

OCT 30 , 2022

Attn: Unison Motors FZE
P.O.BOX 262219,
JEBEL ALI FREE ZONE,
DUBAI, UAE
SUBJECT: Coolant filling machine

SH Quote #SQ22-1511

Revision:

Dear Sir:

Sail is pleased to submit the following quotation regarding the above-mentioned subject. This proposal is subject to specifications and requirements to be verified before contract release.

For easy navigation, this quotation has been organized in the following sections:

Section 1: Common information

Section 2: General condition

Section 3: Filling description

Section 4: General Notes, Clarifications, and Exceptions

Section 5: Delivery and Payment Terms and Conditions

Thank you for giving us the opportunity to present this quotation. This quote is valid for 30 days. **Any item not specifically detailed within our quotation is excluded.** Should you require any further information, please feel free to contact our office.

Respectfully submitted,

Frank Wang
Operation Manager
JiNan Sail Automation Co Ltd



Frank Wang 10/22



Section 1: Common Information

Plant:	Arian Pars motor Co.
New Factory:	Khomain assembly line-Iran
Car Model:	Mini truck (Jack)- Van-Minibus-Full truck (shacman)
Cycle time:	Max 10 JPH for mini truk and Max 3 JPH for full truck
Machines:	Compact or Portable cabinet

Coolant Filling Machine

Coolant fluid :	Mixing Glycol and water
Filling volume :	Max 20 Litters for mini truck, 60litters for Full truck
Vacuum level :	25mbar
Pressure Test :	Less than 2bar



Section 2: General Condition

General Data

Placing:	The equipment must be placed indoors
Ambient air temperature:	0-50°C
Atmospheric humidity:	30-90% (not condensing)
Transportation and storage:	-25 to +55°C
Colour:	RAL 7035 (light grey)
Supply voltage:	3 phase + N + PE 50/60Hz

Control panel (standard)

- | | |
|-----------------------|--------------------|
| 1. Power consumption: | (Coolant, 2.2 kVA) |
| 2. Supply voltage: | 3 x phase + N + PE |
| 3. Frequency: | 50 Hz or 60Hz |

Pump cabinet (Coolant)

- | | |
|--|------------------------------------|
| 1. Dimensions incl. control panel (l x h x w): | 1600 x 1800 x 1100 mm |
| 2. Weight: | Approx. 600 kg (incl. filled tank) |
| 3. Efficient volume: | |
| 3.1 Extra volume: | 30 liter |
| 3.2 Tank size: | 50 liter |
| 3.3 Mix range (water/glycol): | 30/70-70/30 |
| 3.4 Accuracy: | ±2% |
| 4. Evacuation capacity: | 40 m ³ /h |
| 4.1 End vacuum (abs.): | 25 mbar |
| 4.2 Pump type: | Ring vacuum pump (Leybold SV40B) |
| 5. Filling pump type: | Wing pump (Wilo) |
| 5.1 Displacement: | Max. 60 l/min. |
| 5.2 Pressure range (gage.): | 1.5-4bar |
| 6. Water connection: | |
| 6.1 Allowable inlet pressure: | 3-5 bar |
| 6.2 Temperature range: | 5-40°C |
| 6.3 Inlet filter: | 100 micro |



Technical water (H₂O) specification supplied by customer

Item	Range	Unit
pH	7,0 – 8,5	
Total hardness	< 15	°dH
Carbon hardness	< 4	°dH
Chloride Cl	< 100	mg/l
Sulphate SO ₄	< 150	mg/l
Ammonium NH ₄	< 1	mg/l
Iron Fe	< 0,2	mg/l
Manganese Mn	< 0,1	mg/l
Conductivity	< 100	mS/m
No lubricants		

For trouble free function of the equipment the water must be free of third parties particles as corrosions etc.

If not possible the use of filters are demanded.

Mess size < 50 μm, max. 10mg/m³

7. Glycol connection:

- 7.1 Allowable inlet pressure: 3-5 bar (50 l/min.)
- 7.2 Temperature range: 5-40°C
- 7.3 Inlet filter: 100 micro

8. Air connection:

- 8.1 Allowable inlet pressure: 5.5-10 bar
- 8.2 Air consumption: 100NI/min.
- 8.3 Quality acc. ISO 8573-1: 3.4.2

9. Pressure sensor:

Range (abs.): Ceramic diaphragm (KATU)
1-10 bar

10. Vacuum sensor type:

Ceramic diaphragm (GE-DRUCK)
11.1 Range (abs.): 0.1-350 mbar
11.2 Accuracy: ±0.2% FS

11. Pneumatic:

FESTO/SMC/EMC

Section 3: Filling description



1) Compact Coolant filling equipment:

- Coolant filling equipment
- Hydraulic cabinet
- Control cabinet (Siemens PLC)
- Mix of water and glycol (integrated in the equipment)
- Air pressure test (expansion tank filling)
- Flow counter
- Drum supply (Double)
- Swing arm for single station
- Adaptor



1.1 Coolant filling equipment

Designed for evacuation and pressurized filling of coolant circuits.

Selectable processes: Expansion tank and radiator.

Equipped with 1 drip free automatically operated 3 valve filling head with separated evacuation, filling and leveling hoses.

Holster with switch.

The filling head is provided by a hose management consisting of evacuation, filling and leveling hoses. The filling head is made of a light material and with manual operated coupling sealing against the reservoir.

The hose management is connected to the pump cabinet with manifold for quick exchange. From the filling head a sensor hose is leading back to the pump cabinet where the vacuum sensor is placed. Built-in 80 liter storage tank with a capacity of 45 liter. Filling pressure 1.5 – 4 bar by a negative wing pump.

Evacuation by 40m³/h fluid ring vacuum pump, end vacuum 20 mbar (abs).

Pls. note: Applications with radiator filling, the filling of the pressure less reservoir is done on time without adapting the reservoir.

1.2 Hydraulic cabinet

The hydraulic cabinet with integrated drip-tray contains the stainless steel tank, the filling pump, fluid-ring vacuum pump, the air preparation, the filter, the valve terminal, the sensors and the process valves.



1.3 Control cabinet (Siemens PLC)



Cabinet built together with the pump cabinet with all electrical switch gear and control modules.

The control cabinet has general control modules as control on/off, main switch etc.

The configuration of the unit is possibly made for remote I/O connection, which includes the pneumatic control part.

All sensors are connected with M8/12 approved remote plug terminals if possible.

Siemens S7-1200, Valve Island, Terminals with DI/DO/AI on board and Siemens TP1200 Comfort HMI for parameter settings, monitoring sequence steps with measured scaled values, process faults, equipment faults and alarms. The HMI Controller is visualizing the process parameter, the process sequence with actual and pre-set units, the process faults, the unit faults, alarms and fault log, which can be modified through password protection.



The measurements of the electronic vacuum and pressure sensors can be monitored on the text display.

The process can be performed automatically or step vice.

- 5 push button for channel selection of filling parameters.
- 3 color Tower lamp is included
- Light in control cabinet incl. door switch
- Phase control

Position selector switch for following operator selection:

- 1- Channel selection via Barcode
- 2- Manual channel selection
- 3- Manual channel selection with Barcode on (Barcode will be only read and will be printed in print out)

1.4 Air Pressure test

Air pressure test

Pressure increasing with air typically to 1-4 bar. continued control of major leakage.

1.5 Flow Counter

For monitoring filling amount incl. software



1.6 Mix of Glycol and water

Water and glycol mixing. Range 30/70-70/30% by volume. Accuracy $\pm 2\%$.

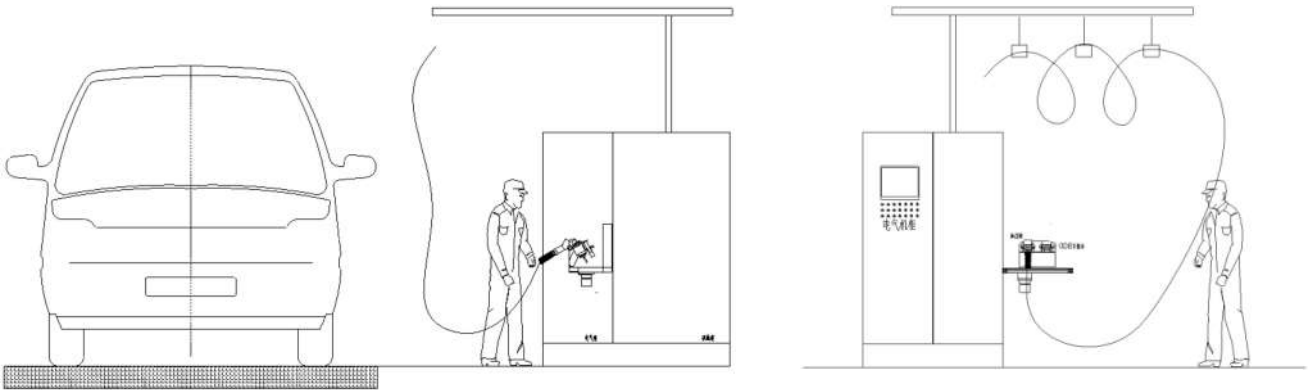
1.7 Drum supply (Double)

Drum supply with change over including 2 off stainless steel dip sticks with integrated level sensor (alarm warning on control cabinet), Dip stick holster (to be used during drum change), diaphragm pneumatic operated pump. Air supply and electrical connection from mobile unit.

Central fluid supply is viable.

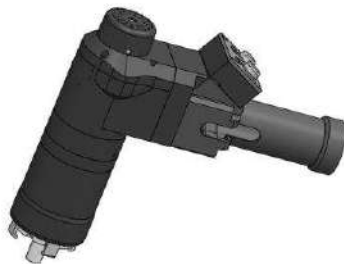
1.8 Swing arm

Strong swing arm is included.
Dimension of swing arm length need to be configured by customer based on field requirements.



1.9 Adaptor

- Built-in three control valves in adaptor
 - ◆ Two for filling and vacuum
 - ◆ One for scavenge
- Ergonomics design, more flexible
- Good appearance, oxidation treatment;
- Selected materials, aviation aluminum alloy
- Long production life
- Easy maintenance
- Light weight



2) Accessories for filling machine operation

2.1 Hand-held bar code reader

Including serial communication interface to the PLC and the printer application program.

The application program includes decoding of the barcode (Vehicle Identification Number) and selection of the 5 channels holding the charging amount.

The application program is limited by:

1. Barcode length of max 30 characters
2. Max two number of indexes (characters) selecting one channel
3. Max five different characters per index

The customer must support bar code information by start of the project.



2.2 EPSON TM-U220D printer

Printer and serial communication interface to the PLC and the filling application program.

The application program includes print-out string of:

Brake example:

VIN No.:	1234567890
Machine:	Brake
Model name:	Golf
Channel no.:	1
ABS Type:	Bosch 8.2 (only on brake)
Result:	OK /NOK (red in case of NOK)
PFaults:	No faults (red in case of a fault)
Operation:	Man / Auto
Date/time:	27/03/2017 09:17

Step	PV / SP
Pre Evacuation	10.0 / 2.0 mbar
Pressure inlet	4.00 / 4.00 bar
Pressure test	3.00 / 4.00 bar
Evacuation	25.0 / 20.0 mbar
Vacuum test	20.0 / 25.0 mbar
Evacuation	25.0 / 20.0 mbar
Filling pressure	3.00 / 2.00 bar
Filling pressure test	2.50 / 3.00 bar
Filling volume	5000 ml
Total process time	66 s



The finale location of the Barcode reader and printer to be agreed .

2.3 Test neck



Test neck is composed of steel neck and ball valve.
Steel neck is made of stainless steel , dimensionally is same as the reservoir.
Test neck is only used to simulate the filling process of evacuation, filling , scavenge.
No any sensor or calibration unit together with test neck.

2.4 Slave adaptor

Slave adaptor for full truck shacman. (reservoirs, drawings and technical information should be provided by customer)

3)Pre acceptance

3.1 MFU

Machine capability analysis before delivery MFU will be based on 25 tests

3.2 Pre-acceptance (FAT)

FAT will be done at SAIL prior to the shipment
Customer should specify if anybody from it's side will be present in this FAT or not.
Cost will update and add to quote accordingly.

4) Installation, test, training & Standby

4.1 Installation and commissioning

Including:

1 Installation Engineer (Local) 5 days
1 Software Engineer (Local) 5 days
Installation material
Travel-and accommodation

Equipment installation

All connections between media supply and console are designed as tubes or hoses
The quotation is based on the assumption that no other installation will take place in the filling area at the same time. Utilities should be prepared by customer before of installation.
Change or delays during the installation will lead to additional cost

Commissioning

Vehicles for testing during the commissioning has to be present
If this is not possible, extra costs will be charged for additional start-up on vehicles.

4.2 Standby & training

Including:

-One person during 5 days for stand by and training.
Stand by should be started immediately after installation and commissioning.
At least 20 completed cars should be prepared before stand by. Any extended stand by period will be led to more costs and should be covered by customer.

Note: consideration of Covid-19, turnkey installation will be done by local representative. Sail guarantee the machines are fully tested and verified for running. Basically this is a few logic need to change.

5)Documentation & Project management



5.1 Documentation

Documentation will be delivered according to SH Standard. Software program, electrical drawings and Electrical parts lists in English

1hard copies + 2 x CD (Software only on CD)

01_Instruction book for installation	2022-04-01 9:53
02_Electrical drawings	2017-01-09 15:18
03_Hydr and Pneu drawings	2022-06-07 17:01
04_Mechanical Drawings	2022-06-08 15:40
05_Electrical material	2022-04-01 9:53
06_Hydr and Pneu material	2022-04-01 9:53
07-PLC program	2022-01-04 9:04
08-Adaptor drawings	2022-04-01 9:53
09-Spare parts	2017-01-09 15:18
10- Training Materials	2017-02-03 11:29
20_Test Report	2017-02-03 13:23

Including:

- PLC program, HMI program

5.2 Project management

Including:

- Project handling
- FAT (Factory Acceptance Test)
- SAT (Site Acceptance Test)

6) Packing

In closed box for secure transportation



Section 4: General Notes, Clarifications, and Exceptions

General Conditions:

- All supply of compressed air, power, and cables for interfaces to network or SCADA, as well as media is not included in this quotation, and should be available in a distance of maximum 1 meter from the above equipment. If not available upon installation start, possible waiting time is to be considered as extra work and will be invoiced as such.
- After receipt of a written purchase order, a project plan will be forwarded to you by our project manager. The milestones stated in the project plan, for which we require answers from you, have to be followed. In case of any delay from your side SAIL cannot be held responsible for the confirmed delivery time.
- Before the design and production of adapters can be started, reservoir or radiator drawings including dimensions and tolerances, as well as reservoirs or radiators (minimum 2 pcs.) for testing purposes must be sent to SAIL. Reservoirs or radiators must be dimensionally stable and suitable for vacuum and pressure charging. Reservoirs must not contain any kind of internal restrictions. Drawings and reservoirs/radiators must be received according to the milestone stated in the forwarded project plan. Possible costs regarding the forwarding of reservoirs or radiators will be carried by you.
- The quotation does not include any kind of steel work.
- In case the quotation includes shipping costs (DDU, CIF etc.), the costs will be based on one complete shipment. If partial shipments will be required, due to reasons for which SAIL cannot be held responsible, extra shipping costs will be considered as extra costs and will be invoiced separately.
- Installation, commissioning, training and standby are based on the complete scope of supply being carried out simultaneously and consecutively. If this is not possible, due to reasons for which SAIL cannot be held responsible, possible extra costs will be considered as extra costs and will be invoiced separately.
- Possible waiting time during the installation, commissioning, training and standby, for which you can be held responsible, will be considered as extra costs and invoiced as such. Further you have to confirm before installation start that sufficient vehicles will be available to carry out an adequate commissioning.
- The equipment shipped from SAIL must not be unpacked without the supervision of an SAIL employee. If this happens, without a separate permission from SAIL, SAIL cannot be held responsible for the condition and functioning of the equipment. The responsibility for transport of the equipment from place of unloading to the installation site is yours. Unless anything else has been agreed upon in the contract, SAIL cannot be held responsible for removal of the packing material.
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- The equipment delivered will be built according to the specifications sent to SAIL and if customer specifications are not available, the equipment will be built according to SAIL specifications. Regarding items not mentioned in your specification or if SAIL indicates not to follow your specification, the SAIL specification delivered together with the quotation will be considered.



- The equipment/parts, quoted as options, are not a part of the scope of delivery (if not expressly stated in the order), and have to be ordered separately.
- FAT (Factory Acceptance Test) is included in this quotation. Possible travel and accommodation costs for your technicians are not included in the quotation. If you do not participate in the FAT, possible discrepancies from the agreed specifications, or modifications which were found and could have been solved during the FAT, cannot be claimed afterwards. Possible agreed changes during FAT, which are not a part of your specifications, cannot delay the already agreed delivery time or influence the payment terms.
- SAT (Site Acceptance Test) is included in this quotation. SAT has to be carried out no later than 1 month after commissioning. If this is not possible, due to reasons for which SAIL cannot be held responsible, the payment has to be made according to agreement.
- Measuring components are supplied with the manufacturer standard conformity certificates to ensure that the components are in accordance with the data of the technical sheets. Any specific calibration certificate is not within the scope of delivery.
- In case of specific customer requirements for demanded components, SAIL is not liable for the application of these components.
- The design of the material and equipment shall be the sole property of SAIL. The only software sources which will be supplied are PLC programming. No PC or embedded software sources shall be supplied. Any transmission to a third party or reproduction of the documentation or trainings books is strictly forbidden. Possible sub supplier information regarding material and equipment supplied under any contract shall not be passed over to buyer until payment in full for the material and equipment has been made.
- Any temporary storage before the installation is under the liability of the buyer, including associated guards fees or charges if storage in customs area. Even in case of temporary storage (whatever the duration) the warranty conditions as described shall apply.
- Prior to signing contracts the customer must verify that his application and/or media can be processed by the quoted material or equipment. The buyer must verify/guarantee that the connection point(s) to the quoted material or equipment do not generate bad performance and/or extension of the cycle time.
- SAIL assumes that above the filling point (reservoir) by fluid applications a free minimum space of 250mm with a diameter of 140mm will be available, if not additional costs might be charged.



Section 5: Delivery and Payment Terms and Conditions

Commercial.

- The delivery time, stated in the quotation, is valid from technical and commercial clarification of the project.
- If the order includes prepayment, the given delivery time is valid from receipt of this payment according to the payment terms agreed upon.
- The warranty period for the quoted equipment is 12 months starting from SAT. However, the warranty period will start no later than 3 months after FAT or 6 months after delivery.
- In case of rebuilding of equipment, the warranty only includes parts, the replacement of which has been agreed upon according to the contract.
- If partial delivery will take place, the equipment/parts will be invoiced according to below terms of payment. Possible extra costs in this regard will be invoiced separately.
- SAIL offers a 24 hour service. A separate commercial agreement shall be made for this with our service department.

Delivery and payment terms:

Delivery time:	22 weeks after receive of order and final technical clarification
Payment:	Confirmed Letter of Credit payable at sight
Warranty:	1 year after installation and final acceptance, but max. 6 months after the date of shipment this installation should be done.
Country of origin:	China
Name and address Of manufacturer:	SAIL No. 917 Bao'an Road, Baoshan District, Shanghai
Validity:	3 months starting from date of issuance of the quotation.



Mechanical side of coolant filling machine

Descriptions	Manuf.	Country
VACUUM PUMP SV40	LEYBOLD	Germany
FLUID PUMP	WILO	Germany
2/2 BALL VALVE G 1/2" BSPP	FESTO	Germany
FILTER 1/2" SAE	ASCO HYDRO	China
AIR UNIT	FESTO	Germany
GAGE	WIKA	Germany
IFM SENSOR	IFM	Germany
TANK 1 (#1)	SAIL	China
TANK 3 (#3)	SAIL	China
TANK 4 (#1)	SAIL	China
ADAPTOR	SAIL	China
2/2 BALL VALVE 3/4" BSPP	FESTO	Germany
2 WAY VALVE – G1/2"	BURKERT/YsmarH	Germany/China
HOLSTER SWITCH	IFM	Germany
GAGE 0-200psi	WIKA	Germany
VACUUM TRANSDUCER 0-250mbar	DRUCK/WIKA	USA/Germany
FLOWMETER	IFM	Germany
PRESSURE TRANSDUCER 0-25bar	DRUCK/WIKA/KATU	USA/Germany
GAGE 0-200psi	WIKA	Germany
MUFFLER 3/4" NPT	SMC	JAPAN
3/2 SOLENOID VALVE 3/8" NPT w/COIL	SMC	JAPAN
2/2 SOLENOID VALVE G1/4" w/ COIL	SMC	JAPAN
AIR PRESSURE SWITCH Rc1/8	SMC	JAPAN
FITTINGS	EATON/PARKER	USA made in china
Air HOSE	SMC/E.MC	JAPAN/China
Hydraulic hose	Gates	France

Electrical side of machine



Descriptions	Manuf.	Country
ENCLOSURE	RITTAL/DongAN	Germany
AIR CONDITIONER	RITTAL/LEIBO	Germany
PLC CPU	SIEMENS	Germany
PLC POWER SUPPLY	SIEMENS	Germany
RELAY OUTPUT	SIEMENS	Germany
POWER SUPPLY 24V DC	SIEMENS	Germany
MMC CARD	SIEMENS	Germany
COMMUNICATION CABLE BETWEEN CPU TO HMI	SIEMENS	Germany
HMI 12	SIEMENS	Germany
HMI CABLE	SIEMENS	Germany
PROGRAM CABLE	SIEMENS	Germany
CONNECTOR 20PIN	SIEMENS	Germany
CONNECTOR 40PIN	SIEMENS	Germany
PARALLELS RAIL	SIEMENS	Germany
MOTOR CIRCUIT BREAKER	SIEMENS/SCHNEIDER	Germany
CIRCUIT BREAKER	SIEMENS/SCHNEIDER	Germany
AUXILLARY FOR CIRCUIT BREAKER	SIEMENS/SCHNEIDER	Germany
CIRCUIT BREAKER	SIEMENS/SCHNEIDER	Germany
RELAY	SIEMENS/SCHNEIDER	Germany
CONTACTOR	SIEMENS/SCHNEIDER	Germany
CABLE	LAPP	Germany
E-STOP MUSHROOM PB	SIEMENS/SCHNEIDER	Germany
GREEN PUSHBUTTON WITH LIGHT	SIEMENS/SCHNEIDER	Germany
RED LIGHT	SIEMENS/SCHNEIDER	Germany
PUSHBUTTON	SIEMENS/SCHNEIDER	Germany
GREEN LIGHT	SIEMENS/SCHNEIDER	Germany
2 WAY ROTARY PB	SIEMENS/SCHNEIDER	Germany
2 CONTACT FOR PB	SIEMENS/SCHNEIDER	Germany
LED LIGHT	SIEMENS/SCHNEIDER	Germany
NAMEPLATE	SIEMENS/SCHNEIDER	Germany
TABLE	SIEMENS/SCHNEIDER	Germany
FUSE CARRIER	SIEMENS/SCHNEIDER	Germany
FUSE 20A	SIEMENS/SCHNEIDER	Germany
AUDIBLE ALARM & BEACON	MOELLER	Germany
MAIN ISOIATE SWITCH	MOELLER	Germany
EARTH LEAKAGE UNIT 24VDC	WEIDMULLER	Germany
EARTH LEAKAGE UNIT 220VAC	WEIDMULLER	Germany
CONTROL TERMINALS-WDU2.5	WEIDMULLER	Germany
MOTOR TERMINALS-WDU 4	WEIDMULLER	Germany

