

Technical specifications for 8 terminal tractors

COMMITMENT

We hereby commit if our offer is accepted, to undertake the following: -

1-To provide all the basic specifications needed to (ACCHCO) to purchase **the spare parts from its original manufacturers as follow: -**

A-All equipments (main components) installed in the tractor should be provided with its original manufacturer name plate in English Language (engine-transmission-front &rear axles-pumps-compressor-fifth wheel)

B-Submit the required copies of complete spare parts manual and catalogue (in English language) for each component from its original manufacturer, including the requisitions form of spare parts, quantity of items and codes in equipment (see the form of attached spare parts list)as well as a removable storage device(flash memories) registering these information .

C-Submit the basic specification for all standard parts installed in the tractor or in its components (filters, bearings ...etc.) so as to be purchased by (ACCHCO) from any local or foreign supplier.

2-To insure and guarantee that no constrains for (ACCHCO) to get the spare parts(Even during the warranty period) from any of the sub - suppliers and that would not make any deals with the sub - suppliers to refuse supplying any required spare parts for (ACCHCO),or to raise its prices than the usual market prices.

3- Tenderer must assure and provide guarantee for the continuous production of the tractors main components (engine, transmission and rear &front axles,...etc.) and their spare parts at least for the coming ten years and that their local agents can supply at any time the required spare parts and programs to repair and maintain the equipments in good working conditions from the date of final acceptance

Name of the company :

Name of representative :

Signature :

Date :

1-GENERAL

1-1 OBJECT OF THE TENDER

Tenderer are invited by Alexandria container and cargo handling company (ACCHCO) for delivery and commissioning of the following: -

1. Eight (8) in number (four (4) for Alexandria branch and four (4) for Dekhila branch) terminal tractors (TT) must be (4× 2) heavy duty for Container handling used for towing trailers (20feet two heavy containers (70 ton) +trailer weight+ tractor weight) safe working load.
- 2.The king pin used with the fifth wheel should be of size two inch.
3. The tractors manufacturers shall be USA, Japan, European Union, United Kingdom and Belarus made and not under license (**under license will be rejected**).
4. Wheel base is preferable to be **not less than 3200 mm**.
5. Air tanks, fuel tank, hydraulic tank must be protected for safety (Steel shielded) from damage, scratches and accident.
6. Rear tires must be covered with steel mudguards **not less than 10 mm**.
7. Left hand driver cabin **without swivel seat**.
8. Tractors weight must be not less than 8 ton **dry** and preferable more than 8 ton
9. Original brochure for heavy duty terminal tractors (TT) must be involved in the tender offer
10. Equipped with two firefighting extinguishers (2 x 6 kg powder) From Egyptian local market to meet the traffic regulations
- 11.**The guarantee period for one year without any constrain for the operating hours.**
- 12.**Proto type will be rejected**

1-2 STANDARDS AND CODES

1. The tractors should be designed for port / terminal heavy-duty, new and of the latest model, robust construction and high reliability to meet the working condition on rough roads and heavy shocks from STS with twin Spreader with 80-ton load during handling operations.
2. The manufacturer must proof in his experience list that his company has already manufactured a wide range of tractors working in good conditions in multi international terminals and the experience list must be stamped and registered from the chamber of commerce at the manufacturer country.

1-3 INSPECTION AND TESTS

1. Tenderer should submit (with their offers) the inspections schedules and tests at manufacturer firm and ACCHCO site (for our inspection groups) according to the applicable recent international standards and load test.
2. Tests load conditions (20feet two heavy containers (70 ton) +trailer weight+ tractor weight) according to the above item should be conducted at the factory and approved by an international society as a third party (LR, GL, BV or similar) Approval reports should be submitted.
3. Operational tests should be conducted on **ACCHCO** site in representative of ACCHCO inspectors and Tenderer side only.
4. Cost of inspection and tests at factory will be borne by Tenderer including materials and third-party costs.

1-4 CERTIFICATES

The successful Tenderer should submit the following certificates

During commissioning:

- 1-Factory certificates for each main component from original Manufacturer (engine, transmission, fifth wheel and axles front/rear) and Clarify the year of production.
- 2-Data sheet (machine card) for each tractor containing the basic data for them Main Components (model, type and serial No of engine, transmission And axles rear & front).
- 3- Each tractor must be equipped with machine card stamped with rivets in the cabin including (weight, axles load, wheel base, tractor load...etc.)

1-5 DOCUMENTS

The successful Tenderer should furnish all the tractors with **4 (four) copies** of The following documents (in English language): -

1. Operating manuals must include all codes for the diagnostic faults for engine, transmission, and tractor in tables as hard copy, soft copy plus electrical wiring diagram for engine, transmission and tractor...etc.
2. Detailed maintenance manual for all tractor main components.
3. All necessary schematic diagrams for all components of tractor.
4. Separate electrical wiring diagrams for engine, transmission and all functions of the tractor
5. Lubrication and greasing charts for all moving and rotating parts Including the recommended main and alternative types of oils and Grease covered by local suppliers (equivalent from Shell, Exxon Mobil).
6. Spare parts manual and catalogues for each main component (engine, transmission, rear axle, front axle, and fifth wheel) from their original manufacturers including quantities of parts installed and manufacturer part no. and remarks and also part no. and remarks for all tractor from the Tenderer.

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7. Workshop manual for all tractor main components (engine, transmission, axles, hydraulic, steering, brakes, and pneumatic system) from their original manufacturers.
8. (10) copies as a removable storage device (flash memories) for all previous documents (operating manual-maintenance manual-wiring-diagrams-greasing chart-spare parts list ,for engine transmission axles and tractor (by original manufacturers part number and also by factory number)

1-6 Software and hardware

THE ELECTRONIC CONTROL SYSTEM IS PREFERABLE TO BE I QAN SYSTEM COMPLETE or ANY OTHER EQUIVALENT (it will be evaluated) and it must meet the following requirements: -

- ❖ Multifunctional digital display for the engine, transmission, hydraulics, air, (all **the details are mentioned in cabin section item 2-7**). All data, faults shall be readable codes. & written fault and shall be saved in the display.
- ❖ The periodic maintenance should be involved in the display program for next service at 250 hr for engine and should be programmed after finishing service for the next service.
- ❖ All the calibration needed **MUST BE** done from the displays inside the cabin.
- ❖ Tender should supply a complete pamphlet with a complete explanation for the system

The successful tender must be submitting the following items:

1. Four (4) external laptop (not less than Intel® Core™ i7-9th Gen (original Microsoft windows) for checking and repairing the tractor (fault diagnostic system) with software package including all software necessary for engine, transmission ,display and tractor **with separate price** .
2. Original diagnostic devices (software, hardware,) will be supplied for the tractor for (engine, transmission) for maintenance and troubleshooting remedy (Four set) with cables & connectors **with separate price.**

1-7 SPARE PARTS

1. Tenderer should supply the attached list of necessary spare parts with specified quantities, part numbers and prices (prices will be evaluated with the tractors prices).
2. Tenderer should indicate their own sub- suppliers/ manufacturers for every component / system in tractor.
3. Tenderer should state the basic specifications, manufacturer, and part numbers for all standard parts installed in the tractor.

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4. All mechanical and electrical components installed in the tractor should be of the standard production models / types of their original manufacturer (unique / modified / special products should be avoided otherwise will be rejected).
5. Successful Tenderer should provide all equipments / components with their original manufacturer name plates (in English language)

especially for the following: -

- ❖ Engine
- ❖ Transmission
- ❖ Axles (steering, drive) and fifth wheel
- ❖ Hydraulic units (pumps, hydraulic control / valves, etc.).
- ❖ Main electric and pneumatic components.

1-8 TOOLS

1. The Tenderer should indicate in his offer and supply tool kit (in detail items) see attached tools required.
2. All special tools necessary for adjusting engine valve clearance, engine injectors (from **the engine manufacturer**) must be supplied. See attached tools required.

1-9 TRAINING AND INSPECTION

1. The manufacturer should be submit in his offer the training program in checking problems and trouble shooting by using laptop and software for fault remedy for engine, transmission, and tractor and all the calibration needed for two weeks (include arrival and departure days) for (one group) consists of (4) engineers and (4) technicians at manufacturer firm. Air tickets & full accommodation and internal transportation will be on behalf of contractor.
2. ACCHCO has the right to send (one groups) consists of (4) engineers for two weeks (include arrival and departure days) to the manufacturer firm for tractors inspection, Air tickets & full Accommodation and internal transportation will be on behalf of contractor.
3. The manufacturers have to submit training program for 10 days (5 days for each terminal) for operators (drivers), maintenance engineers and technicians, on ACCHCO site during receiving operation.

1-10 TECHNICAL EVALUATION

- 1- In case of large technical discrepancy between offers, the technical committee will notify the Tenderer to readjust their technical specifications by fax to define the appropriate technical level with respect to the chassis, engine, transmission, axles, suspension, brakes, design criteria... etc.
- 2- The tenderer who will not agree upon the required technical adjustment, his offer will be excluded from the tender.

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- 3- ACCHCO. Will notify the Tenderer who will be accepted technical offers by the date of unsealing envelope (B) financial envelope.

2- TRACTOR REQUIREMENTS AND PERFORMANCE

1. These tractors shall be used for towing trailers with combined load capacity of (20 feet two heavy containers (70 ton) +trailer weight+ tractor weight) safe working load.
2. The fifth wheel should be adapted for use with **(two inch)** king pin controlled from inside the tractor cabin.
3. The tractor should be designed for heavy duty and intensive operation conditions on rough roads and should be guaranteed by the manufacturer to operate under the tropical climatic conditions: -
 - Sea water spray (marine atmosphere)
 - Ambient temperature up to 50°C
 - Relative humidity of 100 %
 - Presence of fine sands and coal dust.

2-1 CHASSIS

- Main frame should be designed for heavy duty and shock resistant in accordance to the acceptable international design standards to give maximum durability, rigidity and long service life.
- The manufacturer should present the material (grade & properties) and the chassis construction design type.
- steel protection on chassis sides & front (preferable)

2-2 ENGINE

The diesel engine should be of the latest model environment adapted of industrial type, heavy duty, **(must be Volvo engine)** and must meet the following requirements: -

1. Four strokes, six cylinders in line, direct injection and turbo charged.
2. Engine power must be not less than 240HP at rated speed (without fan) to be stated in the offer (ISO 3046).
3. Engine performance curves should be submitted with the offer.
4. The ability to refill cooling water must be done without tilting the cabin.
5. Engine cooling fan must be direct mounted to the engine without flexible coupling or viscous hub.

6. Engine should be protected with a shut-off device in case of: -

- Low oil pressure.
- High water-cooling temperature
- Low water level

* It will be checked at factory firm during our inspection.

7. Must be not less than euro step III emission
8. The engine production year must be the recent year of the offer

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9. The engine manufacturer must be from the origin manufacturer (SWEDEN, GERMANY, and FRANCE).
10. Prefilter (cyclone) **preferable to be** added before air filter to prevent fine dust.
11. Engine shut down in normal operation after certain time (delay stop is preferable) to cool the engine & turbo.
12. Automatic engine shut off with adjustable idling speed time
13. Fuel / water separator assembly must be equipped with water drain system (electrically controlled is preferable)
14. Suitable fuel heating system must be added to avoid wax formation in winter
15. Air intake from a cleaner position recommended for dusty circumstances (above cabin platform) (preferable)
16. A draining device below or near radiator to drain cooling liquid according to maintenance schedule (preferable)

2-3 TRANSMISSION

The transmission should be heavy duty of a well-known standard type (ZF, DANA CLARK, ALLISON) compatible with the engine power and torque (**Preferable ZF Germany**) and meet the following requirements: -

1. Automatic power shift transmission at least four forward speeds, one reverse and must be through gear lever selector.
2. Protection device against sudden change of direction
3. the transmission production year must be the recent year of the offer
4. All function of the transmission should be blocked when applying parking brake.
5. Transmission performance curves (power & torque) should be submitted with the offer.
6. Compatibility between the engine and transmission curves should be accepted from the manufacturer of the transmission and (**accepted performance calculations must be submitted with the offer to be evaluated**).

2-4 FRONT AXLE (STEERING AXLE)

Front axle should be of a well-known standard type (KESSLER, DAF, VOLVO, SISU) heavy-duty suitable for Tractor operation conditions and mounted with two leaf springs and two telescopic shock absorbers.

*****Complete drawing for the front axle suspension must be attached in the offer**

2-5 REAR AXLE (DRIVE AXLE)

- * Should be of a well-known standard type (Kessler & sisu), (PREFERABLE KESSLER), heavy-duty, suitable for terminal tractor operation conditions and the rear axle dynamic load must be not less than (35 ton) at 20km/hr.
- * Must be equipped with air suspension mounting consisting of two air bellows Not less than 14 ton (membranes), two telescopic shock absorbers and two leaf Spring.

***** Complete drawing for the rear axle suspension must be attached in the offer.**

2-6 BRAKE SYSTEM

Should meet the following requirements:

1. Suitable and durable to perform its function.
2. Two separate air circuits for front and rear axles main brake.
3. Separate pressure gauges for each circuit installed in the cabin display.
4. Two air lines for trailer brake system.
5. Brake system (**S- cam**) type is preferable for rear axle, but any other brake system will be accepted with additional guarantee period for one year excluding **Z cam type (Z cam type will be rejected)**
6. Parking brake must be applied from the cab by electrical switch in rear axle
Only

2-7 CABIN

Should meet the following requirements:

1. One-person left-hand drive position without swivel seat.
2. Cabin mounted on anti-vibration mounts.
3. Must be wide cabin.
4. Wide visibility range for the driver.
5. Cabin can be tilted not less than 50° by hydraulic hand pump and the Cabin must be equipped with safety mechanical lock to hold the Cabin after lifting.
6. Comfortable and adjustable driver seat with safety belt.
7. Two sides movable safety glass windows.
8. Noise proof, heat insulated and efficient ventilation.
9. The cabin must be attached with two hand cook valves with non-return valve
In the main pressure line for trailer, two spiral hoses fitted directly to
Screw nipple for trailer brake and spiral cable.
10. The cabin should be prepared with a suitable position to hold two fire fighting
Extinguishers (diameter 18 cm & height 40 cm).
11. Flat glasses in all sides of the cabin (Preferable).
12. Cabin glasses (wind shield) to be bounded to the cabin body without
locking strip seal (Must be)
13. Dashboard with all gauges, switches and control-lights required for
safe operation of tractor must be done by multifunctional digital display
14. cabin should be painted with several painting layers preventing it from rust
and corrosion and capable to work in a various climate conditions and to be
guaranteed by the manufacturer as mentioned in item (2).
-Tender should supply a complete pamphlet for the painting process

Must be including the following:

2-7-1- GAUGES (digital in the display) FOR: -

1. Air pressure for two brake circuits lines.
2. Cooling water temperature
3. Engine oil pressure
4. Engine RPM & speed km/hrs.
5. Fuel level.
6. Transmission oil temperature
7. Transmission oil pressure
8. Hour meter.
9. Battery charge value (voltage).

2-7-2- CONTROL-LIGHTS FOR

1. Battery Charging & alternator.
2. Low oil pressure for engine.
3. Low cooling water level.
4. Fifth wheel locking & unlocking.
5. Low air pressure.
6. Parking brake.
7. Direction indicator (L&R& hazards).
8. Air filter clogged.
9. Hydraulic filter clogged
10. Water in fuel (control light or message in the display).
11. Low fuel level

2-7-3- ELECTRICAL SWITCHES FOR

1. Start / stop.
2. Parking brake.
3. Fifth wheel unlocking.
4. Windscreen wiper front and rear.
5. Fifth wheel (lifting / lowering)
6. Horn, beacon, hazard & dim light
7. Reverse alarm
8. Reverse light
9. Container working light

2-8 HYDRAULIC SYSTEM AND STEERING SYSTEM

- Steering system should be fully hydraulic power steering, Tenderer should specify and submit full information about the hydraulic system.
- Must be gear pump.
- All system (pump, valves and controls) preferable Parker or Rexroth
- Lifting/lowering for fifth wheel must be actuated from inside the cabin via electrical switch to the hydraulic control (electrohydraulic control).
- Hydraulic tank must be separated from fuel tank (two separated tanks (not combined))

2-9 ELECTRICAL EQUIPMENT

Should meet the following requirements: -

1. Lighting system (LED TYPE) in compliance with high way and city regulations (head, tail, turn, stop lights, extra light, container working light, horn, beacon, hazard ...etc).
2. Standard plug (7 pole spiral cable, 24V) for trailer connection.
3. It is preferable to put all fuses and relays and electronic cards under one cover (in one electrical box) without using bolts
4. Two (12 volt) heavy-duty batteries maintenance free (dry type) protected Mounted to prevent spark (**preferable not under the cabin**)
5. Main electrical board (all electronic cards) should be protected Completely to prevent dust or water drops.
6. All fuses should be automatic thermal fuses.
7. External batteries connection with (2) two cable set (preferable)

2-10- RIMS AND TIRES

- Front and rear rims must be the same size 22.5-inch rim width 9 inch.
- Front and rear tires must be of size 310/80 R 22.5 industrial - rim width 9 inch and should be of heavy-duty type suitable for rough road.
- Option Michelin tiers with separate price.

2-11 FIFTH WHEEL AND TRACTOR COUPLING

Should meet the following requirements: -

1. Heavy-duty type well known (preferable Euro hitch HOLLAND).
2. Designed for a standard two-inch king pin for trailer coupling.
3. Fifth wheel lifting capacity not less than 36000 kgs.
4. Two lifting cylinders leak proof type (preferable single rod stroke with Lifting stroke from 60 to 70 cm)
5. Locking and unlocking controlled from the cabin.
6. Hydraulic valves should be used to prevent self lowering at any level during normal operation.
7. Must be installing emergency manual unlatching.
8. Complete drawing for the tractor must be attached with the offer showing all dimensions of the fifth wheel in the lowest and max position.

2-12 AIR COMPRESSOR

Heavy duty type long life maintenance free (preferable Wabco).

- The compressed air system should be provided with an air dryer unit with heater
- equipped with a pilot line from air dryer to unload air compressor operation After complete charging of air vessels (Energy Saving System).

2-13

-Tenderer must confirm all the specifications in our booklet in details according to the same sequence in both general and technical specifications and any deviations must be in the same paragraph.

NOTICE

The Spare Parts and Tools Will Be Divided as Follow: -

- ❖ **50 % FOR ALEX BRANCH (with (4) four tractors)**
- ❖ **50 % FOR DK BRANCH (with (4) four tractors)**
- **Colour will be determined during comissioning (contracting)**

3 - TECHNICAL DATA LIST FOR TRACTOR

The following specifications should be written (fill spaces) and submitted with the Tenderer offer.

3-1 TRACTOR BASIC SPECIFICATIONS

- Manufacturer
- Manufacture year
- Model
- Type

Overall dimensions

- Overall length mm
- Overall width mm
- Height (unloaded/ loaded) mm
- Overhang (front/rear) mm
- Wheel base mm
- Ground clearance mm
- Turning radius right /left mm

3-2 CHASSIS

Description of chassis, design criteria, manufacture standards, steel code and properties should be mentioned.

- Manufacturer
- Model / type
- Material according to DIN
- Construction design type
- Yield strength
- Design stress

3-3 ENGINE

- Manufacturer
- Origin of manufacturer
- Production year
- Model / type
- No. of cylinders
- Stroke mm
- Bore mm
- power (without fan) according to
(ISO 3046 or equivalent) Bhp at r.p.m
- Max. torqueN.m at.....r.p.m
- Fuel consumption at rated speed/max. loadlit/hr..... lit / hr
- Malfunction shut off deviceyes/no
- Heater in Fuel Lineyes/no
- Fuel/ Water separatoryes/ no
- **Engine performance curves should be attached with the offer.**

3-4 TRANSMISSION

- Manufacturer
- Origin of manufacturer
- Production year
- Model / type
- Net power (at engine speed max.)bhp at r. p.m.
- Net torque(max.).N. m at..... r. p.m.
- Type of gearshift
- Number of speeds forward / reverse/.....
- Max. Tractor speed at max. load (90 ton with tractor load)km/hr
- Protection device against sudden change of direction yes/no

3-5 DRIVE AXLE

- Manufacturer
- Origin of manufacturer
- Model / type
- Static load capacity (at 0 km/hr)Ton
- Dynamic load capacity (at 20km/hr) Ton

3-6 STEERING AXLE

- Manufacturer
- Origin of manufacture
- Model / type
- Static load capacity (at 0 km/hr)Ton
- Dynamic load capacity (at 20 km/hr)Ton

3-7 RIMS AND TIRES

- Manufacturer of rim
- Manufacturer of tire
- Drive wheelsNo. /size
- Steer wheelsNo. /size

3-8 BRAKE FORCES

- Service brake (front / rear)/..... (K.N)
- Parking brake (K.N)
- Max. road inclination to hold loaded tractor
And tractor by hand brakedegree
- (S – cam) type(y/n)

3-9 WEIGHT AND LOADS

- Tractor dead weight dryTon
- Tractor dead weight in service conditionTon
- Front axle load (at empty/full load)/..... Ton
- Rear axle load (at empty/full load)/..... Ton
- Rated fifth wheel dynamic load (at 20 km/hr).....Ton

3-10 AIR COMPRESSOR

- Manufacturer
- Model /type

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- Air discharge lit/min
- Air tank capacity per vessel lit
- Max. Tank pressure bar
- Air dryer with heateryes/no
- Unloader pilot line yes /no

3-11 FIFTH WHEEL

- Manufacturer
- Origin of manufacturer
- Model /Type
- Static lifting capacity kgs
- Dynamic lifting capacity@20km./hrkgs
- Fifth wheel height in the lowest/ highest position.....cm/ cm
- Fifth wheel lift boom (schematic diagram) should be attached yes/no

3-12 AXLE LOADS

Fifth wheel load (TON)	Admissible top speed (km/hr)	Front axle load (TON)	Rear Axle Load (TON)
16			
20			
24			
28			
32			
36			

3-13 SPEEDS (km/hr)

Max. speed	Forward	Reverse
First speed shift		
Second speed shift		
Third speed shift		
Forth speed shift		
Fifth speed shift		
Sixth speed shift		

3-14 TRACTIVE FORCES

Speed	Forward Force (KN)	Reverse Force (KN)
First speed shift		
Second speed shift		
Third speed shift		
Forth speed shift		
Fifth speed shift		
Sixth speed shift		

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Attached tools required

item	Description	Qty	price
1	Digital multimeter (universal meter, avometer) (euro- USA- japan) manufacturer	2	
2	Angle torque wrench 100 N.M with measurement angles (torqometer) (euro- USA- japan) manufacturer	2	
3	Cooling system testing device(euro- USA- japan) manufacturer	2	
4	Bent and straight circlip pliers set (4 pc) (external & internal) (length -8\\) (euro- USA- japan) manufacturer	2 set	
5	Allen key star from 3 mm to 14 mm-(length 8\\)) (euro- USA- japan) manufacturer	2 set	
6	Drive socket star set (ratchet included) from 6mm to 24 mm (euro- USA- japan) manufacturer	2 set	
7	Double open-end spanner from 6 mm to 22 mm (euro- USA- japan) manufacturer	2 set	
8	Combination spanner (ratchet type) from 6 mm to 22 mm (euro- USA- japan) manufacturer	2 set	
9	Lock grip (clamping) plier 10-inch (euro- USA- japan) manufacturer	2 pc	
10	Double ended socket wrench metric size from 8mm to 22 mm (euro- USA- japan) manufacturer	2 set	
11	3/4" Air Impact Wrench Kit (twin hammer) with the following specification: - working torque up to 750 N.M-Drive sockets (Drive 3/4") from 9 to 27 mm – Drive 3/4" extension bar compact size made in USA	2 kit	
12	special tools for adjusting engine valve clearance, engine injectors.....etc. (from the offered engine manufacturer) as follow: -		
12-a	valve clearance adjustment	2	
12-b	Engine compression teaster	2	
12-c	piston ring compressor	2	
12-d	Piston ring pliers	2	
12-e	Engine liner puller	2	
Total price			

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(3 – 15) ATTACHED SPARE PARTS LIST
(FOR ALL TRACTORS)

SN	PART DESCRIPTION	BIDDER P.N.	MANUFACTURER P. N	QTY. FOR 8 (eight) TRACTORS	UNIT	UNIT PRICE	TOTAL PRICE	NOTE
FOR ENGINE								
1	Water pump			4	Unit			
2	Turbo charger			4	Unit			
3	Air compressor			4	Unit			
4	Starter motor			4	Unit			
5	Alternator			4	Unit			
6	Charge regulator for alternator			8	Unit			
7	Fuel injection pump (main pump)			4	Unit			
8	Primary pump (feed pump)			4	Unit			
9	Complete set of fuel injectors			12	Unit			
10	Air compressor repair kit including all gasket, valves, plates...etc			8	Kit			
11	M-PROP if exists for high pressure pump			4	Unit			
12	Belt tensioner			4	unit			
13	Belt			4	set			
FOR HYDRAULIC SYSTEM								
1	Hydraulic pump (one of each type)			2	Each type			
2	Hydraulic lifting cylinder repair kit			4	Kit			
FOR CABIN								
1	Cabin hand pump			4	Unit			
2	Cabin lifting cylinder			4	Unit			
3	Gear control lever			2	Unit			
4	Light control lever			2	Unit			

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FOR HYDRAULIC STEERING SYSTEM

1	Complete set of main hydraulic control unit and valves for lifting system			2	Set			
2	Complete set of main hydraulic control unit for steering system (priority valve)			2	Set			
3	Steering unit (orbitrol)			2	Unit			
4	Steering cylinder			2	Unit			
5	Steering cylinder seal kit			4	Kit			

FRONT AXLE

1	Brake drum			2	Unit			
2	Set of Brake lining for one wheel with bolted			4	Set			
3	Brake chamber			4	Each			
4	Leaf spring			4	Set			
5	Shock absorber			4	Unit			

REAR AXLE

1	Brake drum			4	Unit			
2	Set of Brake lining for one wheel with bolted			4	Set			
3	Brake chamber from each type			4	Each			
4	Air bellows			8	Set			
5	Leaf spring			4	Set			
6	Shock absorber			4	Unit			

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FOR PNEUNMATIC SYSTEM								
1	Brake pedal valve			4	Unit			
2	Complete set of all air valves as follow: - - 4 circuit protection valve -parking brake valve - quick release valve - pressure reducing valve -unlocking fifth wheel valve - Leveling valve - drain valve - check valve - shuttle valve - trailer valve <u>and any other solenoid air valves exists in the tractors</u>			4	Set			
3	complete air dryer			8	Unit			
FOR WHEELS								
1	Set of studs for one wheel (rear)			4	Set			
2	Set of nuts for one wheel (rear)			4	Set			
3	Complete spare wheels (rim & tire)			8	Unit			
4	Tire			24	Unit			
5	Set of studs for one wheel (front)			4	Set			
6	Set of nuts for one wheel (front)			4	Set			
FIFTH WHEEL								
1	Jaw lift + Jaw right (one set)			4	Set			
2	Jaws cylinder			4	Unit			
ELECTRICAL CONTROL SYSTEM								
1	<u>Complete set of electronic cards as follow</u> -EMS for engine -TCU for transmission -INTERFACES - And any (electronic or printed) cards exists in the tractor			2	Set			

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2	<p><u>Set of all sensors (engine, transmission, air, hydraulic...etc.) as follow: -</u></p> <ul style="list-style-type: none"> - Engine, coolant temp. sensor - Camshaft sensor - Crankshaft sensor - Fuel feed pressure sensor - Boost pressure /boost temp. sensor - Common rail pressure sensor - Oil pressure sensor - Water level sensor - Fuel level sensor - Fuel temp. in tank sensor - Air filter clogged sensor - Hydraulic filter clogged sensor - Parking brake sensor - Stop light sensor - Locking/unlocking fifth wheel sensor - Speed pick- up, engine - Speed pick-up, turbine - Speed pick-up, internal - Speed sensor output - Load sensor - Transm. Pressure switch - Transm. Temperature switch - Transm. Filter restriction switch - Transm. Temp. indicator switch - Transm. Sudden change direction switch <p><u>-Air pressure circuits charging switch and any other switches in the tractors</u></p>			4	Set			

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3	(all displays exist) programmed			4	Set			
4	Electronic accelerator pedal			4	Unit			
5	Cable harness for (engine-I can-tractor)			4	Set			
6	Spiral electrical cable for trailer			8	Unit			
7	Spiral pneumatic hose			12	Unit			

All filters needed for 8000 operation hours for 8 tractors to be calculated by the manufacturer:

1	Air filter element (outer).				Unit			
2	Air filter element (inner).				Unit			
3	Engine oil filter element. (250 hrs)			256	Unit			
4	Fuel water separator				Unit			
5	Fuel filter element				Unit			
6	Complete set of hydraulic filter elements.				Unit			
7	Transmission filter.				Unit			
8	Air dryer element.				Unit			
9	Hydraulic breather element if exists				Unit			

*****Each mean every type exists in the tractors**

*****Set means total number exists in the tractors**

Technical Specification for 8 Terminal Tractors

Technical Evaluation Will Be Calculated According to The Point System as Follows:

Point system

ITEM	DEGREE
Chassis	8
Power Train	45
- Engine	
- Transmission	
- Compatibility Between Transmission & Engine	
- Rear Axle & suspension	
Front Axle	4
Hydraulic system	4
Rims & Tiers	2
Brake System	4
Performance	15
- Weight & loads	
- Fifth Wheel	
- Overall Dimension	
- Speeds & Tractive Forces	
Experience & Origin	6
Cabin & electrical system	12
TOTAL	100

**** أتفقت اللجنة علي أن العرض المقبول فنيا يحصل علي درجة 80% علي الأقل من كل بند وعلي الأقل 85% من الأجمالي**

Technical Specification for 8 Terminal Tractors