

MATERIAL TEST RESULT

MESSRS	UNIMECH ENGINEERING (M) SDN. BHD.
JOB NAME	
JOB No.	
P.O.No.	APO-2004-0011
PRODUCT CODE	150SCTDZM<GT101>3

Certificate No.
1020331905-003-01-01-Z1

Date : 2020/07/10



Figure	150SCTDZ<GT101>3	Valve No.	
	Material ASTM A 216 Gr. WCB	Item No.	4
	Charge No.	Display No.	Name of Parts
1	KA0333		BODY
2	KA9ZP1		BODY
3	KA0344		BODY
4	KA0343		BODY

CHEMICAL COMPOSITION %

Element	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V						
Spec.	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max						
	0.30	1.00	0.035	0.035	0.60	0.30	0.50	0.50	0.20	0.03						
1	0.19	0.79	0.019	0.010	0.46	0.02	0.03	0.06	0.00	0.01						
2	0.22	0.85	0.015	0.004	0.60	0.02	0.02	0.16	0.00	0.01						
3	0.22	0.87	0.017	0.006	0.54	0.02	0.01	0.04	0.00	0.01						
4	0.20	0.81	0.017	0.009	0.50	0.02	0.03	0.23	0.00	0.01						
Element	CE															
Spec.	Max															
	0.50															
1	0.33															
2	0.39															
3	0.37															
4	0.39															

TENSION TEST

IMPACT TEST

Item			Tensile str.	Yield str.	Elongation	Reduction				
Unit			MPa	MPa	%	%				
Spec.			485	Min	Min	Min				
			655	250	22	35				
1			516	314	29	63				
2			497	298	30	57				
3			545	354	30	59				
4			535	341	25	51				

Item										
Unit										
Spec.										
1										
2										
3										
4										

HEAT TREATMENT °C

Spec.	
1	N:930° C*90min AC
2	N:930° C*90min AC
3	N:930° C*90min AC
4	N:930° C*90min AC
N:Normalizing A:Annealing T:Tempering Q:Quenching AC:Air Cooling WQ:Water Quenching OQ:Oil Quenching WC:Water Cooling FC:Furnace Cooling ST:Solution Treatment	

REMARKS

CE = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

Reviewed by _____

KITZ CORPORATION
 QC Manager

We hereby certify that the articles listed above are satisfactory in accordance with the requirements of the standard and purchase order.

MATERIAL TEST RESULT

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JOB NAME	
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P.O.No.	APO-2004-0011
PRODUCT CODE	150SCTDZM<GT101>3

Certificate No.
1020331905-003-01-01-Z2

Date : 2020/07/10

KITZ

Figure	150SCTDZ<GT101>3	Valve No.	
	Material ASTM A 216 Gr. WCB	Item No.	4
	Charge No.	Display No.	Name of Parts
1	KA0331		BODY
2	KA0346		BODY
3	KA9ZK8		BODY
4	KA9ZDD		BODY CAP

CHEMICAL COMPOSITION %

Element	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V						
Spec.	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max						
	0.30	1.00	0.035	0.035	0.60	0.30	0.50	0.50	0.20	0.03						
1	0.21	0.77	0.020	0.012	0.48	0.02	0.02	0.03	0.00	0.01						
2	0.19	0.77	0.019	0.009	0.49	0.02	0.02	0.07	0.00	0.01						
3	0.20	0.76	0.012	0.007	0.48	0.01	0.01	0.11	0.02	0.01						
4	0.21	0.86	0.014	0.007	0.55	0.04	0.07	0.12	0.03	0.01						
Element	CE															
Spec.	Max															
	0.50															
1	0.34															
2	0.33															
3	0.35															
4	0.39															

TENSION TEST

IMPACT TEST

Item			Tensile str.	Yield str.	Elongation	Reduction				
Unit			MPa	MPa	%	%				
Spec.			485	Min	Min	Min				
			655	250	22	35				
1			507	316	30	65				
2			510	329	26	54				
3			503	335	27	62				
4			502	327	30	56				

Item										
Unit										
Spec.										
1										
2										
3										
4										

HEAT TREATMENT °C

Spec.	
1	N:930° C*90min AC
2	N:930° C*90min AC
3	N:930° C*90min AC
4	N:930° C*90min AC
N:Normalizing A:Annealing T:Tempering Q:Quenching AC:Air Cooling WQ:Water Quenching OQ:Oil Quenching WC:Water Cooling FC:Furnace Cooling ST:Solution Treatment	

REMARKS

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PRODUCT CODE	150SCTDZM<GT101>3

Certificate No.
1020331905-003-01-01-Z3

Date : 2020/07/10



Figure	150SCTDZ<GT101>3	Valve No.	
	Material ASTM A 216 Gr. WCB	Item No.	4
	Charge No.	Display No.	Name of Parts
1	KA9ZDK		BODY CAP
2	KA9ZF5		BODY CAP
3	KA9ZAA		BODY CAP
4	KA9ZF4		BODY CAP

CHEMICAL COMPOSITION %

Element	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V						
Spec.	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max						
	0.30	1.00	0.035	0.035	0.60	0.30	0.50	0.50	0.20	0.03						
1	0.21	0.78	0.018	0.012	0.42	0.02	0.07	0.13	0.03	0.01						
2	0.21	0.70	0.013	0.006	0.53	0.02	0.04	0.18	0.01	0.01						
3	0.19	0.76	0.015	0.009	0.47	0.02	0.02	0.12	0.00	0.01						
4	0.22	0.80	0.017	0.011	0.53	0.04	0.04	0.11	0.03	0.01						
Element	CE															
Spec.	Max															
	0.50															
1	0.37															
2	0.36															
3	0.34															
4	0.38															

TENSION TEST

IMPACT TEST

Item			Tensile str.	Yield str.	Elongation	Reduction				
Unit			MPa	MPa	%	%				
Spec.			485	Min	Min	Min				
			655	250	22	35				
1			506	317	30	59				
2			487	295	29	63				
3			500	306	35	62				
4			486	307	29	65				

Item										
Unit										
Spec.										
1										
2										
3										
4										

HEAT TREATMENT °C

Spec.	
1	N:930° C*90min AC
2	N:930° C*90min AC
3	N:930° C*90min AC
4	N:930° C*90min AC
N:Normalizing A:Annealing T:Tempering Q:Quenching AC:Air Cooling WQ:Water Quenching OQ:Oil Quenching WC:Water Cooling FC:Furnace Cooling ST:Solution Treatment	

REMARKS

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PRODUCT CODE	150SCTDZM<GT101>3

Certificate No.
1020331905-003-01-01-Z4

Date : 2020/07/10



Figure	150SCTDZ<GT101>3	Valve No.	
Material	ASTM A 216 Gr. WCB	Item No.	4
Charge No.	Display No.	Name of Parts	
1 KA9ZFA			BODY CAP
2 KA9Z88			BODY CAP
3			
4			

CHEMICAL COMPOSITION %

Element	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V						
Spec.	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max						
	0.30	1.00	0.035	0.035	0.60	0.30	0.50	0.50	0.20	0.03						
1	0.21	0.74	0.012	0.006	0.50	0.02	0.04	0.07	0.01	0.02						
2	0.20	0.87	0.020	0.009	0.50	0.02	0.02	0.06	0.00	0.01						
3																
4																

Element	CE									
Spec.	Max									
	0.50									
1	0.35									
2	0.36									
3										
4										

TENSION TEST

IMPACT TEST

Item			Tensile str.	Yield str.	Elongation	Reduction			
Unit			MPa	MPa	%	%			
Spec.			485	Min	Min	Min			
1			515	342	25	61			
2			520	306	28	59			
3									
4									

Item									
Unit									
Spec.									
1									
2									
3									
4									

HEAT TREATMENT °C

Spec.	
1	N:930° C*90min AC
2	N:930° C*90min AC
3	
4	

N:Normalizing A:Annealing T:Tempering Q:Quenching AC:Air Cooling
 WQ:Water Quenching OQ:Oil Quenching WC:Water Cooling FC:Furnace Cooling ST:Solution Treatment

REMARKS

CE = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

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1020331905-003-01-01-Z5

Date : 2020/07/10



Figure	150SCTDZ<GT101>3	Valve No.	
Material	ASTM A 351 Gr. CF8M	Item No.	4
Charge No.	Display No.	Name of Parts	
1	JAO3M	BALL	
2			
3			
4			

CHEMICAL COMPOSITION %

Element	C	Mn	Si	S	P	Ni	Cr	Mo								
Spec.	Max	Max	Max	Max	Max	9.0	18.0	2.0								
	0.08	1.50	1.50	0.040	0.040	12.0	21.0	3.0								
1	0.04	0.79	0.60	0.008	0.030	9.2	18.6	2.1								
2																
3																
4																
Element																
Spec.																
1																
2																
3																
4																

TENSION TEST

IMPACT TEST

Item			Tensile str.	Yield str.	Elongation				
Unit			MPa	MPa	%				
Spec.			Min	Min	Min				
1			485	205	30				
2			573	347	58				
3									
4									

Item									
Unit									
Spec.									
1									
2									
3									
4									

HEAT TREATMENT °C

Spec.	Min 1040° C WQ
1	ST:1100° C* 1h WQ
2	
3	
4	

N:Normalizing A:Annealing T:Tempering Q:Quenching AC:Air Cooling
 WQ:Water Quenching OQ:Oil Quenching WC:Water Cooling FC:Furnace Cooling ST:Solution Treatment

REMARKS

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MATERIAL TEST RESULT

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PRODUCT CODE	150SCTDZM<GT101>3

Certificate No.
1020331905-003-01-01-Z6

Date : 2020/07/10

KITZ

Figure	150SCTDZ<GT101>3	Valve No.	
	Material ASTM A 276 TYPE316	Item No.	4
	Charge No.	Display No.	Name of Parts
1	5X527003		STEM
2			
3			
4			

CHEMICAL COMPOSITION %

Element	C	Mn	P	S	Si	Ni	Cr	Mo								
Spec.	Max	Max	Max	Max	Max	10.00	16.00	2.00								
	0.08	2.00	0.045	0.030	1.00	14.00	18.00	3.00								
1	0.05	1.50	0.028	0.027	0.27	10.09	17.01	2.03								
2																
3																
4																
Element																
Spec.																
1																
2																
3																
4																

TENSION TEST

IMPACT TEST

Item			Tensile str.	Yield str.	Elongation	Reduction				
Unit			MPa	MPa	%	%				
Spec.			Min	Min	Min	Min				
1			515	205	30	40				
2			714	637	36	66				
3										
4										

Item										
Unit										
Spec.										
1										
2										
3										
4										

HEAT TREATMENT °C

Spec.	
1	ST:1040°C WQ
2	
3	
4	

N:Normalizing A:Annealing T:Tempering Q:Quenching AC:Air Cooling
 WQ:Water Quenching OQ:Oil Quenching WC:Water Cooling FC:Furnace Cooling ST:Solution Treatment

REMARKS

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