

MODEL E220.C2

Spinning at over 2100rpm, Visiport® electrical spin windows sling off coolant and chips for a perfect view into your machining environment. Productivity is increased while the need to stop and restart your machine is reduced. Operators can view setups and milling processes behind the safety window, eliminating the risk of bypassing machine interlocks.

The Visiport® electrical spin window installs using a unique surface-mount method, requiring no holes so as to maintain machine window integrity and user safety. On properly prepared surfaces, the VHB mounting adhesive has a bonding strength safety factor better than 20 to 1. The chemically strengthened glass of the disc assembly helps resist scratching. Motor assembly features integrated electronics with reverse polarity protection, 24v brushless DC motor, and instrument-rated bearing set. Steady state current draw 250mA (no coolant load), and 5Amp peak supply requirement.

Visiport® units work best with water-soluble coolants and light mineral oils. Made with the highest quality components for reliable operation, it also comes with a one year limited warranty.

INSTALLATION

Visiport® spin windows may be installed in moving or fixed windows, and have a low 45mm profile compatible with the majority of machines. Unit should be installed from vertical to 30° from vertical position. Complete system contains the base unit, switchbox, motor assembly, small parts replacement kit, and installation manual. For machines without the necessary 24v 5Amp circuit, an optional 120w power supply is available. All systems require a power conduit and cabling.

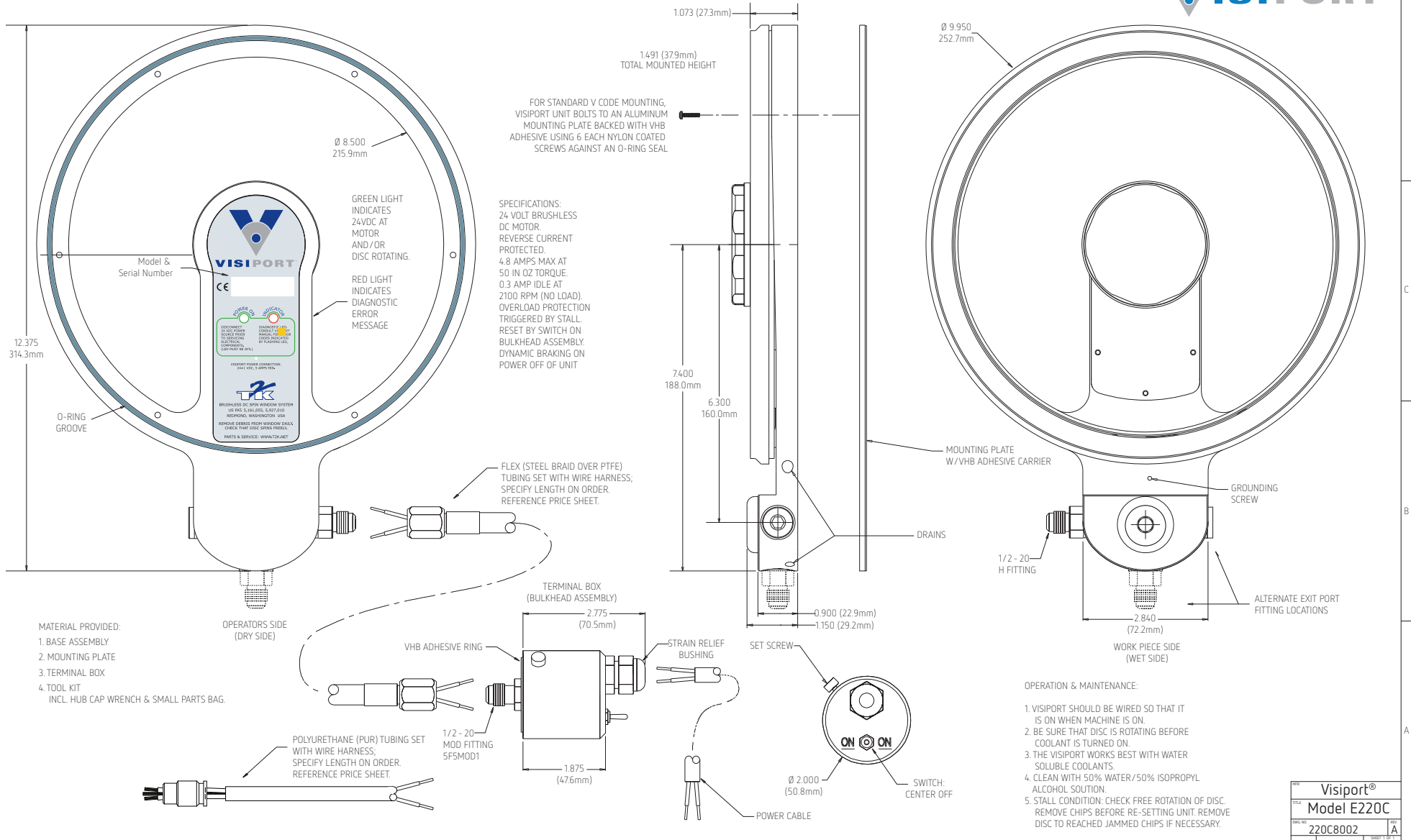


FEATURES & OPTIONS

- Sealed connection cavity with exit ports on sides and bottom.
- Flexible steel conduit or PUR tubing for harness routing (EO/E02 optional).
- Terminal box with mechanical on/off toggle switch.
- Installs on glass or polycarbonate safety windows.
- Drainage features for high coolant volume applications.
- Dynamic braking to reduce inducted current.
- Diamond-like Carbon (DLC) coating option for maximum abrasion resistance.
- Light-weight aluminum construction.
- Mounting plate for easy installation and removal.

OVERALL DIAMETER	10 in (253 mm)
PROFILE HEIGHT	1.75 in (45 mm)
OVERALL LENGTH	12.375 in (315 mm)
WEIGHT	4.84 lbs (2.2 kg)
GLASS THICKNESS	.120 in (3 mm)
ADHESIVE CARRIER	Closed Cell Acrylic Foam
PEEL ADHESION	20 lbs/in (3.5 N/mm)
TENSILE ADHESION	140 lbs/in ² (1.0 N/mm ²)
DYNAMIC SHEAR ADHESION	80 lbs/in ² (0.55 N/mm ²)

Model E220C, P/N E220-1511-0



TYPE	Visiport®
MODEL	Model E220C
DRG. NO.	220C8002
REV.	A

Model: **E** Type Electric, **220** Size 8" / 20-cm, **C** Motor 5 Amp 24 VDC, **H** Fittings Flex, **V** Mounting Mounting Plate w/VHB Adhesive

P/N: **E220** - **1** **5** **1** **1** - **0**

- 1xxx = C2D
- x5xx = H, 5F5MOD1
- xx1x = V
- xxx1 = TRM
- 0 = w/o DLC

Contact Visiport for other configuration options:
www.visiport.com



The typical spin window retrofit installation to a new or existing machine tool consists of specifying 4-6 discrete parts. Beyond the base unit, the customer should evaluate optional connection fittings and disc coating, as well as the condition of the machine tool safety window itself for retrofit suitability.

Discrete Parts Required for Complete Installation

1. Base Spin Window System

Includes Base Unit, Std. Mounting Plate, Bulkhead Switchbox Assembly

2. Conduit

Goes between "Installation Point" on the window and "Bulkhead Point" somewhere on sheet metal. Required not just to exit the conductors from cabin, but also to aspirate the Visiport. Aspiration is required to prevent fogging and to overcome any disc pumping action. The shortest practicable length can be safely routed inside the machine is recommended. Comes standard with matched length (conduit+8" prox.) of 2-conductor wire harness. Sold in unit lengths, i.e., 1.5-m takes 2.0-m price point.

3. Fitting

Attaches conduit to Visiport base (and bulkhead assembly)
Priced as 1 part (Visiport supplies 2nd matched fitting for Bulkhead Assembly end)

4. Power Cable

Goes between "Bulkhead Point" and "Power Supply Point"
Robotics-grade 3 conductor (2+ground) cabling
Sold in unit lengths, i.e., 1.5-m takes 2.0-m price point.
Also sold in legacy 10-m length (Code P or P/N 220A7015)

5. Power Supply [option]

Required if machine does not have 5 amps, 24VDC to dedicate to unit.
Spin window consumes only 200mA under no-load conditions.
When used with high-pressure coolant, electric unit draws up to 4.8 amps.
Power supply is UL508 compliant with UL/TÜV/CE approvals.
Alternately, customer may supply own fully-regulated 120W power supply.

6. Installation Vacuum Pump [option]

One-time purchase for installers of electric and pneumatic spin window systems (re-usable).
Used to quickly and completely adhere standard VHB adhesive to substrate.
Helps installer identify color-shift in adhesive that had 'made' to substrate.
Comes with 4-40 & M4 thread adapters for Mounting Plates/Bases.

Additional Options and Installation Evaluation Steps

Optional Connection Fittings

When considering the necessary parts to make connections between the "Installation Point" and "Bulkhead Point", and between the "Bulkhead Point" and the "Power Supply Point" span distances, there are 90° Strain Reliefs and Adapters available for the Terminal Box bulkhead assembly that allow you to modify the plane that the Conduit and Power Cable will drape in, to allow for smooth opening of doors and windows to which the spin window system is installed.

> Please refer to the price sheet for price and part number details.

DLC

Diamond-like carbon (DLC) coating is an option for the glass disc supplied with the Base Unit. The few atoms deep layer provides exceptional scratch resistance and lubricity to the regular chemically strengthened glass used. This coating is popular with aerospace machining operations, but it is sufficiently costly that customers are advised to evaluate the standard disc's life under operating conditions prior to making the 2X cost to 5X plus wear calculation. Please note that the coating does not impart any additional impact resistance to projectiles, as the coating is only several atoms thick.

Machine Tool Window Evaluation

Finally, there are several issues regarding the condition of the machine tool window that must be considered by the spin window installer in order to ensure a successful installation. The window must not be so scratched as to prevent proper viewing through the window. The system does not replace the existing window, but augments the window that is already there. Merely installing a spin window system over a scratched up window will not provide the desired visibility.

Secondly, the windows installed into machine tools are of two types, namely polycarbonate plastic or a multi-layer machine tool safety window composed of a glass layer on the wet side of the window for scratch resistance to chip activity together with a polycarbonate plastic layer for impact resistance, either with an edge seal or metal frame for containment and mounting. Machine tool safety windows that meet clarity requirements can be easily cleaned up to allow very successful bonding of the VHB adhesive that is used in the standard VHB Mounting plate.

Polycarbonate windows are another story, in that chip activity and oil contamination are typically such that the window found on a machine tool in use cannot be cleaned sufficiently to accommodate bonding of the VHB adhesive. While 3M's VHB adhesive is tremendously strong, it needs to bond to the window substrate rather than to a thin film of oil on the surface of the substrate, and due to the wetting action of modern metalworking fluids, together with the scratches and pitting common to chip activity, a used window must be considered contaminated and should thus be replaced at the same time a spin window system installation is done.

As a customer service, Visiport can easily provide you with a replacement polycarbonate window of any given size and thickness, with or without a hole pattern, and can also provide pre-mounting of the VHB Mounting plate in a specified location to speed the installation process. Given the necessary dimensions, Visiport can also provide custom aftermarket machine tool safety windows from the world's leading manufacturers, with full CE Mark impact class requirements, all at an extremely competitive cost.

With machine tool windows having been classified as a wear item in some countries that should be periodically replaced to prevent metalworking fluid embrittlement over time, it is strongly recommended that customers consider replacing any machine tool windows that are blind, cracked, severely pitted, or over 5 years old. Research has found that over 8-10 years, some polycarbonate windows had as little as 10-15% of their original impact strength, due to the exposure to metalworking fluids, and that it was impossible to visually determine which windows had been embrittled simply by visual inspection. The ease of replacing these windows, and the ease of maintaining our spin Visiport® spin window on your machine tool window, should help to improve operator safety and productivity at the same time. Please contact Visiport for more information.

ENTIRE CONTRACT: All orders are accepted and all sales of products and services of Proto-Design, Inc. dba **Visiport** (hereinafter the "Seller") are made subject to the provisions of the written contract between us including the following provisions, or if no such contract exists, subject only to the terms on the invoice and the following provisions. In the event of any conflict between same and those submitted by the Buyer, the terms and conditions of Seller shall prevail. Unless specifically incorporated herein by reference, no written or oral understandings, representations, or warranties regarding the subject matter of this agreement and predating the date of this agreement shall have any effect. No changes or additions are effective unless agreed to by us in writing. To the extent that Buyer is a distributor of Seller's products; the terms of the distributor policy statement are incorporated herein by reference. To the extent that this invoice contains charges for service under a separate service agreement between Buyer and Seller, the terms of that service agreement are incorporated herein by reference.

TERMS OF PAYMENT: Net 30 days from date of invoice, unless otherwise stated on the invoice. All orders are subject to acceptance by Seller's offices in Redmond, Washington. Notwithstanding acceptance or acknowledgment thereof, all orders and all quotations are subject to approval by Seller of Buyer's credit; at Seller's option, terms of payment may be varied from those set forth herein. If Seller places collection of the amount due to it under this contract in the hands of an attorney after non-payment according to the terms hereof, Seller shall be entitled to a reasonable attorney's fees, which shall be added to the amount of any Court judgment entered in favor of Seller for the amount due under this contract. Any invoice unpaid after thirty (30) days shall bear interest at 18% per annum.

DELIVERY AND FREIGHT: Delivery of all goods is Ex Works our factory, unless otherwise stated on the invoice. Seller will pay freight on the order only if so stated on the invoice, and in so doing shall have the right to designate routing and means of transportation. Buyer may direct other routing and means; however, the Buyer will pay any extra costs involved. Domestic orders are shipped via UPS service unless acknowledged in writing by Seller. Buyers supplying a valid account number for collect charges may specify an alternate carrier. International orders, with the exception of credit card orders, are shipped freight collect via freight forwarder specified by Buyer. Actual shipping charges, duties, and taxes are the responsibility of the Buyer. Credit card orders can only be shipped via carriers using published rates. Seller is currently able to offer shipping for credit card orders through DHL, FedEx, or UPS. Unless specified, credit card orders will be shipped FedEx. Shipping charges are calculated for each shipment and added to the invoice billed to Buyer's credit card on date of shipment, unless Buyer specifies a valid account number for billing of freight charges.

PRICES AND QUOTATIONS: Prices are subject to change without notice, but any such changes shall not affect accepted orders scheduled for shipment within 30 days from the date the order is entered; prices of those products scheduled for shipment after 30 days from the date an order is accepted and entered shall be the published price in effect at the time of such scheduled shipment, but Buyer, by written notice to Seller within 5 days of receipt of a price increase, may elect to cancel the order for said products without charge in lieu of paying a higher price. Price quotations are firm for 30 days only.

TAXES: In the absence of proper evidence of exemption supplied to Seller, Buyer will reimburse Seller for all taxes, excise, or other charges which Seller may be required to pay any government (national, state, provincial, or local), except Income taxes, assessed upon the production, storage, sale, transportation, and/or use of the goods identified on the invoice.

TECHNICAL ADVICE: Any technical advice furnished before delivery regarding the use of goods is furnished on the basis that it represents our best judgment under the circumstances but that it is used at Buyer's sole risk. Notwithstanding any technical advice given, Buyer should test the application of Seller products to determine the suitability of the product for Buyer's intended use.

DESIGNS AND PUBLISHED DATA:

All designs and specifications are subject to change without notice. Such changes are not to be considered retroactive, and Seller assumes no responsibility for revisions of models already in the field. All data is sufficiently accurate for general use, but Seller assumes no responsibility for errors or omissions. Certified prints are available on request, at a reasonable charge.

RETURNS: All non-defective returns authorized by Seller are subject to a minimum 20% restocking fee. Only goods which are received within 90 days of original invoice date will be considered for credit. Credit will be based upon prices in effect at time of return or time of invoicing, whichever is lower, subject to deduction for handling, re-inspection, and any additional expense incurred in restoring goods to saleable condition, as determined by Seller's inspection. All return shipping charges must be prepaid. Used, damaged products, or products with missing packaging materials (hardware, literature, etc.) will be returned freight collect to the Sender. Products ordered to custom specifications are not returnable for credit or exchange. All returns require prior authorization and must be returned with all original packaging, accessories, and documentation. To request a Return Goods Authorization (RGA), please call +001 (425) 558-0200. RGA numbers are valid for 30 days. Incomplete or unauthorized returns will be refused and/or returned at Buyer's expense. Defective items will be repaired or replaced at Seller's sole discretion.

WARRANTY AND LIMITATION OF LIABILITY:

Seller warrants its products to be free from defects in materials and workmanship, without warranty for any specific application or use, for a period of one year (except glass products or mounting products not installed by Seller) from date of shipment by it to the original purchaser, its liability under this warranty being limited to repair, replacement, or credit allowance, at Seller's option, of any defective product or parts; Seller shall not be liable for any consequential injuries or damages or for claims for labor, loss of profit, repairs, or transportation or other expenses incidental to replacement of the material. This warranty shall not apply to any products which have been subject to misuse, misapplication, negligence, accident, modifications, tampering or instructional products used in an industrial application. This warranty is expressly in lieu of all other warranties, expressed or implied, and of all other obligations or liabilities on its part and no agent, representative or employee of Seller has any authority to extend the scope of this warranty or make any other representation, promise or guarantee in connection with the manufacture, sale or application of its products. Notice of merchandise received in a damaged condition shall be given to Seller within ten (10) days after delivery thereof, but the same shall not be returned to Seller until after notification to the carrier and inspection and examination thereof by a representative of the carrier and/or an inspection and examination by a representative of Seller. Any claim against Seller by a purchaser of goods and merchandise arising out of the condition or quality or quantity of said goods shall be made in writing to Seller within ten (10) days after the delivery of said goods and merchandise, and a failure to present such claim within the said ten (10) days shall constitute a waiver of such claim. Seller's only office for the transaction of business is at Redmond, Washington and only duly authorized officials of Seller at that place shall have the power to alter or amend the terms of any agreement binding upon Seller. No such amendment or alteration shall be binding upon Seller unless in writing and signed by such person.

GOVERNING LAW: All aspects of this agreement and its performance shall be governed by the law of the State of Washington, excluding the 1980 United Nations Convention on Contracts for the International Sale of Goods if otherwise applicable. The parties agree and consent that the Supreme Court of the State of Washington or United States District Court for the Western District of Washington shall have sole and exclusive jurisdiction of any dispute concerning the Agreement or its validity, construction, or performance, or the sale of goods and services hereunder.

FORCE MAJEURE: No liability shall result from any cause (including without limitation Acts of God, force majeure, labor trouble, inclement weather, shortage of or inability to obtain materials, equipment, or transportation, and/or orders of courts) beyond the reasonable control of the part affected. Either party may eliminate any quantities so affected, but this contract shall remain otherwise in effect. If Seller's supply of goods to be sold is limited by any such cause, Seller shall have the right to reduce or cancel in its entirety our commitment under this contract.

MISCELLANEOUS: This contract is not assignable or transferable without the prior written consent of the other party.