

Department of Chemistry,  
University of Mumbai,  
No. :  
Date: October, 2013

To,

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Separate, Sealed Quotation/Tender for purchase of following items is invited, for and on behalf of University of Mumbai by the Head, Department of Chemistry, University of Mumbai, so as to reach him in his office latest by 4.00 p.m. on Saturday, 2<sup>nd</sup> November 2013.

1. Thermogravimetric Analyser and Differential Scanning Calorimeter
2. Rotary Vacuum Evaporator
3. Diaphragm Vacuum Pump

Blank forms containing terms and conditions of supply and technical specifications are available at the office of the Head, Department of Chemistry, University of Mumbai, on all working days between 11.00 a.m. and 4.00 p.m. from Monday, 14<sup>th</sup> October 2013 to Saturday, 2<sup>nd</sup> November 2013, on payment of ₹ 500.00 (₹ Five Hundred only) in cash OR can be downloaded from our website <http://mu.ac.in/tenders.html> and submitted alongwith a DD of ₹ 500.00 (₹ Five Hundred only) in favour of 'Finance and Accounts Officer, University of Mumbai'. The quotation/tender duly complete in all respects, along with the necessary documents should be submitted to the Head, Department of Chemistry, University of Mumbai, latest by 4.00 p.m. on Saturday, 2<sup>nd</sup> November 2013.

The quotations/tenders so received, shall be opened on Thursday, 7<sup>th</sup> November 2013, at 11.30 a.m., in the office of the Head, Department of Chemistry, University of Mumbai, Lokmanya Tilak Bhavan, Vidyanagari, Santacruz (E), Mumbai, 400 098, in presence of representatives of the suppliers. Right to reject any or all tenders, without assigning any reason thereof, is reserved by the University of Mumbai.

Sd/-  
(Dr. V. R. Ajgaonkar)  
Prof. & Head,  
Department of Chemistry,  
University of Mumbai.

**Department of Chemistry**  
**University of Mumbai**  
Lokmanya Tilak Bhavan, Vidyanagari  
Santacruz (E), Mumbai - 400 098  
Phone: 26543587/26543354  
Fax: 26528547

**Tender Document**  
**Date: 14<sup>th</sup> October, 2013**  
Part A - Terms and conditions  
Part B - Specifications  
Price ₹ 500.00 (non refundable)

**Important Dates**

Sale of Tender forms	Monday, 14 <sup>th</sup> October 2013 to Saturday, 2 <sup>nd</sup> November 2013. (All working days, from 11.00 a.m. to 4.00 p.m. except Sundays, 2 <sup>nd</sup> and 4 <sup>th</sup> Saturdays and Public Holidays)
Last Date for receiving sealed Tenders	Saturday, 2 <sup>nd</sup> November 2013 upto 4.00 p.m.
Date of Opening of Tenders	Thursday, 7 <sup>th</sup> November 2013; at 11.30 am.

**Head, Department of Chemistry**  
**(Seal & sign)**

**Department of Chemistry**  
**University of Mumbai**  
Lokmanya Tilak Bhavan, Vidyanagari  
Santacruz (E), Mumbai - 400 098  
Phone: 26543587/26543354  
Fax: 26528547

**Tender Document**  
**Date: 14<sup>th</sup> October, 2013**

Part A -Terms and Conditions of Supply

**Thermogravimetric Analyser and  
Differential Scanning Calorimeter**

## Part A -Terms and Conditions

1. The last date and time for the acceptance of the quotation / Tender is Saturday, 2<sup>nd</sup> November 2013 upto 4.00 p.m.
2. The tenderers shall submit the following documents along with their quotations / tenders.
  - a. Income tax clearance certificate, from the Income Tax officer concerned, certifying that the tenderer has cleared all the Income Tax dues.
  - b. Suppliers should state whether they are a Propriety Firm, Partnership Firm or a Private / Public Limited Company and furnish a profile of the firm / company. They should also clearly mention whether they are manufacturers, authorized dealers or retail suppliers.
  - c. The names of the organizations and the offices to which similar supplies have been made.
  - d. Earnest Money Deposit in the form of Demand Draft in favour of Finance and Accounts Officer, University of Mumbai, on any Scheduled / Nationalized Bank payable at Mumbai.
  - e. Sales Tax Registration No. / VAT Registration No.
  - f. Technical specifications offered by the Supplier, Proprietary Certificate (if any).
  - g. Vendor must submit Compliance statement in tabular form comparing each specification of the quoted item with that given in the Tender Document part B.
3. The rates should be mentioned in the Schedule attached with the tender / quotation paper. Each page of the tender shall be signed in full and stamped with the seal by supplier. The supplier must clearly state in what capacity he or she is signing the tender.
4. The tenderers shall submit the tender in two envelopes. The first envelope (Technical Bid) shall contain all the documents referred to in Para 2 above and shall be sealed. The second envelope (Commercial Bid) shall contain the **Schedule**, in which the supplier shall register the rates of supply. The second envelope shall also, likewise, be sealed. Both the envelopes then should be put together and shall be sealed in an envelope, and shall be submitted to the University by the prescribed time and date. The Technical Bid shall be opened first to ensure that the tenderers have submitted all the requisite documents. If the Technical Bids are not in order or are deficient in some respect, the Commercial Bids in respect of such tenders shall not be opened.
5. The amount of Earnest Money Deposit shall be 5% of the cost of supply subject to a maximum of ₹ 1,00,000.00 (₹ One Lakh only). The Earnest Money Deposit should be in the form of Bank Draft drawn on a nationalized / scheduled bank (payable at Mumbai) in favour of the '**Finance and Accounts Officer, University of Mumbai**', Fort Campus, Mumbai - 400 032 and must be enclosed with the Technical Bid.
6. Tenders / quotations not accompanied by the requisite amount of Earnest Money Deposit shall be rejected.
7. The amount of Security Deposit / Performance Guarantee shall be 5% of the cost. In case of successful tenderers the amount of Earnest Money Deposit shall be converted into Security Deposit / Performance Guarantee and shall be refunded after the warranty period is over.
8. Supplier should read carefully all the instructions and terms and conditions, etc., before registering rates in prescribed schedule of the tender. Taxes and duties etc. should be shown separately.

9. The offers made by the suppliers shall be open for acceptance for 120 days after the last date of submission of tender.
10. The quotation shall be opened by the Head, Department of Chemistry in his office **on Thursday, 7<sup>th</sup> November 2013**. The tenderers or their authorized representatives shall be allowed to be present at the time of opening of the tenders.
11. In case of imported items / equipments the rates should be quoted in the light of exemptions enjoyed by educational institutions. The University is exempted from payment of Customs/Excise duty, Octroi; and the necessary certificates / forms can be issued by the University.
12. Technical specifications of the instrument / equipment are given in the Annexure of these papers (Part B).
13. The delivery time of instrument / equipment should be clearly mentioned in the tender. No extension shall be granted to the contractors / suppliers for the period of delivery mentioned in the tender, under any circumstances.
14. If the supplier fails to deliver the article as per the delivery schedule, the University of Mumbai shall be free to procure the balance / undelivered supply, at the risk and cost of such supplier.
15. The goods, article, material supplied by the contractor shall be accepted after inspection by an officer authorized by the competent authority. No article / material which do not conform to the specifications laid down in the terms and conditions or damaged in transit or otherwise, shall be accepted.
16. The bills of the suppliers shall be paid by the University after all the article/ material/ instrument / equipment have been received, inspected as above.
17. The warranty period shall be at least for one year from the date of installation.
18. Supplier should give free service at least for three years after the warranty is over.
19. Service Support should be from Factory trained Engineers; specifying the no. of Engineers with their names, mobile numbers, base location, Response time, etc.
20. A list of spares/consumables required for hassle free functioning of the instrument for at least two years should be quoted additionally.
21. Undertaking from the manufacturer that parts will be made available at least for next ten years even after discontinuation of the supplied model is necessary.
22. Supplier should have at least five orders from Institutions / Laboratories in the past three years (copies of the PO to be attached).
23. The detailed operational training should be provided by the competent Engineers during the time of installation.

24. As the supplier shall be responsible for the supply and installation of the material at the Department of Chemistry, University of Mumbai; the cost towards loading/unloading, insurance, etc. shall be borne by the suppliers.
25. Without any purchase commitment, inspection/demonstration should be arranged at the cost of the supplier for the quoted material at two places in Mumbai.
26. In the event of any breach of the terms and conditions of the supply, the University of Mumbai may terminate the contract placed with the supplier and forfeit the EMD/Security Deposit of the supplier.

## SCHEDULE TO TENDER

**Note:**

1. Tenderers are advised to read carefully the Terms and Conditions of supply and "the Instructions to the tenderers" before recording the rates in this schedule.
2. No erasures or overwriting shall be allowed, unless they are authenticated under the full signature and seal of the tenderers.
3. The Rates shall be FOR, at destinations / godowns/ places indicated in the delivery.

Item No.	Description of goods with details of specifications	Number/Quantity	Price / Rate per Unit	Taxes, Duties etc.

Full Signature of Tenderer

(Seal of the Firm/Company)

**Department of Chemistry**  
**University of Mumbai**  
Lokmanya Tilak Bhavan, Vidyanagari  
Santacruz (E), Mumbai - 400 098  
Phone: 26543587/26543354  
Fax: 26528547

**Tender Document**  
**Date: 14<sup>th</sup> October, 2013**

Part B - Technical Specifications

**Thermogravimetric Analyser and  
Differential Scanning Calorimeter**



**SPECIFICATIONS FOR SUPPLY OF THERMOGRAVIMETRIC ANALYSER AND DIFFERENTIAL SCANNING CALORIMETER.**

**TGA System with Modular concept:**

Sr. No.	Specification	
1	Temperature Range	From Room temp to 1100°C with temperature precision of +/- 0.4°C. Sample should follow the program temperature up to 1100°C . System should take into account the temp. lag & correct for same
2	Furnace	Horizontal Design to give stable weight signal.
3	Sample holders	Easy simple to exchange type.
4	Heating Rate	0.02 to 250 K/min (Sample insert and remove at any preset temperature)
5	Balance Design	Ultra micro weight change measurements should not be dependent on sample positioning. Thermo stated balance housing with auto calibration facility with built-in-weights.
6	Balance measurement range	1 gm upgradeable to 5gm without range switching and 1 µgm resolution for complete measurement range.
7	Blank curve reproducibility	Better than +/- 10µg for complete temp. range
8	Balance Repeatability	Less than or equal to 1 µg or better
9	Balance Linearity	Less than or equal to 4 µg or better
10	Sampling rate	10 values/second
11	Weighing accuracy	0.005%
12	Weighing precision	0.0025%
13	Thermostat for balance (Water cooled)	Temperature accuracy: +/- 0.01 °C Stability of balance temp. at 22°C: +/-0.1°C
14	EGA Option	Horizontal design compatible with FTIR, MS, Sorption/Humidity generator/measurement system etc.
15	Flow meter	40-360ml/min with N2 for purge gas - furnace & protective gas for balance 2 nos.
16	Software	Common software to run both TG and DSC simultaneously with multitasking, PEAK TEMPERATURE, STEP CALC. with horizontal or tangential regression lines, tables, DTA®, 2 <sup>nd</sup> & higher derivative, blank curve subtraction, normalisation, signal deconvolution, X-scaling with respect to time, temperature, sample temperature; result documentation settings using single step, multi-step or multi-limit, auto-limit; choice of different baselines for interpretation (line, tangential, integral) etc.
17	Calibration	Temperature adjustment with Curie reference substances. <i>System should not need recalibration when changing crucible, gases and heating rates.</i>
18	Crucible	Alumina 70 µl.
19	Auto Sampler	To be quoted optionally

## DSC Specifications:

Fully modular Modulated Differential Scanning Calorimeter (MDSC) operating on *Heat Flux* Principle. System should be able to measure 'Reversing and Non-reversing effects, Measurement of Sensible and Latent heat flow, Direct Cp measurements' using Temp. Modulation Multi-frequency technique & operate in both Modulated and Un-modulated modes. Heat flow measurements in Static as well as Dynamic Gas Atmospheres essential. System should provide raw data without mathematical treatment / deconvolution / smoothing / baseline correction.

Sr. No.	Specification	
1	Temperature range	-35 to 700° C with Intra-cooler (refrigerated cooling system). Measurement from -35° C to 700° C in one single run.
2	Temp. accuracy	+/- 0.2° C
3	Temp. precision	+/- 0.02° C
4	Furnace temp. resolution	0.00006° C
5	Heating rate	0.02 to 300° C/min.
6	Controlled Cooling rate	0.02 to 50° C/min.
7	Pressure	Ambient
8	Sensor	Ceramic, Corrosion resistant, exchangeable type heat flow measurement with multiple-thermopiles offering low signal time constant of 1 - 2 s
9	Noise (isothermal) RMS	Less than 0.7µW
10	Noise (dynamic) RMS	Less than 0.7µW
11	Resolution	Greater than 16 million points, 0.04µW
12	Data Sampling rate	50 values per second
13	Purge gas	Inert, reactive & static.
14	DSC Amplifier range	+/- 350mW (700mW)
15	Reproducibility of zero (0) in µW	+/- 30µW
16	Reproducibility of Peak integration	0.2%
17	Accuracy of Enthalpy measurement	Less than 1% Indium
18	Crucibles	Wide choice viz. Al 40µl, 160µl with or without lids with a Sealing press to analyze different types of samples. System should be upgradeable for running Safety studies experiments with Gold plated crucibles.
19	Calibration standards	Should be provided with tool kit for both temperature & Heat flow.
20	Software	Software should enable automatic / manual on-line data acquisition and display of running measurements, Calibration. The multi-tasking software should facilitate storage of both raw DSC data as well as deconvoluted data in the form of standard DSC curves. The s/w should have the facility of choosing different baseline e.g. line, tangential, horizontal, spline, Integral tangential, polygon line etc for correct

		evaluation/integration of peaks. Options for Baseline correction, data smoothing, plot expansion, Curve overlay, Font selection etc. should be provided. Storage of results in tabular form (ASCII format) should be facilitated. Software option enabling Multi-frequency analysis in the modulated profile of the DSC run should be available as option.
21	Power supply	220V/50Hz
22	Auto Sampler	To be quoted optionally
<b>System should not need recalibration while changing crucible, gases and heating rates.</b>		

**Latest configuration PC of international brand with LED/TFT monitor, suitable licensed operating system and colour LaserJet printer to be quoted separately.**

Any other items required for making the instruments functional and to be procured locally should be quoted separately in Indian rupees.

**Department of Chemistry**  
**University of Mumbai**  
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Phone: 26543587/26543354  
Fax: 26528547

**Tender Document**  
**Date: 14<sup>th</sup> October, 2013**

Part A -Terms and Conditions of Supply

**Rotary Vacuum Evaporator (2 Nos)**

## Part A -Terms and Conditions

1. The last date and time for the acceptance of the quotation / Tender is Saturday, 2<sup>nd</sup> November 2013 upto 4.00 p.m.
2. The tenderers shall submit the following documents along with their quotations / tenders.
  - a. Income tax clearance certificate, from the Income Tax officer concerned, certifying that the tenderer has cleared all the Income Tax dues.
  - b. Suppliers should state whether they are a Propriety Firm, Partnership Firm or a Private / Public Limited Company and furnish a profile of the firm / company. They should also clearly mention whether they are manufacturers, authorized dealers or retail suppliers.
  - c. The names of the organizations and the offices to which similar supplies have been made.
  - d. Earnest Money Deposit in the form of Demand Draft in favour of Finance and Accounts Officer, University of Mumbai, on any Scheduled / Nationalized Bank payable at Mumbai.
  - e. Sales Tax Registration No. / VAT Registration No.
  - f. Technical specifications offered by the Supplier, Proprietary Certificate (if any).
  - g. Vendor must submit Compliance statement in tabular form comparing each specification of the quoted item with that given in the Tender Document part B.
3. The rates should be mentioned in the Schedule attached with the tender / quotation paper. Each page of the tender shall be signed in full and stamped with the seal by supplier. The supplier must clearly state in what capacity he or she is signing the tender.
4. The tenderers shall submit the tender in two envelopes. The first envelope (Technical Bid) shall contain all the documents referred to in Para 2 above and shall be sealed. The second envelope (Commercial Bid) shall contain the **Schedule**, in which the supplier shall register the rates of supply. The second envelope shall also, likewise, be sealed. Both the envelopes then should be put together and shall be sealed in an envelope, and shall be submitted to the University by the prescribed time and date. The Technical Bid shall be opened first to ensure that the tenderers have submitted all the requisite documents. If the Technical Bids are not in order or are deficient in some respect, the Commercial Bids in respect of such tenders shall not be opened.
5. The amount of Earnest Money Deposit shall be 5% of the cost of supply subject to a maximum of ₹ 50,000.00 (₹ Fifty thousand only). The Earnest Money Deposit should be in the form of Bank Draft drawn on a nationalized / scheduled bank (payable at Mumbai) in favour of the **'Finance and Accounts Officer, University of Mumbai'**, Fort Campus, Mumbai - 400 032 and must be enclosed with the Technical Bid.
6. Tenders / quotations not accompanied by the requisite amount of Earnest Money Deposit shall be rejected.
7. The amount of Security Deposit / Performance Guarantee shall be 5% of the cost. In case of successful tenderers the amount of Earnest Money Deposit shall be converted into Security Deposit / Performance Guarantee and shall be refunded after the warranty period is over.

8. Supplier should read carefully all the instructions and terms and conditions, etc., before registering rates in prescribed schedule of the tender. Taxes and duties etc. should be shown separately.
9. The offers made by the suppliers shall be open for acceptance for 120 days after the last date of submission of tender.
10. The quotation shall be opened by the Head, Department of Chemistry in his office **on Thursday, 7<sup>th</sup> November 2013**. The tenderers or their authorized representatives shall be allowed to be present at the time of opening of the tenders.
11. In case of imported items / equipments the rates should be quoted in the light of exemptions enjoyed by educational institutions. The University is exempted from payment of Customs/Excise duty, Octroi; and the necessary certificates / forms can be issued by the University.
12. Technical specifications of the instrument / equipment are given in the Annexure of these papers (Part B).
13. The delivery time of instrument / equipment should be clearly mentioned in the tender. No extension shall be granted to the contractors / suppliers for the period of delivery mentioned in the tender, under any circumstances.
14. If the supplier fails to deliver the article as per the delivery schedule, the University of Mumbai shall be free to procure the balance / undelivered supply, at the risk and cost of such supplier.
15. The goods, article, material supplied by the contractor shall be accepted after inspection by an officer authorized by the competent authority. No article / material which do not conform to the specifications laid down in the terms and conditions or damaged in transit or otherwise, shall be accepted.
16. The bills of the suppliers shall be paid by the University after all the article/ material/ instrument / equipment have been received, inspected as above.
17. The warranty period shall be at least for one year from the date of installation.
18. Supplier should give free service at least for three years after the warranty is over.
19. Service Support should be from Factory trained Engineers; specifying the no. of Engineers with their names, mobile numbers, base location, Response time, etc.
20. A list of spares/consumables required for hassle free functioning of the instrument for at least two years should be quoted additionally.
21. Undertaking from the manufacturer that parts will be made available at least for next ten years even after discontinuation of the supplied model is necessary.
22. Supplier should have at least five orders from Institutions / Laboratories in the past three years (copies of the PO to be attached).

23. The detailed operational training should be provided by the competent Engineers during the time of installation.
24. As the supplier shall be responsible for the supply and installation of the material at the Department of Chemistry, University of Mumbai; the cost towards loading/unloading, insurance, etc. shall be borne by the suppliers.
25. Without any purchase commitment, inspection/demonstration should be arranged at the cost of the supplier for the quoted material at two places in Mumbai.
26. In the event of any breach of the terms and conditions of the supply, the University of Mumbai may terminate the contract placed with the supplier and forfeit the EMD/Security Deposit of the supplier.

## SCHEDULE TO TENDER

**Note:**

1. Tenderers are advised to read carefully the Terms and Conditions of supply and "the Instructions to the tenderers" before recording the rates in this schedule.
2. No erasures or overwriting shall be allowed, unless they are authenticated under the full signature and seal of the tenderers.
3. The Rates shall be FOR, at destinations / godowns/ places indicated in the delivery.

Item No.	Description of goods with details of specifications	Number/Quantity	Price / Rate per Unit	Taxes, Duties etc.

Full Signature of Tenderer

(Seal of the Firm/Company)



**Department of Chemistry**  
**University of Mumbai**  
Lokmanya Tilak Bhavan, Vidyanagari  
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Phone: 26543587/26543354  
Fax: 26528547

**Tender Document**  
**Date: 14<sup>th</sup> October, 2013**

Part B - Technical Specifications

**Rotary Vacuum Evaporator (2 Nos)**

## **SPECIFICATIONS FOR SUPPLY OF ROTARY VACUUM EVAPORATOR (2 Nos).**

- Motorised lift with manual by-pass in case of power failure available as standard.
  - Digital RPM indication with AC drive.
  - Rotation speed: 30 to 270 rpm
  - Digital water cum oil Bath: Temp range ambient + 5°C to 180°C.
  - **Vertical Glass Set** - consisting of:
    - Flask Adapter B-29
    - Pear shaped evaporating flask cap. **1 lit B-29**
    - Round bottom receiver flask cap. **1 lit S-35**
  - **Vertical Condenser** with 1200cm<sup>2</sup> cooling area.
- PTFE Feed Tube with PTFE feed stop cock.
- Power supply: 230 V, 50 Hz, single phase.

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**Tender Document**  
**Date: 14<sup>th</sup> October, 2013**

Part A -Terms and Conditions of Supply

**Diaphragm Vacuum Pump**

## Part A -Terms and Conditions

1. The last date and time for the acceptance of the quotation / Tender is Saturday, 2<sup>nd</sup> November 2013 upto 4.00 p.m.
2. The tenderers shall submit the following documents along with their quotations / tenders.
  - a. Income tax clearance certificate, from the Income Tax officer concerned, certifying that the tenderer has cleared all the Income Tax dues.
  - b. Suppliers should state whether they are a Propriety Firm, Partnership Firm or a Private / Public Limited Company and furnish a profile of the firm / company. They should also clearly mention whether they are manufacturers, authorized dealers or retail suppliers.
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  - f. Technical specifications offered by the Supplier, Proprietary Certificate (if any).
  - g. Vendor must submit Compliance statement in tabular form comparing each specification of the quoted item with that given in the Tender Document part B.
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5. The amount of Earnest Money Deposit shall be 5% of the cost of supply subject to a maximum of ₹ 25,000.00 (₹ Twenty five thousand only). The Earnest Money Deposit should be in the form of Bank Draft drawn on a nationalized / scheduled bank (payable at Mumbai) in favour of the '**Finance and Accounts Officer, University of Mumbai**', Fort Campus, Mumbai - 400 032 and must be enclosed with the Technical Bid.
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7. The amount of Security Deposit / Performance Guarantee shall be 5% of the cost. In case of successful tenderers the amount of Earnest Money Deposit shall be converted into Security Deposit / Performance Guarantee and shall be refunded after the warranty period is over.

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22. Supplier should have at least five orders from Institutions / Laboratories in the past three years (copies of the PO to be attached).

23. The detailed operational training should be provided by the competent Engineers during the time of installation.
24. As the supplier shall be responsible for the supply and installation of the material at the Department of Chemistry, University of Mumbai; the cost towards loading/unloading, insurance, etc. shall be borne by the suppliers.
25. Without any purchase commitment, inspection/demonstration should be arranged at the cost of the supplier for the quoted material at two places in Mumbai.
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## SCHEDULE TO TENDER

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Full Signature of Tenderer

(Seal of the Firm/Company)

**Department of Chemistry**  
**University of Mumbai**  
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**Tender Document**  
**Date: 14<sup>th</sup> October, 2013**

Part B - Technical Specifications

**Diaphragm Vacuum Pump**



## **SPECIFICATIONS FOR SUPPLY OF DIAPHRAGM VACUUM PUMP.**

- Vacuum capacity down to 7 MBAR
- Two vacuum ports for operating simultaneously two applications
- Volume flow rate 50/60 Hz 2.0/2.3m<sup>3</sup>/h
- 230 V ~ 50-60 Hz voltage capacity
- Inlet connection (IN)- Hose nozzle DN 10 mm
- Outlet connection (EX)- Hose nozzle DN 10 mm
- Coolant connection 2 x hose nozzle DN 6-8 mm
- Dimensions (L x W x H) mm 326 x 248 x 402