

**RAND WATER**

**SPECIFICATION**

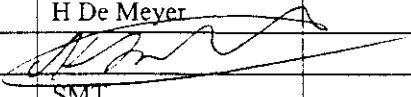
**FOR**

**REFURBISHING OF**

**SLUICE-, REFLUX-, BUTTERFLY-, DIAPHRAGM-  
AND LARNER JOHNSON CONTROL VALVES**

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Approval

Name	H De Meyer			
Signature				
Designation	SMT			
Date	August 2001			

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## SCHEDULE 1 - DOCUMENTS AND INFORMATION

## ANNEXURES

## DATA AND COSTING SHEET FOR:

SLUICE GATE VALVE

BUTTERFLY VALVE

REFLUX VALVE

DIAPHRAGM CONTROL VALVE

L J CONTROL VALVE

## QUALITY CONTROL PLAN AND PROGRAM OF WORK

## VALVE DATA MANUAL

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SLUICE-, AIR-, REFLUX-, BUTTERFLY-, RESILIENT SEAL GATE-, CONTROL- AND BALL VALVES

1 OBJECTIVE

This Specification provides the minimum technical requirements for the refurbishing of valves.

2 SCOPE

This Specification is for the refurbishing and testing of valves for installation by Rand Water.

3 REFERENCES

Rand Water Specification RW/0310/AS 0460.

4 DEFINITIONS AND ABBREVIATIONS

In these Conditions, or in the Agreement, Specification, schedules or drawings, the following expressions apply namely:

"contract price" shall mean the value of that portion accepted by Rand Water of the sum named in the form of tender, subject to such additions thereto or deductions therefrom as may be made from time to time under the provisions hereinafter contained.

"Contractor" shall mean the person or persons appointed to undertake the work specified herein and shall include the heirs, executors and administrators of the Contractor.

"Engineer" shall mean the Chief Engineer - Installations for Rand Water or other person duly authorized by him.

"Engineer's Representative" shall mean any person whom the Engineer may appoint as Inspector in terms of the Conditions of Contract, Agreement or Specification.

"Rand Water" shall mean the Rand Water Board, a body incorporated under the provisions of Section 84 of the Water Service Act 108 of 1997.

"Subcontractor" shall mean the firm, company, person, or persons to whom any portion of the work is sublet by Rand Water or by the Contractor with the approval of Rand Water.

"work" shall mean all the materials, articles, matters and things which are to be manufactured, supplied and delivered and which are described in the Specification and schedules or which may in the future be ordered as additions to the contract.

5 GENERAL

5.1 WORKMANSHIP

The workmanship shall be of the highest quality throughout and any inferior work will be a cause for rejection.

5.2 MATERIALS

All materials shall be of that quality and possess those properties best suited to the purpose for which they are used. All materials and performances shall comply with the requirements of the most recent edition of the appropriate Standard Specification and test pieces forming part of the actual castings, or keel blocks cast simultaneously with the castings shall be subjected to the specified tests.

5.3 DEFECTS LIABILITY PERIOD AND GUARANTEE

The defects liability period is 12 months and commences on commissioning of the valve. All refurbished valves will be guaranteed against any defect or workmanship as a result of the refurbishment, for the duration of the defects liability period .

5.2 ITEMS NOT MENTIONED

This Specification does not necessarily mention every detail which has to be supplied and the type or design of any detail not specifically mentioned is left to the discretion of the Tenderer provided the complete equipment supplied complies with the Specification.

5.3 DEPARTURE FROM SPECIFICATION

Certain features and items which are considered essential are detailed in this Specification. Any departure by the Tenderer from these requirements shall be specially excluded or amended in writing by noting them in the contract at the time of tendering, otherwise the Engineer may require such features and items to be provided by the Contractor without any increase in the contract price.

5.4 DOCUMENTS AND INFORMATION

Certain documents and drawings as listed in Section A of Schedule 1 shall be supplied 3 (three) weeks after receipt of letter of acceptance but before refurbishment commences.

Before completion of the contract, the Contractor shall also supply any documents and or drawings that the Engineer may require additional to those listed.

Final payment will not be made until all the documents and information listed in Sections A and B of Schedule 1 have been received and approved.

Sufficient information shall be given on the drawings to enable replacement parts to be made locally, if necessary.

5.5 VALVE DATA MANUALS

The Contractor shall provide a fully illustrated Valve Data Manual for operating, maintenance and installation of the valves and actuators written in English for approval within 3 (three) weeks after placement of the order. Three copies of the approved manuals shall be supplied to the Engineer with delivery of the valve.

Each document shall take the form of a fully indexed Valve Data Manual containing, but not limited to the following data:

- Detailed operating instructions.
- Proposed preventative maintenance schedules and procedures covering all wearing components.
- Lubrication schedule together with recommended lubricant for each application and quantity used.
- Detailed dismantling and reassemble instructions and procedures.
- Full details of proprietary components used, i.e descriptive literature bearing reference numbers, circlip and seal details etc.
- Spare parts lists with full re-order information.
- Schedule of maintenance tools provided/required and the method of use.

- Electrical schematic diagrams, instrumentation loop diagrams and cable schedules (if applicable).
- Detailed installation requirements and procedures.
- Detailed commissioning procedure.

All data included in the manuals shall be produced on standard A4 size sheets. The materials used shall be resistant to oil and dirt.

## 6 VALIDITY OF INSPECTIONS AND TESTS

Any inspection, examination or test at the maker's works, either of material or performance, shall not exempt the Contractor from any obligation under this contract. The liability of the Contractor for defective material or workmanship that may be disclosed after the plant has been put into service shall be in accordance with the General Conditions of Contract notwithstanding that the defective item may have been passed previously during manufacture, or after installation.

## 7 PRE-ASSESSMENT OF VALVES

Pre-assessment of the valves will be carried out by the Refurbishment Contractor in conjunction with the Engineer's Representative. The assessed scope of work to be carried out will be approved by the Engineer's Representative. Refurbishment may only commence after approval of the scope of work is given by the Engineer's Representative. Refer to annexure for the relevant pre-assessment forms to be used

Each valve shall be prepared for pre-assessment by the Refurbishment Contractor. All valves shall be completely dis-assembled, components thoroughly cleaned by means of non destructive abrasive blasting and all pressure containing components shall be Liquid Penetrant tested. Liquid Penetrant tests shall be witnessed by the Engineer's Representative.

The Liquid Penetrant test will be waived at no additional cost to Rand Water should the Refurbishment Contractor prefer to carry out a Hydrostatic pressure test on all pressure containing components prior to dis-assembly of the valve. The required test pressure is to be approved by Engineer's Representative prior to the test. The Hydrostatic test is to be witnessed by the Engineer's Representative. The Refurbishment Contractor is to officially inform Rand Water of the preferred method during tendering stages.

All other components will be examined to determine the exact scope of refurbishment work required. This will include but not be limited to the sealing faces, channel guides, gate shoes, spindle, gate nut, thrust bearings, limit stops, stuffing box, gland follower, gearbox, clamp ring and other components.

By default will all bolts, nuts, gaskets, gland packing and thrust bearings be replaced with new items. The cost thereof shall be included in the basic cost for refurbishing.

A HOLD POINT will be applicable at this point to get approval from the Engineer to proceed with the detailed scope of refurbishment. On approval of the detailed scope of work the refurbishment shall commence. In all instances where the scope may change after approval was granted, the costs thereof shall be for the contractors account. Under no circumstances will less work than the agreed scope being carried out.

It will be the responsibility of the contractor to determine and match the exact original dimensions and material specifications of the components or obtain this from the original valve manufacturer.

All new components will be subjected to the requirements of new components as detailed in Rand Water Specification RW/0310/ AS0460. This includes the required inspections of the Rand Water Inspector.

All components shall be internally coated after refurbishment prior to assembly.

## 8 INSPECTION AND TESTING AT WORKS

The whole of the work is to be inspected by the Engineer's Representative at the manufacturer's, subcontractor's and/or other outside supplier's works during refurbishment. Full information regarding the progress and the necessary facilities to enable the various components to be properly tested and/or inspected shall be given to the Engineer's Representative.

Each new/replaced component shall be inspected, approved and stamped by the Engineer's Representative with his private mark before assembly commences. All castings shall be true and shall be thoroughly cleaned by non destructive abrasive blasting before machining. Valve body surfaces shall be thoroughly cleaned of excess adhesive or other material used for securing sealing faces, guides and shoes.

Each hollow butterfly valve disc shall be tested in the presence of the Engineer's Representative for porosity by immersing it in a water bath and applying air at a pressure of 500 kPa to the internal void. Excessive porosity shall be cause for rejection of the disc. However, the Engineer may on the application in writing by the Contractor, grant permission for the porosity to be sealed by drilling, threading and plugging a blowhole or by the injection of an approved sealing compound.

All approved castings shall, before coating, be stamped by the Engineer's Representative on the edge of the flange with his private mark. A flat machined surface 15 mm by 25 mm in area shall be provided for this purpose.

Rand Water reserves the right to reject any Item which has not been presented for such test and/or inspection.

Certificates of all tests on materials and components are to be forwarded to the Engineer immediately on completion of the tests.

Within 3 (three) weeks after the date of receipt of Rand Water's letter of acceptance of the tender the Contractor shall submit a comprehensive quality control plan and programme of work for approval. The quality control plan will cater for the pre-assessment and witness points. The Engineer will then issue his requirements for quality assurance which will be based on the Contractor's proposals provided these are adequate. The Contractor shall produce a quality assurance report on any component within 7 (seven) days of being so requested.

Certain parts such as body, bonnet, gate, disc or blade-castings will be inspected after casting and the Contractor shall carry out metallurgical tests to establish material composition and mechanical properties as and when instructed by the Engineer. The method of obtaining the samples will be decided during manufacture. The Engineer shall if necessary make further checks on the quality of the work and require the removal of the components for tests and measurements at a place to be selected by him.

## 9 HYDROSTATIC TESTING

Each fully assembled valve shall be subjected to a hydrostatic pressure test at the specified test pressure, at the manufacturer's works, in the presence of and to the satisfaction of the Engineer's Representative.

Each pressure containing component and assembled valve shall withstand the hydrostatic body test pressure specified without showing any sweating or defect of any kind. For the hydrostatic test blank flanges shall be bolted to each flange of the valve; through-bolts shall not be used. The pressure shall be applied steadily by approved means and maintained without variation for the duration as specified for proof and inspection. Should water ooze or sweat from any part or any defect of any nature be discovered the casting shall be indelibly marked and rejected.

Each butterfly valve disc, reflux valve door, sluice valve gate, resilient seal valve gate and ball valve ball shall be tested for mechanical strength to 110% of the seat test pressure stipulated and for leakage from 0 - 100% of the seat test pressure stipulated. The disc, door, gate, ball and sealing mechanism shall be tested assembled in the valve body by bolting a blank flange to one side of the body and applying the pressure steadily between the blank flange and the item under test. This test shall be carried out on both faces of a butterfly, sluice, resilient seal and ball valve for five equal increments in increase in pressure from 0 - 100% of the specified seat test pressure. Test duration and permissible leakage rates for all valves (excluding resilient seal gate valves) shall be limited to the following:

Size of valve	Maximum leakage rate in ml/min	Test duration in minutes Body and seat test
50	1,5	1
80	2,5	1
100	3,0	1
150	4,5	1
200	6,0	2
250	7,5	2
300	9,0	3
400	12,0	3
450	13,5	3
500	15,0	5
600	18,0	5
700	21,0	5
800	24,0	5
900	27,0	5
1 000	30,0	5
1 200	36,0	5
1 400	42,0	5
1 500	45,0	5
1 600	48,0	5
1 800	54,0	5
2 000	60,0	5

After the completion of the test specified and with the pressure at 100% of the stipulated seat test pressure, the butterfly valve disc, ball valve ball or sluice and resilient seal valve gate shall be moved with the operator or actuator that is to be supplied with the specific valve, until the pressure is released. The butterfly valve seal, sluice valve sealing rings and resilient seal valve gate shall show no damage as a result of this test.

Each valve shall be tested with its gearbox and or actuator fitted at the manufacturer's works in the presence of and to the satisfaction of the Engineer's Representative. A detailed functional test on all circuits of each electric-motor-operated actuator shall be carried out in the presence of the Engineer's Representative.

The fact that any valve or fitting may have passed any of the hydrostatic tests at the works shall not exempt the Contractor from his liability.

The Contractor shall provide a suitable safety screen to enable the Engineer's Representative to witness all hydrostatic pressure testing of valves in complete safety. Detailed drawings of the safety screen shall be supplied with the tender.

10

#### PATCH WELDING

The approval of the Engineer shall be obtained in every case before defects in castings are repaired by welding. In the case of castings subject to any stress, welding will be approved only when such repair is made for the purpose of producing sound surfaces for jointing etc and where no loss of strength is involved. A detailed weld repair procedure must in all cases be submitted and approved by the Engineer prior to any repair work.

Where approval is given for welding to be carried out, the part shall be radiographically examined and subsequently heat treated to the Engineer's approval unless otherwise directed by the Engineer.

Any valve component which may be found by the Engineer to have been repaired by welding without his prior approval shall be rejected.

11 FLANGES

Each valve body flange shall be fully machined on the face.

Threaded flange bolt holes shall be thoroughly cleaned. In cases of excessive wear, holes shall be machined, plugged and re-threaded. The method of securing these plugs is to be approved by the Engineer. A full record of the original and or modified flange bolt and threaded holes will be recorded and listed in the operating, maintenance and installation manuals for the valve.

12 LIFTING BOLTS

Each valve shall have at least two eye bolts of the requisite strength designed with a factor of safety of at least four securely attached so that the valve can be lowered into the pipeline in its correct position for installation. The depth of the tapped holes in the valve castings shall be at least 1,5 times the diameter of the eye bolt shank.

Additional eye bolts shall be supplied and located on the valves in positions that allow the valves of 450 mm diameter and larger to be lifted safely either in the vertical or horizontal position.

In close proximity of all the lifting bolts the words "LIFT HERE" to be stenciled on the valve body in red paint. The minimum letter size on valves smaller than 450 mm diameter to be 25 mm and on valves larger than 450 mm diameter to be 45 mm.

13 IDENTIFICATION PLATE AND NUMBER

A substantial brass, gun metal or aluminum plate shall be securely attached near the top of each valve, on which the following information shall be recorded:

RAND WATER ORIGINAL CONTRACT  
NAME OF ORIGINAL MANUFACTURER  
RAND WATER REFURBISHMENT CONTRACT  
NAME OF REFURBISHMENT CONTRACTOR  
YEAR OF REFURBISHMENT  
SIZE OF VALVE..... mm  
VALVE BODY TEST PRESSURE ..... kPa  
VALVE SEAT TEST PRESSURE ..... kPa  
MASS ..... kg (including flanges, nuts, bolts and washers)  
RAND WATER REFERENCE No  
REFURBISHER REFERENCE No

Space shall be provided on this plate for the unique stamp of the Engineer's Representative.

In addition, each valve shall have the Rand Water reference number stamped on all component parts.



## 14 PAINTING

Before assembly each valve shall be non destructive abrasive blasted to remove founding material, scale or rust to provide a degree of cleanliness equivalent to SA 2 1/2 of Swedish Standard SIS 05.5900/1967 and then given sufficient coats of Dulux "Sigmaguard" HS, Plascon Copon Hycote 151 or approved equivalent to ensure a minimum dry film thickness of 250 micrometers to all internal body surfaces and non-machined parts. After each valve has passed the hydrostatic tests specified, all external surfaces shall be cleaned as above and coated with Plascon Copon KSIR 88 or an approved equivalent to ensure a dry film thickness of 200 micrometers. The final colour to be medium sea grey code G24 as per SABS 1091. Gears, spindles, machined surfaces, including machined flanges, etc shall be adequately protected against corrosion.

In the case where a machining surface is to be painted, or where the cutting oil from the machining process has come into contact with a surface to be painted, that surface shall be cleaned with a suitable solvent-free de-greaser and then given a coat of etching zinc primer before the first coat of "Sigmaguard" or "Copon" is applied.

Details of the methods of protection to be provided shall be submitted for approval.

## 15 MARKING, SHIPPING

Each valve and fitting etc shall have the mass and the reference number specified in the delivery schedule and the words "Rand Water" and the reference number painted in white on the outside. All cases or packages shall have the mass and contents and the words "RAND WATER" and the reference number painted clearly thereon.

Each valve shall be adequately protected against damage in transit.

Machined parts of valves shall be protected by means of plastic or similar protective coatings and other fragile components shall be packed in a separate crate.

SCHEDULE 1 - DOCUMENTS AND INFORMATION

- A. The Contractor shall also supply, within 3 (three) weeks of receipt of the letter of acceptance of the tender but before refurbishment commences, the following drawings and documents:

Detailed drawings of all proposed modification or alterations that deviates from the original design and layout of any component.

Detailed manufacturing program with milestones for activities such as drawings, approval of drawings, pattern manufacturing, casting, pre-machining, hydro testing, final machining, testing, painting and shipping.

Quality control plan and programme of work.

Valve data manual as specified.

- B. On completion of the refurbishment work, the contractor shall submit three sets of the final approved Operating, Maintenance and Installation Manual.

NOTES:

1. The Engineer may require the Contractor to submit, for approval, drawings and or documents additional to those listed above.
2. The Certificate of Completion will not be issued nor final payment made until all the relevant documents and information have been received and approved by the Engineer.

RAND WATER REFERENCE NO		ORIGINAL RW CONTRACT			
TYPE	SLUICE GATE VALVE	ORIGINAL TEST PRESS			
SIZE	mm	REQD BODY TEST PRESS			
VALVE ID NUMBER		REQD SEAT TEST PRESS			
ORIGINAL MANUFACTURER		WORKING PRESSURE			
REFURBISH SUB-CONTRACTOR		DATE RECEIVED			
CONTACT NAME		DATE REQUIRED			
TELEPHONE NUMBER		DATE DELIVERED			
ACTION	REMARK	SUB CONTRACT	DATE	RAND WATER	DATE
VALVE STRIPPED					
COMPONENTS NUMBERED					
COMPONENTS BLASTED					
VISUAL INSPECTION					
NDT INSPECTION					
SPECIAL REFURBISHING	SEE TABLE BELOW				
INSPECT REFURBISH COMPLETE	SEE NOTE 3				
COATING - INTERNAL					
ASSEMBLE					
BODY PRESSURE TEST					
SEAT PRESSURE TEST					
FUNCTIONAL TEST					
FINAL COATING					
NEW NAMEPLATE					
RELEASE FOR TRANSPORT					
TOTAL COST FOR ABOVE EXCLUDING SPECIAL REFURBISHMENT WORK					
		COSTS		xxxxxx	
SPECIAL REFURBISHING	COMMENT	REFURBISH	REPLACE	ACTION	
GATE RINGS					
BODY RINGS					
CHANNEL GUIDES					
GATE SHOES					
SPINDLE					
GATE NUT					
LIMIT STOPS					
GLAND FOLLOWER					
WELD REPAIR BODY					
WELD REPAIR BONNET					
WELD REPAIR GATE					
CONTINGENCY					
RAND WATER AGREED EXTRA COST - AFTER ASSESMENT PRIOR TO ANY WORK					
GENERAL COMMENTS					
1. Costs for refurbishing and replacement of each item under special refurbishing must be supplied at tender stage.					
2. All replacement components to comply to Rand Water Specification RW/0310/AS0460 Rev 02.					
3. Valves to be stripped, components marked, cleaned and Dye penn. Tested prior to any assesment.					
4. Valve components to be inspected by Rand Water prior to any assembly.					
5. Valve to be pre-tested prior to the hydro-test witnessed by Rand Water.					

RAND WATER REFERENCE NO		ORIGINAL RW CONTRACT			
TYPE	BUTTERFLY VALVE	ORIGINAL TEST PRESS			
SIZE	mm	REQD BODY TEST PRESS			
VALVE ID NUMBER		REQD SEAT TEST PRESS			
ORIGINAL MANUFACTURER		WORKING PRESSURE			
REFURBISH SUB-CONTRACTOR		DATE RECEIVED			
CONTACT NAME		DATE REQUIRED			
TELEPHONE NUMBER		DATE DELIVERED			
ACTION	REMARK	SUB-CONTRACT	DATE	RAND WATER	DATE
VALVE STRIPPED					
COMPONENTS NUMBERED					
COMPONENTS BLASTED					
VISUAL INSPECTION					
NDT INSPECTION					
SPECIAL REFURBISHING	SEE TABLE BELOW				
INSPECT REFURBISH COMPLETE	SEE NOTE 3				
COATING - INTERNAL					
ASSEMBLE					
BODY PRESSURE TEST					
SEAT PRESSURE TEST					
FUNCTIONAL TEST					
FINAL COATING					
NEW NAMEPLATE					
RELEASE FOR TRANSPORT					
TOTAL COST FOR ABOVE EXCLUDING SPECIAL REFURBISHMENT WORK					
			COSTS		xxxxxx
SPECIAL REFURBISHING	COMMENT	REFURBISH	REPLACE	ACTION	
DISC SEAL RING					
BODY SEAT RING					
CLAMP RING					
DRIVE SHAFT					
FREE END SHAFT					
THRUST BEARING					
THRUST COVER					
SHAFT BEARINGS					
SHAFT PINS					
WELD REPAIR BODY					
WELD REPAIR DISC					
CONTINGENCY					
RAND WATER AGREED EXTRA COST - AFTER ASSESMENT PRIOR TO ANY WORK					
GENERAL COMMENTS					
1. Costs for refurbishing and replacement of each item under special refurbishing must be supplied at tender stage.					
2. All replacement components to comply to Rand Water Specification RW/0310/AS0460 Rev 02.					
3. Valves to be stripped, components marked, cleaned and Dye penn. Tested prior to any assesment.					
4. Valve components to be inspected by Rand Water prior to any assembly.					
5. Valve to be pre-tested prior to the hydro-test witnessed by Rand Water.					

RAND WATER REFERENCE NO		ORIGINAL RW CONTRACT	
TYPE	REFLUX VALVE	ORIGINAL TEST PRESS	
SIZE	mm	REQD BODY TEST PRESS	
VALVE ID NUMBER		REQD SEAT TEST PRESS	
ORIGINAL MANUFACTURER		WORKING PRESSURE	
REFURBISH SUB-CONTRACTOR		DATE RECEIVED	
CONTACT NAME		DATE REQUIRED	
TELEPHONE NUMBER		DATE DELIVERED	
ACTION	REMARK	SUB-CONTRACT	DATE
VALVE STRIPPED			
COMPONENTS NUMBERED			
COMPONENTS BLASTED			
VISUAL INSPECTION			
NDT INSPECTION			
SPECIAL REFURBISHING	SEE TABLE BELOW		
INSPECT REFURBISH COMPLETE	SEE NOTE 3		
COATING - INTERNAL			
ASSEMBLE			
BODY PRESSURE TEST			
SEAT PRESSURE TEST			
FUNCTIONAL TEST			
FINAL COATING			
NEW NAMEPLATE			
RELEASE FOR TRANSPORT			
TOTAL COST FOR ABOVE EXCLUDING SPECIAL REFURBISHMENT WORK			
		COSTS	
		xxxxxx	
SPECIAL REFURBISHING	COMMENT	REFURBISH	REPLACE
CLACK SEATS			
BODY SEATS			
SHAFTS			
STOPPERS			
CLACK ARM AND PIN			
COUNTER WEIGHT			
INDICATOR			
GLAND FOLLOWER			
THRUST BEARING			
WELD REPAIR BODIES			
WELD REPAIR DOORS			
CONTINGENCY			
RAND WATER AGREED EXTRA COST - AFTER ASSESMENT PRIOR TO ANY WORK			
GENERAL COMMENTS			
1. Costs for refurbishing and replacement of each item under special refurbishing must be supplied at tender stage.			
2. All replacement components to comply to Rand Water Specification RW/0310/AS0460 Rev 02.			
3. Valves to be stripped, components marked, cleaned and Dye penn. Tested prior to any assesment.			
4. Valve components to be inspected by Rand Water prior to any assembly.			
5. Valve to be pre-tested prior to the hydro-test witnessed by Rand Water.			

RAND WATER REFERENCE NO		ORIGINAL RW CONTRACT			
TYPE	DIAPHRAGM CONTROL VALVE	ORIGINAL TEST PRESS			
SIZE	mm	REQD BODY TEST PRESS			
VALVE ID NUMBER		REQD SEAT TEST PRESS			
ORIGINAL MANUFACTURER		WORKING PRESSURE			
REFURBISH SUB-CONTRACTOR		DATE RECEIVED			
CONTACT NAME		DATE REQUIRED			
TELEPHONE NUMBER		DATE DELIVERED			
ACTION	REMARK	SUB-CONTRACT	DATE	RAND WATER	DATE
VALVE STRIPPED					
COMPONENTS NUMBERED					
COMPONENTS BLASTED					
VISUAL INSPECTION					
NDT INSPECTION					
SPECIAL REFURBISHING	SEE TABLE BELOW				
INSPECT REFURBISH COMPLETE	SEE NOTE 3				
COATING - INTERNAL					
ASSEMBLE					
BODY PRESSURE TEST					
SEAT PRESSURE TEST					
FUNCTIONAL TEST					
FINAL COATING					
NEW NAMEPLATE					
RELEASE FOR TRANSPORT					
TOTAL COST FOR ABOVE EXCLUDING SPECIAL REFURBISHMENT WORK					
		COSTS		xxxxxx	
SPECIAL REFURBISHING	COMMENT	REFURBISH	REPLACE	ACTION	
CLACK SEATS					
BODY SEATS					
SHAFT					
DIAPHRAGM					
DIAPHRAGM RETAINER					
INDICATOR					
GLAND FOLLOWER					
WELD REPAIR COVER					
WELD REPAIR BODY					
PILOT VALVE					
CONTINGENCY					
RAND WATER AGREED EXTRA COST - AFTER ASSESMENT PRIOR TO ANY WORK					
GENERAL COMMENTS					
1. Costs for refurbishing and replacement of each item under special refurbishing must be supplied at tender stage.					
2. All replacement components to comply to Rand Water Specification RW/0310/AS0460 Rev 02.					
3. Valves to be stripped, components marked, cleaned and Dye penn. Tested prior to any assesment.					
4. Valve components to be inspected by Rand Water prior to any assembly.					
5. Valve to be pre-tested prior to the hydro-test witnessed by Rand Water.					

<b>RAND WATER REFERENCE NO</b>		<b>ORIGINAL RW CONTRACT</b>	
<b>TYPE</b>	<b>L J CONTROL VALVE</b>	<b>ORIGINAL TEST PRESS</b>	
<b>SIZE</b>	<b>mm</b>	<b>REQD BODY TEST PRESS</b>	
<b>VALVE ID NUMBER</b>		<b>REQD SEAT TEST PRESS</b>	
<b>ORIGINAL MANUFACTURER</b>		<b>WORKING PRESSURE</b>	
<b>REFURBISH SUB-CONTRACTOR</b>		<b>DATE RECEIVED</b>	
<b>CONTACT NAME</b>		<b>DATE REQUIRED</b>	
<b>TELEPHONE NUMBER</b>		<b>DATE DELIVERED</b>	
<b>ACTION</b>	<b>REMARK</b>	<b>SUB-CONTRACT</b>	<b>DATE</b>
VALVE STRIPPED			
<b>COMPONENTS NUMBERED</b>			
COMPONENTS BLASTED			
VISUAL INSPECTION			
NDT INSPECTION			
SPECIAL REFURBISHING	SEE TABLE BELOW		
INSPECT REFURBISH COMPLETE	SEE NOTE 3		
COATING - INTERNAL			
ASSEMBLE			
BODY PRESSURE TEST			
SEAT PRESSURE TEST			
FUNCTIONAL TEST			
FINAL COATING			
NEW NAMEPLATE			
RELEASE FOR TRANSPORT			
<b>TOTAL COST FOR ABOVE EXCLUDING SPECIAL REFURBISHMENT WORK</b>			
		<b>COSTS</b>	
			xxxxxx
<b>SPECIAL REFURBISHING</b>	<b>COMMENT</b>	<b>REFURBISH</b>	<b>REPLACE</b>
PILOT VALVE SEAT			
BODY SEAT			
PILOT VALVE ROD			
PLUNGER			
PLUNGER LINER			
FLG LINER AND WEAR STRIPS			
GLAND FOLLOWER			
NOSE PIECE			
PILOT VALVE			
REGULATING VALVE			
WELD REPAIR INLET BEND			
WELD REPAIR BODY			
WELD REP DISCHARGE SECTION			
CONTINGENCY			
<b>RAND WATER AGREED EXTRA COST - AFTER ASSESMENT PRIOR TO ANY WORK</b>			
<b>GENERAL COMMENTS</b>			
1. Costs for refurbishing and replacement of each item under special refurbishing must be supplied at tender stage.			
2. All replacement components to comply to Rand Water Specification RW/0310/AS0460 Rev 02.			
3. Valves to be stripped, components marked, cleaned and Dye penn. Tested prior to any assesment.			
4. Valve components to be inspected by Rand Water prior to any assembly.			
5. Valve to be pre-tested prior to the hydro-test witnessed by Rand Water.			

RAND WATER REFERENCE NUMBER		CONTRACTOR'S LOGO AND DETAILS	REQUIRED TEST PRESS	
TYPE			REQUIRED SEAT TEST PRESS	
SIZE			WORKING PRESSURE	
REFURBISHING CONTRACTOR			RW ACCEPTANCE CERT NUMBER:	
CONTACT NAME			CONTRACTOR CERT NUMBER:	
TELEPHONE NUMBER			CONTRACTOR JOB NUMBER:	

ACTIVITY	DESCRIPTION	REF DOC	REPORT	CONTRACTOR		RAND WATER		PROPOSED PROGRAMME	
				INTERVENTION	SIGN	INTERVENTION	SIGN	START DATE	END DATE
1	SUBMISSION OF ALL DOCUMENTATION	SPEC							
2	APPROVAL OF ALL DOCUMENTATION	SPEC		H		V			
3	PREPARATION FOR PRE-ASSESSMENT	SPEC							
4	LIQUID PEN TEST/HYDRO TEST	SPEC	TEST CERT	H		W			
5	PRE-ASSESSMENT	RW FORM		H		V			
6	REFURBISHMENT	SPEC							
7	NEW COMPONENTS	SPEC	MATL CERT	H		V			
8	CORROSION PROTECTION INTERNAL	SPEC							
9	ASSEMBLY	SPEC							
10	CORROSION PROTECTION EXTERNAL	SPEC							
11	HYDRO TEST	SPEC	TEST CERT	H		W			
12	FUNCTIONAL TEST	SPEC	TEST CERT	H		W			
13	FINAL COATING	SPEC							
14	FINAL INSPECTION	RW FORM	TEST CERT	H		V			

INTERVENTION LEGEND	
S	SURVEILLANCE
V	VERIFY
W	WITNESS
H	HOLD

QCP APPROVAL			
CONTRACTOR		RAND WATER	
SIGNATURE		SIGNATURE	
NAME		NAME	
DATE		DATE	

QCP APPROVAL STATUS	
APPROVED - NO COMMENTS	
APPROVED - SEE COMMENTS	
PRE-LIM APPROVED - RE-SUBMIT	
NOT APPROVED - RE-SUBMIT	



# VALVE DATA MANUAL

SECTION 1	VALVE DETAILS - RW ITEM NUMBER WITH MANUFACTURER'S SERIAL NUMBER
SECTION 2	GENERAL DESCRIPTION OF EACH TYPE OF VALVE
SECTION 3	OPERATION OF VALVE
SECTION 4	DETAILED INSTALLATION PROCEDURE
SECTION 5	DETAILED COMMISSIONING PROCEDURE
SECTION 6	MAINTENANCE REQUIREMENTS - ACTIVITY AND TIME INTERVAL
SECTION 7	RECOMMENDED SPARE PARTS - LIST WITH COMPLETE RE-ORDER INFORMATION
SECTION 8	MATERIAL CERTIFICATES
SECTION 9	MANUFACTURER'S TEST CERTIFICATES
SECTION 10	RAND WATER ACCEPTANCE CERTIFICATES
SECTION 11	QUALITY CONTROL PLAN
SECTION 12	PRODUCTION SCHEDULES
SECTION 13	CONCESSION REQUESTS AND APPROVAL
SECTION 14	DRAWINGS - A4 COPIES OF EACH DRAWING