



## QUQLITY ASSURANCE PLAN

# *Mawa Engineering Works*

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<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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## MAWA ENGINEERING WORKS QUALITY ASSURANCE PLAN FOR BUTTERFLY VALVE VALVE

DOC. NO.: MEW/ISO/QAP/BFV		ISSUE NO.:01			REV. NO. :00	DATE: 01.09.06
SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body	Visual	Surface finishing, marking (size, logo Heat no.)	100%	W.I. for material receiving inspection	IS 8092, API 609 BS 5155, BS EN 593 Foundry TC
1.2	Disc	Visual	Surface finishing, marking (size, Heat no.)	100%	W.I. for material receiving inspection	IS 8092, Foundry TC
1.3	Trim materials Round Bars	Visual Size	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
1.4		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue
1.5	Lever, throttle disc, Gear box, pins, fasteners	Visual, Size	Surface finishing, Dimensional check up	100%	W.I. for material receiving inspection	P.O. Drawing, Supplier's TC
	Seals (Bushes, Bearing, 'O' ring, seat ring)	Visual Fitness	Surface finishing and damage, dimensional check up	Random sampling	W.I. for material receiving inspection	Challan & Drawing
2.0	IN-PROCESS INSPECTION					
2.1	Body, Disc, Shaft & all machined parts	Machining dimensions	Measurement by Vernier Caliper after machining	Random sampling	Drawing	Drawing

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR BUTTERFLY VALVE VALVE

DOC. NO.: MEW/ISO/QAP/BFV	ISSUE NO.:01	REV. NO. :00	DATE: 01.09.06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0 3.1	INSPECTION & TESTING Body rubber bonding	Visual, Fitness	Surface defect of rubber lining, Fitness checking with disc	100%	Drawing	Drawing and illustrated sample
3.2	Pressure test	Shell test, disc strength, seat	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing API 609, BS 5155	API 598, BS: 5155 BS EN 12266 Part 1
		Seat leakage	Pneumatic test by compressed air	Customer's requirement	W.I. for Pressure testing	BS EN 12266 Part 1,
4.0 4.1 4.2	FINAL INSPECTION Operation Surface finishing	Actuation	Opening and closing of valve with pneumatic, electrical actuator	100%	BS: 5155, BS EN 593	BS: 5155, BS EN 593
5.0	Packaging	Proper Packing	Visual	100%	W.I. for Painting, API 609, BS EN 593	Illustrated sample
					W.I. for packing, API 609 BS EN 593	Prevent from deterioration

**Abb.** WI = Work Instruction. TC = Test Certificate. API = American Petroleum Institute. BS = British Standard. IS = Indian Standard. P.O = Purchase Order.

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR DUAL PLATE CHECK VALVE

DOC. NO.: MEW/ISO/QAP/DPCV	ISSUE NO.:01	REV. NO. :00	DATE: 01-09-06
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No.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body, Disc (flapper)	Visual	Surface finishing, marking (Heat no.)	100%	W.I. for material receiving inspection	IS 8092,
1.2	Round Bars, flats	Visual, Dimensional	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue/standards
1.3	Eye bolt (hook)	Visual, Size	Dimensional check up by Vernier Caliper	Random sampling	W.I. for material receiving inspection	Challan & P.o
1.4	Seat Ring	Visual, Size	Dimensional check up by Vernier Caliper	Random sampling	W.I. for material receiving inspection	Drawing, P.O
2.0	IN-PROCESS INSPECTION					
2.1	Body, Disc, hinge, hinge pin	Machining dimensions	Dimensions by Vernier Caliper & thread gauge	Random sampling	Drawing	Drawing, API 6D
3.0	INSPECTION & TESTING					
3.1	Pressure test	Shell test & seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing API 598	API 598
4.0	FINAL INSPECTION					
4.1	Overall dimensions	Dimensions	F/F by caliper vernier	100%	Drawing	Drawing, API 6D
4.2	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	API 6D	Prevent from deterioration

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR GATE VALVE

DOC. NO.: MEW/ISO/QAP/GTV	ISSUE NO.:01	REV. NO. :00	DATE: 01-09-06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body & Bonnet	Visual	Surface finishing, marking (size, logo Heat no. mat. code)	100%	W.I. for material receiving inspection	IS 8092, API 600 Foundry TC
1.2	Trim materials Round Bars, Castings, Wedge	Visual Dimensional	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue/standards
1.3	Operator (Hand wheel)	Visual, Size	Surface finishing & Square hole	Random sampling	W.I. for material receiving inspection	Drawing
1.4	Fasteners	Visual, Size	Dimensional check up Vernier Caliper	Random sampling	W.I. for material receiving inspection, drg	Drawing, Supplier's TC/ code
1.5	Gasket, gland packing	Visual Fitness	Surface finishing and damage, dimensional check up	Random sampling	W.I. for material receiving inspection	Drawing
2.0	IN-PROCESS INSPECTION					
2.1	Body, Bonnet, trims & all machined parts	Machining dimensions	Dimensions by Vernier Caliper & thread gauge, Plug & ring gauge	Random sampling	Drawing	Drawing

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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**MAWA ENGINEERING WORKS**  
**QUALITY ASSURANCE PLAN FOR GATE VALVE**

DOC. NO.: MEW/ISO/QAP/GTV	ISSUE NO.:01	REV. NO. :00	DATE: 01-09-06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0	<b>INSPECTION &amp; TESTING</b>					
3.1		Shell test & seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing API 598	API 598
3.2	Pneumatic test	Seat leakage	Pneumatic test by compressed air	Customer's requirement	W.I for Pressure testing.	API 598
4.0	<b>FINAL INSPECTION</b>					
4.1	Overall dimensions	Dimensions	F/F, Flange by caliper & foot rule	100%	Drawing	Drawing
4.2	Operation	Actuation	Opening and closing of valve with pneumatic, electrical actuator	100%	API 600, API 6D	API 600, API 6D
4.3	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	API 600, API 6D	Prevent from deterioration

**Abb.** WI = Work Instruction. TC = Test Certificate. BS = British Standard. IS = Indian Standard. P.O = Purchase Order.

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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR GLOBE VALVE

DOC. NO.: MEW/ISO/QAP/GLB

ISSUE NO.:01

REV. NO. :00

DATE: 01-09-06

S.R. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body & Bonnet	Visual	Surface finishing, marking (size, logo Heat no. mat. code)	100%	W.I. for material receiving inspection	IS 8092, BS 1873
1.2	Trim materials Round Bars, Castings, Disk, Seat rings	Visual Dimensional	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue/standards
1.3	Operator (Hand wheel)	Visual, Size	Surface finishing & Square hole	Random sampling	W.I. for material receiving inspection	Drawing
1.4	Fasteners	Visual, Size	Dimensional check up Vernier Caliper	Random sampling	W.I. for material receiving inspection,dwg	Drawing, Supplier's TC/ code
1.5	Gasket, gland packing	Visual Fitness	Surface finishing and damage, dimensional check up	Random sampling	W.I. for material receiving inspection	Drawing
2.0	IN-PROCESS INSPECTION					
2.1	Body, Bonnet, trims & all machined parts	Machining dimensions	Dimensions by Vernier Caliper & thread gauge, Plug & ring gauge	Random sampling	Drawing	Drawing

**ISSUED BY:**

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**REVIEWED BY:**

**MAWA ENGINEERING WORKS**  
**QUALITY ASSURANCE PLAN FOR GLOBE VALVE**

DOC. NO.: MEW/ISO/QAP/GLB

ISSUE NO.:01

REV. NO. :00

DATE: 01-09-06

SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0	INSPECTION & TESTING					
3.1	Pressure test	Shell test & seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing BS EN 12266 Part 1	BS EN 12266 Part 1, API: 598
3.2	Pneumatic test	Seat leakage	Pneumatic test by compressed air	Customer's requirement	W.I for Pressure testing.	BS EN 12266 Part1, API: 598
4.0	FINAL INSPECTION					
4.1	Overall dimensions	Dimensions	F/F, Flange by caliper & foot rule	100%	Drawing	Drawing
4.2	Operation	Actuation	Opening and closing of valve with pneumatic, electrical actuator	100%	BS 1873	BS 1873
4.3	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	BS 1873	Prevent from deterioration

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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR SWING CHECK VALVE

DOC. NO.: MEW/ISO/QAP/SCV

ISSUE NO.:01

REV. NO. :00

DATE: 01-09-06

SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body	Visual	Surface finishing, marking (size, Heat no. mat. code)	100%	W.I. for material receiving inspection	P.O., Challan/supplier's TC
1.2	Cover, disk, hinge, bracket	Visual Dimensional	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	P.O., Challan/supplier's TC
1.3	Trim materials Round Bars,	Visual Dimensional	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
1.4		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue/standards
1.5	Fasteners	Visual, Size	Dimensional check up Vernier Caliper	Random sampling	W.I. for material receiving inspection, drg	Drawing, Supplier's TC/ code
	Gasket	Visual Fitness	Surface finishing and damage, dimensional check up	Random sampling	W.I. for material receiving inspection	Drawing
2.0	IN-PROCESS INSPECTION					
2.1	Body, Cover, trims & all machined parts	Machining dimensions	Dimensions by Vernier Caliper & thread gauge	Random sampling	Drawing	Drawing

**ISSUED BY:**

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**MAWA ENGINEERING WORKS**  
**QUALITY ASSURANCE PLAN FOR SWING CHECK VALVE**

DOC. NO.: MEW/ISO/QAP/SCV	ISSUE NO.:01	REV. NO. :00	DATE: 01-09-06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0	INSPECTION & TESTING					
3.1	Pressure test	Shell test & seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing BS EN 12266 Part 1	BS EN 12266 Part 1
4.0	FINAL INSPECTION					
4.1	Overall dimensions	Dimensions	F/F, Flange by caliper & foot rule	100%	Drawing	Drawing
4.2	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	BS1868	Prevent from deterioration

**Abb.** WI = Work Instruction. TC = Test Certificate. BS = British Standard. IS = Indian Standard. P.O = Purchase Order.

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR LIFT CHECK VALVE

DOC. NO.: MEW/ISO/QAP/LCV

ISSUE NO.:01

REV. NO. :00

DATE: 01-09-06

SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body	Visual	Surface finishing, marking (size, Heat no. mat. code)	100%	W.I. for material receiving inspection	P.O., Challan/supplier's TC BS1868
1.2	Cover,	Visual Dimensional	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	P.O., Challan/supplier's TC
1.3	Trim materials Round Bars,	Visual Dimensional	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
1.4		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue/standards
1.5	Fasteners	Visual, Size	Dimensional check up Vernier Caliper	Random sampling	W.I. for material receiving inspection, drg	Drawing, Supplier's TC/ code
	Gasket	Visual Fitness	Surface finishing and damage, dimensional check up	Random sampling	W.I. for material receiving inspection	Drawing
2.0	IN-PROCESS INSPECTION					
2.1	Body, Cover, trims & all machined parts	Machining dimensions	Dimensions by Vernier Caliper & thread gauge	Random sampling	Drawing	Drawing

**ISSUED BY:**

**APPROVED BY:**

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**MAWA ENGINEERING WORKS**  
**QUALITY ASSURANCE PLAN FOR LIFT CHECK VALVE**

DOC. NO.: MEW/ISO/QAP/LCV	ISSUE NO.:01	REV. NO. :00	DATE: 01-09-06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0	INSPECTION & TESTING					
3.1	Pressure test	Shell test & seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing BS EN 12266 Part 1	BS EN 12266 Part 1
4.0	FINAL INSPECTION					
4.1	Overall dimensions	Dimensions	F/F, Flange by caliper & foot rule	100%	Drawing	Drawing
4.2	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	BS1868	Prevent from deterioration

**Abb.** WI = Work Instruction. TC = Test Certificate. BS = British Standard. IS = Indian Standard. P.O = Purchase Order.

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR BALL VALVE

DOC. NO.: MEW/ISO/QAP BV

ISSUE NO.:01

REV. NO. :00

DATE: 01-04-2008

SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body	Visual	Surface finishing, marking (size, logo Heat no.)	100%	W.I. for material receiving inspection	IS 8092, BS EN ISO17292 Foundry TC
1.2	Connector, ball					
1.3	Trim materials Round Bars	Visual, Size	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
1.4		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue
1.5	Wrench, Gear box, fasteners	Visual, Size	Surface finishing, Dimensional check up	Random sampling	W.I. for material receiving inspection	P.O. Drawing, Supplier's TC
	Seals , seat ring	Visual, Fitness	Surface finishing and damage, dimensional check up	Random sampling	W.I. for material receiving inspection	Challan & Drawing
2.0	IN-PROCESS INSPECTION					
2.1	Body, Connector, stem & all machined parts	Machining dimensions	Dimensions by Vernier Caliper & thread gauge	Random sampling	Drawing	Drawing
2.2	Ball machined & polished	Machining & sphericity	Dimension by caliper & micrometer, radius gauge	Random sampling	Drawing	drawing

**ISSUED BY:**

**APPROVED BY:**

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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR BALL VALVE

DOC. NO.: MEW/ISO/QAP BV

ISSUE NO.:01

REV. NO. :00

DATE: 01-04-2008

SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
<b>3.0</b>	<b>INSPECTION &amp; TESTING</b>					
3.1	Pressure test	Shell test & seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing BS EN ISO17292, BS EN 12266 Part 1	BS EN ISO17292, BS EN 12266 Part 1
3.3	Pneumatic test	Seat leakage	Pneumatic test by compressed air	Customer's requirement	W.I for Pressure testing.	BS EN 12266 Part 1
3.4	Fire safe testing	Seat leakage	Fire test at the test rig	Customer's requirement	BS EN 12266 Part 2 API: 607 Fifth Edition	BS EN 12266 Part 2 API: 607 Fifth Edition
4.0	<b>FINAL INSPECTION</b>					
4.1	Overall dimensions	Dimensions	F/F, Flange by caliper & foot rule	100%	Drawing	Drawing
4.2	Operation	Actuation	Opening and closing of valve with pneumatic, electrical actuator	100%	BS EN ISO17292,	BS EN ISO17292,
4.3	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	W.I. for packing, BS EN ISO17292,	Prevent from deterioration

**Abb.** WI = Work Instruction. TC = Test Certificate. BS = British Standard. IS = Indian Standard. P.O = Purchase Order.

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR F. S. GATE VALVE

DOC. NO.: MEW/ISO/QAP/FS.GTV	ISSUE NO.:01	REV. NO. :00	DATE: 01-09-06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body & Bonnet	Visual	Surface finishing, marking (size, Heat no. mat. code)	100%	W.I. for material receiving inspection	P.O., Challan/supplier's T.C
1.2	Trim materials Round Bars,	Visual Dimensional	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	P.O., Challan
		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue/standards
1.3	Operator (Hand wheel)	Visual, Size	Surface finishing & Square hole	Random sampling	W.I. for material receiving inspection	Drawing
1.4	Fasteners	Visual, Size	Dimensional check up Vernier Caliper	Random sampling	W.I. for material receiving inspection, drg	Drawing, Supplier's TC/ code
1.5	Gasket, gland packing	Visual, Fitness	Surface finishing and damage, dimensional check up	Random sampling	W.I. for material receiving inspection	Drawing
2.0	IN-PROCESS INSPECTION					
2.1	Body, Bonnet, trims & all machined parts	Machining dimensions	Dimensions by Vernier Caliper & thread gauge	Random sampling	Drawing	Drawing
2.2	Stem hardened	Hardness	Checked by Hardness tester	Random sampling	API 602	Drawing

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR F. S. GATE VALVE

DOC. NO.: MEW/ISO/QAP/FS.GTV	ISSUE NO.:01	REV. NO. :00	DATE: 01-09-06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0	INSPECTION & TESTING					
3.1	Pressure test	Shell test & seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing API 598	API 598
3.2	Pneumatic test	Seat leakage	Pneumatic test by compressed air	Customer's requirement	W.I for Pressure testing.	API 598
4.0	FINAL INSPECTION					
4.1	Overall dimensions	Dimensions	F/F, Flange by caliper & foot rule	100%	Drawing	Drawing
4.2	Operation	Actuation	Opening and closing of valve with pneumatic, electrical actuator	100%	API 602,	API 602,
4.3	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	API 602,	Prevent from deterioration

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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR F.S. GLOBE VALVE

DOC. NO.: MEW/ISO/QAP/FSGLB

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DATE: 01-09-06

SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body & Bonnet	Visual	Surface finishing, marking (size, Heat no. mat. code)	100%	W.I. for material receiving inspection	P.O., Challan/supplier's TC
1.2	Trim materials Round Bars,	Visual Dimensional	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue/standards
1.3	Operator (Hand wheel)	Visual, Size	Surface finishing & Square hole	Random sampling	W.I. for material receiving inspection	Drawing
1.4	Fasteners	Visual, Size	Dimensional check up Vernier Caliper	Random sampling	W.I. for material receiving inspection, drg	Drawing, Supplier's TC/ code
1.5	Gasket, gland packing	Visual Fitness	Surface finishing and damage, dimensional check up	Random sampling	W.I. for material receiving inspection	Drawing
2.0	IN-PROCESS INSPECTION					
2.1	Body, Bonnet, trims & all machined parts	Machining dimensions	Dimensions by Vernier Caliper & thread gauge	Random sampling	Drawing	Drawing
2.2	Stem hardened	Hardness	Checked by Hardness tester	Random sampling	BS 5352	Drawing

**ISSUED BY:**

**APPROVED BY:**

**REVIEWED BY:**

# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR F.S. GLOBE VALVE

DOC. NO.: MEW/ISO/QAP/FSGLB

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DATE: 01-09-06

SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0	INSPECTION & TESTING					
3.1	Pressure test	Shell test & seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing BS EN 12266 Part1	BS EN 12266 Part1,
3.2	Pneumatic test	Seat leakage	Pneumatic test by compressed air	Customer's requirement	W.I for Pressure testing.	BS EN 12266 Part1, API 598
4.0	FINAL INSPECTION					
4.1	Overall dimensions	Dimensions	F/F, Flange by caliper & foot rule	100%	Drawing	Drawing
4.2	Operation	Actuation	Opening and closing of valve with pneumatic, electrical actuator	100%	BS 5352	BS 5352
4.3	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	BS 5352	Prevent from deterioration

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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR F.S. CHECK VALVE

DOC. NO.: MEW/ISO/QAP/FSCV

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DATE: 01-09-06

SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body & Cover	Visual	Surface finishing, marking (size, Heat no. mat. code)	100%	W.I. for material receiving inspection	P.O., Challan/supplier's TC
1.2	Trim materials Round Bars,	Visual, Dimensional	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue/standards
1.3	Fasteners	Visual, Size	Dimensional check up Vernier Caliper	Random sampling	W.I. for material receiving inspection, drg	Drawing, Supplier's TC/ code
1.4						
1.5	Gasket	Visual, Fitness, dimensional	Surface finishing and damage, dimensional check up	Random sampling	W.I. for material receiving inspection	Drawing
2.0	IN-PROCESS INSPECTION					
2.1	Body, Cover, trims & all machined parts	Machining dimensions	Dimensions by Vernier Caliper & thread gauge	Random sampling	Drawing	Drawing

**ISSUED BY:**

**APPROVED BY:**

**REVIEWED BY:**

**MAWA ENGINEERING WORKS**  
**QUALITY ASSURANCE PLAN FOR F.S. CHECK VALVE**

DOC. NO.: MEW/ISO/QAP/FSCV	ISSUE NO.:01	REV. NO. :00	DATE: 01-09-06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0	INSPECTION & TESTING					
3.1	Pressure test	Shell test & seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing BS EN 12266 Part1	BS EN 12266 Part1,
3.2	Pneumatic test	Seat leakage	Pneumatic test by compressed air	Customer's requirement	W.I for Pressure testing.	BS EN 12266 Part1, API 598
4.0	FINAL INSPECTION					
4.1	Overall dimensions	Dimensions	F/F, Flange by caliper & foot rule	100%	Drawing	Drawing
4.2	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	BS 5352	Prevent from deterioration

**Abb.** WI = Work Instruction. TC = Test Certificate. BS = British Standard. IS = Indian Standard. P.O = Purchase Order.

**MAWA ENGINEERING WORKS**  
**QUALITY ASSURANCE PLAN FOR WAFER CHECK VALVE**

DOC. NO.: MEW/ISO/QAP/CV	ISSUE NO.:01	REV. NO. :00	DATE: 01-09-06
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<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body	Visual	Surface finishing, marking (Heat no.)	100%	W.I. for material receiving inspection	IS 8092,
1.2	Round Bars	Visual, Dimensional	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue/standards
1.3	Eye bolt	Visual, Size	Dimensional check up by Vernier Caliper	Random sampling	W.I. for material receiving inspection	Challan & P.o
1.4	'O' Ring	Visual, Size	Dimensional check up by Vernier Caliper	Random sampling	W.I. for material receiving inspection	Drawing, P.O
2.0	IN-PROCESS INSPECTION					
2.1	Body, Disc	Machining dimensions	Dimensions by Vernier Caliper & thread gauge	Random sampling	Drawing	Drawing
3.0	INSPECTION & TESTING					
3.1	Pressure test	Shell test & seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing API 598	API 598
4.0	FINAL INSPECTION					
4.1	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	API 600, API 6D	Prevent from deterioration

**Abb.** WI = Work Instruction. TC = Test Certificate. BS = British Standard. IS = Indian Standard. P.O = Purchase Order.

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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## MAWA ENGINEERING WORKS QUALITY ASSURANCE PLAN FOR DIAPHRAGM VALVE

DOC. NO.: MEW/QAP/DV	ISSUE NO.:01	REV. NO. :00	DATE: 01.09.06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body	Visual	Surface finishing, marking (size, logo Heat no.)	100%	W.I. for material receiving inspection	IS 8092, BS 5156, Foundry TC
1.2	Bonnet, compressor and handwheel					
1.3	Round Bars	Visual	Surface finishing,	100%	W.I. for material receiving inspection	IS 8092, Foundry TC
1.4		Visual Size	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant technical catalogue
1.4	Diaphragm, indicator, fasteners	Visual, Size	Surface finishing, Dimensional check up	Random sampling	W.I. for material receiving inspection	Challan, Drawing, Supplier's TC,
2.0	IN-PROCESS INSPECTION					
2.1	Body, Bonnet, spindle & all machined parts	Machining dimensions	Measurement by Vernier Caliper after machining	Random sampling	Drawing	Drawing

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR DIAPHRAGM VALVE

DOC. NO.: MEW/QAP/DV	ISSUE NO.:01	REV. NO. :00	DATE: 01.09.06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0	INSPECTION & TESTING					
3.1	Body rubber lining	Visual	Surface defect of rubber lining	100%	Drawing	Drawing and illustrated sample
3.2		Spark testing	Testing by Spark tester	100%	Drawing	Drawing
3.2		Hardness	Testing by hardness tester	100%	Drawing	Drawing
3.2	Pressure test	Shell test, seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing BS 5156, BS:5146 Part 2	BS: 5156, BS EN 12266 Part 1
3.2		Seat leakage	Pneumatic test by compressed air	Customer's requirement	W.I. for Pressure testing BS 5156, BS EN 12266 Part 1	BS: 5156, BS EN 12266 Part 1
4.0	FINAL INSPECTION					
4.1	Operation	Actuation	Opening and closing of valve with pneumatic, electrical actuator	Customer's requirement	BS: 5156	BS: 5156
4.2	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting,	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	W.I. for packing, BS:5156	Prevent from deterioration

**Abb.** WI = Work Instruction. TC = Test Certificate. BS = British Standard. IS = Indian Standard.

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR CPVC BUTTERFLY VALVE

DOC. NO.: MEW/ISO/QAP/CPVCBFV	ISSUE NO.:01	REV. NO. :00	DATE: 01-09-06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body	Visual	Surface finishing, marking (size, logo Heat no.)	100%	W.I. for material receiving inspection	BS 5155, Supplier's TC
1.2	Disc	Visual	Surface finishing, marking size,	100%	W.I. for material receiving inspection	BS 5155, Supplier's TC
1.3	Trim materials Round Bars	Visual Size	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	Challan
		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory	Relevant code & technical catalogue
1.4	Lever, throttle disc, Gear box, pins, fasteners	Visual, Size	Surface finishing, Dimensional check up	100%	W.I. for material receiving inspection	P.O. Drawing, Supplier's TC
1.5	Seals (Bushes, Bearing, 'O' ring, seat ring)	Visual Fitness	Surface finishing and damage, dimensional check up	Random sampling	W.I. for material receiving inspection	Challan & Drawing
2.0	IN-PROCESS INSPECTION					
2.1	Body, Disc, Shaft & all machined parts	Machining dimensions	Measurement by Vernier Caliper after machining	Random sampling	Drawing	Drawing

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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**MAWA ENGINEERING WORKS**  
**QUALITY ASSURANCE PLAN FOR CPVC BUTTERFLY VALVE**

DOC. NO.: MEW/ISO/QAP/CPVCBFV	ISSUE NO.:01	REV. NO. :00	DATE: 01-09-06
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0	INSPECTION & TESTING					
3.1	Body rubber bonding	Visual Fitness	Surface defect of rubber lining, Fitness checking with disc	100%	Drawing	Drawing and illustrated sample
3.2	Pressure test	Shell test, disc strength, seat	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing BS EN 12266 Part 1	BS EN 12266 Part 1
		Seat leakage	Pneumatic test by compressed air	Customer's requirement	W.I. for Pressure testing	BS EN 12266 Part 1
4.0	FINAL INSPECTION					
4.1	Operation	Actuation	Opening and closing of valve with pneumatic, electrical actuator	100%	BS: 5155, BSEN:593	BS: 5155, BSEN:593
4.2	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting,	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	W.I. for packing,	Prevent from deterioration

**Abb.** WI = Work Instruction. TC = Test Certificate. API = American Petroleum Institute. BS = British Standard. IS = Indian Standard. P.O = Purchase Order.

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR CARBON STEEL RUBBER LINED PIPES AND FITTINGS

DOC. NO.: MEW/ISO/QAP PF

ISSUE NO.:01

REV. NO. :00

DATE: 27.02.08

SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Pipes, tee, bend, elbow, reducer, etc.	Visual	Surface finishing, marking (size, logo Heat no.)	100%	ASME B 36.10, B 16.5 IS: 1239 Part 1 & 2	Drawing, Test Certificate
1.2	Pipes, tee, bend, elbow, reducer, etc.	Size	Dimensional check up by Vernier Caliper/ Tape	Random sampling	AQL Annex. I Drawing	Drawing
1.3	Flanges	Visual, Size	Surface finishing, Dimensional check up by Vernier Caliper/ Tape	Random sampling	DIN 2501 Part 1 AQL Annex I	Drawing, Test Report
1.4	Gaskets	Visual, Size	Surface finishing, Dimensional check up by Vernier Caliper/ Tape	Random sampling	AQL Annex I, P.O	Drawing,
1.5	Bolts & nuts	Visual, Size	Surface finishing, Dimensional check up by Vernier Caliper	Random sampling	IS: 2712 AQL Annex I	Drawing, Test Report
1.6	Raw rubber sheet	Visual, Size	Surface finishing, Dimensional check up by Vernier Caliper	100%	P.O	Test Certificate
		Identification	Chemical test by Lab.	Sampling	ASTM Standard	Lab Report
2.0	IN-PROCESS INSPECTION					
2.1	Pipes, tee, bend, elbow, reducer, etc.	Welded flanged dimensions,	Dimensions by tape, bevel protractor	100%	Drawing, ASME B 16.5 BS 4515-1	Drawing
2.2	Pipes, tee, bend, elbow, reducer, etc.	Rubber lined dimensions,	Dimensions by tape, bevel protractor	Random sampling	Drawing,	Drawing

**ISSUED BY:**

**APPROVED BY:**

**REVIEWED BY:**

# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR CARBON STEEL RUBBER LINED PIPES AND FITTINGS

DOC. NO.: MEW/ISO/QAP PF	ISSUE NO.:01	REV. NO. :00	DATE: 27.02.08
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
<b>3.0</b>	<b>INSPECTION &amp; TESTING</b>					
3.1	Radiographic Test	Welding quality	Radiography by X-Ray machine	Random sampling	ASME B 16.34	ASME B 16.34
3.3	Hardness of rubber lined surface	Hardness	Shore hardness by Hardness tester	100%	ASTM standard	P.O.
	Spark testing	Coductivity	Spark testing by Spark tester	100%	Drawing	Drawing
4.0	FINAL INSPECTION					
4.1	Surface finishing	Painting finishing	Visual	100%	Painting instruction	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	IS 1239	Prevent from deterioration

**Abb.** TC = Test Certificate. IS = Indian Standard. P.O = Purchase Order.

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR SLUICE VALVE

DOC. NO.: MEW/ISO/QAP/SLV	ISSUE NO.:01	REV. NO. :00	DATE: 01-03-08
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body, Bonnet, Dome, Stuffing box, Gland flange, Wedge & Hand wheel.	Visual	Surface finishing, marking (size, logo Heat no. mat. code)	100%	W.I. for material receiving inspection, IS:210, IS:14846	Foundry T.C, Illustrated samples
1.2	Body seat ring, wedge ring, wege nut	Visual Size	Surface finishing Dimensional check up Vernier Caliper	Random Sampling	W.I. for material receiving inspection, IS:4905	Foundry T.C, Illustrated sample, IS:318
1.3	Round bars	Visual Size	Surface finishing Dimensional check up Vernier Caliper	100%	W.I. for material receiving inspection, IS:6603	P.O, challan
		Chemical Composition	Chemical Analysis	100%	Chemical analysis report of laboratory, IS:6603	IS:6603, Relevant standards
1.4	Fasteners(Bolts & nuts)	Visual, Size	Dimensional check up by Vernier Caliper	Random sampling	W.I. for material receiving inspection, IS:1363	Drawing, Supplier's TC/ IS:1363
1.5	Gasket	Size	Dimensional check up by Vernier Caliper	Random sampling	W.I. for material receiving inspection, IS:2712	Drawing
1.6	Gland packing	Size	Dimensional check up by vernier Caliper	Random sampling	W.I. for material receiving inspection, IS:4687, IS:5414	P.O, Challan
2.0	IN-PROCESS INSPECTION					
2.1	Body, Bonnet, trims & all machined parts	Machining dimensions	Dimensional check up by Vernier Caliper, gauges	Random sampling	Drawing, IS:14846	Drawing, IS:14846

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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**MAWA ENGINEERING WORKS**  
**QUALITY ASSURANCE PLAN FOR SLUICE VALVE**

DOC. NO.: MEW/ISO/QAP/SLV	ISSUE NO.: 01	REV. NO. :00	DATE: 01-03-08
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SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0	INSPECTION & TESTING					
3.1	Pressure test	Shell test & seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing IS: 14846	IS: 14846
4.0	FINAL INSPECTION					
4.1	Overall dimensions	Visual Dimensions	ISI mark F/F, Flange by caliper	100%	Drawing, IS: 14846	Drawing, IS: 14846
4.2	Operation	Actuation, Stroke	Opening and closing of valve, Stroke	100%	Drawing, IS: 14846	Drawing, IS: 14846
4.3	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting, IS: 14846	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	IS: 14846	Prevent from deterioration

**Abb.** WI = Work Instruction. TC = Test Certificate. IS = Indian Standard. P.O = Purchase Order.

<b>ISSUED BY:</b>	<b>APPROVED BY:</b>	<b>REVIEWED BY:</b>
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# MAWA ENGINEERING WORKS

## QUALITY ASSURANCE PLAN FOR CONTROL VALVE

DOC. NO.: MEW/QAP/CV

ISSUE NO.:01

REV. NO. :00

DATE: 01.09.06

SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
1.0	INCOMING MATERIAL CONTROL					
1.1	Body	Visual	Surface finishing, marking (size, logo Heat no.)	100%	W.I. for material receiving inspection	IS 8092, Foundry TC
1.2	Bonnet, flange	Visual	Surface finishing,	100%	W.I. for material receiving inspection	P.O.
1.3	Round Bars	Visual Size	Surface finishing Dimensional check up by Vernier Caliper	100%	W.I. for material receiving inspection	P.O.
		Chemical Composition	Chemical Analysis	Sampling	Chemical analysis report of laboratory	Relevant technical catalogue
1.4	Fasteners	Visual, Size	Surface finishing, Dimensional check up	Random sampling	W.I. for material receiving inspection	Challan, Drawing, Supplier's TC,
2.0	IN-PROCESS INSPECTION					
2.1	Body, Bonnet, spindle & all machined parts	Machining dimensions	Measurement by Vernier Caliper after machining	Random sampling	Drawing	Drawing

**ISSUED BY:**

**APPROVED BY:**

**REVIEWED BY:**

**MAWA ENGINEERING WORKS**  
**QUALITY ASSURANCE PLAN FOR CONTROL VALVE**

DOC. NO.: MEW/QAP/CV

ISSUE NO.:01

REV. NO. :00

DATE: 01.09.06

SR. NO.	DESCRIPTION	CHARACTERISTIC	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE CRITERIA
3.0	INSPECTION & TESTING	Visual	Surface defect of rubber lining	100%	Drawing	Drawing and illustrated sample
3.1	Body rubber lining		Spark testing	Testing by Spark tester	100%	Drawing
3.2	Pressure test	Hardness	Testing by hardness tester	100%	Drawing	Drawing
		Shell test, seat leakage	Pressure test by Hydrostatic test pump	100%	W.I. for pressure testing	ISA S 75.19
		Seat leakage	Pneumatic test by compressed air	Customer's requirement	W.I. for Pressure testing	ISA S 75.19
4.0	FINAL INSPECTION	Actuation	Opening and closing of valve with pneumatic, electrical actuator	Customer's requirement	W.I. for Cycling test	Relevant standard
4.1	Operation					
4.2	Surface finishing	Painting finishing	Visual	100%	W.I. for Painting,	Illustrated sample
5.0	Packaging	Proper Packing	Visual	100%	W.I. for packing,	Prevent from deterioration

**Abb.** WI = Work Instruction. TC = Test Certificate. BS = British Standard. IS = Indian Standard.

**ISSUED BY:**

**APPROVED BY:**

**REVIEWED BY:**