE examinations (type & extent): VE on 5-year Interval – due July 2028 ; UT on 5-year DUE July 2028  
 Preparation for next inspection: None  
 PSV: Last service September 2020, report reviewed. Next PSV service due September 2025

Qualified

Inspector: Aaron Bischoff Qual: IBPV#644

Signature:



Report date: 17-Nov-2023      Report status: Final



# Vessel External Inspection

Report No.:


Client	Yoho Resources			Inspector	Ryan Cadieux			Date	July 27, 2023							
District	Inga, BC		Surface LSD	10-19-087-23W6			Downhole LSD									
<b>Vessel Data</b>																
Vessel Description	BPV-066729 – 1 <sup>st</sup> Stage Aerial Cooler			RT	No		PWHT	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Partial <input type="checkbox"/>								
A# / NB#	A0552588		Serial #	055572.3			CRN #	T4387.213								
Manufacturer	Air-X-Changers			Manway	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Size:									
Owner Tag	N/S		Skid	Comp Skid #050903			OD			Length						
MAWP 1	<input type="checkbox"/> Shell <input checked="" type="checkbox"/> Tube	645	psi		kPa	MAWT		C	350	F	MDMT		C	-20	F	
MAWP 2	<input type="checkbox"/> Shell <input type="checkbox"/> Tube		psi		kPa	MAWT		C		F	MDMT		C		F	
Operating Pressure			psi		kPa	Operating Temp		C		F	Flange Rating #	300				
Process Conditions:	<input checked="" type="checkbox"/> Sweet <input type="checkbox"/> Sour						Internal Coating:	N/S								
Product:	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Water <input type="checkbox"/> Air <input type="checkbox"/> Effluent <input type="checkbox"/> Other:															
<b>PSV #1 Data</b>																
Owner ID/Tag	14 Yoho					PSV Location	Piping									
Manufacturer	Farris					Model #	26GA12-120									
Serial #	496603-16-A10					Mfg Date	05/06									
CRN #	0G8442.5C					Code	UV/NB									
Set Pressure	635					<input checked="" type="checkbox"/> psi <input type="checkbox"/> kPa	Service Company	Unified								
Capacity	6207		scfm		gpm		Other	Service Date	09/2020		Service Tag #	37348C				
Inlet Size	1.5"		NPS	Type	<input type="checkbox"/> THD <input checked="" type="checkbox"/> FLG #		300	Outlet Size	2.5"		NPS	Type	<input type="checkbox"/> THD <input checked="" type="checkbox"/> FLG #		150	
Inlet Block Valve	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Locked/Sealed		<input type="checkbox"/> Yes <input type="checkbox"/> No		Outlet Block Valve	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Locked/Sealed		<input type="checkbox"/> Yes <input type="checkbox"/> No				
Seal Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					Properly Supported	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No									
Drainage (i.e. pocketed, missing tailpipe):	Satisfactory															
Discharge Piped to (i.e. flare line, pop tank, FKO, atmosphere):	Flare															
PSV General Condition/Comments:	No issues noted.															
<b>PSV #2 Data</b>																
Owner ID/Tag						PSV Location										
Manufacturer						Model #										
Serial #						Mfg Date										
CRN #						Code										
Set Pressure						<input type="checkbox"/> psi <input type="checkbox"/> kPa	Service Company									
Capacity			scfm		gpm		Other	Service Date			Service Tag #					
Inlet Size			NPS	Type	<input type="checkbox"/> THD <input type="checkbox"/> FLG #			Outlet Size			NPS	Type	<input type="checkbox"/> THD <input type="checkbox"/> FLG #			
Inlet Block Valve	<input type="checkbox"/> Yes <input type="checkbox"/> No		Locked/Sealed		<input type="checkbox"/> Yes <input type="checkbox"/> No		Outlet Block Valve	<input type="checkbox"/> Yes <input type="checkbox"/> No		Locked/Sealed		<input type="checkbox"/> Yes <input type="checkbox"/> No				
Seal Intact:	<input type="checkbox"/> Yes <input type="checkbox"/> No					Properly Supported	<input type="checkbox"/> Yes <input type="checkbox"/> No									
Drainage (i.e. pocketed, missing tailpipe):																
Discharge Piped to (i.e. flare line, pop tank, FKO, atmosphere):																
PSV General Condition/Comments:																

# Vessel External Inspection

Report No.:

External Inspection	Good	Fair*	Poor*	N/A	External Inspection	Good	Fair*	Poor*	N/A
Skid Foundation/Supports	X				Ladder(s)/Platforms				X
Insulation/Cladding		X			Gauges				X
Vessel Nameplate	X				Valves				X
Vessel Saddle/Skirt/Supports/Bolts	X				Piping	X			
Vessel Paint/Coating	X				Flanges/Bolting (per Code)	X			
Vessel Shell				X	Piping Support	X			
Vessel Head	X				Catadyne Heaters (zip ties)				X
Nozzles	X				Surface Staining of Ground	X			
Pig Traps (ie evidence of hammering)				X	Signage (i.e. stand alone)				X
Regulators Vented	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				Vessel/Skid Grounded	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

\* Fair and Poor selections require comments

<b>Comments:</b> 1. The caulking around the piping to building interface has failed.				
<input checked="" type="checkbox"/> In Service <input type="checkbox"/> Idle <input type="checkbox"/> Blinded/Disconnected		Signature		Date <b>July 27, 2023</b>

# Vessel External Inspection

## PHOTOS

Report No.:





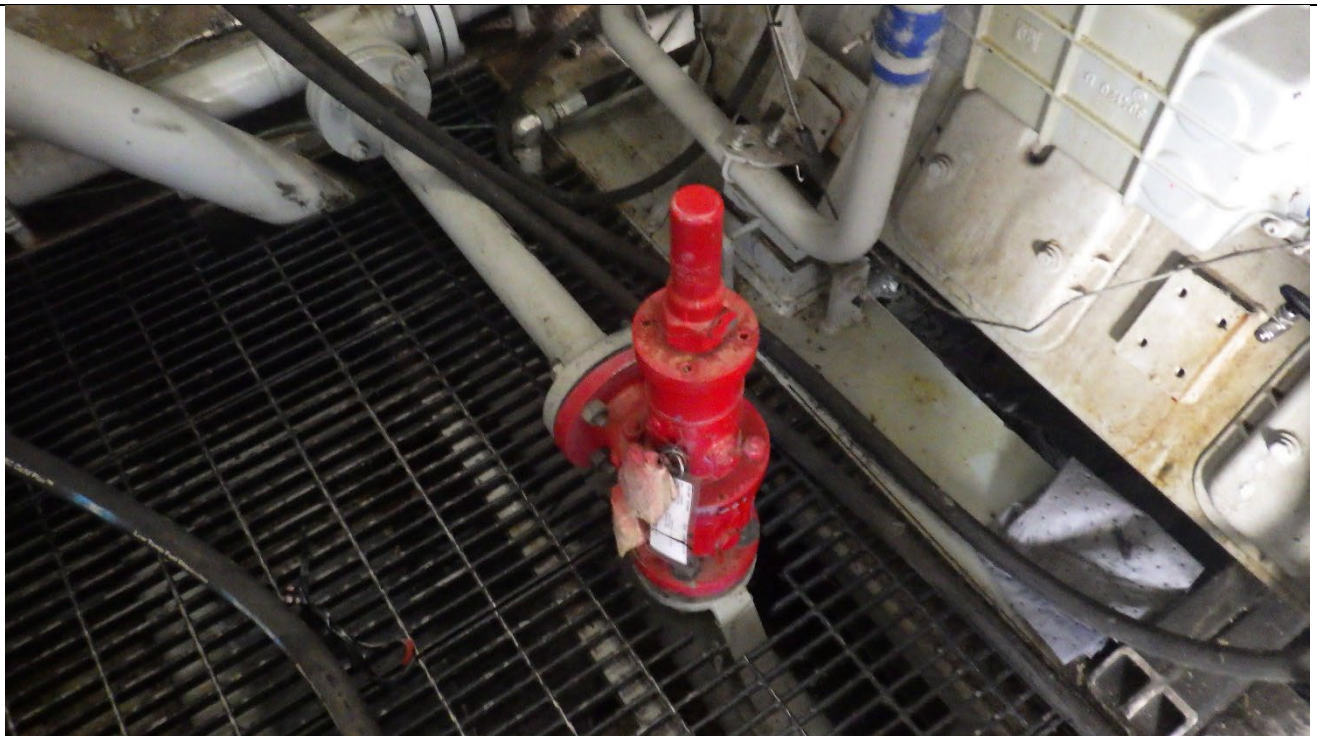
# Vessel External Inspection

Report No.:



## Vessel External Inspection

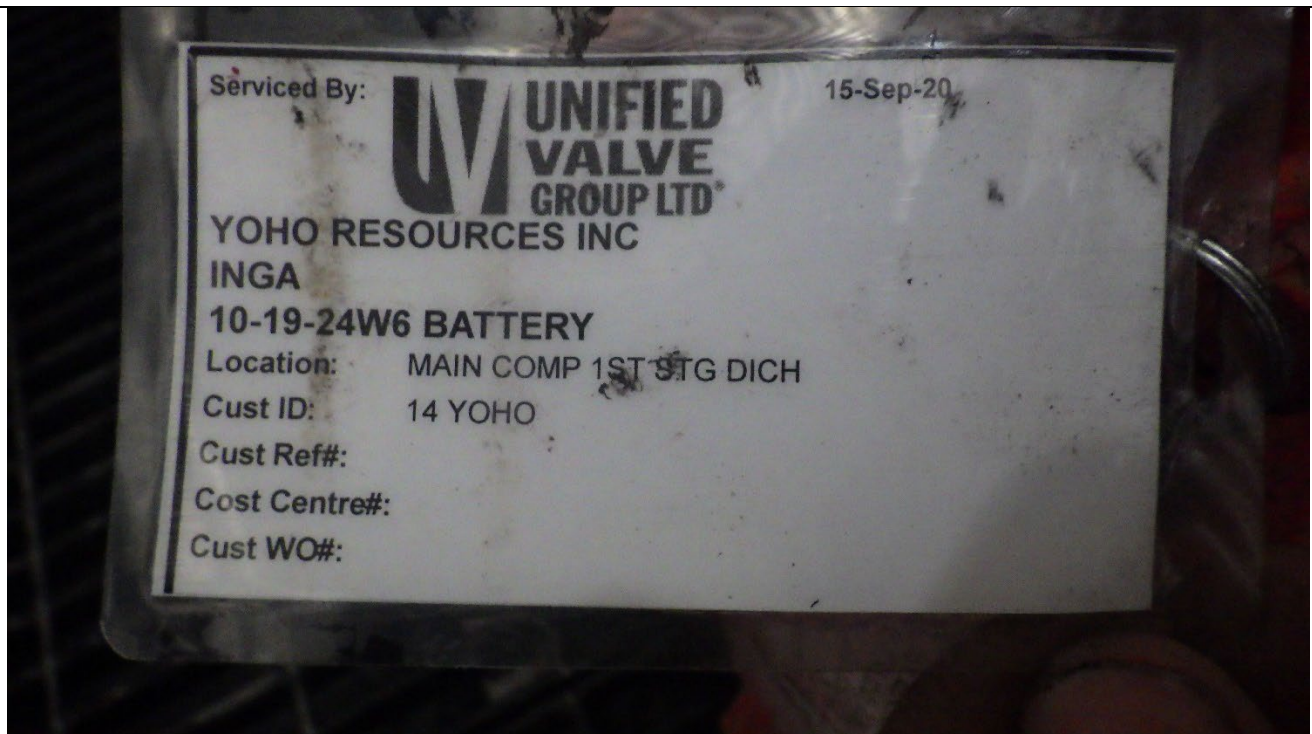
Report No.:





## Vessel External Inspection

Report No.:





## Vessel External Inspection

Report No.:







## Corrosion Survey Report

<b>Client:</b> Yoho Resources  <b>Date:</b> Thursday, July 27, 2023	<b>A0552588 - UT - 001 - RC</b>
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<b>Work Location:</b> Inga, BC <b>Examination Standard:</b> ASME V Article 4 - 2021 <b>Acceptance Standard:</b> Client's Spec. <b>RJC Procedure:</b> RJC-UT-001 Rev.0	<b>Scanning Surface:</b> O.D. <b>Material:</b> Carbon Steel <b>Surface Condition:</b> Painted <b>Temperature:</b> Ambient	<b>Job No.:</b> 2023-0033 <b>P.O. No.:</b> <b>W.O. No.:</b> <b>Other:</b>
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<b>Instrument:</b> Olympus <b>Model:</b> Epoch 600 <b>Serial No.:</b> 140708306 <b>Cal Due Date:</b> Monday, January 15, 2024	<b>Couplant:</b> UTX <b>Calibration Block:</b> C.S. Step Wedge Serial No. 3886-20 <b>Calibration Block:</b> <b>Scanning Limitation:</b> See comments below
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Probe	Ser. No.	Angle	MHz	Crystal Size / Type	Primary Ref. Reflector / Amp. / Distance / dB	Scan Sens.	Calibrated Range
V-110	180002	0°	5 MHz	0.500" / Single	1st Back wall	As required	0.100" - 1.000"

<b>Purpose:</b> To perform an ultrasonic thickness survey.  <b>Results:</b> Refer to attached pages for recorded data.  <b>Notes:</b> 1. Thickness readings do NOT include paint thickness. 2. * = Assumed nominal thickness 3. Piping wall loss between 12.6% - 30% = Caution 4. Piping wall loss greater then 30% = Urgent	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="6" style="background-color: #f4a460;">VESSEL DATA</th></tr> <tr> <td colspan="6" style="background-color: #f4a460;"><b>Vessel Description:</b> 1st Stage Aerial Cooler</td></tr> <tr> <td style="background-color: #f4a460;"><b>A No.:</b></td><td>0552588</td><td style="background-color: #f4a460;"><b>Vessel ID:</b></td><td>N/S</td><td style="background-color: #f4a460;"><b>Manufacturer:</b></td><td>Air-X-Changers</td></tr> <tr> <td style="background-color: #f4a460;"><b>CRN No.:</b></td><td>T4387.213</td><td style="background-color: #f4a460;"><b>Year Built:</b></td><td>2005</td><td style="background-color: #f4a460;"><b>District:</b></td><td>Inga, BC</td></tr> <tr> <td style="background-color: #f4a460;"><b>Serial No.:</b></td><td>55572.3</td><td style="background-color: #f4a460;"><b>C.A.:</b></td><td>N/S</td><td style="background-color: #f4a460;"><b>LSD:</b></td><td>10-19-087-23W6</td></tr> </table>	VESSEL DATA						<b>Vessel Description:</b> 1st Stage Aerial Cooler						<b>A No.:</b>	0552588	<b>Vessel ID:</b>	N/S	<b>Manufacturer:</b>	Air-X-Changers	<b>CRN No.:</b>	T4387.213	<b>Year Built:</b>	2005	<b>District:</b>	Inga, BC	<b>Serial No.:</b>	55572.3	<b>C.A.:</b>	N/S	<b>LSD:</b>	10-19-087-23W6
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Interpretation is in accordance with the above mentioned standards, to the best of my professional ability.			
<b>Print:</b> Ryan Cadieux	<b>CGSB/SNT Level:</b> II/II	<b>Reg. No.:</b> 18219	<b>Sign:</b>
<b>Client Representative:</b>			
<b>Print:</b>	<b>Date:</b>	<b>Sign:</b>	

Band ID	Location	Direction	Material	Nominal (in)	CA (in)		Baseline (in)	Previous (in)	Current (in)	% Wall Loss	Tmin (in)	STCR (mpy)	LTCR (mpy)	Years Remaining	
000*	EHB - North Face	T - B	SA516 - 70N	0.750	0.063	Year: Min: Avg:	2005 0.750		2023 0.742 0.743	1.07%	0.687	0.00	0.44	20	Acceptable
	Comments: 0.063" used for C.A.														
005*	EHB - South Face	T - B	SA516 - 70N	0.750	0.063	Year: Min: Avg:	2005 0.750		2023 0.746 0.747	0.53%	0.687	0.00	0.22	20	Acceptable
	Comments: 0.063" used for C.A.														
010*	WHB - South Face	T - B	SA516 - 70N	0.750	0.063	Year: Min: Avg:	2005 0.750		2023 0.770 0.771	0.00%	0.687	0.00	0.00	20	Acceptable
	Comments: 0.063" used for C.A.														
015*	WHB - North Face	T - B	SA516 - 70N	0.750	0.063	Year: Min: Avg:	2005 0.750		2023 0.747 0.748	0.40%	0.687	0.00	0.17	20	Acceptable
	Comments: 0.063" used for C.A.														
						Year: Min: Avg:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Comments:														
						Year: Min: Avg:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Comments:														



Band ID	Location	Direction	Material	Nominal (in)	CA (in)		Baseline (in)	Previous (in)	Current (in)	% Wall Loss	Tmin (in)	STCR (mpy)	LTCR (mpy)	
020	4" XS Inlet Pipe	360° Circ	Carbon Steel	0.337	0.042	Year:	2005		2023					Acceptable
						Min:	0.337		0.333	1.19%	0.295	0.00	0.22	
						Avg:			0.338					
Comments: 12.5% used for C.A														
025	4" XS Inlet Pipe	360° Circ	Carbon Steel	0.337	0.042	Year:	2005		2023					Acceptable
						Min:	0.337		0.332	1.48%	0.295	0.00	0.28	
						Avg:			0.340					
Comments: 12.5% used for C.A.														
						Year:								#DIV/0!
						Min:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	
						Avg:								
Comments:														
						Year:								#DIV/0!
						Min:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	
						Avg:								
Comments:														
						Year:								#DIV/0!
						Min:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	
						Avg:								
Comments:														
						Year:								#DIV/0!
						Min:				#DIV/0!	0.000	#DIV/0!	#DIV/0!	
						Avg:								
Comments:														

## Vessel Overview





## Nameplate



## TML Locations





## TML Locations



PSV Service report reviewed using PSV assessment calculator. PSV serviced by Unified Valve Fort St John. No issues or concerns at time of servicing, suggested interval of 5 years / 60 months. AJB



PRV INSPECTION AND TEST REPORT

BRANCH: Fort St John      UVL ID#: 37348C  
Work Order: W16001404      Customer PO#:

Customer	YOHO RESOURCES INC	Date:	09/03/2020
Facility:	INGA	LSD:	10-19-24W6 BATTERY
A#:		Vessel SN:	
Cust. Ref.:		Valve PO:	
Cust. WO#:		Cust AFE#:	
		PSV Location:	MAIN COMP 1ST STG DICH
		Cust Id:	14 YOHO
		PO LINE#:	
		Cost Centre#:	

VALVE DATA

Man.:	FARRIS	Model:	26GA12-120	Serial:	496603-16-A10	Seat:	HARD
Conn.	Flanged	Inlet:	1.5" 300 RF	Orifice:	G	Outlet:	2.5" 150 RF
Set Press.	635 PSI	Back Press.:	N/A PSI	CDTP:	N/A PSI	Temp:	N/A
Lift Lever	<input type="checkbox"/>	Cap Assembly:	Closed	RFID:		Code Symbol:	UV
						Cap:	6,270 SCFM
						CRN#:	0G8442.5C

CUSTOMER INSTRUCTIONS

Instructions: Full Service      Pretest Required? ☒      Reset Required? ☐

CONDITION AS RECEIVED

Visual Condition:	Fair	Data Plate Condition:	OK	Date of last service:	11/2017
Seal Condition:	Top: Intact	Bottom:	Intact	Insignia:	UVL
Inlet:		Inlet Plugged:	<input type="checkbox"/>	Outlet:	<input type="checkbox"/>
		Outlet:		Outlet Plugged:	<input type="checkbox"/>
				Initial Insp. Signoff:	K-anna Jobson

PRETEST 1

Simmer: 624 PSI      Set Press: 627 PSI      Reseat: 583 PSI      Leakage: 10 BPM      Test Gauge: FSJ9/10  
Tested By: Chance Pomeroy      Pretest Comments:

PRETEST 2

Simmer:      Set Press:      Reseat:      Leakage:      Test Gauge: FSJ9/10  
Tested By:      Pretest Comments:

COMPONENTS INSPECTION

(0 Like New / 1 Minor / 2 Medium / 3 Major )

ITEM	CLEAN	OLY	RUSTY	CARBON	PITTED	CORRODED	SCALE	VIBRATION	GROOVED	DENTED	GALLING	GOUNDED	OTHER	Machined	Lapped	Polished	Replaced	Replace Next Service	COMMENTS
DISC		1												<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOZZLE		1												<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CAP-LEVER ASSY		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COMP SCREW and LC		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
AS FOUND:		AS LEFT:																	
SPRING and BUTTONS		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SPINDLE / STEM		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
STEM RETAINER								1						<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
DISC HOLDER		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
GUIDE / UPPER RING		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LOWER RING		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
RING PIN(S)		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
BELLOWS														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
GASKET / SEALS		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4KG26A21S
CONNECTION ENDS		1												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
OTHER														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

DISC: Min:	.296	ACT -	.312	NOZZLE: MIN / MAX	4.234	ACT -	4.327	SPRING NUMBER:	
Disassembly:	Grant Attfield	Inspection:	Sean Moore	Reassembly:	Grant Attfield				

FINAL TEST

Test Medium	Air	Simmer:	633 PSI	Set Pressure:	635 PSI
Reseat:	521 PSI	Leakage Acceptable:	<input checked="" type="checkbox"/>	B.P. Test:	60 PSI
ADJ. RING SETTING (NOTCHES):		Upper:	N/A	Lower:	-9
Tested by:	Dale Welsh	Test Gauge:	FSJ9/10	Vacuum:	N/A
		Date Final Tested:	09/16/2020	Set Press Def	POP

FINAL INSPECTION:

SEAL: Top:	<input checked="" type="checkbox"/>	Bottom:	<input checked="" type="checkbox"/>	End Protectors Installed:	<input checked="" type="checkbox"/>	Painted:	<input checked="" type="checkbox"/>	Palletized:	<input checked="" type="checkbox"/>	Ship Container:	<input type="checkbox"/>	Flex Gaskets Supplied:	<input checked="" type="checkbox"/>
Final Inspection:	Randy Rowsell	Customer Inspection:											
Comments:													