

**00095-02121-8**

DRON GINWARD

**INDUSTRIAL VIDEOIMAGESCOPE SYSTEM ALONG WITH ACCESSORIES**

THE SYSTEM SHOULD CONSIST OF VIDEO-PROBE (WITH CCD LOCATED AT THE TIP OF THE PROBE), LIGHT AND POWER SOURCE AS REQUIRED, CCD CAMERA, CAMERA CONTROL UNIT FUNCTION, HANDY LCD MONITOR (SIZE NOT LESS THAN 6.0" INCH) AND OTHERS ESSENTIAL ACCESSORIES FOR VIEWING, RECORDING AS WELL AS MEASURING OF DEFECTS OR DISCONTINUITY. EQUIPMENT SHOULD COMPLY BELOW SPECIFICATION.

1.	INSERTION TUBE LENGTH & DIAMETER	3.5 METER & 6.0 MM
2.	LCD MONITOR	NOT LESS THAN 6.0" LCD DAY LIGHT MONITOR . THE LCD SCREEN SHOULD BE INTEGRATED WITH THE EQUIPMENT AND SHOULD NOT BE OFFERED AS A SEPARATE MONITOR.
3.	POWER SUPPLY & BATTERY POWER BACKUP	100-240VAC/50-60HZ , 2 HRS
4.	PROBE TECHNOLOGY & PROBE CONSTRUCTION.	TUNGSTEN BRAD
5.	LIGHT SOURCE	LED HAVING ILLUMINATION AT THE TIP FOR ADEQUATE VISIBILITY OF THE COMPONENT BEING VIEWED EVEN IN DARK. EQUIPMENT SHOULD HAVE FEATURE FOR AUTOMATIC LIGHT ILLUMINATION CONTROL.
6.	WEIGHT OF EQUIPMENT	MAX. 4.5 KGS.
7.	UNIT PROTECTION	IP55 RATING
8.	ARTICULATION & CONTROL	MIN 130 DEGREE, 4 WAY, SCOPE TIP ARTICULATION WITH ELECTRONIC POWER-ASSISTED, MANUAL ARTICULATION, CONTROL IS BY JOY STICK ONLY
9.	EQUIPMENT PROTECTION	EQUIPMENT SHOULD PROTECTED AGAINST, VIBRATION (GENERAL VIBRATION TEST), SHOCK (TRANSIT DROP TEST), WATER RESISTANCE , HUMIDITY, SAND AND DUST, SALT FOG, ELECTROMAGNETIC INTERFERENCE. BIDDERS TO SUBMIT TEST CERTIFICATE FOR THE SAME ALONG WITH TECHNICAL BID.
10.	SOFTWARE & ARTICULATION CONTROL	DEDICATED JOY STICK FOR SOFTWARE CONTROL & ARTICULATION CONTROL
11.	HAND HELD CONTROLLER & OPERATIONAL KEYS	USER FRIENDLY HAND HELD CONTROLLER. ALL QUICK ACCESS BUTTON ON CONTROLLER FOR FREQUENTLY USED FUNCTIONS SUCH AS LIVE MODE, BRIGHTNESS, ZOOM, FREEZE IMAGE, RECORD STILL/VIDEO, ARTICULATION CONTROL, ARTICULATION LOCK, MENU ACCESS, SAVED RECORDING INDEX ACCESS, QUICK LAST IMAGE RECALL
12.	PDF VIEW	EQUIPMENT SHOULD HAVE FEATURE TO UPLOAD & VIEW PDF.
13.	MEASUREMENT & MEASUREMENT FUNCTION:	STEREO - MEASUREMENT ONLY.
A.	DISTANCE	DISTANCE BETWEEN TWO POINTS.
B.	POINT ON LINE	PERPENDICULAR DISTANCE BETWEEN A POINT AND A USER-DEFINED LINE
C.	DEPTH	ORTHOGONAL DEPTH/HEIGHT DISTANCE BETWEEN A POINT AND A USER-DEFINED PLANE.
D.	AREA	MULTIPLE POINT CIRCUMFERENCE AND AREA MEASUREMENT.
14.	TEMPERATURE SENSOR	EQUIPMENT SHOULD HAVE 2-STAGE INDICATOR FOR HIGH TEMPERATURE WARNING.
15.	IMAGE CONTROL	5X DIGITAL ZOOM
16.	IMAGE RESOLUTION	IMAGE RESOLUTION - H 768 X V 576 (PIXEL)
17.	STORAGE	USB FLASH MEMORY 1 GB MINIMUM.
18.	OPERATING TEMPERATURE	INSERTION TUBE -25°C TO 100°C IN AIR & SYSTEM -10°C TO 40°C IN AIR.

**MATERIAL CODE :- W90312120010**

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Inventory No \_\_\_\_\_ Sign & Date \_\_\_\_\_ Ref.Drawing No> \_\_\_\_\_

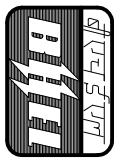
REV	DATE	ALTERED	REV	DATE	ALTERED
		CHECKED			CHECKED

GRADE OF UNTOL.DIM  
M/CG.- $\phi$ /M/ $\phi$  AA0230208  
WELDING-A/B/ $\phi$ / $\phi$  AA0621104  
GAS CUTTING-T3'AA0621101

AGREED DEPT	NAME	SIGN	DATE	STATUS OF DRG

—GMS No- / C B O M

TYPE OF PRODUCT **STEAM TURBINE**  
OR  
NAME OF CUSTOMER/PROJECT

 **BHARAT HEAVY ELECTRICALS LTD.**  
**RANPUR, HARDWAR**

DRN	NAME	SIGN	DATE	NO. OF
AFZAL KHAN		SD/-	05.02.14	VAR
SUNNY		SD/-	07.02.14	
DKRAY		SD/-	10.02.14	73 74

REV	DATE	ALTERED	SUNNY
01	19.01.15	CHECKED	ALOK SINGH

SHEET NO.1 DRAWING SUPERSEDED UNDER SAME NUMBER.  
SHEET NO.2 ADDED AS PER C\A NO. STE-15-F0064.

DEPT SITE  
CODE 4011

SCALE 1:2

WEIGHT (KG) --

TITLE : **BORESCOPIC VIDEO IMAGE KIT**

CARD CODE	DRAWING NO.
7	<b>3-12120-56000</b>
SHEET No. 01	No. OF SHEETS 02

00095-02121-6  
DRAWING

**THE EQUIPMENT SHOULD HAVE THE BELOW OPTICAL ADAPTORS:**

**A. VIEWING TIP** - VIEWING TIP ADAPTORS (INTERCHANGEABLE) OF DIAMETER AS COMPATIBLE WITH THE PROBE AS REQUIRED :

**a. FORWARD VIEW**

FIELD OF VIEW	120°
PURPOSE	OPTICAL IMAGING
DIRECTION OF VIEW	FORWARD
DEPTH OF FIELD	19 MM TO INFINITY

**b. SIDE VIEW**

FIELD OF VIEW	120°
PURPOSE	OPTICAL IMAGING
DIRECTION OF VIEW	SIDE
DEPTH OF FIELD	4 MM TO 100 MM

**B. STEREO MEASUREMENT TIP** - STEREO TIP ADAPTORS (INTERCHANGEABLE) OF DIAMETER AS COMPATIBLE WITH THE PROBE AS REQUIRED.

**a. FORWARD VIEW**

FIELD OF VIEW	60D / 60D
PURPOSE	MEASUREMENT
DIRECTION OF VIEW	FORWARD
DEPTH OF FIELD	5 MM TO 80 MM

**BILL OF MATERIAL FOR INDUSTRIAL VIDEO IMAGE SCOPE SYSTEM WITH ACCESSORIES**

SL. NO.	BHEL REQUIREMENT	QTY.
1.	VIDEO IMAGE SCOPE WITH HANDSET SCREEN , CONTROL UNIT, LIGHT SOURCE (AS REQUIRED), INSERTION PROBE (AS PER SPECIFICATION) (6 MM & 3.5 METER ) , CARRYING CASE.	1 SET
2.	VIEWING TIP (FORWARD) (AS PER SPECIFICATION)	1 SET
3.	VIEWING TIP (SIDE) (AS PER SPECIFICATION)	1 SET
4.	STEREO MEASUREMENT TIP(FORWARD) (AS PER SPECIFICATION)	1 SET
5.	RECHARGEABLE BATTERY FOR SYSTEM	1 SET
6.	BATTERY CHARGER / AC ADAPTOR	1 SET
7.	FLEX & STAY GUIDE TUBE 1 METER FOR 6MM PROBE DIA.	1 SET

**NOTES:**

- VENDOR HAS TO ARRANGE A DEMONSTRATION OF SUPPLIED EQUIPMENT AT SITE.
- THREE COPIES OF OPERATION & MAINTENANCE MANUAL IN SOFT COPY AS WELL AS IN HARD COPY MUST BE SUPPLIED ALONG WITH THE EQUIPMENT.
- GUARANTEE CERTIFICATE FOR 12 MONTHS FROM DATE OF COMMISSIONING OR 18 FROM DATE OF DESPATCH, WHICHEVER IS EARLIER TO BE PROVIDED.
- SUPPLIER SHOULD HAVE FULL FLEDGE SERVICE CENTER FOR VIDEO SCOPE IN INDIA.

**MATERIAL CODE :- W90312120010**

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Ref.Drawing No> \_\_\_\_\_  
Sign & Date \_\_\_\_\_  
Inventory No \_\_\_\_\_

REV	DATE	ALTERED	CHECKED

GRADE OF UNTOL.DIM  
M/CG.- $\phi$ /M/ $\phi$  AA0230208  
WELDING-A/B/ $\phi$ / $\phi$  AA0621104  
GAS CUTTING-T3'AA0621101

AGREED DEPT	NAME	SIGN	DATE	STATUS OF DRG

GMS No- / C B O M

TYPE OF PRODUCT **STEAM TURBINE**  
OR  
NAME OF CUSTOMER/PROJECT

**BHARAT HEAVY ELECTRICALS LTD.**  
**RANIPUR, HARDWAR**

DRN	NAME	SIGN	DATE	NO. OF VAR
AFZAL KHAN	SD/-		05.02.14	
SUNNY	SD/-		07.02.14	
DKRAY	SD/-		10.02.14	73 74

REV	DATE	ALTERED	SUNNY
01	19.01.15	CHECKED	ALOK SINGH

DEPT STE

SCALE 1:2

WEIGHT (KG) --

CARD NO. **3-12120-56000**

DRAWING NO. \_\_\_\_\_

REF. TO ASSY. DRG. \_\_\_\_\_

ITEM No. \_\_\_\_\_

NO. OF ITEMS 75 77

TITLE : **BORESCOPIC VIDEO IMAGE KIT**

AS PER C\A NO. STE-15-F0064.

SHEET NO.2 ADDED.

**ANNEXURE-I**  
**PRICE SCHEDULE FOR EACH SET BOROSCOPIC VIDEO IMAGE KIT**  
**FOR INDIGINOUS SUPPLY (i.e. IN INDIA)**

SL NO.	DESCRIPTION OF ITEMS	TOTAL QTY (COL 3)	UNIT PRICE (IN INR)	TOTAL PRICE (FOR QTY. IN COLUMN 3) FOB
1.	Video image scope with handset screen, control unit, light source (as required), insertion probe (as per specification) (6 mm & 3.5 meter), carrying case.	01 Set		
2.	Viewing tip (forward) (as per specification).	01 Set		
3.	Viewing tip (side) (as per specification).	01 Set		
4.	Stereo measurement tip (forward) (as per specification).	01 Set		
5.	Rechargeable battery for system.	01 Set		
6.	Battery charger / ac adaptor	01 Set		
7.	Flex & stay guide tube 1 meter for 6mm probe dia.	01 Set		
8.	TOTAL FOB VALUE FOR THE SCOPE OF SUPPLY MENTIONED ABOVE.	01 Set		
9.	Freight charges up to North Karanpura site			
10.	Per Day Charges for demonstration of equipment (lump sum & inclusive of everything i.e. lodging, fooding, boarding etc.)	--		
11.	Per Visit Charges (to & fro to our site) including every expense	--		

- THE PRICES ARE TO BE SUBMITTED STRICTLY AS PER ABOVE PRICE SCHEDULE AND FOR THE SCOPE OF SUPPLY AS MENTIONED IN THE ENCLOSED DRAWINGS & SPECIFICATIONS, OTHER WISE THE OFFERS OF VENDORS MAY BE IGNORED.
- PRICE COMPARISON WILL BE DONE ON THE TOTAL LANDED COST TO BHEL TAKING ALL ITEMS & SERVICES TOGETHER.
- PERDAY AND PER VISIT CHARGES FOR DEMONSTRATION AND TRAINING OF EQUIPMENT ARE TO BE QUOTED IN THE PRICE SCHEDULE. 01 VISIT AND 01 DAY WOULD BE TAKEN FOR THE PURPOSE OF EVALUATION. HOWEVER IN THE EVENT OF ORDERING, THE PAYMENT FOR SERVICES WILL BE MADE ON ACTUAL NUMBER OF DAYS / VISITS INVOLVED IN DEMONSTRATION OF EQUIPMENT.

<b>ANNEXURE-I</b>				
<b>PRICE SCHEDULE FOR EACH SET BOROSCOPIC VIDEO IMAGE KIT</b>				
<b>FOR FOREIGN SUPPLY (i.e. OUT INDIA)</b>				
<b>SL NO.</b>	<b>DESCRIPTION OF ITEMS</b>	<b>TOTAL QTY (COL 3)</b>	<b>UNIT PRICE (IN INR)</b>	<b>TOTAL PRICE (FOR QTY. IN COLUMN 3) FOB</b>
1.	Video image scope with handset screen, control unit, light source (as required), insertion probe (as per specification) (6 mm & 3.5 meter), carrying case.	01 Set		
2.	Viewing tip (forward) (as per specification).	01 Set		
3.	Viewing tip (side) (as per specification).	01 Set		
4.	Stereo measurement tip (forward) (as per specification).	01 Set		
5.	Rechargeable battery for system.	01 Set		
6.	Battery charger / ac adaptor	01 Set		
7.	Flex & stay guide tube 1 meter for 6mm probe dia.	01 Set		
8.	TOTAL FOB VALUE FOR THE SCOPE OF SUPPLY MENTIONED ABOVE.	01 Set		
9.	Sea/air freight charges up to Mumbai for the total scope of supply mentioned above.			
10.	Per Day Charges for demonstration of equipment (lump sum & inclusive of everything i.e. lodging, fooding, boarding etc.)	--		
11.	Per Visit Charges (to & fro to our site) including every expense	--		

- THE PRICES ARE TO BE SUBMITTED STRICTLY AS PER ABOVE PRICE SCHEDULE AND FOR THE SCOPE OF SUPPLY AS MENTIONED IN THE ENCLOSED DRAWINGS & SPECIFICATIONS, OTHER WISE THE OFFERS OF VENDORS MAY BE IGNORED.
- PRICE COMPARISON WILL BE DONE ON THE TOTAL LANDED COST TO BHEL TAKING ALL ITEMS & SERVICES TOGETHER.
- PERDAY AND PER VISIT CHARGES FOR DEMONSTRATION AND TRAINING OF EQUIPMENT ARE TO BE QUOTED IN THE PRICE SCHEDULE. 01 VISIT AND 01 DAY WOULD BE TAKEN FOR THE PURPOSE OF EVALUATION. HOWEVER IN THE EVENT OF ORDERING, THE PAYMENT FOR SERVICES WILL BE MADE ON ACTUAL NUMBER OF DAYS / VISITS INVOLVED IN DEMONSTRATION OF EQUIPMENT.

**Annexure-II (Technical Sheet)**

**INDUSTRIAL VIDEOIMAGESCOPE SYSTEM ALONG WITH ACCESSORIES**

The system should consist of video-probe (with CCD located at the tip of the probe), light and power source as required, CCD camera, camera control unit function, handy LCD monitor (size not less than 6.0" inch) and others essential accessories for viewing , recording as well as measuring of defects or discontinuity. Equipment should comply below specification.

Sl.No.	Equipment Parameters	Details of requirement	Confirmed / attached, as applicable
1.	Insertion Tube Length & Diameter	3.5 Meter & 6.0 mm	
2.	LCD Monitor	Not less than 6.0" LCD day light monitor .The LCD Screen should be integrated with the equipment and should not be offered as a separate monitor.	
3.	Power supply & BATTERY POWER BACKUP	100-240VAC/50-60HZ , 2 Hrs	
4.	Probe technology & Probe construction.	Tungsten Braid	
5.	Light Source	LED having illumination at the tip for adequate visibility of the component being viewed even in dark. Equipment should have feature for automatic light illumination control.	
6.	Weight of equipment	Max 4.5 Kgs.	
7.	Unit Protection	IP55 rating	
8.	Articulation & Control	Min 130 degree, 4 way,scope tip articulation with electronic power-assisted, manual articulation, Control is by joy stick only.	
9.	Equipment Protection	Equipment should protected against, Vibration (General Vibration Test), Shock (Transit drop test), Water resistance, Humidity, Sand and dust, Salt fog, Electromagnetic Interference. Bidders to submit Test certificate for the same along with technical bid.	
10.	Software & articulation control	Dedicated joy stick for software control & articulation control.	
11.	Hand held Controller & Operational Keys	User friendly Hand held controller. All Quick access button on Controller for frequently used functions such as Live mode, Brightness, Zoom, Freeze Image, Record Still/Video, Articulation Control, Articulation Lock, Menu Access, SavedRecording Index Access, Quick Last Image Recall.	
12.	PDF view	Equipment should have feature to upload & view PDF.	
13	Measurement & Measurement Function :	Stereo - Measurement only.	
A.	Distance	Distance between two points	

B.	Point to Line	Perpendicular distance between a point and a user-defined line	
C.	Depth	Orthogonal depth/height distance between a point and a user-defined plane.	
D.	Area	Multiple point circumference and area measurement.	
14.	Temperature Sensor	Equipment should have 2-stage indicator for high temperature warning.	
15.	Image control	5X digital zoom	
16.	Image resolution	Image Resolution — H 768 x V 576 (Pixel)	
17.	Storage	USB flash memory 1 GB Minimum.	
18.	Operating temperature	Insertion tube -25°C to 100°C in air & system -10°C to 40°C in air.	
19.	<b>Optical Adaptors (Forward &amp; Side view)</b>		
A.	Forward View	Field of view - 120 <sup>0</sup> , Purpose - Optical Imaging, Direction of view – Forward, Depth of field - 19 MM to Infinity.	
B.	Side View	Field of view - 120 <sup>0</sup> , Purpose - Optical Imaging, Direction of view – Side, Depth of field - 4 MM to 100 MM.	
20.	<b>Stereo Measurement Tip</b>		
A.	Forward View	Field of view - 60D / 60D Degree, Purpose – Measurement, Direction of view – Forward, Depth of field - 5 MM to 80 MM.	