



INVAC CAST LIMITED

BLOCK / SURVEY No.444 to 453 & 455,NANA FOFADIYA ROAD,BAMANGAM,TALUKA : KARJAN,,VADODARA,Pin:391210,INDIA
Tel:++912666-290555,,Fax:++912666-290136,e-mail:info@intricastindia.com,WEB : www.invaccast.com

ISO 9001 : 2008
Certificate No.
44 100 124180

INSPECTION CERTIFICATE EN 10204 - type 3.1

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M/s. L&T VALVES LTD (COIMBATORE) VALVE MANUFACTURING UNIT, L&T CAMPUS, MALUMICHAMPATTI BY PASS ROAD COIMBATORE , Pin :641050	T.C No :G/2144/18-19/1 D.C No :G/2144/18-19 O.A No :C2820 P.O No :10160288	Date: 29/11/2018 Date: 29/11/2018 Date: 31/08/2018 Date: 10/08/2018
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SPECIFICATION : ASTM A216-18 Gr.WCB
TEST SPECIFICATION : -

CHEMICAL ANALYSIS

HEAT #	C.%	Mn.%	Si.%	S.%	P.%	Cr.%	Ni.%	Mo.%	V.%	Cu.%	Al.%	CE.%	TRE.%		
MIN	-	-	-	-	-	-	-	-	-	-	-	-	-		
MAX	0.250	1.000	0.600	0.035	0.030	0.500	0.500	0.200	0.030	0.300	0.060	0.430	1.000		
8WWC	0.201	0.899	0.505	0.011	0.024	0.055	0.066	0.004	0.002	0.036	0.045	0.370	0.163		
8WWC	0.201	0.899	0.505	0.011	0.024	0.055	0.066	0.004	0.002	0.036	0.045	0.370	0.163		
8WWC	0.201	0.899	0.505	0.011	0.024	0.055	0.066	0.004	0.002	0.036	0.045	0.370	0.163		
8WWD	0.203	0.906	0.523	0.009	0.025	0.032	0.050	0.001	0.001	0.036	0.003	0.367	0.120		
8WWD	0.203	0.906	0.523	0.009	0.025	0.032	0.050	0.001	0.001	0.036	0.003	0.367	0.120		

MECHANICAL PROPERTIES

HEAT #	Y.S (0.2%)	Y.S (1.0%)	T.S	% Elgn	% Red	Hardness	Shear Area	Impact Test at (Joules)				Lateral Expansion (in MM)			
	MPa	MPa	MPa		in Area	BHN		I	II	III	AVG	I	II	III	AVG
MIN	250	-	485	22	35	-	-	-	-	-	-	-	-	-	-
MAX	-	-	655	-	-	235	-	-	-	-	-	-	-	-	-
8WWC	329.86	-	520.17	35.00	62.47	141 - 153	-	-	-	-	-	-	-	-	-
8WWC	329.86	-	520.17	35.00	62.47	141 - 153	-	-	-	-	-	-	-	-	-
8WWC	329.86	-	520.17	35.00	62.47	141 - 153	-	-	-	-	-	-	-	-	-
8WWD	331.37	-	536.51	42.32	63.84	141 - 150	-	-	-	-	-	-	-	-	-
8WWD	331.37	-	536.51	42.32	63.84	141 - 150	-	-	-	-	-	-	-	-	-

HEAT TREATMENT DETAILS

HEAT TREATMENT PROCESS - I					HEAT TREATMENT PROCESS - II				HEAT TREATMENT PROCESS - III			
HEAT #	Type of H/T	Soaked Temp. °C	Soaked Time Hrs	Cooling Media	Type of H/T	Soaked Temp. °C	Soaked Time Hrs	Cooling Media	Type of H/T	Soaked Temp. °C	Soaked Time Hrs	Cooling Media
8WWC	NORMALIZE	920	2.20	AC								
8WWC	NORMALIZE	920	2.20	AC								
8WWC	NORMALIZE	920	2.20	AC								
8WWD	NORMALIZE	920	2.20	AC								
8WWD	NORMALIZE	920	2.20	AC								

DESPATCH DETAILS

HEAT #	POUR DATE	PO. SNo.	MOULD #	ITEM DESCRIPTION	PART #	DRAWING #	DESP. QTY
8WWC	22/10/2018	11	J55518B	2" # 150/300 SCV COVER (IBR)	BL0037V-Y-A10C0KA	BL0037V-B REV 0	30
8WWC	22/10/2018	17	J55518B	2" # 150/300 SCV COVER (IBR)	BL0037V-Y-A10C0KA	BL0037V-B REV 0	2
8WWC	22/10/2018	18	J55518B	2" # 150/300 SCV COVER (IBR)	BL0037V-Y-A10C0KA	BL0037V-B REV 0	4
8WWD	22/10/2018	2	J55516B	2.00" CL.150 SCV BODY (IBR)	BL0001V-Y-A10C0KA	BL0001V-B	1
8WWD	22/10/2018	3	J55516B	2.00" CL.150 SCV BODY (IBR)	BL0001V-Y-A10C0KA	BL0001V-B	2

For INVAC CAST LIMITED

Amdt No. : 00

Date : 01.01.2012

Tested By:

FAVIK VAIDYA

[Signature]

FAVIK VAIDYA

WORK INSPECTOR



QA SYSTEM AS PER ANNEX.1, CLAUSE 4.3 OF PED 2014/68/EU CERTIFIED BY TUVNORD WIDE CERT.NO.07/202/1409/WZ/1747/16
H/T Abbreviation (Cooling Media) :- WQ - Water Quenched, AC - Air Cooled

MTC - REVIEWED & ACCEPTED

501599 LTV QC



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M/s. L&T VALVES LTD (COIMBATORE) VALVE MANUFACTURING UNIT, L&T CAMPUS, MALUMICHAMPATTI BY PASS ROAD COIMBATORE , Pin :641050	T.C No :G/2144/18-19/1 D.C No :G/2144/18-19 O.A No :C2820 P.O No :10160288	Date: 29/11/2018 Date: 29/11/2018 Date: 31/08/2018 Date: 10/08/2018
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SPECIFICATION : ASTM A216-18 Gr.WCB
TEST SPECIFICATION : -

CHEMICAL ANALYSIS

HEAT #	C.%	Mn.%	Si.%	S.%	P.%	Cr.%	Ni.%	Mo.%	V.%	Cu.%	Al.%	CE.%	TRE.%		
MIN	-	-	-	-	-	-	-	-	-	-	-	-	-		
MAX	0.250	1.000	0.600	0.035	0.030	0.500	0.500	0.200	0.030	0.300	0.060	0.430	1.000		
8WWD	0.203	0.906	0.523	0.009	0.025	0.032	0.050	0.001	0.001	0.036	0.003	0.367	0.120		
8WWD	0.203	0.906	0.523	0.009	0.025	0.032	0.050	0.001	0.001	0.036	0.003	0.367	0.120		
8WWE	0.204	0.747	0.477	0.009	0.021	0.024	0.048	0.002	0.002	0.029	0.018	0.339	0.105		
8WWF	0.206	0.906	0.520	0.011	0.025	0.033	0.051	0.003	0.002	0.034	0.014	0.370	0.123		
8WYO	0.193	0.841	0.586	0.010	0.022	0.115	0.064	0.004	0.002	0.035	0.010	0.364	0.220		

MECHANICAL PROPERTIES

HEAT #	Y.S (0.2%)	Y.S (1.0%)	T.S	% Elgn	% Red	Hardness	Shear Area	Impact Test at (Joules)				Lateral Expansion (in MM)			
	MPa	MPa	MPa		in Area	BHN		I	II	III	AVG	I	II	III	AVG
MIN	250	-	485	22	35	-	-	-	-	-	-	-	-	-	-
MAX	-	-	655	-	-	235	-	-	-	-	-	-	-	-	-
8WWD	331.37	-	536.51	42.32	63.84	141 - 150	-	-	-	-	-	-	-	-	-
8WWD	331.37	-	536.51	42.32	63.84	141 - 150	-	-	-	-	-	-	-	-	-
8WWE	308.79	-	496.67	47.88	63.84	135 - 139	-	-	-	-	-	-	-	-	-
8WWF	339.80	-	520.17	34.80	65.12	137 - 147	-	-	-	-	-	-	-	-	-
8WYO	336.42	-	533.05	40.68	66.49	141 - 144	-	-	-	-	-	-	-	-	-

HEAT TREATMENT DETAILS

HEAT TREATMENT PROCESS - I					HEAT TREATMENT PROCESS - II				HEAT TREATMENT PROCESS - III			
HEAT #	Type of H/T	Soaked Temp. °C	Soaked Time Hrs	Cooling Media	Type of H/T	Soaked Temp. °C	Soaked Time Hrs	Cooling Media	Type of H/T	Soaked Temp. °C	Soaked Time Hrs	Cooling Media
8WWD	NORMALIZE	920	2.20	AC								
8WWD	NORMALIZE	920	2.20	AC								
8WWE	NORMALIZE	920	2.20	AC								
8WWF	NORMALIZE	920	2.20	AC								
8WYO	NORMALIZE	920	2.20	AC								

DESPATCH DETAILS

HEAT #	POUR DATE	PO. SNo.	MOULD #	ITEM DESCRIPTION	PART #	DRAWING #	DESP. QTY
8WWD	22/10/2018	4	J55516B	2.00" CL.150 SCV BODY (IBR)	BL0001V-Y-A10C0KA	BL0001V-B	1
8WWD	22/10/2018	9	J55516B	2.00" CL.150 SCV BODY (IBR)	BL0001V-Y-A10C0KA	BL0001V-B	4
8WWE	22/10/2018	7	J55516B	2.00" CL.150 SCV BODY (IBR)	BL0001V-Y-A10C0KA	BL0001V-B	8
8WWF	22/10/2018	5	J55516B	2.00" CL.150 SCV BODY (IBR)	BL0001V-Y-A10C0KA	BL0001V-B	8
8WYO	24/10/2018	5	J55516B	2.00" CL.150 SCV BODY (IBR)	BL0001V-Y-A10C0KA	BL0001V-B	1

For INVAC CAST LIMITED

Amdt No. : 00
Date : 01.01.2012

Tested By:
FAVIK VAIDYA

[Signature]

FAVIK VAIDYA
WORK INSPECTOR



MTC - REVIEWED & ACCEPTED

501599 LTV QC



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M/s. L&T VALVES LTD (COIMBATORE) VALVE MANUFACTURING UNIT, L&T CAMPUS, MALUMICHAMPATTI BY PASS ROAD COIMBATORE , Pin :641050	T.C No :G/2144/18-19/1 D.C No :G/2144/18-19 O.A No :C2820 P.O No :10160288	Date: 29/11/2018 Date: 29/11/2018 Date: 31/08/2018 Date: 10/08/2018
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SPECIFICATION : ASTM A216-18 Gr.WCB
TEST SPECIFICATION : -

CHEMICAL ANALYSIS

HEAT #	C.%	Mn.%	Si.%	S.%	P.%	Cr.%	Ni.%	Mo.%	V.%	Cu.%	Al.%	CE.%	TRE.%		
MIN	-	-	-	-	-	-	-	-	-	-	-	-	-		
MAX	0.250	1.000	0.600	0.035	0.030	0.500	0.500	0.200	0.030	0.300	0.060	0.430	1.000		
8WYO	0.193	0.841	0.586	0.010	0.022	0.115	0.064	0.004	0.002	0.035	0.010	0.364	0.220		
8WYO	0.193	0.841	0.586	0.010	0.022	0.115	0.064	0.004	0.002	0.035	0.010	0.364	0.220		
8WYP	0.217	0.862	0.506	0.013	0.024	0.058	0.043	0.003	0.002	0.032	0.011	0.378	0.138		
8WYP	0.217	0.862	0.506	0.013	0.024	0.058	0.043	0.003	0.002	0.032	0.011	0.378	0.138		

MECHANICAL PROPERTIES

HEAT #	Y.S (0.2%)	Y.S (1.0%)	T.S	% Elgn	% Red	Hardness	Shear Area	Impact Test at (Joules)				Lateral Expansion (in MM)			
	MPa	MPa	MPa		in Area	BHN		I	II	III	AVG	I	II	III	AVG
MIN	250	-	485	22	35	-	-	-	-	-	-	-	-	-	-
MAX	-	-	655	-	-	235	-	-	-	-	-	-	-	-	-
8WYO	336.42	-	533.05	40.68	66.49	141 - 144	-	-	-	-	-	-	-	-	-
8WYO	336.42	-	533.05	40.68	66.49	141 - 144	-	-	-	-	-	-	-	-	-
8WYP	331.37	-	534.00	36.24	61.54	135 - 139	-	-	-	-	-	-	-	-	-
8WYP	331.37	-	534.00	36.24	61.54	135 - 139	-	-	-	-	-	-	-	-	-

HEAT TREATMENT DETAILS

HEAT TREATMENT PROCESS - I					HEAT TREATMENT PROCESS - II				HEAT TREATMENT PROCESS - III			
HEAT #	Type of H/T	Soaked Temp. °C	Soaked Time Hrs	Cooling Media	Type of H/T	Soaked Temp. °C	Soaked Time Hrs	Cooling Media	Type of H/T	Soaked Temp. °C	Soaked Time Hrs	Cooling Media
8WYO	NORMALIZE	920	2.20	AC								
8WYO	NORMALIZE	920	2.20	AC								
8WYP	NORMALIZE	920	2.20	AC								
8WYP	NORMALIZE	920	2.20	AC								

DESPATCH DETAILS

HEAT #	POUR DATE	PO. SNo.	MOULD #	ITEM DESCRIPTION	PART #	DRAWING #	DESP. QTY
8WYO	24/10/2018	8	J55516B	2.00" CL.150 SCV BODY (IBR)	BL0001V-Y-A10C0KA	BL0001V-B	2
8WYO	24/10/2018	10	J55518B	2" # 150/300 SCV COVER (IBR)	BL0037V-Y-A10C0KA	BL0037V-B REV 0	12
8WYP	24/10/2018	5	J55516B	2.00" CL.150 SCV BODY (IBR)	BL0001V-Y-A10C0KA	BL0001V-B	6
8WYP	24/10/2018	6	J55516B	2.00" CL.150 SCV BODY (IBR)	BL0001V-Y-A10C0KA	BL0001V-B	2

For INVAC CAST LIMITED

Amdt No. : 00

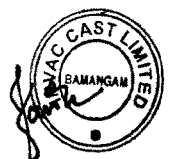
Date : 01.01.2012

Tested By:

FAVIK VAIDYA

[Signature]

FAVIK VAIDYA
WORK INSPECTOR



MTC - REVIEWED & ACCEPTED

501599 LTV QC




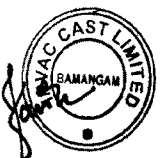
INVAC CAST LIMITED

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ISO 9001 : 2008
Certificate No.
44 100 124180

TEST CERTIFICATE EN 10204 - type 3.1

F08/9

M/s. L&T VALVES LTD (COIMBATORE) VALVE MANUFACTURING UNIT, L&T CAMPUS, MALUMICHAMPATTI BY PASS ROAD COIMBATORE , Pin :641050		T.C No : G/2144/18-19/1 D.C No : G/2144/18-19 O.A No : C2820 P.O No : 10160288	Date: 29/11/2018 Date: 29/11/2018 Date: 31/08/2018 Date: 10/08/2018
SPECIFICATION : ASTM A216-18 Gr.WCB TEST SPECIFICATION : -			
<p>We confirm that above material was manufactured, sampled, tested and inspected in accordance with PO.Requirement & Material Specification ASTM A216-18 Gr.WCB and was found to meet the requirements.</p> <p>CUSTOMER TECHNICAL SPECIFICATION TDC 001 REV. 26. VISUAL INSPECTION : ALL CASTINGS AS PER MSS SP 55 TYPE II - Xlla. GAUGE LENGTH 25 MM.</p> <p>NO RADIOACTIVE CONTAMINATION. MPI TEST AS PER REPORT NO.00885/18, 00886/18.</p> <p>NACE MR0103-2016 & NACE MR0175/ISO 15156 -2015.</p> <p>ALL THE CASTINGS ARE FULLY KILLED CARBON STEEL.</p> <p>YIELD STRENGTH DETERMINATION USING 0.2% OFFSET.</p> <p>BEND TEST CARRIED OUT AT 120° ANGLE AND FOUND SATISFACTORY.</p> <p>MANUFACTURER'S MARK : </p>			
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">MTC - REVIEWED & ACCEPTED 501599 LTV QC</div>			
		For INVAC CAST LIMITED  FAVIK VAIDYA WORK INSPECTOR	
Amdt No. : 00 Date : 01.01.2012	Tested By: FAVIK VAIDYA 