

बिड दस्तावेज़ / Bid Document

| बिड विवरण/Bid Details | |
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| बिड बंद होने की तारीख/समय /Bid End Date/Time | 02-06-2026 17:00:00 |
| बिड खुलने की तारीख/समय /Bid Opening Date/Time | 02-06-2026 17:30:00 |
| बिड पेशकश वैधता (बंद होने की तारीख से)/Bid Offer Validity (From End Date) | 180 (Days) |
| मंत्रालय/राज्य का नाम/Ministry/State Name | Ministry Of Ports, Shipping And Waterways |
| विभाग का नाम/Department Name | Na |
| संगठन का नाम/Organisation Name | Directorate General Of Lighthouses And Lightships |
| कार्यालय का नाम/Office Name | Gandhidham |
| कुल मात्रा/Total Quantity | 11 |
| वस्तु श्रेणी /Item Category | Magnetrons of X-band and S-band Radars of VTS-GoK |
| GeMARPTS में खोजी गई स्ट्रिंग्स / Searched Strings used in GeMARPTS | Supply of Magnetrons of X-band and S-band Radars of VTS-GoK |
| GeMARPTS में खोजा गया परिणाम / Searched Result generated in GeMARPTS | Plaster of Paris Bandage Conforming to IS 4738, Cotton Towelling And Towels (V3) Conforming To IS 7056, Package No 4 - Atal Tinkering Lab of Niti Aayog Power Supply and Accessories and Safety Equipment, Multiband Ligator, Revolving Chair (V5), Handloom Blanket (V2), Shoes Black Non-Slip for Camouflage Rig ICG |
| अधिसूचना के लिए चयनित प्रासंगिक श्रेणियाँ / Relevant Categories selected for notification | <ul style="list-style-type: none"> • Non Linear Junction Evaluator (NLJE) as per MHA QRs |
| बिडर का न्यूनतम औसत वार्षिक टर्नओवर (3 वर्षों का) /Minimum Average Annual Turnover of the bidder (For 3 Years) | 30 Lakh (s) |
| मूल उपकरण निर्माता का औसत टर्नओवर (गत 3 वर्षों का)/OEM Average Turnover (Last 3 Years) | 30 Lakh (s) |
| उन्हीं/समान सेवा के लिए अपेक्षित विगत अनुभव के वर्ष/Years of Past Experience Required for same/similar service | 3 Year (s) |
| एमएसएमई के लिए अनुभव के वर्षों और टर्नओवर से छूट प्रदान की गई है/MSE Relaxation for Years of Experience and Turnover | No |

| बिड विवरण/Bid Details | |
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| स्टार्टअप के लिए अनुभव के वर्षों और टर्नओवर से छूट प्रदान की गई है / Startup Relaxation for Years of Experience and Turnover | No |
| विक्रेता से मांगे गए दस्तावेज़/ Document required from seller | Experience Criteria,Past Performance,Bidder Turnover,Certificate (Requested in ATC),OEM Authorization Certificate,OEM Annual Turnover,Additional Doc 1 (Requested in ATC),Compliance of BoQ specification and supporting document *In case any bidder is seeking exemption from Experience / Turnover Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer |
| क्या आप निविदाकारों द्वारा अपलोड किए गए दस्तावेज़ों को निविदा में भाग लेने वाले सभी निविदाकारों को दिखाना चाहते हैं? संदर्भ में नू है/ Do you want to show documents uploaded by bidders to all bidders participated in bid? | Yes (Documents submitted as part of a clarification or representation during the tender/bid process will also be displayed to other participated bidders after log in) |
| बिड लगाने की समय सीमा स्वतः नहीं बढ़ाने के लिए आवश्यक बिड की संख्या। / Minimum number of bids required to disable automatic bid extension | 2 |
| दिनों की संख्या, जिनके लिए बिड लगाने की समय-सीमा बढ़ाई जाएगी। / Number of days for which Bid would be auto-extended | 3 |
| ऑटो एक्सटेंशन अधिकतम कितनी बार किया जाना है। / Number of Auto Extension count | 1 |
| विगत प्रदर्शन / Past Performance | 80 % |
| बिड से रिवर्स नीलामी सक्रिय किया/ Bid to RA enabled | No |
| बिड का प्रकार/ Type of Bid | Two Packet Bid |
| तकनीकी मूल्यांकन के दौरान तकनीकी स्पष्टीकरण हेतु अनुमत समय / Time allowed for Technical Clarifications during technical evaluation | 2 Days |
| निरीक्षण आवश्यक (सूचीबद्ध निरीक्षण प्राधिकरण /जेम के साथ पूर्व पंजीकृत एजेंसियों द्वारा)/ Inspection Required (By Empanelled Inspection Authority / Agencies pre-registered with GeM) | No |
| मूल्यांकन पद्धति/ Evaluation Method | Total value wise evaluation |
| वित्तीय दस्तावेज की आवश्यकता है / Financial Document Required | Yes |
| मध्यस्थता खंड/ Arbitration Clause | No |
| सुलह खंड/ Mediation Clause | No |

ईएमडी विवरण/EMD Detail

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|-----------------------------|---------------------|
| एडवाइजरी बैंक/Advisory Bank | State Bank of India |
| ईएमडी राशि/EMD Amount | 171100 |

ईपीबीजी विवरण /ePBG Detail

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|---|---------------------|
| एडवाइजरी बैंक/Advisory Bank | State Bank of India |
| ईपीबीजी प्रतिशत (%) /ePBG Percentage(%) | 5.00 |
| ईपीबीजी की आवश्यक अवधि (माह) /Duration of ePBG required (Months). | 27 |

(a). जेम की शर्तों के अनुसार ईएमडी छूट के इच्छुक बिडर को संबंधित केटेगरी के लिए बिड के साथ वैध समर्थित दस्तावेज प्रस्तुत करने हैं। एमएसई केटेगरी के अंतर्गत केवल वस्तुओं के लिए विनिर्माता तथा सेवाओं के लिए सेवा प्रदाता ईएमडी से छूट के पात्र हैं। व्यापारियों को इस नीति के दायरे से बाहर रखा गया है।/EMD EXEMPTION: The bidder seeking EMD exemption, must submit the valid supporting document for the relevant category as per GeM GTC with the bid. Under MSE category, only manufacturers for goods and Service Providers for Services are eligible for exemption from EMD. Traders are excluded from the purview of this Policy.

(b).ईएमडी और संपादन जमानत राशि, जहां यह लागू होती है, लाभार्थी के पक्ष में होनी चाहिए। / EMD & Performance security should be in favour of Beneficiary, wherever it is applicable.

लाभार्थी /Beneficiary :

Deputy Director General-VTS

Directorate General of Lighthouses and Lightships, VTS Gandhidham, Plot 17 Sector 8 Deep Bhawan Gandhidham Kutch Gujarat 370201

(Deputy Director General)

बोली विभाजन लागू नहीं किया गया/ Bid splitting not applied.

एमआईआई खरीद वरीयता / MII Purchase Preference

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| एमआईआई खरीद वरीयता / MII Purchase Preference | Yes |
| मेक इन इंडिया विक्रेताओं को खरीद में प्राथमिकता, यदि उनका मूल्य L1+X% तक की सीमा में है / Purchase Preference to MII sellers available upto price within L1+X% | 20 |
| मेक इन इंडिया खरीद में प्राथमिकता के लिए बिड की मात्रा का अधिकतम प्रतिशत / Maximum Percentage of Bid quantity for MII purchase preference | 50 |

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| सार्वजनिक खरीद (मेक-इन-इंडिया को प्राथमिकता) आदेश 2017 के अनुसार केवल क्लास 1/क्लास 2 के स्थानीय आपूर्तिकर्ताओं को ही भागीदारी की अनुमति है दिनांक 16.09.2020 (समय-समय पर संशोधित एवं लागू) / Allow participation only from Class 1/Class 2 local suppliers as per the Public procurement(Preference to Make-in-india) order 2017 date 16.09.2020(as amended and applicable time to time) | Yes, in compliance with the MII ORDER : DPIIT Order(as amended and applicable time to time) |
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एमएसई खरीद वरीयता/MSE Purchase Preference

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|--|-----|
| एमएसई खरीद वरीयता/MSE Purchase Preference | Yes |
| सूक्ष्म और लघु उद्यम मूल उपकरण निर्माताओं को खरीद में प्राथमिकता, यदि उनका मूल्य $L1+X\%$ तक की सीमा में हो / Purchase Preference to MSE OEMs available upto price within $L1+X\%$ | 15 |
| सूक्ष्म और लघु उद्यम को खरीद में प्राथमिकता के लिए बिड की मात्रा का अधिकतम प्रतिशत / Maximum Percentage of Bid quantity for MSE purchase preference | 25 |

1. The minimum average annual financial turnover of the bidder during the last three years, ending on 31st March of the previous financial year, should be as indicated above in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution / incorporation of the bidder is less than 3-year-old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criteria.
2. Experience Criteria: In respect of the filter applied for experience criteria, the Bidder or its OEM of the product offered in the bid {themselves or through reseller(s)} should have regularly, manufactured and supplied same or similar Category Products to any Central / State Govt Organization / PSU for number of Financial years as indicated above in the bid document before the bid opening date. Copies of relevant contracts and delivery acceptance certificates like CRAC to be submitted along with bid in support of having supplied some quantity during each of the Financial year. In case of bunch bids, the category of primary product having highest value should meet this criterion.
3. OEM Turn Over Criteria: The minimum average annual financial turnover of the OEM of the offered product during the last three years, ending on 31st March of the previous financial year, should be as indicated in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution / incorporation of the OEM is less than 3 year old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criteria.
4. Preference to Make In India products (For bids < 200 Crore):Preference shall be given to Class 1 local supplier as defined in public procurement (Preference to Make in India), Order 2017 as amended from time to time and its subsequent Orders/Notifications issued by concerned Nodal Ministry for specific Goods/Products. The minimum local content to qualify as a Class 1 local supplier is denoted in the bid document. If the bidder wants to avail the Purchase preference, the bidder must upload a certificate from the OEM regarding the percentage of the local content and the details of locations at which the local value addition is made along with their bid, failing which no purchase preference shall be granted. In case the bid value is more than Rs 10 Crore, the declaration relating to percentage of local content shall be certified by the statutory auditor or cost auditor, if the OEM is a company and by a practicing cost accountant or a chartered accountant for OEMs other than companies as per the Public Procurement (preference to Make-in -India) order 2017 dated 04.06.2020. Only Class-I and Class-II Local suppliers as per MII order dated 4.6.2020 will be eligible to bid. Non - Local suppliers as per MII order dated 04.06.2020 are not eligible to participate. However, eligible micro and small enterprises will be allowed to participate .The buyers are advised to refer the OM No.F.1/4/2021-PPD dated 18.05.2023.

[OM No.1 4 2021 PPD dated 18.05.2023](#) for compliance of Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order, 2017.

5. Purchase preference will be given to MSEs having valid Udyam Registration and whose credentials are validated online through Udyam Registration portal as defined in Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 dated 23.03.2012 issued by Ministry of Micro, Small and Medium Enterprises and its subsequent Orders/Notifications issued by concerned Ministry. If the bidder wants to avail themselves of the Purchase preference, the bidder must be the manufacturer / OEM of the offered product on GeM. Traders are excluded from the purview of Public Procurement Policy for Micro and Small Enterprises and hence resellers offering products manufactured by some other OEM are not eligible for any purchase preference. In respect of bid for Services, the bidder must be the Service provider of the offered Service. Relevant documentary evidence in this regard shall be uploaded along with the bid in respect of the offered product or service and Buyer will decide eligibility for purchase preference based on documentary evidence submitted, while evaluating the bid. If L-1 is not an MSE and MSE Seller (s) has / have quoted price within L-1+ 15% (Selected by Buyer) of margin of purchase preference /price band defined in relevant policy, such MSE Seller shall be given opportunity to match L-1 price and contract will be awarded for 25% (selected by Buyer) percentage of total quantity. The buyers are advised to refer the OM No. F.1/4/2021-PPD dated 18.05.2023 [OM No.1 4 2021 PPD dated 18.05.2023](#) for compliance of Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order, 2017. Benefits of MSE will be allowed only if seller is validated on-line in GeM profile as well as validated and approved by Buyer after evaluation of documents submitted.

6. Past Performance: The Bidder or its OEM {themselves or through re-seller(s)} should have supplied same or similar Category Products for 80% of bid quantity, in at least one of the last three Financial years before the bid opening date to any Central / State Govt Organization / PSU. Copies of relevant contracts (proving supply of cumulative order quantity in any one financial year) to be submitted along with bid in support of quantity supplied in the relevant Financial year. In case of bunch bids, the category related to primary product having highest bid value should meet this criterion.

Pre Bid Detail(s)

| मूल्य भिन्नता खंड दस्तावेज़/Pre-Bid Date and Time | प्री-बिड स्थान/Pre-Bid Venue |
|---|---|
| 21-05-2026 16:00:00 | Directorate of Lighthouses and Lightships, VTS Directorate Gandhidham, Plot 17 Sector 8 Gandhidham Kutch Gujarat 370201 |

Magnetrons Of X-band And S-band Radars Of VTS-GoK (11 set)

(क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक/Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively)

तकनीकी विशिष्टियाँ /Technical Specifications

| | |
|---|--------------------------|
| क्रेता विशिष्टि दस्तावेज़ /Buyer Specification Document | Download |
|---|--------------------------|

परेषिती/रिपोर्टिंग अधिकारी तथा मात्रा/Consignees/Reporting Officer and Quantity

| क्र.सं./S.N O. | परेषिती/रिपोर्टिंग अधिकारी /Consignee Reporting/Officer | पता/Address | मात्रा /Quantity | डिलीवरी के दिन/Delivery Days |
|----------------|---|-------------|------------------|------------------------------|
|----------------|---|-------------|------------------|------------------------------|

| क्र.सं./S.N o. | परेषिती/रिपोर्टिंग अधिकारी /Consignee Reporting/Officer | पता/Address | मात्रा /Quantity | डिलीवरी के दिन/Delivery Days |
|-------------------|---|---|------------------|---------------------------------|
| 1 | Ajeet Kumar | 370201, Directorate of Lighthouses and Lightships, Deep Bhavan, Plot No. 17, Sector-8, Behind DPT Admin Office, Gandhidham-370201 | 11 | 60 |

क्रेता द्वारा जोड़ी गई बिड की विशेष शर्तें/Buyer Added Bid Specific Terms and Conditions

1. Generic

OPTION CLAUSE: The Purchaser reserves the right to increase or decrease the quantity to be ordered up to 25 percent of bid quantity at the time of placement of contract. The purchaser also reserves the right to increase the ordered quantity up to 25% of the contracted quantity during the currency of the contract at the contracted rates. The delivery period of quantity shall commence from the last date of original delivery order and in cases where option clause is exercised during the extended delivery period the additional time shall commence from the last date of extended delivery period. The additional delivery time shall be $(\text{Increased quantity} \div \text{Original quantity}) \times \text{Original delivery period (in days)}$, subject to minimum of 30 days. If the original delivery period is less than 30 days, the additional time equals the original delivery period. The Purchaser may extend this calculated delivery duration up to the original delivery period while exercising the option clause. Bidders must comply with these terms.

2. Buyer Added Bid Specific ATC

Buyer uploaded ATC document [Click here to view the file.](#)

अस्वीकरण/Disclaimer

The Additional Terms and Conditions (ATC) have been incorporated by the Buyer after approval of their Competent Authority. The Buyer, is solely responsible for the impact of these clauses on the bidding process, its outcome, and consequences thereof including any restriction arising in the bidding process due to these ATCs and including the modification of technical specifications and / or terms and conditions governing the bid. All representations / grievances pertaining to the ATC clauses shall be raised with the buyer organization directly and not with GeM. If any of the clause(s) is/are incorporated by the Buyer regarding the following, the bid & resultant contract shall be treated as null & void. Further, GeM reserves the right, at its sole discretion, to cancel the bid forthwith, without issuance of any prior notice or intimation :-

1. Publishing Custom / BOQ bids for items for which regular GeM categories are available (unless such Custom / BOQ item is bunched with the major regular product Category Item).
2. Mandating procurement of / from specific Brand / Make / Model / Manufacturer / Dealer except in case of Single Bid / Proprietary Article Certificate (PAC) Buying.
3. Inclusion of disqualification criteria related to suspension of seller / service provider, where such suspension period has already expired.
4. Mandating submission of documents in physical form as a pre-requisite to qualify bidders.
5. Publishing bids on GeM for procurement of works.
6. Procurement of Goods by creating a Service bid on GeM & vice-versa.
7. Seeking sample with bid or approval of samples during bid evaluation process. However, trial / sample, as the case may be, shall be permitted in cases where trial / sample are allowed as per approved and published procurement policy of the Buyers' controlling Ministry / Department / State / Public Sector Enterprises Headquarters. If there is any violation of trial / sample clause with regard to approved policy of the Buyers' Ministry / Department / State / Public Sector Enterprises Headquarters, then this is to be determined and redressed by the concerned Buyer Organisation only.

8. Seeking experience from specific organization / department / institute only or from foreign / export experience.
9. Creating bid for items from incorrect categories.
10. Reference of conditions published on any external site or reference to external documents/clauses.
11. Asking for any Tender fee / Bid Participation fee, as the case may be.
12. Buyer added ATC Clauses which are in contravention of clauses defined in bid detail section, including specifications, EMD Detail, ePBG Detail and MII and MSE Purchase Preference sections of the bid, unless otherwise allowed by the applicable GeM GTC.
13. Any ATC clause in contravention with GeM GTC Clause 4 (xiii) (h) will be invalid. In case of multiple L1 bidders against a service bid, the buyer shall place the Contract by selection of a bidder amongst the L-1 bidders through a Random Algorithm executed by GeM system.
14. In a category based bid, adding additional items, through buyer added, additional scope of work/ additional terms and conditions/or any other document. If buyer needs more items along with the main item, the same must be added through bunching category based items or by bunching custom catalogues or bunching a BoQ with the main category based item, the same must not be done through ATC or Scope of Work.

Further, if any seller has any objection/grievance against these additional clauses or otherwise on any aspect of this bid, they can raise their representation against the same by using the Representation window provided in the bid details field in Seller dashboard after logging in as a seller. Buyer is duty bound to reply to all such representations and would not be allowed to open bids if he fails to reply to such representations.

All GeM Sellers/Service Providers shall ensure full compliance with all applicable labour laws, including the provisions, rules, schemes and guidelines under the four Labour Codes i.e. the Code on Wages, 2019; the Industrial Relations Code, 2020; the Occupational Safety, Health and Working Conditions Code, 2020; and the Code on Social Security, 2020 as and when notified and brought into force by the Government of India.

For all provisions of the Labour Codes that are pending operationalisation through rules, schemes or notifications, the corresponding provisions of the pre-existing labour enactments (such as The Minimum Wages Act, 1948, The Payment of Wages Act, 1936, The Payment of Bonus Act, 1965, The Equal Remuneration Act, 1976, The Payment of Gratuity Act, 1972, etc. and relevant State Rules) shall continue to remain applicable.

The Seller/ Service Providers shall, therefore, be responsible for ensuring compliance under:

- **All notified and enforceable provisions of the new Labour Codes as mentioned hereinabove; and**
- **All operative provisions of the erstwhile Labour Laws until their complete substitution.**

All obligations relating to wages, social security, safety, working conditions, industrial relations etc. and any other statutory requirements shall be strictly met by the Seller/ Service Provider. Any non-compliance shall constitute a breach of the contract and shall entitle the Buyer to take appropriate action in accordance with the contract and applicable law.

This Bid is governed by the General Terms and Conditions, conditions stipulated in Bid and Service Level Agreement specific to the Service, as the case may be, as provided in the Marketplace.

However, in case of Service, if any condition specified in General Terms and Conditions is contradicted by the conditions stipulated in Service Level Agreement specific to said Service, then it will over-ride the conditions in the General Terms and Conditions.

[यह बिड सामान्य शर्तों के अंतर्गत भी शासित है /This Bid is also governed by the General Terms and Conditions](#)

जेम की सामान्य शर्तों के खंड 26 के संदर्भ में भारत के साथ भूमि सीमा साझा करने वाले देश के बिडर से खरीद पर प्रतिबंध के संबंध में भारत के साथ भूमि सीमा साझा करने वाले देश का कोई भी बिडर इस निविदा में बिड देने के लिए तभी पात्र होगा जब वह बिड देने वाला सक्षम प्राधिकारी के पास पंजीकृत हो। बिड में भाग लेते समय बिडर को इसका अनुपालन करना होगा और कोई भी गलत घोषणा किए जाने व इसका अनुपालन न करने पर अनुबंध को तत्काल समाप्त करने और कानून के अनुसार आगे की कानूनी कार्रवाई का आधार होगा।/In terms of GeM GTC clause 26 regarding Restrictions on procurement from a bidder of a country which shares a land border with India, any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. While participating in bid, Bidder has to undertake compliance of this and any false declaration and non-compliance of this would be a ground for immediate termination of the contract and further legal action in

accordance with the laws.

---धन्यवाद/Thank You---

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|---|---|---|
| <p>भारत सरकार पत्तन,पोत परिवहन और जलमार्ग मंत्रालय दीपस्तंभ और दीपपोत निदेशालय "दीपभवन" प्लाट नो:- 17, सेक्टर - 8 " वी. टी. एस. निदेशालय, गांधीधाम, (गुजरात)-370201</p> |  | <p>Govt. of India Ministry of Ports, Shipping and Waterways Directorate of Lighthouses & Lightships Deep Bhavan" Plot No. 17 Sectors - 8 V.T.S. Directorate, Gandhidham, (Gujarat)-370201</p> |
| <p>Email-dydgvts@gmail.com/dte-vts@nic.in</p> | | <p>Tele: 02836-299104</p> |

संचिका संख्या.: EMDVTS-02002(01)/1/2020- maintenance

अतिरिक्त नियम एवं शर्तें

Buyer Added Additional Terms and Conditions

| S. No | Subject | Description |
|-------|--|---|
| 1. | कार्यका नाम Name of work | Supply of Magnetrons of X-band and S-band Radars of VTS-GoK |
| 2. | कार्यस्थल Location | Master Control Centre (MCC), Kandla |
| 3. | अनुमानित राशि Estimated cost | ₹ 85,53,820/- (Including GST and all taxes) |
| 4. | बयाना राशि Earnest Money Deposit (EMD) | ₹ 1,71,100/- to be submitted in original in the form of DD/ FDR/BG in favour of Deputy Director General, VTS at Directorate of Lighthouses & Lightships Deep Bhavan" Plot No. 17 Sectors - 8 V.T.S. Directorate, Gandhidham on before submission date |
| 5. | Time of completion of Supply | 60 days |

1. Eligibility Criteria:

1.1 The bidder shall have experience of successfully completed similar works during the last seven (07) years, reckoned up to the last day of the month preceding the month in which the bid is published. The bidder must have executed similar works within this period, and such experience shall meet any one of the following criteria:

- (a) Three similar completed works, each costing not less than the amount equal to 40% of the estimated cost.
- or
- (b) Two similar completed works, each costing not less than the amount equal to 50% of the estimated cost.
- or
- (c) One similar completed work costing not less than the amount equal to 80% of the estimated cost.

Similar work means-

"Supply/ Repair of Radar and its associated equipment Or Supply/ Repair of Radio and its associated equipment Or CAMC of Vessel traffic services having at least 02 radars - in any Central/ State Govt. Organization/ UT/ PSU (as per govt Notified List)" In order to fulfill above criteria, the agency has to submit Work order/contract agreement and along with Completion Certificate GEM issued by the Work Awarding authorities

1.2 The bidder should have experience in supply of magnetrons/repair of Radar, documentary

- proof shall be submitted
- 1.3 The bidder shall submit copy of valid GST Registration certificate.
 - 1.4 The bidder should have an annual average turnover not less than Rs. 30, 00,000/- (Rupees Thirty Lakh Only) for the last three financial years ending 31.03.2025. Accordingly, the Bidder shall submit Certificate from CA for average turnover for 2022-23, 2023-24, 2024-25.
 - 1.5 The Bidder shall submit an affidavit on non-judicial stamp paper, duly notarized in respect of information regarding any litigation & blacklisting in current or during last 3 years ending 28.02.2026 (**Annexure-I**).
 - 1.6 Copies of Income Tax Return for the last three years ending 31.03.2025.
 - 1.7 The bidder shall submit Tender Acceptance letter as per **Annexure II**.
 - 1.8 The agency has to submit Declaration of Compliance as per **Annexure-III**.
 - 1.9 Solvency: Bidder should submit the solvency certificate indicating an amount equal to or not less than 40% of the estimated value of this tender. Copy of Fresh Solvency Certificate issued by any scheduled Bank is required to be uploaded and submitted. The date of solvency certificate issued by bank should not be earlier than 3 months from the date of submission of bid.
 - 1.10 Bidder must submit EMD for the amount mentioned in the bid submitted in original at Directorate of Lighthouses & Lightships "Deep Bhavan" Plot No. 17 Sectors – 8 V.T.S. Directorate, Gandhidham on before EMD submission date in favor of Deputy Director General VTS in the form of DD/FDR/PBG.(in case of PBG format shall be provided to bidder separately through email on request) The EMD exemption, is only for bidders who are OEM for items offered in the bid. There is no exemption for bidder who are participating as reseller/ distributor/ traders.

The bid shall be disqualified if any of the above-mentioned eligibility criteria documents are not submitted.

2. Technical evaluation of the eligible bidder shall be carried as follows:

| Sr. No. | List of Documents | Evaluation Criteria | Name of Agency | | | |
|---------|--|---|----------------|-------|-------|-------|
| | | | 1 | 2 | 3 | 4 |
| | | | Marks | Marks | Marks | Marks |
| A | Financial capability-15 Marks | | | | | |
| (i) | Average annual turnover - 10 Marks | 60% marks for minimum eligibility criteria | | | | |
| | | 100% marks for twice the minimum eligibility criteria or more | | | | |
| | | in between (i) & (ii) - on pro -rata basis | | | | |
| (ii) | Solvency Certificate – 5Marks | | | | | |
| B | Experience in similar class of works – 65 Marks | | | | | |
| | | 60% marks for minimum eligibility criteria | | | | |
| | | 100% marks for twice the minimum eligibility criteria or more | | | | |
| | | in between (i) & (ii) - on pro -rata basis | | | | |
| C | Performance of works (Quality) - 20 Marks | | | | | |

| | | | | | | |
|-------|--------------------|----------|--|--|--|--|
| (i) | Outstanding | 20 Marks | | | | |
| (ii) | Very Good | 15 Marks | | | | |
| (iii) | Satisfactory | 10 Marks | | | | |
| (IV) | Fair /or no remark | 5 Marks | | | | |
| (v) | Poor | 0 Mark | | | | |
| | Total Marks | | | | | |

- Minimum marks required to be Technically qualified: **60 Marks**.

3. Financial Evaluation: Financial bid shall be opened only of those bidders who are Technically qualified.

- 3.1 The rate quoted shall be for destination. No other expenses shall be borne by the Buyer other than what is quoted in Bid Document.
- 3.2 The rates shall be quoted in Indian Currency only and if quoted in other currency, the offer will be rejected.
- 3.3 Conditional offers shall not be accepted and if found, the bid shall be outrightly rejected.
- 3.4 The Deputy Director General-VTS does not bind himself to accept the lowest or any bid. He is free to reject any or all of the bids received without assigning any reason. He also reserves right for himself of accepting the whole or any part of the bid and bidder shall be bound to perform the same at the rate quoted. All bids in which any of the prescribed conditions are not fulfilled or incomplete in any respect are liable to be rejected. Also, conditional bids will be summarily rejected. Canvassing in any form is strictly prohibited and the bids submitted by the contractor who resort to any form of canvassing shall be summarily rejected.
- 3.5 Any effort by a bidder to influence the Deputy Director General-VTS in the process of examination, clarification, evaluation, and in decisions concerning award of contract, may result in rejection of the bidder's tender.

3. Award of work and signing the agreement

- 3.1 The employer shall award the Contract to the bidder whose bid has been determined to be responsive to the bid document and who has offered the lowest bid price, provided that such bidder has been determined to be eligible in accordance with the provisions of Clause 1 and 2.
- 3.2 The employer shall award the contract within 180 days of the opening of the technical bid.

4. Prebid Meeting

The bidder are advised to go through the GEM bid and respective Additional Terms and conditions very carefully before quoting. They should satisfy themselves about the scope of work/ supply. In case of any queries same is to be submitted on or before pre-bid meeting date as mentioned in GeM portal. Under no circumstances issues raised by the bidder will be entertained once bids are opened.

5. Scope of work and Technical Specifications:

- 5.1 Scope of work involves supply of total of 10 (Ten) numbers of X-band radar magnetrons and 01 no. S-band Magnetron.
- 5.2 Out of 10 no. X-band magnetrons, 08 (Eight) numbers shall be Type-1 having an operating frequency of 9375 MHz, and 02 (Two) numbers shall be Type-2 having an operating frequency of 9410 MHz.
- 5.3 The supplied magnetrons shall be preferably of same make and Model (e2V), as these magnetrons are compatible and are being used in the system by this Directorate for the last 12 years and performance found satisfactory.
- 5.4 In case other make magnetrons (other than e2V), the specification shall be same as mentioned at Annexure-IV and they should be compatible with the existing radar system, if they are not found compatible during testing, same shall be rejected and no cost shall be borne by this office.
- 5.5 The supplied magnetron shall be tested to verify their serviceability, compatibility, and functional performance prior to acceptance by this Directorate as per the procure. The payment shall be cleared only if the magnetrons are found working satisfactory. Their operability may be tested at Kandla, Mandvi, Jakhau and Okha or any of the radar station of VTS-GoK. The bidder shall provide complete technical support, skilled manpower, test equipment, and documentation required for conducting such tests. In case the magnetrons fail to meet the required parameters or performance standards during testing, the same shall be rejected outrightly. Such testing will be within the tender cost and no extra payment shall be made.
- 5.6 The brief technical specifications of magnetron are as follows:

a. X-band Type I Magnetron:

Frequency : 9375MHZ+/- 25 MHZ
preferred Make e2v technologies, Model MG5239T X-Band Magnetron

b. X-band Type II Magnetron:

Frequency : 9410 MHZ+/- 30 MHZ
preferred Make e2v technologies , Model MG5242T X-Band Magnetron

c. S-band Magnetron:

Frequency : 3050 MHZ+/- 10 MHZ
preferred Make e2v technologies , Model MG5223 S-Band Magnetron

The detailed specifications are mentioned at **Annexure-IV**. The supplied magnetron shall be verified with detailed specifications for acceptance at any of the VTS site. No extra payment shall be made for carrying out testing at site. The magnetrons shall be transported by the contractor at his cost and risk and after testing, the magnetrons shall be taken over at MCC Kandla.

- 5.7 All supplied magnetrons shall be brand new, unused, make and model as mentioned in this bid and of the latest manufacturing batch. Refurbished, repaired, or previously used items shall not be accepted. The bidder shall submit a Test Certificate from the Original Equipment Manufacturer (OEM) confirming compliance with required specifications, performance parameters, and operational standards if required.
- 5.8 Under the circumstance if the Original Make and Model is not available because of stop in production then the agency has to submit declaration for stating non production by OEM of same. Accordingly the agency can propose different make and model however with same specification mentioned Annexure -IV
- 5.9 The magnetrons shall carry a comprehensive warranty of 02 years (2 years or 9000 hours whichever is earlier) from the date of acceptance/commissioning. During the warranty period, the bidder shall be responsible for the free replacement of any defective magnetron, including all logistics, labour, and associated costs, without

any additional financial implication to the Department. In the event that a new magnetron, duly tested, accepted, and kept in store for future use, is installed within the warranty period and is found to be non-operational, the same shall be replaced by the bidder at no cost to the Department.

The warranty shall be strictly on a replacement basis only, repaired or refurbished magnetrons shall not be accepted under any circumstances.

6. Schedule of Supply: The schedule of Supply is mentioned below:

| Tender Inviting Authority: Deputy Director General, VTS Directorate, Directorate of Lighthouses and Lightships, Gandhidham | | | | | |
|---|--|------|-----|--------------------------------------|--|
| Name of Work: Supply of Magnetrons for X-band and S-band radars of VTS-GoK | | | | | |
| Bidder's Name: | | | | | |
| PRICE SCHEDULE | | | | | |
| Sl. No. | Item Description | Unit | Qty | Rate including GST and all taxes (₹) | Total Amount including GST and all taxes (₹) |
| 1. | Supply of Magnetron of X-band radar (Specification as per Annexure IV), 08 nos. of operating frequency 9375 MHz and 02 nos. of operating frequency 9410 MHz. | Nos. | 10 | | |
| 2. | Supply of Magnetron of S-band radar as per specification mentioned at Annexure-IV | No | 01 | | |

Note: As per the custom bid of GEM the rates will be for total 11 Magnetrons. The rate shall be submitted only in financial bid. The bid shall be rejected if the rates are found in technical bid.

6.1 Supply order may be placed in parts also as per the requirement of this Directorate.

7. Payment Conditions: Payment to the Contractor shall be made as per details given below: -

7.1 100% payment shall be made on successful of actual Supply and testing of all the magnetrons

7.2 Invoice along with relevant documentary evidences shall be raised in GeM.

(a) All product documents as supplied by OEM.

(b) Warranty Card/ warranty certificate.

7.3 Payment shall be processed only after ascertaining the specifications (whole or part) as per discretion of Dy DGLL after deduction of TDS on GST and IT as per prevailing norms.

7.4 Payment shall be released after receipt of all the documents mentioned above.

7.5 Part payment can also be made against actual quantity accepted.

8. Penalty:

Time is the essence of contract. The items shall be supplied within the timeframe mentioned in the tender. **Penalty @ 0.02 % of the total contract value per day shall be levied from the bill of the contractor for non-compliance of time line, however the total penalty shall not exceed 5% of contract value.** All the case of delay shall be decided by the Deputy Director General of Lighthouses and Lightships, Gandhidham or his authorized representative.

- 9. Warranty:** The Bidder shall declare that the items supplied under this order in accordance with the specifications and the **warranty of all the magnetron shall be 02 years.** Warranty certificate shall be submitted.
- 10.** The amount for which the Bid is approved shall be inclusive of all expenses for the proper and entire completion of the work and shall be inclusive of GST and all taxes and other incidental charges. The amount offered shall be final and no claim whatsoever on any account shall be entertained.
- 11.** The prices quoted by the Bidder and accepted by the Employer shall hold good till the completion of the works and no additional claims will be admissible on account of any price variation or fluctuation in the market rates. Any notified change in the GST (both increase and decrease) from the base date shall be to the Employer's account. For such claims of variations, the Bidder shall produce the Government notification as documentary evidence. Price variation due to any other cause shall be on Bidder's account.
- 12. Permit/ statutory licenses / clearances / approval:**
The responsibility of obtaining necessary Permit/ statutory licenses / clearances /approval from designated authority for supply of magnetron will be of the contractor. However, necessary administrative assistance may be provided by the DDG-VTS on request of the bidder.
- 13. Performance Guarantee cum security deposit:** The work order on GeM shall be issued to L1 bidder. Within 10 days of receipt of work order/ GeM contract order, the successful bidder will furnish the contract Performance Guarantee cum security deposit in favour of Deputy Director General, Directorate of Lighthouses and Lightships, Gandhidham @ 5% of the value of the contract, valid for a period of 27 months in the form of FDR from any commercial bank. The original documents shall be the same which is uploaded on GeM portal otherwise the Bid shall be rejected and action shall be taken as per prevailing Govt. norms and the tender terms and conditions.
- 14.** The bidder shall be black listed for 03 years if he indulges in the following actions EMD/Performance security shall be forfeited:
 - a. The bidder withdraws his bid during bid validity period after opening of Technical Bid.
 - b. The bidder makes any modification in the terms & conditions of the Bid at his own.
 - c. The bidder does not accept corrigendum/addendum issued by the Deputy Director General or any corrections raised due to error in filling the bid.
 - d. The successful bidder fails to sign the agreement within specified period as per bid documents
 - e. The bidder does not submit Performance security.
- 15. Bid Validity:** The validity of quotes rates is 180 days from the date of opening of financial bids.

Annexure-I

Proforma for Not-Black listing
Non-Blacklisting declaration

(On non-judicial stamp paper)

Date:

To,

Sub: Declaration for Non-Blacklisting

Tender Reference No: _____

Name of Tender / Work: - _____

Dear Sir,

We hereby declare that we are not blacklisted by any Central/ State Government/ agency of Central/ State Government of India or any other country in the world/ Public Sector Undertaking/ any Regulatory Authorities in India or any other country in the world for any kind of fraudulent activities.

Yours faithfully,

(Signature of the Bidder with Official Seal)

**PROFORMA FOR TENDER ACCEPTANCE
LETTER**
(To be given on Company Letter Head)

To

Sub: Acceptance of Terms & Conditions of Tender

Tender Reference No: _____

1. We have downloaded / obtained the tender document(s) for the above mentioned "Tender/work" from the web site(s) namely:

as per your advertisement, given in the above-mentioned website(s).

2. I / We hereby certify that I / we have read the entire terms and conditions of the tender documents (including all documents like Form(s), schedule(s), etc.), which shall form part of the contract agreement and I / we shall abide hereby by the terms / conditions / clauses contained therein.

3. The corrigendum(s) issued from time to time by your department/ organization too has also been taken into consideration, while submitting this acceptance letter.

4. I / We hereby unconditionally accept the tender conditions of above-mentioned tender document/ corrigendum(s) in its totality / entirety.

5. In case any provisions of this tender are found violated, then your department/ organization shall without prejudice to any other right or remedy be at liberty to reject this tender/bid including the forfeiture of the full earnest money deposit absolutely.

Yours faithfully,

(Signature of the Bidder, with Official seal)

**PERFORMA FOR DECLARATION OF COMPLIANCE
(On letter head of the firm)**

It is to declare that the X and S band magnetron supplied against the bid _____(bid no.), fully complied with the required technical specification as per Annexure-IV of the bid.

We are aware that in case of absence or deviation of even one specification, our bid may be rejected at any stage.

Seal & Signature of the Bidder

Date.....



The data should be read in conjunction with the Magnetron Preamble.

ABRIDGED DATA

Fixed frequency pulse magnetron.

| | | |
|---------------------------|---|-----|
| Operating frequency | 9375 ± 25 | MHz |
| Minimum peak output power | 25 | kW |
| Magnet | integral | |
| Output | no. 16 waveguide (22.86 x 10.16 mm internal) | |
| Coupler | UG-40B/U (NATO S.N. 5985-99-083-0051) | |
| Cooling | natural or forced-air | |

GENERAL

Electrical

| | |
|--|-------------------|
| Cathode | indirectly heated |
| Heater voltage (see note 1) | 6.3 V |
| Heater current at 6.3 V | 0.55 A |
| Heater starting current, peak value, not to be exceeded | 3.0 A max |
| Cathode pre-heating time (minimum) (see note 2) | 60 s |

Mechanical

| | |
|--------------------|---------------|
| Overall dimensions | see outline |
| Net weight | 1.5 kg approx |
| Mounting position | any |

A minimum clearance of 50 mm must be maintained between the magnet and any magnetic materials.

Cooling natural or forced-air

MAXIMUM AND MINIMUM RATINGS (Absolute values)

These ratings cannot necessarily be used simultaneously, and no individual rating should be exceeded.

| | Min | Max |
|--|-----|-----------|
| Heater voltage (see note 1) | 5.7 | 6.9 V |
| Heater starting current (peak) | - | 3.0 A |
| Anode voltage (peak) | 7.5 | 8.2 kV |
| Anode current (peak) | 6.0 | 10 A |
| Input power (peak) | - | 75 kW |
| Input power (mean) (see note 3) | - | 85 W |
| Duty cycle | - | 0.0015 |
| Pulse duration | - | 2.0 μs |
| Rate of rise of voltage pulse (see notes 4 and 5) | - | 200 kV/μs |
| Anode temperature (see note 6) | - | 120 °C |
| VSWR at the output coupler | - | 1.5:1 |

TYPICAL OPERATION

Operating Conditions

| | Oscillation | |
|-------------------------------|-------------|-----------|
| | 1 | 2 |
| Heater voltage | 6.3 | 6.3 V |
| Anode current (peak) | 8.0 | 8.0 A |
| Pulse duration | 1.0 | 0.1 μs |
| Pulse repetition rate | 500 | 1000 pps |
| Rate of rise of voltage pulse | 120 | 120 kV/μs |

Typical Performance

| | | |
|----------------------|------|--------|
| Anode voltage (peak) | 8.0 | 8.0 kV |
| Output power (peak) | 27 | 27 kW |
| Output power (mean) | 13.5 | 2.7 W |

TEST CONDITIONS AND LIMITS

The magnetron is tested to comply with the following electrical specification.

Test Conditions

| | Oscillation 1 | Oscillation 2 | |
|---|------------------|------------------|-----------|
| Heater voltage (for test) | 6.3 | 6.3 | V |
| Anode current (mean) | 4.0 | 0.8 | mA |
| Duty cycle | 0.0005 | 0.0001 | |
| Pulse duration (see note 7) | 0.5 | 0.05 | µs |
| VSWR at the output coupler | 1.15:1 | 1.15:1 | max |
| Rate of rise of voltage pulse (see note 4): | | | |
| using hard tube pulser | 200 | 200 | kV/µs min |
| alternatively using line type pulser | 120 | 120 | kV/µs min |

Limits

| | Min | Max | Min | Max | |
|--|------|------|-----|-----|-------------|
| Anode voltage (peak) | 7.5 | 8.2 | 7.5 | 8.2 | kV |
| Output power (mean) | 12.5 | - | 2.5 | - | W |
| Frequency (see note 8) | 9350 | 9400 | - | - | MHz |
| RF bandwidth at 1/4 power | - | 5.0 | - | 50 | MHz |
| Frequency pulling (VSWR not less than 1.5:1) | - | 23 | - | - | MHz |
| Stability (see note 9) | - | 0.1 | - | 0.1 | % |
| Heater current | | | | | see note 10 |
| Temperature coefficient of frequency | | | | | see note 11 |

LIFE TEST

The quality of all production is monitored by the random selection of tubes which are then life-tested under Test Conditions Oscillation 1. If the tube is to be operated under conditions other than those specified herein, e2v technologies should be consulted to verify that the life of the magnetron will not be impaired.

End of Life Criteria (under Test Conditions Oscillation 1)

| | | |
|---------------------------|--------------|---------|
| Anode voltage (peak) | 7.5 to 8.5 | kV |
| Output power (peak) | 16 | kW min |
| RF bandwidth at 1/4 power | 5.0 | MHz max |
| Frequency | 9350 to 9400 | MHz |
| Stability (see note 9) | 1.0 | % max |

NOTES

1. With no anode input power.

For average values of pulse input power greater than 40 W the heater voltage must be reduced within 3 seconds after the application of HT according to the following schedule:

$$V_h = 0.08 (110 - P_i) \text{ volts}$$

where P_i = average input power in watts.

The magnetron heater must be protected against arcing by the use of a minimum capacitance of 4000 pF shunted across the heater directly at the input terminals; in some cases a capacitance as high as 2 µF may be necessary depending on the equipment design. For further details see the Magnetron Preamble.

2. For ambient temperatures above 0 °C. For ambient temperatures between 0 and -55 °C the cathode pre-heating time is 90 seconds.

3. The various parameters are related by the following formula:

$$P_i = i_{apk} \times v_{apk} \times Du$$

where P_i = mean input power in watts

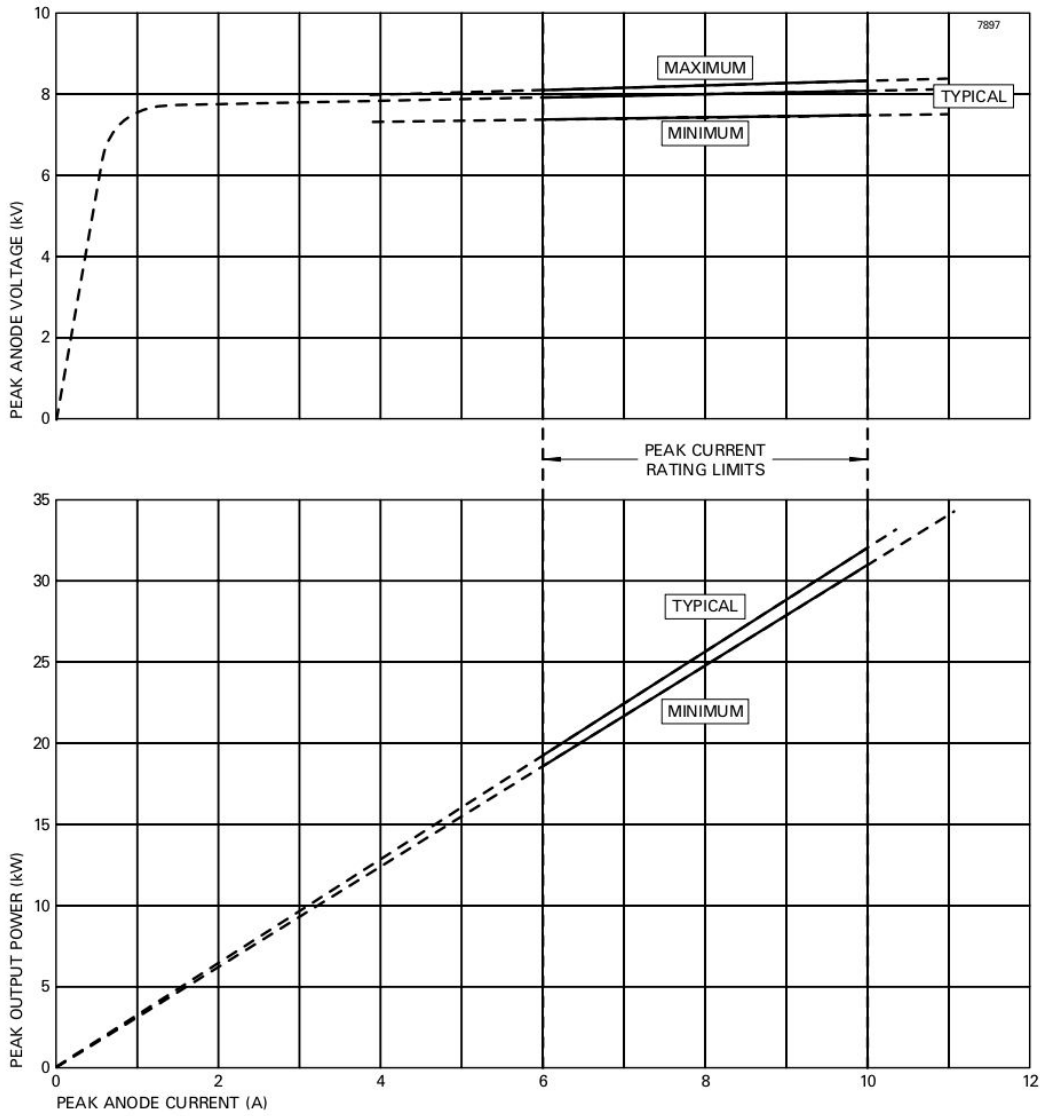
i_{apk} = peak anode current in amperes

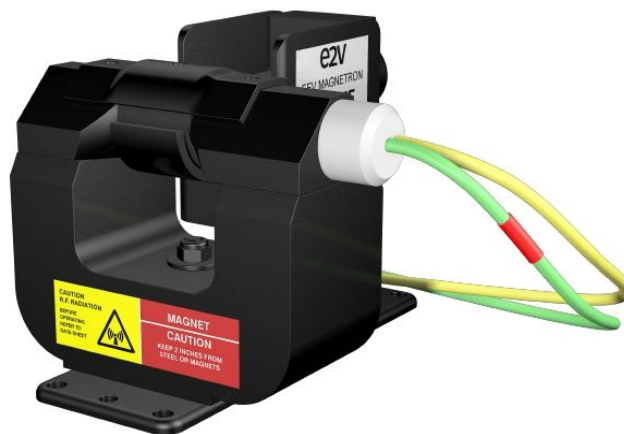
v_{apk} = peak anode voltage in volts

and Du = duty cycle.

4. Defined as the steepest tangent to the leading edge of the voltage pulse above 80% amplitude. Any capacitance in the viewing system must not exceed 6.0 pF.
5. The maximum rate of rise of voltage for stable operation depends upon detailed characteristics of the applied pulse and the pulser design. The specified maximum rating applies to typical hard tube pulsers. For minimum starting jitter and optimum operation, the recommended rate of rise of voltage for most line type pulsers is from 70 to 120 kV/µs.
6. The anode temperature measured at the point indicated on the outline drawing must be kept below the limit specified by means of a suitable flow of air over the anode body and waveguide attachment brackets which serve as cooling fins.
7. Tolerance $\pm 40\%$.
8. Other frequency ranges can be supplied on request.
9. With the magnetron operating into a VSWR of 1.15:1. Pulses are defined as missing when the RF energy level is less than 70% of the normal energy level in a 0.5% frequency range. Missing pulses are expressed as a percentage of the number of input pulses applied during the period of observation after a period of 10 minutes operation.
10. Measured with heater voltage of 6.3 V and no anode input power, the heater current limits are 0.43 A minimum, 0.60 A maximum.
11. Design test only. The maximum frequency change with anode temperature change (after warming) is -0.25 MHz/°C.

TYPICAL PERFORMANCE CHART





The data should be read in conjunction with the Magnetron Preamble.

ABRIDGED DATA

Fixed frequency pulse magnetron.

| | | |
|---------------------------|---|-----|
| Operating frequency | 9410 ± 30 | MHz |
| Minimum peak output power | 25 | kW |
| Magnet | integral | |
| Output | no. 16 waveguide (22.86 x 10.16 mm internal) | |
| Coupler | UG-40B/U (NATO S.N. 5985-99-083-0051) | |
| Cooling | natural or forced-air | |

GENERAL

Electrical

| | |
|--|-------------------|
| Cathode | indirectly heated |
| Heater voltage (see note 1) | 6.3 V |
| Heater current at 6.3 V | 0.55 A |
| Heater starting current, peak value, not to be exceeded | 3.0 A max |
| Cathode pre-heating time (minimum) (see note 2) | 60 s |

Mechanical

| | |
|--------------------|---------------|
| Overall dimensions | see outline |
| Net weight | 1.5 kg approx |
| Mounting position | any |

A minimum clearance of 50 mm must be maintained between the magnet and any magnetic materials.

Cooling natural or forced-air

MAXIMUM AND MINIMUM RATINGS (Absolute values)

These ratings cannot necessarily be used simultaneously, and no individual rating should be exceeded.

| | Min | Max | |
|--|-----|--------|-------|
| Heater voltage (see note 1) | 5.7 | 6.9 | V |
| Heater starting current (peak) | - | 3.0 | A |
| Anode voltage (peak) | 7.5 | 8.2 | kV |
| Anode current (peak) | 6.0 | 10 | A |
| Input power (peak) | - | 75 | kW |
| Input power (mean) (see note 3) | - | 85 | W |
| Duty cycle | - | 0.0015 | |
| Pulse duration | - | 2.0 | µs |
| Rate of rise of voltage pulse (see notes 4 and 5) | - | 200 | kV/µs |
| Anode temperature (see note 6) | - | 120 | °C |
| VSWR at the output coupler | - | 1.5:1 | |

TYPICAL OPERATION

Operating Conditions

| | Oscillation | | |
|-------------------------------|-------------|------|-------|
| | 1 | 2 | |
| Heater voltage | 6.3 | 6.3 | V |
| Anode current (peak) | 8.0 | 8.0 | A |
| Pulse duration | 1.0 | 0.1 | µs |
| Pulse repetition rate | 500 | 1000 | pps |
| Rate of rise of voltage pulse | 120 | 120 | kV/µs |

Typical Performance

| | | | |
|----------------------|------|-----|----|
| Anode voltage (peak) | 8.0 | 8.0 | kV |
| Output power (peak) | 27 | 27 | kW |
| Output power (mean) | 13.5 | 2.7 | W |

TEST CONDITIONS AND LIMITS

The magnetron is tested to comply with the following electrical specification.

Test Conditions

| | Oscillation | | |
|---|-------------|--------|-----------|
| | 1 | 2 | |
| Heater voltage (for test) | 6.3 | 6.3 | V |
| Anode current (mean) | 4.0 | 0.8 | mA |
| Duty cycle | 0.0005 | 0.0001 | |
| Pulse duration (see note 7) | 0.5 | 0.05 | µs |
| VSWR at the output coupler | 1.15:1 | 1.15:1 | max |
| Rate of rise of voltage pulse (see note 4): | | | |
| using hard tube pulser | 200 | 200 | kV/µs min |
| alternatively using line type pulser | 120 | 120 | kV/µs min |

Limits

| | Min | | Max | | |
|--|------|------|-----|-----|-------------|
| | Min | Max | Min | Max | |
| Anode voltage (peak) | 7.5 | 8.2 | 7.5 | 8.2 | kV |
| Output power (mean) | 12.5 | - | 2.5 | - | W |
| Frequency (see note 8) | 9380 | 9440 | - | - | MHz |
| RF bandwidth at 1/4 power | - | 5.0 | - | 50 | MHz |
| Frequency pulling (VSWR not less than 1.5:1) | - | 23 | - | - | MHz |
| Stability (see note 9) | - | 0.1 | - | 0.1 | % |
| Heater current | | | | | see note 10 |
| Temperature coefficient of frequency | | | | | see note 11 |

LIFE TEST

The quality of all production is monitored by the random selection of tubes which are then life-tested under Test Conditions Oscillation 1. If the tube is to be operated under conditions other than those specified herein, e2v technologies should be consulted to verify that the life of the magnetron will not be impaired.

End of Life Criteria

(under Test Conditions Oscillation 1)

| | | |
|---------------------------|--------------|---------|
| Anode voltage (peak) | 7.5 to 8.5 | kV |
| Output power (peak) | 16 | kW min |
| RF bandwidth at 1/4 power | 5.0 | MHz max |
| Frequency | 9380 to 9440 | MHz |
| Stability (see note 9) | 1.0 | % max |

NOTES

1. With no anode input power.

For average values of pulse input power greater than 40 W the heater voltage must be reduced within 3 seconds after the application of HT according to the following schedule:

$$V_h = 0.08 (110 - P_i) \text{ volts}$$

where P_i = average input power in watts.

The magnetron heater must be protected against arcing by the use of a minimum capacitance of 4000 pF shunted across the heater directly at the input terminals; in some cases a capacitance as high as 2 µF may be necessary depending on the equipment design. For further details see the Magnetron Preamble.

2. For ambient temperatures above 0 °C. For ambient temperatures between 0 and -55 °C the cathode pre-heating time is 90 seconds.

3. The various parameters are related by the following formula:

$$P_i = i_{apk} \times v_{apk} \times Du$$

where P_i = mean input power in watts

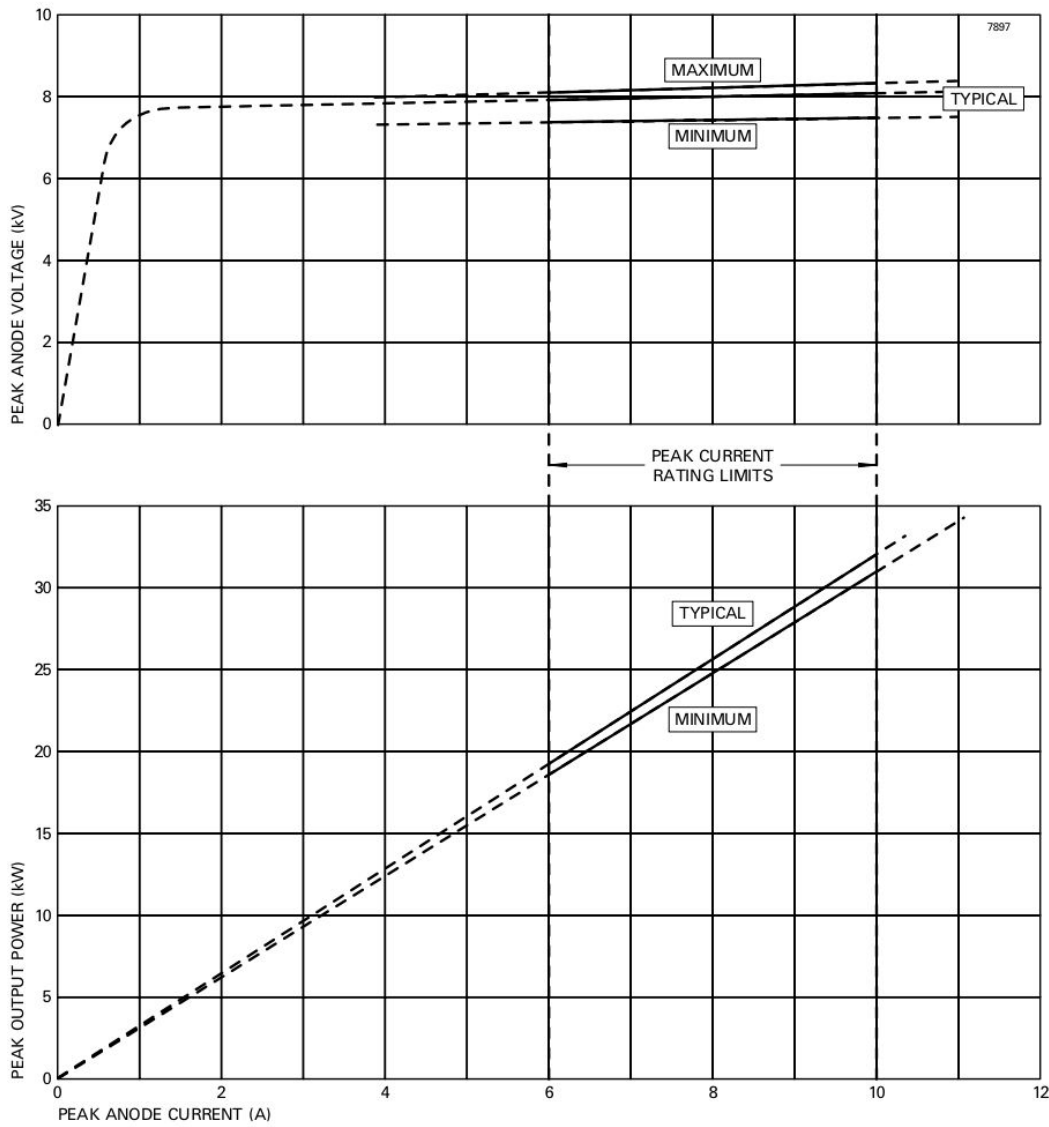
i_{apk} = peak anode current in amperes

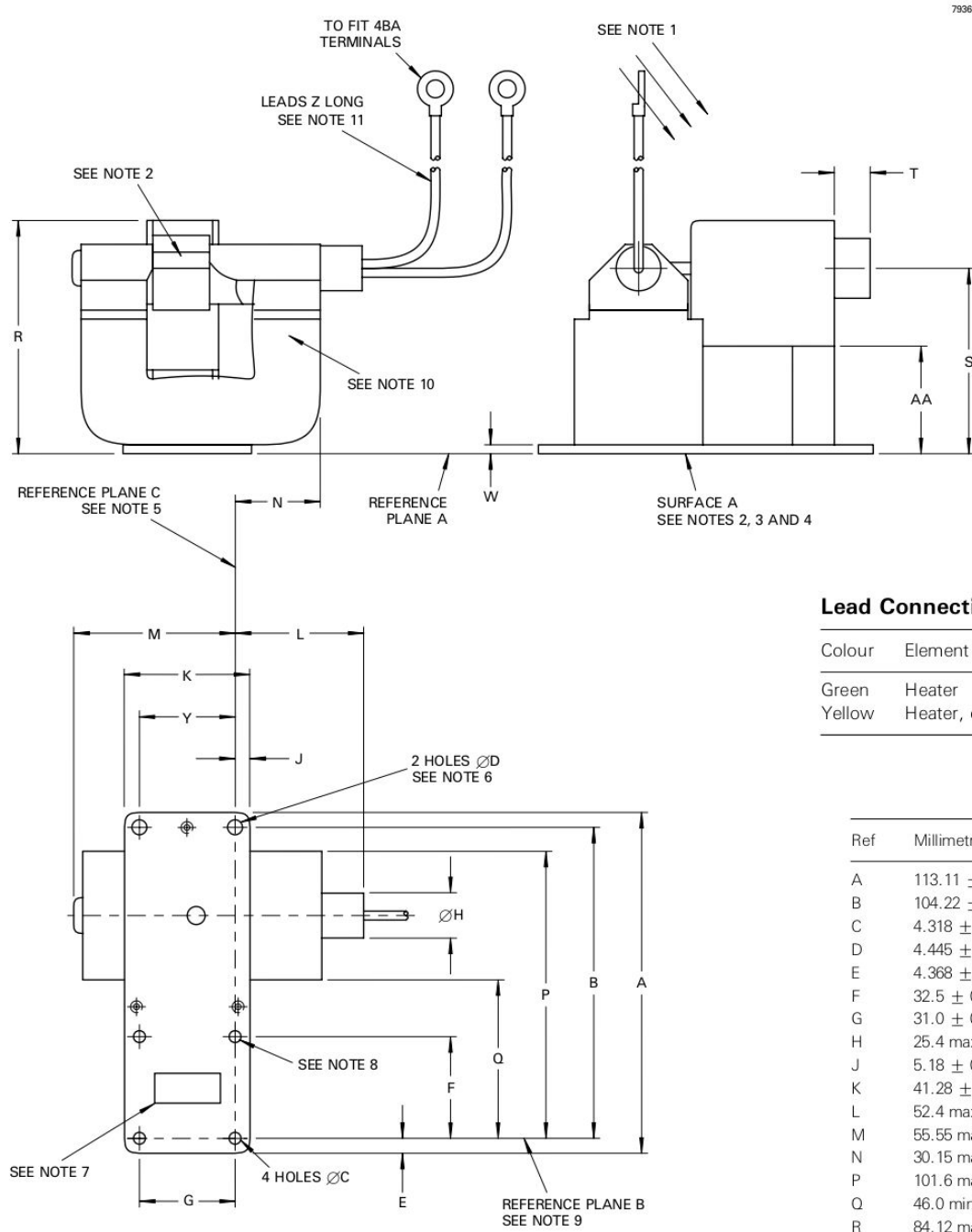
v_{apk} = peak anode voltage in volts

and Du = duty cycle.

4. Defined as the steepest tangent to the leading edge of the voltage pulse above 80% amplitude. Any capacitance in the viewing system must not exceed 6.0 pF.
5. The maximum rate of rise of voltage for stable operation depends upon detailed characteristics of the applied pulse and the pulser design. The specified maximum rating applies to typical hard tube pulsers. For minimum starting jitter and optimum operation, the recommended rate of rise of voltage for most line type pulsers is from 70 to 120 kV/µs.
6. The anode temperature measured at the point indicated on the outline drawing must be kept below the limit specified by means of a suitable flow of air over the anode body and waveguide attachment brackets which serve as cooling fins.
7. Tolerance $\pm 40\%$.
8. Other frequency ranges can be supplied on request.
9. With the magnetron operating into a VSWR of 1.15:1. Pulses are defined as missing when the RF energy level is less than 70% of the normal energy level in a 0.5% frequency range. Missing pulses are expressed as a percentage of the number of input pulses applied during the period of observation after a period of 10 minutes operation.
10. Measured with heater voltage of 6.3 V and no anode input power, the heater current limits are 0.43 A minimum, 0.60 A maximum.
11. Design test only. The maximum frequency change with anode temperature change (after warming) is -0.25 MHz/°C.

TYPICAL PERFORMANCE CHART



OUTLINE**(All dimensions without limits are nominal)**

7936

Lead Connections

| Colour | Element |
|--------|-----------------|
| Green | Heater |
| Yellow | Heater, cathode |

| Ref | Millimetres |
|-----|-------------------|
| A | 113.11 \pm 0.38 |
| B | 104.22 \pm 0.10 |
| C | 4.318 \pm 0.076 |
| D | 4.445 \pm 0.076 |
| E | 4.368 \pm 0.41 |
| F | 32.5 \pm 0.1 |
| G | 31.0 \pm 0.1 |
| H | 25.4 max |
| J | 5.18 \pm 0.38 |
| K | 41.28 \pm 0.41 |
| L | 52.4 max |
| M | 55.55 max |
| N | 30.15 max |
| P | 101.6 max |
| Q | 46.0 min |
| R | 84.12 max |
| S | 63.5 |
| T | 12.7 max |
| W | 3.175 |
| Y | 30.99 \pm 0.10 |
| Z | 311.2 \pm 12.7 |
| AA | 33.0 |

The data should be read in conjunction with the Magnetron Preamble.

ABRIDGED DATA

Fixed frequency pulse magnetron.

Operating frequency 3050 ± 10 MHz
 Typical peak output power 30 kW
 Magnet integral
 Output no. 10 waveguide
 Coupler mates with NATO S.N. 5985-99-083-0058
 Cooling natural or forced-air

GENERAL DATA

Electrical

Cathode indirectly heated
 Heater voltage (see note 1) 6.3 V
 Heater current at 6.3 V 1.25 A
 Heater starting current, peak value,
 not to be exceeded 6.0 A max
 Cathode pre-heating time (minimum) 180 s

Mechanical

Overall dimensions see outline
 Net weight 2.1 kg approx
 Mounting position any

A minimum clearance of 50 mm must be maintained between the magnetron and any magnetic materials.

Cooling (see note 2) natural or forced-air

MAXIMUM AND MINIMUM RATINGS (Absolute values)

These ratings cannot necessarily be used simultaneously, and no individual rating should be exceeded.

| | Min | Max | |
|---|-----|-------|-------|
| Heater voltage (see note 1) | 5.7 | 6.9 | V |
| Heater starting current (peak) | - | 6.0 | A |
| Anode voltage (peak) | 7.5 | 8.5 | kV |
| Anode current (peak) | 6.0 | 12 | A |
| Anode input power (mean) (see note 3) | - | 100 | W |
| Duty cycle | - | 0.001 | |
| Pulse duration | - | 1.2 | µs |
| Rate of rise of voltage pulse (see note 4) | - | 150 | kV/µs |
| VSWR at the output coupler | - | 1.5:1 | |
| Anode temperature (see note 2) | - | 120 | °C |



TYPICAL OPERATION Operating Conditions

| | Condition | | |
|-------------------------------------|-----------|------|-------|
| | 1 | 2 | |
| Heater voltage | 5.3 | 6.3 | V |
| Anode current (peak) | 8.0 | 8.0 | A |
| Pulse duration | 0.55 | 0.05 | µs |
| Pulse repetition rate | 1000 | 4000 | pps |
| Rate of rise of voltage pulse | 150 | 150 | kV/µs |

Typical Performance

| | | | |
|----------------------------|------|-----|----|
| Anode voltage (peak) | 8.0 | 8.0 | kV |
| Output power (peak) | 30 | 30 | kW |
| Output power (mean) | 16.5 | 8.4 | W |

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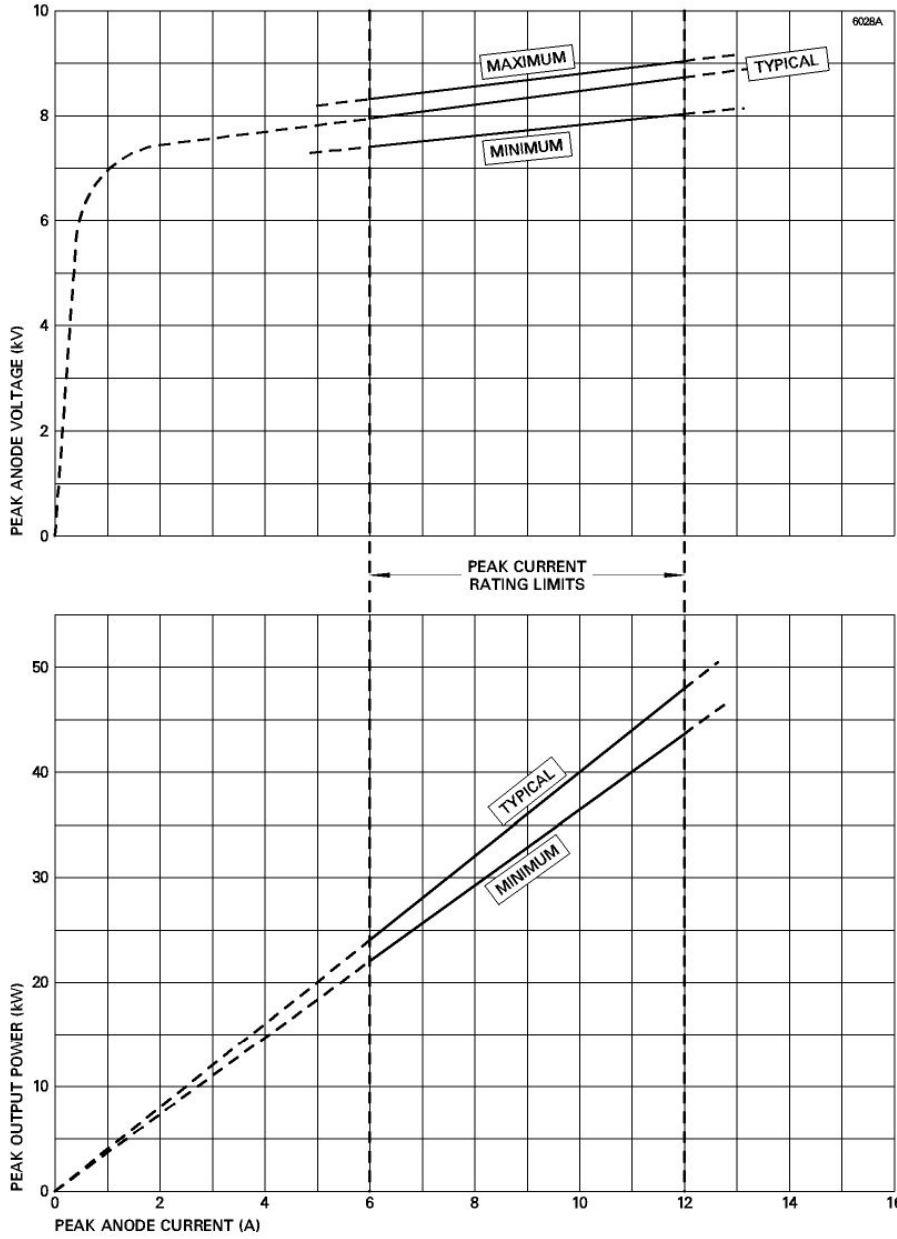
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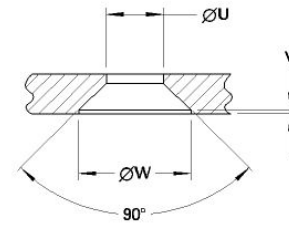
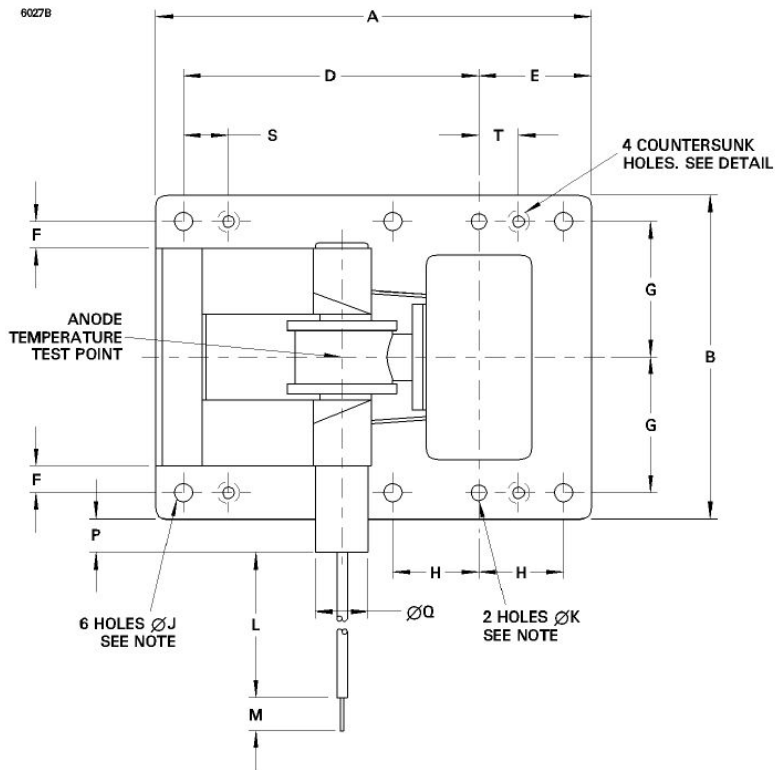
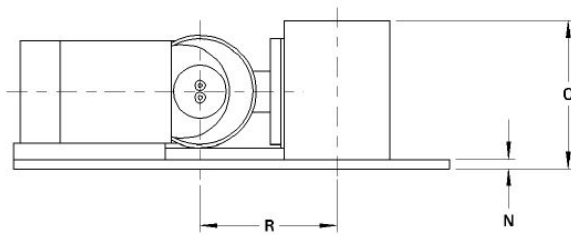
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PERFORMANCE CHART



OUTLINE

(All dimensions without limits are nominal)

**Detail of
Countersunk Holes**

| Ref | Millimetres |
|-----|-----------------------|
| A | 165.1 max |
| B | 123.2 max |
| C | 60.0 max |
| D | 111.13 |
| E | 43.69 max |
| F | 11.09 |
| G | 51.59 |
| H | 32.54 |
| J | 7.14 + 0.15 - 0.00 |
| K | 6.50 ± 0.05 |
| L | 305.0 ± 5.0 |
| M | 12.7 |
| N | 3.1 min |
| P | 20.0 max |
| Q | 22.0 |
| R | 48.0 |
| S | 16.0 |
| T | 15.0 |
| U | 4.25 ± 0.10 |
| V | 0.5 |
| W | 8.5 ± 0.1 |

Lead Connections

| Colour | Element |
|--------|-----------------|
| Green | Heater |
| Yellow | Heater, cathode |

Outline Note

Positional tolerance of holes 0.4 mm diameter with respect to waveguide.

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