

No.15021/05/2013-Prov (MT) - 1749  
भारत सरकार/Government of India  
गृह मंत्रालय/Ministry of Home Affairs  
पुलिस आधुनिकीकरण प्रभाग /Police Modernization Division  
संभरण-I डेस्क/Prov.I Desk

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26, Man Singh Road, Jaisalmer House.  
New Delhi, the 31<sup>st</sup> October, 2016.

To,

DsG: AR (through LOAR), BSF, CISF, CRPF, ITBP, SSB, NSG & BPR&D.

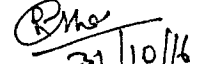
**Subject: Qualitative Requirements (QRs) and Trial Directives (TDs) for Motorized Excavator.**

The QRs and TDs in respect of Motorized Excavator as per the Annex-I and Annex-II respectively have been accepted by the Competent Authority in MHA.

2. Henceforth, all the CAPFs should procure the above item required by them strictly as per the laid down Technical Specifications/QRs.

3. Concerned CAPF will be accountable for correctness of QRs/TDs.

Yours faithfully.

  
21/10/16  
(Ritesh Kumar)

Under Secretary (Prov-I)

Encl: As above.

Copy to: 1. SO(IT), MHA: with the request to host the QRs and TDs of Motorized Excavator on the MHA website (under the page of Organizational Set up-Police Modernization Division-Qualitative Requirements), soft copy being sent through email.

2. DDG (Procurement), MHA

  
21/10/16

(V. Devadas)

Section Officer (Prov-I)



## Fresh ORs/Specification &amp; Trial Directive in r/o "Motorized Excavator"

(A)

S.No	Parameter	Q.R./Specification
1	Performance Engine	The motorized excavator will be employed for excavation, digging, demolition and finishing job at the inclement weather with temperature ranging from -20 to +55 degree Celsius. At the height/altitude ranging from 5000 feet to 18500 feet.
2	Engine	Water cooled turbo charged diesel engine should have cold starting kit to start engine at minus twenty degree Celsius. Made by ISUZU/ BEML/ TATA/ KIRLOSKAR, CUMMINS or of any reputed brand/make conforming to ARIA/BIS/DIN/SAE standards & IS 10000:IS 10002.
3	Engine Power	Not less than 84 HP @ rated RPM
4	Fuel	Diesel
5	Transmission	Four wheel drive (4WD) and at least 4 forward and 2 reverse gears with (synchromesh, synchro-shuttle, power shift, synchro shift mechanism.)
6	Steering System	Power steering
7	Brake System	a) <b>Service Brake System</b> - The service brake should be hydraulically activated, dual line one each for LH and RH, self adjusting, oil immersed multi disc type on the rear axle, well protected from dirt, water etc. Operation should be through independent pedals linked together for normal use (independent brake). Brake system should confirm to CMVR (Central Motor Vehicle Regulation) as applicable to construction vehicles and should be easily applied by a person seated in the driver's seat. b) <b>Parking Brake system</b> - A parking brake system shall be so designed that it should be easily applied by a person seated in the driver's seat. Parking brake shall maintain the parking performance on its application.
8	Turning Radius	a) Turning Radius (outside loader) should not be more than 6 meters. b) Turing Radius (outside wheel) should not more than 04 meters.
9	Ground Clearance	The under carriage ground clearance of the equipment should not be less than 350mm

P.O. ....

M-I (CRPF).....

M-II(BSF).....

M-III(CISF).....

M-IV(NSG).....

M-V(SSB).....

M-VI(ASSAM RIFLE).....

M-VII(ITBP).....

M-VIII(REP BPR&amp;DE).....

Co-Opted member-.....

S.No	Parameter	Q.R./Specification
10	Slew Ground Clearance	460 mm or more
11	Torque	310 Nm or more @ rated RPM
12	Hydraulic Pump Flow	Not less than 105 LPM at 2200 rpm.
13	Operator's Cabin	It shall serve the purpose intended for i.e. it should reduce injury and increase operator protection in the case of falling objects (such as a rock or piece of machinery). The cabin shall have two doors, floor mats, soft touch steering, clear view in all directions. The operator seat shall be so designed to ensure easy operation of all lever positions. The seat should be adjustable & ergonomically designed. The cabin shall be well ventilated with two rear view mirrors, interior light, wipers, fire extinguisher, first aid box, fan & Defogger.
14	Electrical System	Electrical system with suitable alternator & battery. Battery should be covered to minimize any side effect of cold weather.
15	Instrument Panel	All devices/ meters fitted on instrument panel should be in excellent working condition, readable and understandable. The following shall be invariably fitted on the instrument panel- Engine oil pressure gauge, blocked air filter indicator, temp gauge, engine speed /rpm gauge, fuel gauge, hour gauge, water temp gauge, hand brake on gauge & transmission oil high temp sensing gauge, audible and visible fault warning system for alternator charging.
16	Lights	Front -02 fixed head lights Rear -02 fixed & 02 adjustable 01 left & 01 right fix light to be provided
17	Stabilizers	Two stabilizers shall be fitted at the rear of the machine. Stabilizers shall be hydraulically operated. Each stabilizer should have its own control and shall be operated independently at different heights.
18	Cabin HVAC	Cabin should be equipped with heating, ventilation and air conditioning system a per requirement of ITBPolice deployment.
19	Tyres	Heavy duty tyres Front Tyres .....16 PR Rear Tyres .....20 PR size to be recommended by the firm

P.O. ....

M-I (CRPF).....  
M IV(NSG).....  
M-VII(ITBP).....

P.O. ....

M-II(BSF).....  
M-V(SSB).....  
M-VIII(REP BPR&D).....

M-III(CISF).....  
M-VI(ASSAM RIFLE).....  
Co-Opted member-.....

S.No	Parameter	Q.R./Specification
20	Painting	As per requirement of user/ITBP.
21	General Requirements	a) <u>Rotating &amp; fixed shafts/axles</u> - shafts and axels shall have ample rigidity and adequate quality. b) Site condition – Unless otherwise stated, design, construction & performance of excavator cum loader shall meet following environmental conditions. Operation/use & storage i) Temp. -20 to +55 degree Celsius ii) Altitude 5000ft to 18500 ft iii) Humidity 100%

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M-I (CRPF).....  
M IV(NSG).....  
M-VII(ITBP).....

M-II(BSF).....  
M-V(SSB).....  
M-VIII(REP BPR&D).....

M-III(CISF).....  
M-VI(ASSAM RIFLE).....  
Co-Opted member-.....

**(II) MOTORIZED EXCAVATOR PARAMETERS:-**

S.NO	SPECIFICATION	PARAMETERS/QRs RECOMMENDED BY SHQ(DLI)
1	Digging Depth	The digging depth should not be less than 4.29 meters.
2	Reach-Ground Level To Rear Wheel Centre	Ground level reach to rear centre wheel should not be less than 6.70 meters.
3	Maximum Working Height (Stabilizers Not Raised)	Should not be less than 5.20 meter
4	Bucket Rotation	Should not be less than 180 degree
5	Bucket Capacity	0.24 cubic meters
6	Load Over Height (Maximum)	3.5 meter or more
7	Bucket Digging/Breakout Force	5400kgf or more

**(III) LOADER PARAMETERS:-**

S.NO	SPECIFICATION	PARAMETERS/QRs RECOMMENDED BY SHQ(DLI)
1	Dump Height	2.24 meter or more
2	Load Over Height	3.2 meter or more
3	Dump Angle	41 degree or more
4	Loader Bucket Capacity	1.00 cum or more
5	Pin Height	Not less than 3.40 meter
6	Reach At Ground	1.35 meter or more
7	Reach At Full Height	1 meter or more
8	Bucket Breakout Force	4200 kgf or more
9	Below Ground Level Dig Depth	0.05 meter or more

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M-I (CRPF) ..... M-II(BSF) ..... M-III(CISF) .....

M-IV(NSG) ..... M-V(SSB) ..... M-VI(ASSAM RIFLE) .....

M-VII(ITBP) ..... M-VIII(REP BPR&D) ..... Co-Opted member- .....

APPROVED

*[Handwritten Signature]*

DIRECTOR GENERAL  
I.T.B. POLICE

**TRIAL DIRECTIVE IN RESPECT OF MOTORIZED EXCAVATOR**

Date of Trial.....  
 Time of Trial.....  
 Place of Trial.....  
 GR of Trial Area.....(Clear/cloudy/partially cloudy/Hot and Humid/rainy/Foggy and Humid/Soft Snow or Hard Ice)

Temperature.....  
 Altitude.....  
 Weather Condition.....

S. No.	Parameter	Specification	Procedure Suggested for Trial	Result expected/desired
1	2	3	4	5
1	Performance Engine	The motorized excavator will be employed for excavation, digging, demolition and finishing job at the inclement weather with temperature ranging from -20 to +55 degree Celsius. At the height/altitude ranging from 5000 feet to 18500 feet.	The equipment will be employed for the work of digging, excavation, loading, grading, demolition etc.	The equipment should be able to perform the specified jobs as per QRs.
2	Engine	Water cooled turbo charged diesel engine should have cold starting kit to start engine at minus twenty degree Celsius. Made by ISUZU/ BEML/ TATA/ KIRLOSKAR, CUMMINS or of any reputed brand/make conforming to ARIA/BIS/DIN/SAE standards & IS 1000: IS10002.	Based on the certificate provided by the manufacturer and ground trials of equipments for meeting temperature range -20 to +55 degree Celsius.	It should meet the desired parameters as per the QRs.
3	Engine Power	Not less than 84 HP @ rated RPM	Based on the certificate provided by the manufacturer.	It should meet the desired parameters as per the QRs.
4	Fuel	Diesel	The fuel at any port will be checked and certificate to be provided by the manufacturer.	It should be diesel. The equipment should be compatible to Indian fuel.
5	Transmission	Four wheel drive (4WD) and at least 4 forward and 2 reverse gears with (synchromesh, synchro -shuttle, power shift, synchro shift mechanism.)	The equipment will be driven in all the gears including changeover to 4WD.	The equipment should attain the specified speed at respective gears as specified by manufacturer.
6	Steering System	Power steering	The equipment will be driven and turned right/left. Also a certificate to this effect may be provided by the manufacturer.	The operator should be able to turn the equipment with ease.

P.O. [Signature] M-I (CRPF) [Signature] M-II(BSF) [Signature] M-III(CISF) [Signature] M-IV(NSG) [Signature]  
 M-V(SSB) [Signature] M-VI(ASSAM RIFLE) [Signature] M-VII(ITBP) [Signature] M-VIII( BPR&D) [Signature] Co-Opted member- [Signature]

S. No.	Parameter	Specification	Procedure Suggested for Trial	Result expected/desired
7	Brake System	a) <b>Service Brake System</b> - The service brake should be hydraulically activated, dual line one each for LH and RH, self adjusting, oil immersed multi disc type on the rear axle, well protected from dirt, water etc. Operation should be through independent pedals linked together for normal use (independent brake). Brake system should confirm to CMVR (Central Motor Vehicle Regulation) as applicable to construction vehicles and should be easily applied by a person seated in the driver's seat. b) <b>Parking Brake system</b> - A parking brake system shall be so designed that it should be easily applied by a person seated in the driver's seat. Parking brake shall maintain the parking performance on its application.	The brake shall be applied on the equipment. Parking brake will be applied in a slope not more than 30 degree.	It should be able to stop the equipment properly and effectively with both service and parking brake.
8	Turning Radius	a) Turning Radius (outside loader) should not be more than 6 meters. b) Turing Radius (outside wheel) should not more than 04 meters.	The turning radius shall be calculated from the outer wheel of the equipment which shall be driven in circle.	The radius of the circle made by the outer wheels should not be more than 4 meters. When brake of inner wheels applied, similarly radius made by (outside loader) should not be more than 06 meters.
9	Ground Clearance	The under carriage ground clearance of the equipment should not be less than 350mm	Ground clearance shall be measured from the lowest part of the equipment.	it should not less than 350mm
10	Slew Ground Clearance	460 mm or more	Will be measured from the slew centre.	it should not be less than 460mm.
11	Torque	310 Nm or more @ rated RPM	As per the certificate provided by the manufacturer.	It should meet desired parameters as per the QRs.
12	Hydraulic Pump Flow	Not less than 105 LPM at 2200 rpm.	As per the certificate provided by the manufacturer.	It should meet desired parameters as per the QRs.

P.O. .... M-I (CRPF) ..... M-II(BSF) ..... M-III(CISF) ..... M IV(NSG) .....  
M-V(SSB) ..... M-VI(ASSAM RIFLE) ..... M-VII(ITBP) ..... M-VIII( BPR&D) ..... Co-Opted member- .....



S. No.	Parameter	Specification	Procedure Suggested for Trial	Result expected/desired
13	Operator's Cabin	It shall serve the purpose intended for i.e. it should reduce injury and increase operator protection in the case of falling objects (such as a rock or piece of machinery). The cabin shall have two doors, floor mats, soft touch steering, clear view in all directions. The operator seat shall be so designed to ensure easy operation of all lever positions. The seat should be adjustable & ergonomically designed. The cabin shall be well ventilated with two rear view mirrors, interior light, wipers, fire extinguisher, first aid box, fan & Defogger.	Will be physically checked.	It should meet desired parameters as per the QRs.
14	Electrical System	Electrical system with suitable alternator & battery. Battery should be covered to minimize any side effect of cold weather.	As per the certificate provided by the manufacturer and will also be physically checked.	It should meet desired parameters as per the QRs.
15	Instrument Panel	All devices/ meters fitted on instrument panel should be in excellent working condition, readable and understandable. The following shall be invariably fitted on the instrument panel- Engine oil pressure gauge, blocked air filter indicator, temp gauge, engine speed /rpm gauge, fuel gauge, hour gauge, water temp gauge, hand brake on gauge & transmission oil high temp sensing gauge, audible and visible fault warning system for alternator charging.	The instrument panel will be checked physically.	All devices /meters fitted on instrument panel should be in excellent working condition.
16	Lights	Front -02 fixed head lights Rear -02 fixed & 02 adjustable 01 left & 01 right fix light to be provided	All the lights will be switched on	All the lights will be in excellent functional condition as per QRs.
17	Stabilizers	Two stabilizers shall be fitted at the rear of the machine. Stabilizers shall be hydraulically operated. Each stabilizer should have its own control and shall be operated independently at different heights.	The stabilizers should be operated on site.	The stabilizers should be able to move/operate smoothly as per QRs.
18	Cabin HVAC	Cabin should be equipped with heating, ventilation and air conditioning system as per requirements of ITBpolice deployment.	One hour testing for checking of HVAC performance	It should be able to achieve normal working temperature inside the cabin at both extreme temperature.

P.O. .... M-I (CRPF) ..... M-II (BSF) ..... M-III (CISF) ..... M-IV (NSG) .....  
M-V (SSB) ..... M-VI (ASSAM RIFLE) ..... M-VII (ITBP) ..... M-VIII (BPR&D) ..... Co-Opted member .....

**II) MOTORIZED EXCAVATOR PARAMETERS:-**

S.NO	SPECIFICATION	PARAMETERS/QRs RECOMMENDED BY SHQ(DLI)	Procedure Suggested for Trial	Result expected/desired
1	Digging Depth	The digging depth should not be less than 4.29 meters.	The digging depth will be measured physically	It should be as per desired parameters in the QRs.
2	Reach-Ground Level To Rear Wheel Centre	Ground level reach to rear centre wheel should not be less than 6.70 meters.	Will be measured physically	It should be as per desired parameter in the QRs.
3	Maximum Working Height (Stabilizers Not Raised)	Should not be less than 5.20 meter	Will be measured physically	It should be as per desired parameter in the QRs.
4	Bucket Rotation	Should not be less than 180 degree	The bucket rotation will be measured physically by rotating the bucket of the equipment.	It should not be less than 180 degree.
5	Bucket Capacity	0.24 cubic meters	Will be calculated as per SAE standard	It should be as per desired parameter in the QRs.
6	Load Over Height (Maximum)	3.5 meter or more	Will be checked physically	It should be as per desired parameter in the QRs.
7	Bucket Digging/Backhoe Force	5490kgf or more	As per the certificate provided by the manufacturer.	It should be as per desired parameters as mentioned the QRS.

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 M-V(SSB) \_\_\_\_\_ M-VI(ASSAM RIFLE) \_\_\_\_\_ M-VII(ITBP) \_\_\_\_\_ M-VIII( BPR&D) \_\_\_\_\_ Co-Opted member- \_\_\_\_\_

S. No.	Parameter	Specification	Procedure Suggested for Trial	Result expected/desired
19	Tyres	Heavy duty tyres Front Tyres .....16 PR Rear Tyres .....20 PR size to be recommended by the firm	Will be checked physically.	It should meet desired parameters as per the QRs.
20	Painting	As per requirement of user/ITBP.		
21	General Requirements	a) <u>Rotating &amp; fixed shafts/axles</u> - shafts and axels shall have ample rigidity and adequate quality. b) Site condition – Unless otherwise stated, design, construction & performance of excavator cum loader shall meet following environmental conditions. Operation/use & storage i) Temp. -20 to +55 degree Celsius ii) Altitude 5000ft to 18500 ft iii) Humidity 100%		It should meet desired parameters as per the QRs.

P.O. [Signature] M-I (CRPF) [Signature] M-II (BSF) [Signature] M-III (CISF) [Signature] M-IV (NSG) [Signature]  
M-V (SSB) [Signature] M-VI (ASSAM RIFLE) [Signature] M-VII (ITBP) [Signature] M-VIII (BPR&D) [Signature] Co-Opted member- [Signature]

(II) LOADER PARAMETERS:-

S.NO	SPECIFICATION	PARAMETERS/QRs RECOMMENDED BY SHQ(DLI)	Procedure Suggested for Trial	Result expected/desired
1	Dump Height	2.64 meter or more	The dump height of the loader shall be measured physically	It should be as per desired parameters in the QRs
2	Load Over Height	3.2 meter or more	The load over height of the loader shall be measured physically	It should be as per desired parameters in the QRs.
3	Dump Angle	41 degree or more	Will be measure with the help of protector	It should not be less than 41 degree.
4	Loader Bucket Capacity	1.00 cum or more	The loader bucket capacity will be calculated as per SAE standards.	It should not be less than 1.00 cum.
5	Pin Height	Not less than 3.40 meter	Will be measured physically	It should be as per desired parameters in the QRs.
6	Reach At Ground	1.35 meter or more	Reach at ground will be measured physically	it should be as per desired parameters in the QRs.
7	Reach At Full Height	1 meter or more	Will be measured physically	It should be as per desired parameters in the QRs.
8	Bucket Breakout Force	4100 kgf or more	As per the certification provided by the manufacturer	The certificate should specify the bucket breakout force to be more than 4100kgf or more.
9	Below Ground Level Dig Depth	0.05 meter or more	Will be checked physically	It should be as per desired parameters in the QRs.

P.O. *[Signature]* M-I (CRPF) *[Signature]* M-II (BSF) *[Signature]* M-III (CISF) *[Signature]* M-IV (NSG) *[Signature]*  
M-V (SSB) *[Signature]* M-VI (ASSAM RIFLE) *[Signature]* M-VII (ITBP) *[Signature]* M-VIII (BPR&D) *[Signature]* Co-Opted member *[Signature]*

APPROVED  
*[Signature]*  
DIRECTOR GENERAL  
I.T.B. POLICE