

HERMETIC SEALING SYSTEM

SM-8500A

USER MANUAL



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Revision Record

REV	ECO	DATE	BASIS OF REVISION
A	40530	06/06	None. Original edition.
B	41382	11/11	Incorporated into Miyachi Unitek documents.
C	42840	10/13	Updated to Miyachi America name and logo.
D	43177	07/14	Minor software screen update.
E	43480	11/14	Updated to Amada Miyachi America name and logo.
F	43643	03/15	Updated Error Codes.
G	43838	08/15	Updated to Amada Miyachi format.
H	44995	04/18	Include STOP function & reset to cut motor power
J	45357	02/19	Update STOP feature and update limited warranty
K	45913	06/20	Update Company Name (Amada Weld Tech) + Model number
L	46546	01/22	Update Error Code List
M	46980	03/23	Update Error Code List
N	47215	01/24	Update Manual Title

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CONTACT US

Thank you for purchasing an Amada Weld Tech SM-8500A.

Upon receipt of your equipment, please thoroughly inspect it for shipping damage prior to its installation. Should there be any damage, please immediately contact the shipping company to file a claim, and notify us at:

Amada Weld Tech Inc.
1820 South Myrtle Avenue
Monrovia, CA 91016

Telephone: (626) 303-5676

FAX: (626) 358-8048

E-Mail: info@amadaweldtech.com

The purpose of this manual is to provide the information required for proper and safe operation and maintenance of the Amada Weld Tech SM-8500A.

We have made every effort to ensure that information in this manual is both accurate and adequate. If you have any questions or suggestions to improve this manual, please contact us at the phone number or address above.

Amada Weld Tech is not responsible for any loss or injury due to improper use of this product.



CAUTION

Amada Weld Tech may be released from all warranty obligations if repairs or modifications are made by persons other than its own service personnel, or its authorized representatives, unless such repairs or modifications are specifically authorized in writing by Amada Weld Tech.

This manual covers the following models:

Original P/N	Original Model
SM85-05-01	SM8500, 240VAC
SM85-05-02	SM8500, 240VAC NC
SM85-05-03	SM8500, 400VAC
SM85-05-04	SM8500, 400VAC NC

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Current P/N	Current Model
SM85-06-01	SM-8500A, 240VAC
SM85-06-02	SM-8500A, 240VAC NC
SM85-06-03	SM-8500A, 400VAC
SM85-06-04	SM-8500A, 400VAC NC

LIMITED WARRANTY

GENERAL TERMS AND CONDITIONS FOR THE SALE OF GOODS

1. Applicability.

(a) These terms and conditions of sale (these “**Terms**”) are the only terms which govern the sale of the goods (“**Goods**”) by Amada Weld Tech Inc. (“**Seller**”) to the buyer identified in the Sales Quotation and/or Acknowledgment (as each defined below) to which these Terms are attached or incorporated by reference (“**Buyer**”). Notwithstanding anything herein to the contrary, if a written contract signed by authorized representatives of both parties is in existence covering the sale of the Goods covered hereby, the terms and conditions of said contract shall prevail to the extent they are inconsistent with these Terms.

(b) The accompanying quotation of sale (the “**Sales Quotation**”) provided to Buyer, and/or sales order acknowledgement (“**Acknowledgement**”) and these Terms (collectively, this “**Agreement**”) comprise the entire agreement between the parties, and supersede all prior or contemporaneous understandings, agreements, negotiations, representations and warranties, and communications, both written and oral. For clarification, after the Acknowledgement is received by Buyer, the order for Goods is binding and cannot be cancelled by Buyer for any reason and the full purchase price amount set forth in the Acknowledgement shall be due and payable by Buyer to Seller pursuant to the payment schedule set forth in the Acknowledgement unless otherwise agreed to in writing by Seller. All terms and conditions contained in any prior or contemporaneous oral or written communication which are different from, or in addition to, the terms and conditions in this Agreement are hereby rejected and shall not be binding on Seller, whether or not they would materially alter this Agreement. These Terms prevail over any of Buyer’s terms and conditions of purchase regardless whether or when Buyer has submitted its purchase order or such terms. Fulfillment of Buyer’s order does not constitute acceptance of any of Buyer’s terms and conditions and does not serve to modify or amend these Terms. Notwithstanding anything herein to the contrary, all orders for Goods must be for a minimum purchase price of \$100 or such orders will be rejected by Seller.

2. Delivery.

(a) The Goods will be delivered within a reasonable time after Seller provides Buyer the Acknowledgment, subject to availability of finished Goods. Seller will endeavor to meet delivery schedules requested by Buyer, but in no event shall Seller incur any liability, consequential or otherwise, for any delays or failure to deliver as a result of ceasing to manufacture any product or any Force Majeure Event. Delivery schedules set forth in the Acknowledgment are Seller’s good faith estimate on the basis of current schedules. In no event shall Seller be liable for special or consequential damages resulting from failure to meet requested delivery schedules.

(b) Unless otherwise agreed in writing by the parties in the Acknowledgement, Seller shall deliver the Goods to Seller’s plant in Monrovia, CA, USA (the “**Shipping Point**”) using Seller’s standard methods for packaging and shipping such Goods. Buyer shall take delivery of the Goods within three (3) days of Seller’s written notice that the Goods have been delivered to the Shipping Point. Buyer shall be responsible for all loading costs (including freight and insurance costs) and provide equipment and labor reasonably suited for receipt of the Goods at the Shipping Point. Seller shall not be liable for any delays, loss or damage in transit.

(c) Seller may, in its sole discretion, without liability or penalty, make partial shipments of Goods to Buyer, if applicable. Each shipment will constitute a separate sale, and Buyer shall pay for the units shipped whether such shipment is in whole or partial fulfillment of Buyer’s purchase order.

(d) If for any reason Buyer fails to accept delivery of any of the Goods on the date fixed pursuant to Seller’s notice that the Goods have been delivered at the Shipping Point, or if Seller is unable to deliver the Goods at the Shipping Point on such date because Buyer has not provided appropriate instructions, documents, licenses or authorizations: (i) risk of loss to the Goods shall pass to Buyer; (ii) the Goods shall be deemed to have been delivered; and (iii) Seller, at its option, may store the Goods until Buyer picks them up, whereupon Buyer shall be liable for all related costs and expenses (including, without limitation, storage and insurance).

3. Non-delivery.

(a) The quantity of any installment of Goods as recorded by Seller on dispatch from Seller’s place of business is conclusive evidence of the quantity received by Buyer on delivery unless Buyer can provide conclusive evidence proving the contrary.

(b) Seller shall not be liable for any non-delivery of Goods (even if caused by Seller’s negligence) unless Buyer gives written notice to Seller of the non-delivery within three (3) days of the date when the Goods would in the ordinary course of events have been received.

(c) Any liability of Seller for non-delivery of the Goods shall be limited to (in Seller’s sole discretion) replacing the Goods within a reasonable time or adjusting the invoice respecting such Goods to reflect the actual quantity delivered.

4. Shipping Terms. Unless indicated otherwise in the Acknowledgment, Delivery shall be made EXW (Incoterms 2010), Shipping Point, including without limitation, freight and insurance costs. If no delivery terms are specified on the Acknowledgement, the method of shipping will be in the sole discretion of Seller. Unless directed in writing otherwise by Buyer, full invoice value will be declared for all shipments.

5. Title and Risk of Loss. Title and risk of loss passes to Buyer upon delivery of the Goods at the Shipping Point. As collateral security for the payment of the purchase price of the Goods, Buyer hereby grants to Seller a lien on and security interest in and to all of the right, title and interest of Buyer in, to and under the Goods, wherever located, and whether now existing or hereafter arising or acquired from time to time, and in all accessions thereto and replacements or modifications thereof, as well as all proceeds (including insurance proceeds) of the foregoing. The security interest granted under this provision constitutes a purchase money security interest under the California Commercial Code.

6. Amendment and Modification. These Terms may only be amended or modified in a writing which specifically states that it amends these Terms and is signed by an authorized representative of each party.

7. Inspection and Rejection of Nonconforming Goods.

(a) Buyer shall inspect the Goods within two (2) days of receipt ("**Inspection Period**"). Buyer will be deemed to have accepted the Goods unless it notifies Seller in writing of any Nonconforming Goods during the Inspection Period and furnishes such written evidence or other documentation as required by Seller. "**Nonconforming Goods**" means only the following: (i) product shipped is different than identified in Buyer's Acknowledgement; or (ii) product's label or packaging incorrectly identifies its contents. Notwithstanding the foregoing, for shipped Goods that require field installation, the "re-verification" terms in the Acknowledgement shall apply and for custom installations, the inspection and verification shall take place at Buyer's site immediately after the installation is completed.

(b) Seller will only accept Nonconforming Goods that are returned under Seller's Return Material Authorization procedures then in effect ("**RMA**"). Buyer shall obtain a RMA number from Seller prior to returning any Nonconforming Goods and return the Nonconforming Goods prepaid and insured to Seller at 1820 South Myrtle Avenue, Monrovia, CA 91016 or to such other location as designated in writing by Seller for the examination to take place there. If Seller reasonably verifies Buyer's claim that the Goods are Nonconforming Goods and that the nonconformance did not developed by use from Buyer, Seller shall, in its sole discretion, (i) replace such Nonconforming Goods with conforming Goods, or (ii) credit or refund the Price for such Nonconforming Goods pursuant to the terms set forth herein. Notwithstanding the foregoing, the only remedy for Nonconforming Goods that are custom systems is repair (not refund or replacement). No returns for Nonconforming Goods are allowed after thirty (30) days from the original shipping date.

(c) Buyer acknowledges and agrees that the remedies set forth in Section 7(a) are Buyer's exclusive remedies for the delivery of Nonconforming Goods. Except as provided under Section 7(a) and Section 14, all sales of Goods to Buyer are made on a one-way basis and Buyer has no right to return Goods purchased under this Agreement to Seller.

8. Price.

(a) Buyer shall purchase the Goods from Seller at the prices (the "**Prices**") set forth in Seller's published catalogue literature in force as of the date of the Sales Quotation. However, the Prices shown in such catalogue literature or any other publication are subject to change without notice. Unless specifically stated to the contrary in the Sales Quotation, quoted Prices and discounts are firm for thirty (30) days from the date of the Sales Quotation. Unless otherwise stated, prices are quoted EXW (Incoterms 2010), Shipping Point. Unless otherwise stated in the Acknowledgement, if the Prices should be increased by Seller before delivery of the Goods to a carrier for shipment to Buyer, then these Terms shall be construed as if the increased prices were originally inserted herein, and Buyer shall be billed by Seller on the basis of such increased prices.

(b) All Prices are exclusive of all sales, use and excise taxes, and any other similar taxes, duties and charges of any kind imposed by any governmental authority on any amounts payable by Buyer. Buyer shall be responsible for all such charges, costs and taxes (present or future); provided, that, Buyer shall not be responsible for any taxes imposed on, or with respect to, Seller's income, revenues, gross receipts, personnel or real or personal property or other assets.

9. Payment Terms.

(a) Unless otherwise provided in the Acknowledgement, if Buyer has approved credit with Seller, Buyer shall pay all invoiced amounts due to Seller within thirty (30) days from the date of Seller's invoice. If Seller does not have Buyer's financial information and has not provided pre-approved credit terms for Buyer, the payment must be made in cash with order or C.O.D. in US dollars. If Buyer has approved credit terms, the payment may be made by cash with order, wire transfer of immediately available funds, or check in US dollars. Certain products require a down payment. Any payment terms other than set forth above will be identified in the Acknowledgement. Notwithstanding anything herein to the contrary, all prepaid deposits and down payments are non-refundable. If a deposit is not received when due, Seller reserves the right to postpone manufacturing of Goods until payment is received. Seller will not be responsible for shipment delays due to deposit payment delays.

(b) In Seller's sole discretion, Seller may access Buyer interest on all late payments at the lesser of the rate of 1.5% per month or the highest rate permissible under applicable law, calculated daily and compounded monthly. Buyer shall reimburse Seller for all costs incurred in collecting any late payments, including, without limitation, attorneys' fees. In addition to all other remedies available under these Terms or at law (which Seller does not waive by the exercise of any rights hereunder), Seller shall be entitled to suspend the delivery of any Goods if Buyer fails to pay any amounts when due hereunder and such failure continues for ten (10) days following written notice thereof.

(c) Buyer shall not withhold payment of any amounts due and payable by reason of any set-off of any claim or dispute with Seller, whether relating to Seller's breach, bankruptcy or otherwise.

10. Intellectual Property; Software License.

(a) To the extent that any Goods provided under this Agreement contains software, whether pre-installed, embedded, in read only memory, or found on any other media or other form ("**Software**"), such Software and accompanying documentation are licensed to Buyer, not sold and shall remain the sole and exclusive property of Seller or third party licensors of Seller. Seller grants Buyer a non-exclusive license to use the Software solely as provided in and in connection with the use of the Goods in which such Software is contained and in accordance with any applicable user documentation provided with such Goods and subject to the provisions of this Agreement. Certain of Seller's Goods may include third party software such as computer operating systems. Licenses to such third party software are subject to the terms and conditions of any applicable third party software license agreements. Unless identified in the Acknowledgement, no license is granted by Seller with respect to such third party software products that may be provided with the Goods (if any). Seller makes no warranties regarding any third party software that may accompany the Goods or otherwise and such software is explicitly included in the definition of Third Party Products below.

(b) Buyer shall not copy, modify, or disassemble, or permit others to copy, modify, or disassemble, the Software, nor may Buyer modify, adapt, translate, reverse assemble, decompile, or otherwise attempt to derive source code from the Software. Buyer shall not transfer possession of the Software except as part of, or with, the Goods, and each such transfer shall be subject to the restrictions contained herein. Buyer may not sublicense, rent, loan, assign or otherwise transfer the Software or documentation, and Buyer shall retain on all copies of the Software and documentation all copyright and other proprietary notices or legends appearing therein or thereon. Seller may terminate this license upon written notice for any violation of any of the terms of this license or any material breach of any provision of this Agreement. Buyer shall immediately discontinue use of the Software upon any termination of this license or Agreement. This license shall terminate upon any termination of the Agreement.

(c) All patents, trademarks, copyrights or other intellectual property rights embodied in the Goods, including without limitation the Software, are owned by Seller and its licensors. Seller and its licensors retain all right, title and interest in such intellectual property rights. Except as expressly set forth herein, no license rights or ownership in or to any of the foregoing is granted or transferred hereunder, either directly or by implication. ALL RIGHTS RESERVED.

(d) If Buyer is the United States Government or any agency thereof, each of the components of the Software and user documentation are a “commercial item,” and “computer software” as those terms are defined at 48 C.F.R. 2.101, consisting of “commercial computer software” and “commercial computer software documentation,” as such terms are used in 48 C.F.R. 12.212. Consistent with 48 C.F.R. 12.212 and 48 C.F.R. 227.7202-1 through 227.7202-4, all United States government Buyers acquire only those rights in the Software and user documentation that are specified in this Agreement.

11. Installation and Other Services. Seller shall provide installation services (“**Installation Services**”) to Buyer if set forth in the Acknowledgment. If Installation Services are provided for in the Acknowledgment, Buyer will prepare the location for the installation consistent with Buyer’s written specifications and Buyer will install necessary system cable and assemble any necessary equipment or hardware not provided by Seller, unless agreed otherwise in writing by the parties. For Goods that will be operated on or in connection with Buyer supplied hardware or software, Buyer is responsible for ensuring that its hardware and software conform with Seller minimum hardware and software requirements as made available to Buyer. Seller shall provide other field services, such as maintenance visits and field repairs (the “**Other Services**” and together with the Installation Services, the “**Services**”) if set forth in the Acknowledgment.

12. Limited Warranty.

(a) Subject to the exceptions and upon the conditions set forth herein, Seller warrants to Buyer that for a period of one (1) year from the date of shipment (“**Warranty Period**”), that such Goods will be free from material defects in material and workmanship.

(b) Notwithstanding the foregoing and anything herein to the contrary, the warranty set forth in this Section 12 shall be superseded and replaced in its entirety with the warranty set forth on **Exhibit A** hereto if the Goods being purchased are specialty products, which include, without limitation, laser products, fiber markers, custom systems, workstations, Seller-installed products, non-catalogue products and other custom-made items (each a “**Specialty Product**”).

(c) **EXCEPT FOR THE WARRANTY SET FORTH IN SECTION 12(A), SELLER MAKES NO WARRANTY WHATSOEVER WITH RESPECT TO THE GOODS (INCLUDING ANY SOFTWARE) OR SERVICES, INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; (c) WARRANTY OF TITLE; OR (d) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE.**

(d) Products manufactured by a third party and third party software (“**Third Party Product**”) may constitute, contain, be contained in, incorporated into, attached to or packaged together with, the Goods. Third Party Products are not covered by the warranty in Section 12(a). For the avoidance of doubt, **SELLER MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO ANY THIRD PARTY PRODUCT, INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; (c) WARRANTY OF TITLE; OR (d) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE.** Notwithstanding the foregoing, in the event of the failure of any Third Party Product, Seller will assist (within reason) Buyer (at Buyer’s sole expense) in obtaining, from the respective third party, any (if any) adjustment that is available under such third party’s warranty.

(e) Seller shall not be liable for a breach of the warranty set forth in Section 12(a) unless: (i) Buyer gives written notice of the defect, reasonably described, to Seller within five (5) days of the time when Buyer discovers or ought to have discovered the defect and such notice is received by Seller during the Warranty Period; (ii) Seller is given a reasonable opportunity after receiving the notice to examine such Goods; (iii) Buyer (if requested to do so by Seller) returns such Goods (prepaid and insured to Seller at 1820 South Myrtle Avenue, Monrovia, CA 91016 or to such other location as designated in writing by Seller) to Seller pursuant to Seller’s RMA procedures and Buyer obtains a RMA number from Seller prior to returning such Goods for the examination to take place; and (iii) Seller reasonably verifies Buyer’s claim that the Goods are defective and that the defect developed under normal and proper use.

(f) Seller shall not be liable for a breach of the warranty set forth in Section 12(a) if: (i) Buyer makes any further use of such Goods after giving such notice; (ii) the defect arises because Buyer failed to follow Seller’s oral or written instructions as to the storage, installation, commissioning, use or maintenance of the Goods; (iii) Buyer alters or repairs such Goods without the prior written consent of Seller; or (iv) repairs or modifications are made by persons other than Seller’s own service personnel, or an authorized representative’s personnel, unless such repairs are made with the written consent of Seller in accordance with procedures outlined by Seller.

(g) All expendables such as electrodes are warranted only for defect in material and workmanship which are apparent upon receipt by Buyer. The foregoing warranty is negated after the initial use.

(h) Subject to Section 12(e) and Section 12(f) above, with respect to any such Goods during the Warranty Period, Seller shall, in its sole discretion, either: (i) repair or replace such Goods (or the defective part) or (ii) credit or refund the price of such Goods at the pro rata contract rate, provided that, if Seller so requests, Buyer shall, at Buyer’s expense, return such Goods to Seller.

(i) **THE REMEDIES SET FORTH IN SECTION 12(H) SHALL BE BUYER’S SOLE AND EXCLUSIVE REMEDY AND SELLER’S ENTIRE LIABILITY FOR ANY BREACH OF THE LIMITED WARRANTY SET FORTH IN SECTION 12(A).** Representations and warranties made by any person, including representatives of Seller, which are inconsistent or in conflict with the terms of this warranty, as set forth above, shall not be binding upon Seller.

13. Limitation of Liability.

(a) **IN NO EVENT SHALL SELLER BE LIABLE FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR PUNITIVE DAMAGES, LOST PROFITS OR REVENUES OR DIMINUTION IN VALUE, LOSS OF INFORMATION OR DATA, OR PERSONAL INJURY OR DEATH ARISING IN ANY WAY OUT OF THE MANUFACTURE, SALE, USE, OR INABILITY TO USE ANY GOODS, SOFTWARE OR SERVICE, OR ARISING OUT OF OR RELATING TO ANY BREACH OF THESE TERMS, WHETHER OR NOT THE POSSIBILITY OF SUCH DAMAGES HAS BEEN DISCLOSED IN ADVANCE BY BUYER OR COULD HAVE BEEN REASONABLY FORESEEN BY BUYER, REGARDLESS OF THE LEGAL OR EQUITABLE THEORY (CONTRACT, TORT OR OTHERWISE) UPON WHICH THE CLAIM IS BASED, AND NOTWITHSTANDING THE FAILURE OF ANY AGREED OR OTHER REMEDY OF ITS ESSENTIAL PURPOSE.**

(b) **IN NO EVENT SHALL SELLER’S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EXCEED THE TOTAL OF THE AMOUNTS PAID TO SELLER FOR THE GOODS SOLD**

HEREUNDER.

(c) ALL WARRANTIES SET FORTH HEREIN, DIRECT OR IMPLIED, ARE VOIDED IF THE INITIAL INSTALLATION AND START-UP OF THE SUBJECT GOOD IS NOT SUPERVISED BY AN AUTHORIZED REPRESENTATIVE OF SELLER. AFTER INSTALLATION, ANY RE-ALIGNMENT, RE-CLEANING, OR RE-CALIBRATION, PROVIDED THEY ARE NOT RELATED TO A PROVEN DEFECT IN MATERIALS OR WORKMANSHIP, SHALL BE PERFORMED BY AN AUTHORIZED REPRESENTATIVE OF SELLER AT THE CURRENT SERVICE RATES.

(d) WHERE GOODS ARE SUBJECT TO A MOVE TO ANOTHER LOCATION AFTER THE ORIGINAL INSTALLATION HAS BEEN MADE, THE WARRANTY MAY BE MAINTAINED ONLY IF SUPERVISED BY AN AUTHORIZED REPRESENTATIVE OF SELLER. SELLER, FOR A SERVICE CHARGE, WILL ARRANGE FOR AND SUPERVISE THE DISCONNECTION, TRANSPORTATION, REINSTALLATION AND START-UP OF THE EQUIPMENT. CLAIMS FOR DAMAGE IN SHIPMENT ARE THE RESPONSIBILITY OF BUYER AND SHALL BE FILED PROMPTLY WITH THE TRANSPORTATION COMPANY.

14. Return Goods Policy. Seller's products may be returned to Seller for credit within sixty (60) days of shipment subject to the following conditions.

(a) In order to return products for credit, Buyer must obtain a RMA number from Seller. Upon receipt, it must be executed by an authorized person and then returned with the Goods. Goods returned to Seller without a RMA will be returned at Buyer's expense.

(b) Goods are to be returned to Seller at 1820 South Myrtle Avenue, Monrovia, CA 91016 with Freight Prepaid. Seller will not accept collect shipments.

(c) Restocking fees will be assessed in accordance with the following schedules: (i) Goods returned within the first thirty (30) days from shipment date will be restocked less twenty percent (20%) of the amount billed on the original invoice. (ii) Goods returned over thirty (30) days of shipment but less than sixty (60) days will be restocked less thirty percent (30%) of the amount billed on the original invoice. (iii) No returns are allowed after sixty (60) days from the original shipping date.

(d) The restocking fees set forth above are the minimum fees. If a returned Good requires rework to restore it to a saleable condition, further charges will be assessed. Seller's quality assurance department will document the condition of the Goods when received by Seller and report their findings to Buyer.

(e) **Notwithstanding the foregoing provisions of this Section 14, the following Goods cannot be returned, are not eligible for any credit and cannot be restocked: (i) custom or modified products and (ii) any expendable product(s) that have been used.**

15. Compliance with Law and Indemnification. Buyer shall comply with all applicable laws, regulations and ordinances. Buyer shall maintain in effect all the licenses, permissions, authorizations, consents and permits that it needs to carry out its obligations under this Agreement. Buyer shall comply with all export and import laws of all countries involved in the sale of the Goods under this Agreement or any resale of the Goods by Buyer. Goods, Services and technical data delivered by Seller shall be subject to U.S. export controls. Buyer shall, and shall cause its customers to, obtain all licenses, permits and approvals required by any government and shall comply with all applicable laws, rules, policies and procedures of the applicable government and other competent authorities. Buyer will indemnify and hold Seller harmless for any violation or alleged violation by Buyer of such laws, rules, policies or procedures. Buyer shall not transmit, export or re-export, directly or indirectly, separately or as part of any system, the Goods or any technical data (including processes and Services) received from Seller, without first obtaining any license required by the applicable government, including without limitation, the U.S. government. Buyer also certifies that none of the Goods or technical data supplied by Seller under this Agreement will be sold or otherwise transferred to, or made available for use by or for, any entity that is engaged in the design, development, production or use of nuclear, biological or chemical weapons or missile technology. No Buyer information will be deemed "technical data" unless Buyer specifically identifies it to Seller as such. Buyer assumes all responsibility for shipments of Goods requiring any government import clearance. Seller may terminate this Agreement if any governmental authority imposes antidumping or countervailing duties or any other penalties on Goods. For all international shipments, Seller requires that all required Export Control documentations, including Form BIS-711 Statement by Ultimate Consignee and Purchases, are submitted by Buyer along with the purchase order. Seller reserves the right to postpone shipment until all documentations are completed and submitted to Seller. Seller will not be responsible for shipment delays due to non-compliance by Buyer of the foregoing two sentences.

16. Termination. In addition to any remedies that may be provided under these Terms, Seller may terminate this Agreement with immediate effect upon written notice to Buyer, if Buyer: (i) fails to pay any amount when due under this Agreement and such failure continues for ten (10) days after Buyer's receipt of written notice of nonpayment; (ii) has not otherwise performed or complied with any of these Terms, in whole or in part; or (iii) becomes insolvent, files a petition for bankruptcy or commences or has commenced against it proceedings relating to bankruptcy, receivership, reorganization or assignment for the benefit of creditors.

17. Waiver. No waiver by Seller of any of the provisions of this Agreement is effective unless explicitly set forth in writing and signed by Seller. No failure to exercise, or delay in exercising, any rights, remedy, power or privilege arising from this Agreement operates or may be construed as a waiver thereof. No single or partial exercise of any right, remedy, power or privilege hereunder precludes any other or further exercise thereof or the exercise of any other right, remedy, power or privilege.

18. Confidential Information. All non-public, confidential or proprietary information of Seller, including, but not limited to, specifications, samples, patterns, designs, plans, drawings, documents, data, business operations, customer lists, pricing, discounts or rebates, disclosed by Seller to Buyer, whether disclosed orally or disclosed or accessed in written, electronic or other form or media, and whether or not marked, designated or otherwise identified as "confidential," in connection with this Agreement is confidential, solely for the use of performing this Agreement and may not be disclosed or copied unless authorized in advance by Seller in writing. Upon Seller's request, Buyer shall promptly return all documents and other materials received from Seller. Seller shall be entitled to injunctive relief for any violation of this Section 18. This Section 18 does not apply to information that is: (a) in the public domain through no fault of Buyer; (b) known to Buyer at the time of disclosure without restriction as evidenced by its records; or (c) rightfully obtained by Buyer on a non-confidential basis from a third party.

19. Force Majeure. Seller shall not be liable or responsible to Buyer, nor be deemed to have defaulted or breached this Agreement, for any failure or delay in fulfilling or performing any term of this Agreement when and to the extent such failure or delay is caused by or results from acts or circumstances beyond the reasonable control of Seller including, without limitation, acts of God, flood, fire, earthquake, explosion, governmental actions, war, invasion or hostilities (whether war is declared or not), terrorist threats or acts, riot, or other civil unrest, national emergency, revolution, insurrection, epidemic, lock-outs, strikes or other labor disputes (whether or not relating to either party's workforce), or restraints or delays affecting carriers or inability or delay in obtaining supplies

of adequate or suitable materials, materials or telecommunication breakdown or power outage (each a “**Force Majeure Event**”), provided that, if the event in question continues for a continuous period in excess of thirty (30) days, Buyer shall be entitled to give notice in writing to Seller to terminate this Agreement.

20. Assignment. Buyer shall not assign any of its rights or delegate any of its obligations under this Agreement without the prior written consent of Seller. Any purported assignment or delegation in violation of this Section 20 is null and void. No assignment or delegation relieves Buyer of any of its obligations under this Agreement.

21. Relationship of the Parties. The relationship between the parties is that of independent contractors. Nothing contained in this Agreement shall be construed as creating any agency, partnership, joint venture or other form of joint enterprise, employment or fiduciary relationship between the parties, and neither party shall have authority to contract for or bind the other party in any manner whatsoever.

22. No Third-Party Beneficiaries. This Agreement is for the sole benefit of the parties hereto and their respective successors and permitted assigns and nothing herein, express or implied, is intended to or shall confer upon any other person or entity any legal or equitable right, benefit or remedy of any nature whatsoever under or by reason of these Terms.

23. Governing Law. All matters arising out of or relating to this Agreement is governed by and construed in accordance with the internal laws of the State of California without giving effect to any choice or conflict of law provision or rule (whether of the State of California or any other jurisdiction) that would cause the application of the laws of any jurisdiction other than those of the State of California.

24. Dispute Resolution.

(a) If Buyer is an entity formed under the laws of the United States of America, or any of its states, districts or territories (“**U.S. Law**”), then any dispute, legal suit, action or proceeding arising out of or relating to this Agreement shall be adjudicated and decided in the federal courts of the United States of America or the courts of the State of California in each case located in the City of Los Angeles and County of Los Angeles, California and each party irrevocably submits to the exclusive and personal jurisdiction of such courts in any such dispute, suit, action or proceeding.

(b) If Buyer is an entity formed under the laws of any country, state, district or territory other than U.S. Law, then the parties irrevocably agree that any dispute, legal suit, action or proceeding arising out of or relating to this Agreement shall be submitted to the International Court of Arbitration of the International Chamber of Commerce (“**ICC**”) and shall be finally settled under the Rules of Arbitration of the ICC. The place and location of the arbitration shall be in Los Angeles, California, pursuant to the ICC’s Rules of Arbitration and shall be finally settled in accordance with said rules. The arbitration shall be conducted before a panel of three arbitrators. Each party shall select one arbitrator and the two arbitrators so selected shall select the third arbitrator, who shall act as presiding arbitrator. Notwithstanding the foregoing, if the matter under dispute is \$500,000 or less, there shall only be one arbitrator who shall be mutually selected by both parties. If the party-selected arbitrators are unable to agree upon the third arbitrator, if either party fails to select an arbitrator, or in the case that only one arbitrator is required and the parties are unable to agree, then the International Court of Arbitration shall choose the arbitrator. The language to be used in the arbitral proceeding shall be English. The arbitrator(s) shall have no authority to issue an award that is contrary to the express terms of this Agreement or the laws of the State of California or applicable US Federal Law, and the award may be vacated or corrected on appeal to a court of competent jurisdiction for any such error. The arbitrator(s) shall be specifically empowered to allocate between the parties the costs of arbitration, as well as reasonable attorneys’ fees and costs, in such equitable manner as the arbitrator(s) may determine. The arbitrator(s) shall have the authority to determine issues of arbitrability and to award compensatory damages, but they shall not have authority to award punitive or exemplary damages. Judgment upon the award so rendered may be entered in any court having jurisdiction or application may be made to such court for judicial acceptance of any award and an order of enforcement, as the case may be. In no event shall a demand for arbitration be made after the date when institution of a legal or equitable proceeding based upon such claim, dispute or other matter in question would be barred by the applicable statute of limitations. Notwithstanding the foregoing, either party shall have the right, without waiving any right or remedy available to such party under this Agreement or otherwise, to seek and obtain from any court of competent jurisdiction any interim or provisional relief that is necessary or desirable to protect the rights or property of such party, pending the selection of the arbitrator(s) hereunder or pending the arbitrator(s)’ determination of any dispute, controversy or claim hereunder.

25. Notices. All notices, request, consents, claims, demands, waivers and other communications hereunder (each, a “**Notice**”) shall be in writing and addressed to the parties at the addresses set forth on the face of the Acknowledgement or to such other address that may be designated by the receiving party in writing. All Notices shall be delivered by personal delivery, nationally recognized overnight courier (with all fees pre-paid), facsimile (with confirmation of transmission) or certified or registered mail (in each case, return receipt requested, postage prepaid). Except as otherwise provided in this Agreement, a Notice is effective only (a) upon receipt of the receiving party, upon confirmation of delivery by nationally recognized overnight courier or upon forty-eight (48) hours after being sent by certified or registered mail (as applicable), and (b) if the party giving the Notice has complied with the requirements of this Section 25.

26. Severability. If any term or provision of this Agreement is invalid, illegal or unenforceable in any jurisdiction, such invalidity, illegality or unenforceability shall not affect any other term or provision of this Agreement or invalidate or render unenforceable such term or provision in any other jurisdiction.

27. Survival. Provisions of these Terms which by their nature should apply beyond their terms will remain in force after any termination or expiration of this Order including, but not limited to, the following provisions: Compliance with Laws, Confidentiality, Governing Law, Dispute Resolution, Survival, and the restrictions on Software in Sections 10(b), (c) and (d).

Overview

Introduction

The SM-8500A is a system designed for the precision seam sealing of small to large size electronic hermetic packages, and for resistance welding in industrial applications on a production basis. The SM-8500A offers precise control of power, position and force to provide an extraordinary level of control over the seam sealing process. In conjunction with the HF-2500A High-Frequency Resistance Welding Power Supply, the SM-8500A precisely places and controls the weld energy of every weld spot, insuring a sealing process with the lowest possible transfer of heat into the device.



WARNING

Lethal voltages exist throughout this equipment. Contact with voltages present in this system may cause *serious injuries* or DEATH. Please read this and all manuals completely and note all cautions and warnings before attempting to install, to operate or to maintain the system.

It is of the utmost importance that the service or test personnel be completely familiar with all aspects of this equipment and operation. During any diagnostic test involving motion, be sure hands are clear of all moving parts.

Standard System Specifications

Mechanical Specifications

Length: 533 mm (21 inches)

Width: 559 mm (22 inches)

Height: 483 mm (19 inches)

Welding Parameters

Speed: 0.1 inches per second to 1.5 inches per second

Force: 250 grams to 5000 grams

Power: 50 to 2500 Amps; 0.1 milliseconds to 99 milliseconds, 0.1 millisecond resolution

Part Size

0.08 inch by 0.08 inch to 8.0 inch by 8.0 inch

HF-2500A Specifications

Please see the HF-2500A manual.

Parts and Components

SM-8500A Hermetic Sealing System



HF-2500A High Frequency Inverter



THEORY OF OPERATION

Mechanism

The welding mechanism the SM-8500A consists of three servo-driven axes and programmable pneumatic force application. The three axes control electrode spacing, feed rate, and rotary motion. Weld schedules are based on the dimensions of the part to be welded, sparing the user from the machine details.

HF-2500A HIGH FREQUENCY INVERTER

The HF-2500A provides precisely controlled weld pulses to address the challenge of seam sealing delicate and heat-sensitive devices or the resistance welding of industrial applications. The quality of miniature welds is highly sensitive to small heat profile fluctuations in the resistance welding process. Overheating deforms and destroys parts, while under-heating results in a weak, unacceptable bond. To achieve consistent, reliable welds, precisely controlled heating is required. This necessitates superior control of the energy output from the welding power supply.

With the HF-2500A Series, advances in high frequency switch mode power processing technology (HF-DC) and closed-loop digital feedback control are combined into a single unit. Advanced closed-loop digital feedback simultaneously monitors and adjusts voltage, current, and power output, providing an exceptionally rapid response to fluctuations in the welding process. It is the combination of high output resolution and ultra-fast in-process compensation that creates a well-controlled heating profile.

Installation

Unpacking

The SM-8500A is shipped fully assembled. Remove all packing materials and visually inspect the system for obvious signs of shipping damage. Report any damage immediately to the carrier. The carrier claims agent must file a report with the user that can then be forwarded to Amada Weld Tech for resolution.

The Service Department will advise the customer on the actions to be taken to repair or replace damaged equipment.

Unpack the computer and monitor from their respective boxes. Connect the keyboard, mouse, monitor, network, and power cords.

Positioning the SM-8500A System

When positioning the SM-8500A within the enclosure, be sure to leave adequate room in front for the operator to perform normal duties. The STOP button should always be accessible to the operator.

Electrical and Gas Service Requirements

Electrical Service

The SM-8500A requires a dedicated electrical service unless it is tied into the enclosure's electrical service. If the SM-8500A is a stand-alone machine, the default configuration will be for 115-240 VAC, 50/60 Hz, Single Phase, 15 Ampere.

The HF-2500A requires a separate service supply input. Please consult the User's Manual (Amada Weld Tech Part Number 990-371) for power requirements.

Gas Service

The SM-8500A requires a dedicated gas service unless it is tied into the enclosure's gas service. 414kPa (60 PSIG) is needed for the SM-8500A to operate properly. Either inert gas or compressed air is suitable.

Getting Started

Powering up the SM-8500A

POWER UP THE SM-8500A

Check to see that the system is clear of any parts or obstructions between the weld head electrodes. Remove all nests from the work area.

Remove all items on the rotary table.

Verify the electrical service input requirements are met, and all power connections are plugged in.

Verify the proper line pressures for all gases are correct and that all tube connections are tight.

Check to see that the power connection is made.

Check to see that the SM-8500A MAIN POWER switch is OFF.

Turn on the power for the SM-8500A. On the SM-8500A, the power "switch" is on the rear panel. Turn on the power to the HF-2500A by placing the circuit breaker switch in the up position.

POWER UP THE COMPUTER AND LOG ON

Next check power to the computer. Log on as using your name and password. All user names have different levels of access depending on the role you wish to perform. The SM-8500A is configured on shipment with a single account with user name of "admin".

POWER UP THE ENCLOSURE

Running the SM-8500A

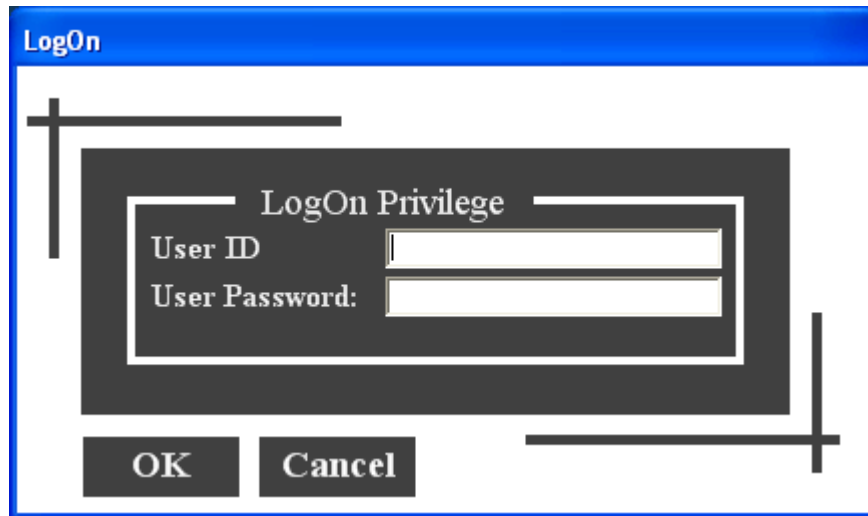
Establish power for the enclosure and SM-8500A

See the section titled “Powering up the SM-8500A.”

Start the SM-8500A Application

Double-click the SM8500 icon to start up the user interface. The Login Window will be presented (see **Error! Reference source not found.**).

Log in using your assigned username and password.



After you have entered a valid User Name and Password, the SM-8500A application establishes communication with the HF-2500A power supply and the motion control system. The system ships with the administrator account having user name “admin” and password “pw”.

After communications have been established, you are presented with the main display window.



Enable power to the SM-8500A

Check to see that the electrodes are clear of any parts or obstructions. Clear the rotary table of any nests and tools. Make sure there are no items that would impair movement by the system.

Press the “Power On” switch if it is not already in the up position. It is located in the top right of the screen.

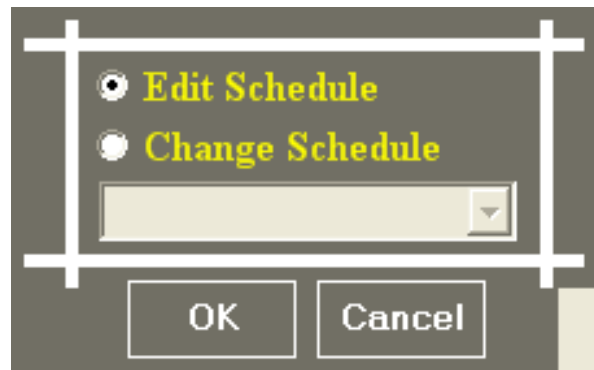
“Home” the SM-8500A

The precise motion control of the SM-8500A requires that each part of the motion control system establish its location from a known point of reference during system start-up. The process the SM-8500A uses to establish this is called “homing,” and the system will not operate until it has been “homed.”

From the Main screen, press the “HOME” button. The machine will begin the homing sequence. While the machine is homing, messages will be displayed indicating the progression. When the homing sequence is finished, the message “Home Sequence Completed” will be displayed.

Select the Weld Schedule

With power on and the system properly homed you are ready to select a weld schedule. Click on the “Schedule” button near the middle right of the Main screen. This will open up the Edit/Change Schedule screen. If you have scheduling editing rights, you would be able to modify the weld schedule. Otherwise, you will only have the ability to change a weld schedule.



Highlight the name of the weld schedule you wish to load from the list of available schedules. After you have highlighted the correct schedule, click on the “OK” button directly below the list and that schedule will become active.

Run the Schedule

Now, do a final check to be sure that no obstruction, including any improperly seated packages in the nest, can interfere with the sealing of the parts. If everything looks correct, press the “Tack”, “Weld”, or “T&W” button at the bottom right corner of the Main screen and begin sealing. The system will automatically stop and present the nest at the front of the sealer when the sealing process is complete.

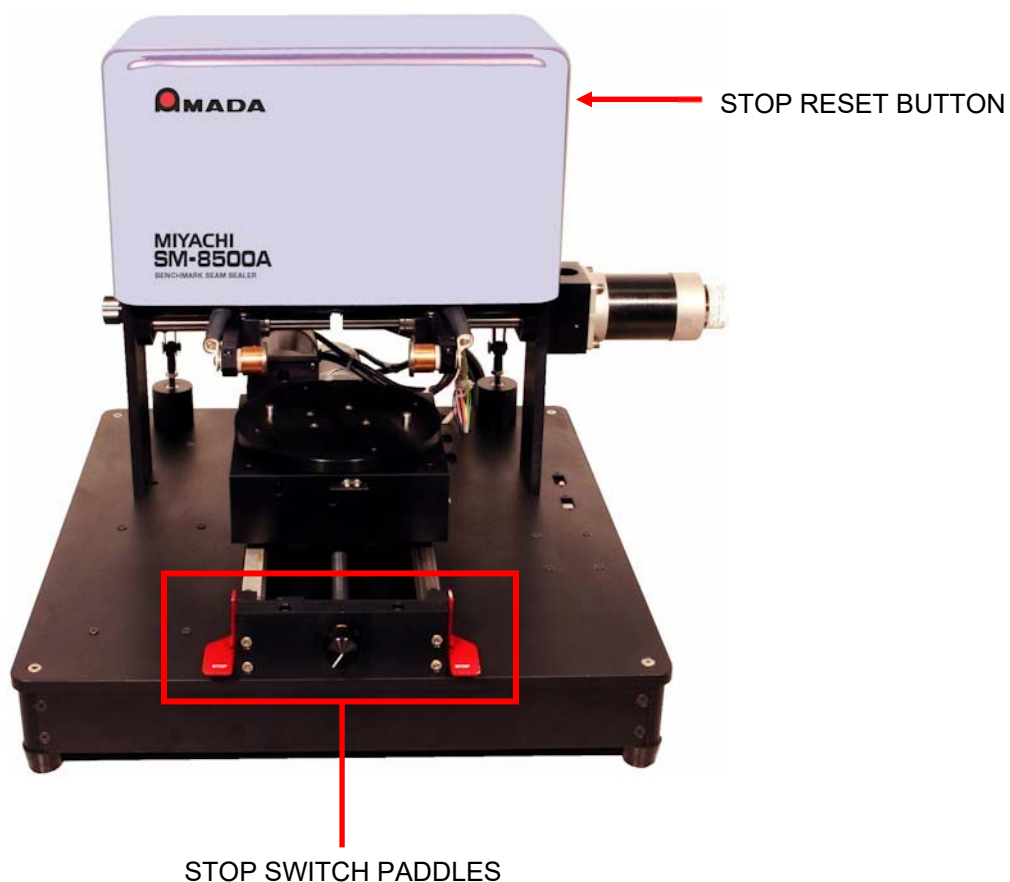
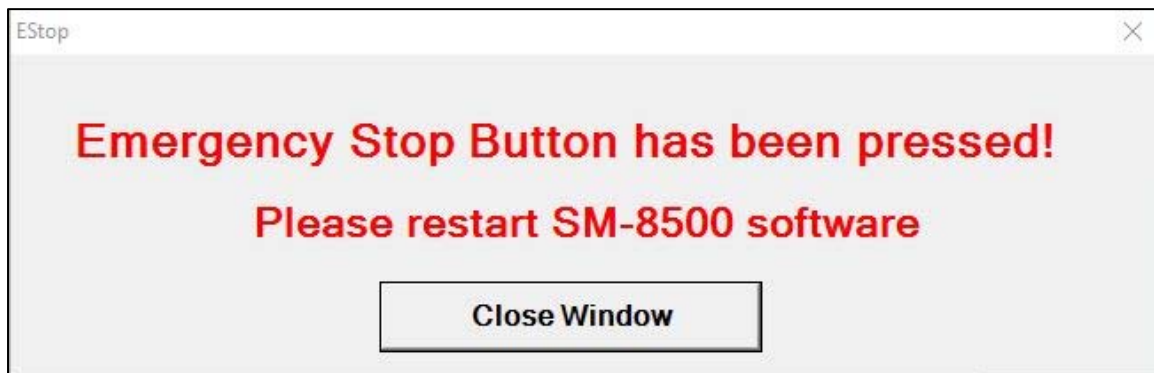
Weld Power Button

The weld power button can be used to turn off the firing signal to the HF-2500A. When the button is green, weld power is enabled. When the button is red, weld power is disabled. The weld/no weld button on the front of the HF-2500A will not work when this button is red.



STOP Button

If the STOP Switch paddle is pressed, all the motions in the system will come to a complete stop. The below message will be displayed. To clear the STOP function make sure the STOP button is not depressed, then restart the application software because the connection to the motion controller is disrupted and the software may not function properly.



Setting up a Weld Schedule

How to program the SM-8500A

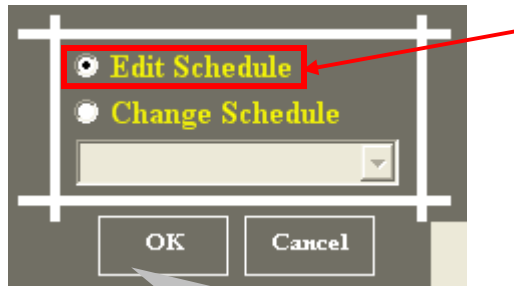
Welding routines, called schedules, are programmed into the SM-8500A using an intuitive visual schedule editor. The Schedule Editor is accessed by clicking the “Schedule” on the Main screen, then “Edit Schedule” on the pop-up window. The user must have schedule editing “rights” to be able to change weld schedule parameters.



When the “**Schedule**” button is clicked, a small dialog box is shown next to it, and contains two options:

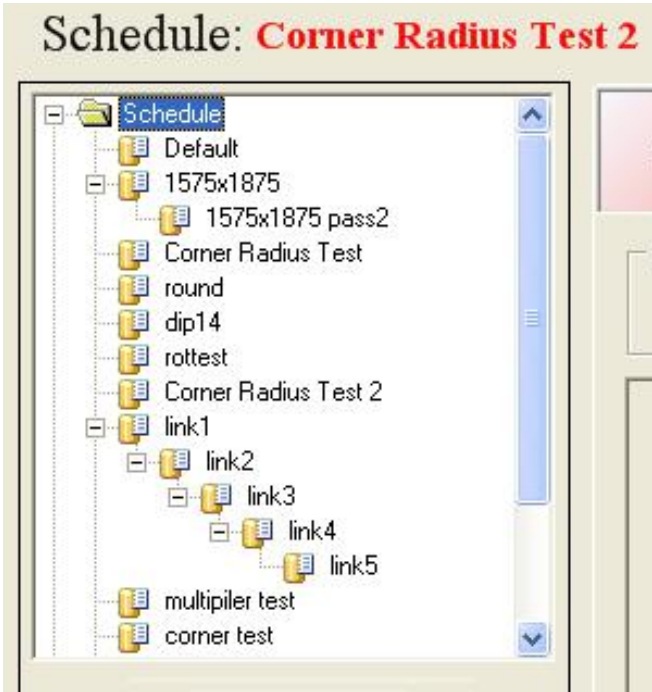
- 1_ *Edit* Schedule
- 2_ *Change* Schedule

When the option “**Edit Schedule**” is selected and the “OK” button is clicked, then the schedule editor will appear.



Click the OK button when “Edit Schedule” is selected, the Schedule Editor will appear.

Schedule Editor has four different regions as shown in the figure above, the numbered circles indicate the regions.

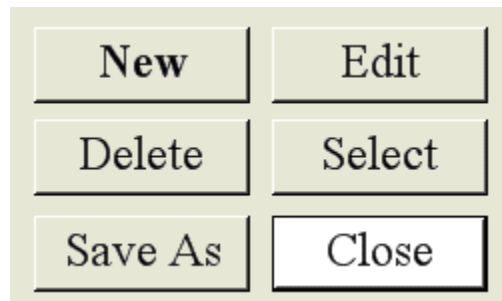


Region 1 is a list containing all the schedules available. The schedule name on top indicates that “Corner Radius Test 2” schedule is selected and all of its data is displayed in region 4. When a different schedule is selected, then the data for that schedule will display accordingly. An indented schedule means that the schedule is linked to the schedule above it. Linked schedule will execute all the schedules one after another. It will stop when the last schedule is processed.



Created:	ENG
Date:	5/25/2006 2:23:10 PM
Modified:	NONE
Modified By:	NONE
Description:	<div></div>

- ← User that created the schedule originally.
- ← Date and time the schedule was created.
- ← Date and time the schedule was last modified.
- ← User that last modified the schedule
- ← Notes to add further details

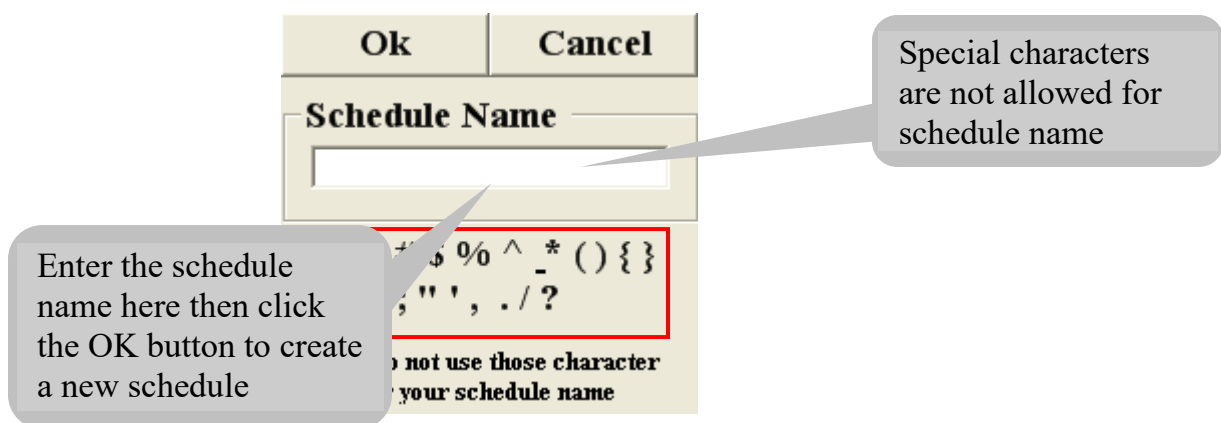


Region 3 contains six different buttons:

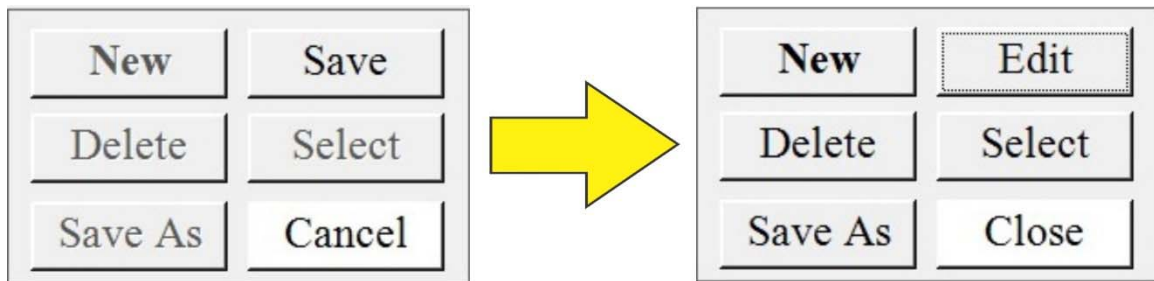
- 1_ **New**: Create a new schedule
- 2_ **Delete**: Delete an existing schedule
- 3_ **Save As**: Save an existing schedule under new name
- 4_ **Edit**: Edit an existing schedule
- 5_ **Select**: Select a schedule in the list as a current welding schedule
- 6_ **Close**: Close the Schedule Editor

New Schedule:

When the “New” button is pressed, a small dialog box will appear as shown below. The user needs to enter the schedule name, and the schedule name cannot have any special characters. If the new schedule name entered is the same as an existing schedule, the new schedule is not allowed and the user is notified. The button labels change: “New” becomes “Save”, “Close” becomes “Cancel”, and the rest of the buttons are disabled. If the user clicks Save, then the new schedule will be saved and the schedule name will be added to the schedule list. If the user clicks the Cancel button, then the schedule will not be created.

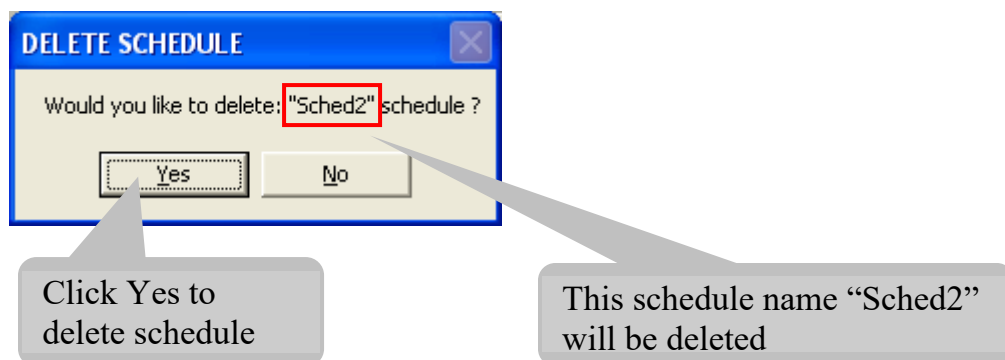


Press SAVE first, then NEW.



Delete Schedule:

When the Delete button is pressed, a small dialog window will open to confirm if the user wants to delete the schedule.



Save As Schedule:

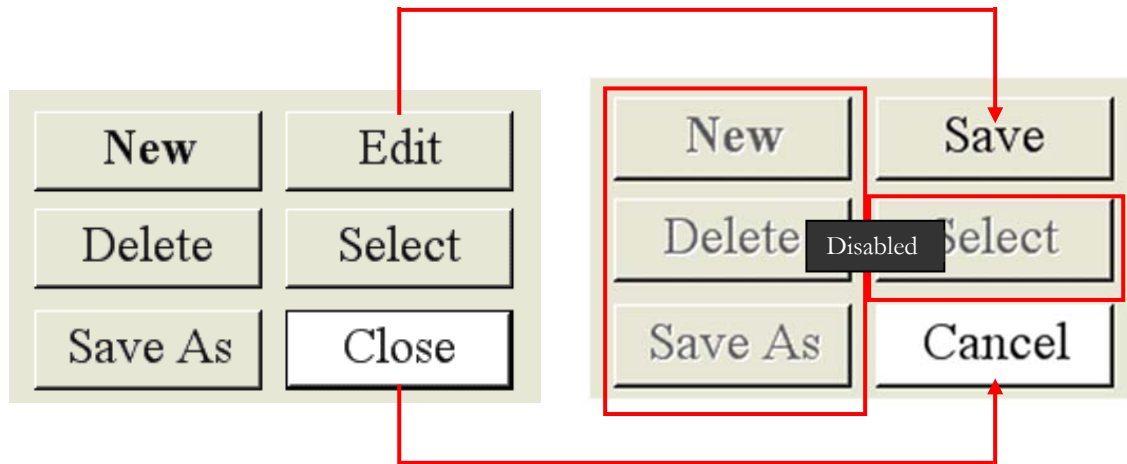
Select any schedule in the list then press the "Save As" button, and a small dialog window will appear to allow user enter a new schedule name. Click OK to finish the operation and Cancel to cancel the operation.

Ok	Cancel
Schedule Name <input style="width: 80%;" type="text"/>	
~ ` @ # \$ % ^ _ * () { }	
[] \ : ; " ' , . / ?	
Please do not use those character above for your schedule name	

Edit Schedule:

When the Edit button is pressed, the button labels change: “Edit” becomes “Save”, “Close” becomes “Cancel”, and the rest of the buttons are disabled. If the user clicks “Save”, all of the changes made to this schedule will be saved. If the user clicks the “Cancel” button, the schedule changes will be discarded.

When the Edit button is pressed, **Edit** → becomes **Save**



When New button is pressed, Close becomes Cancel

Select Schedule:

When the “Select” button is pressed, the highlighted schedule will become active when returning to the Main screen.

Close:

Pressing the “Close” button will close the Schedule Editor.

The Pink color and the font is Bold
Indicate that this tab is currently active

Nest Specifications


First Pass - Right and Left Sides

Second Pass - Tops and Bottoms

Tack

Schedule Part Type

QUADRANGLE



Shape Selection

☐ Quad

☐ Large Quad

☐ Four Pass

☐ Large Four Pass

☒ Corner Radius

☐ Large Corn. Rad

Corner Radius

Corner Radius

0.050 inch

Side-Y

Size

1.600 inch

Overtravel

0.000 inch

Tack Option

☐ Double Side Tack

Weld Option

☒ Single Side Weld

Side Option

☐ Side Two First

Tack and Weld Option

☐ Tack Only

☒ Weld Only

☐ Tack And Weld

Side-X

Size

1.600 inch

Overtravel

0.000 inch

Schedule Helper

hugi78y6
buigfv78t-265-1561
fgdfgd

Track Specifications

Minimum

0.050 inch

Maximum

0.100 inch

NOTE: The visual will change when different part type is selected.

Part Type:

QUADRANGLE

Schedule Part Type
QUADRANGLE

Shape Selection

- ☐ Quad
- ☐ Large Quad
- ☐ Four Pass
- ☐ Large Four Pass
- ☒ Corner Radius
- ☐ Large Corn. Rad

Tack Option
☐ Double Side Tack

Weld Option
☒ Single Side Weld

Corner Radius
Corner Radius
0.050 inch

Side Option
☐ Side Two First

Side-X
Size 1.600 inch Overtravel 0.000 inch

Side-Y
Size 1.600 inch Overtravel 0.000 inch

Tack and Weld Option

- ☐ Tack Only
- ☒ Weld Only
- ☐ Tack And Weld

SHAPE: RECTANGLE

X

Y

ROTARY

Schedule Part Type
ROTARY

Rotation

Part Diameter
1.00 inch

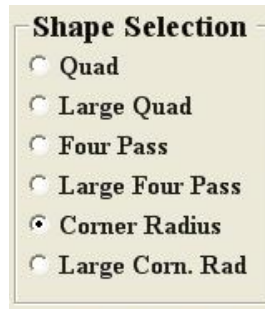
Angle Rotation
188 deg

Tack and Weld Option

- ☐ Tack Only
- ☒ Weld Only
- ☐ Tack And Weld

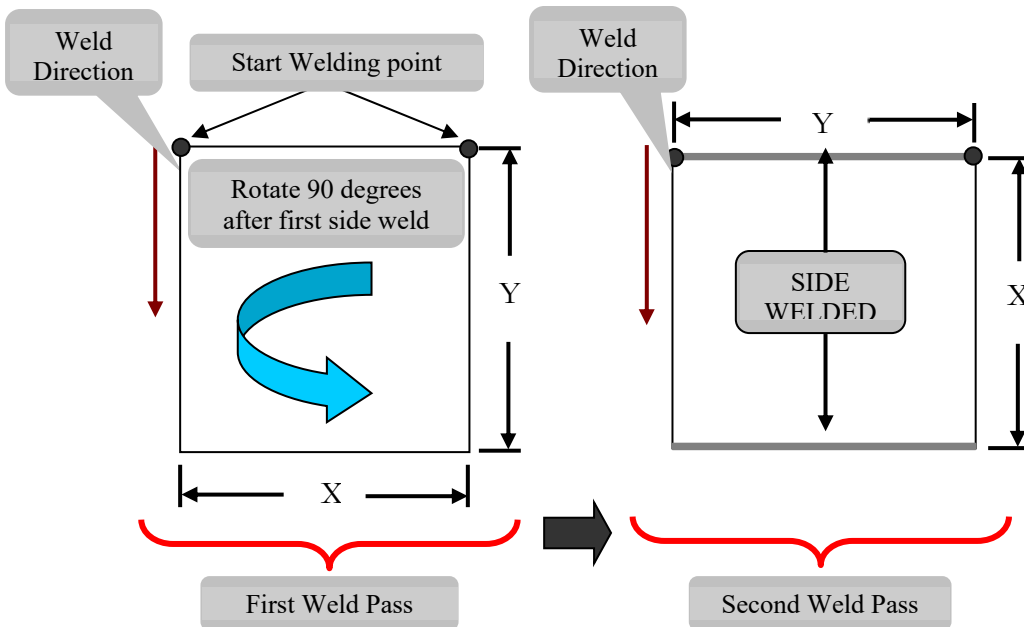
SHAPE: CIRCULAR

Shape Selection



Quad

The quadrangular (rectangle or square) shape has the welding starting in the corners of the part.



Large Quad

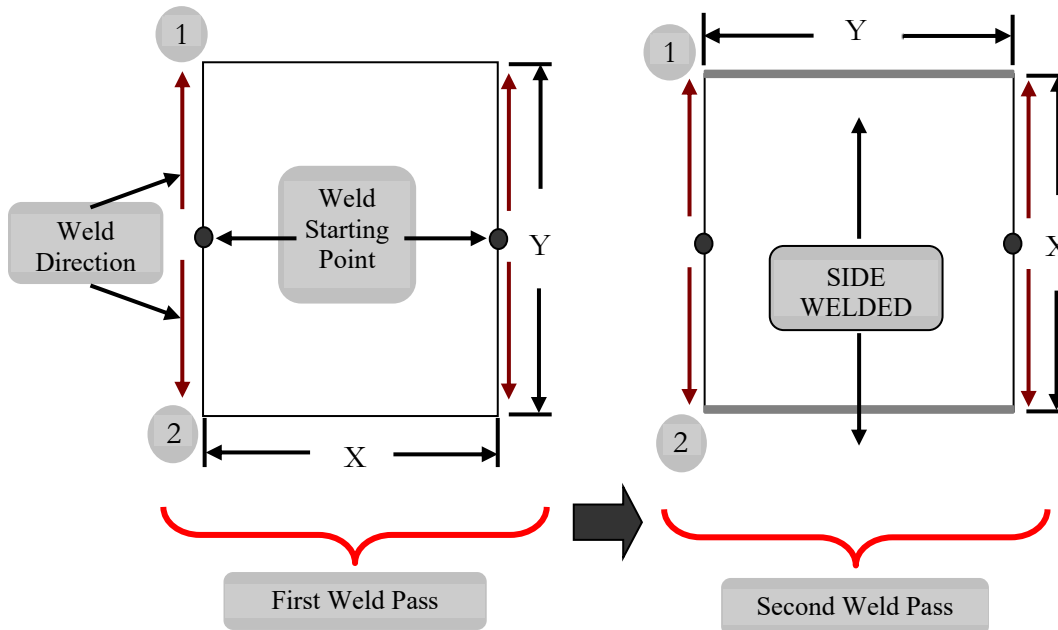
Operates the same as Quad shape, but the welder returns to the park position before rotating. This shape is especially useful for large parts.

Four-Pass

- 1 Electrodes move to the middle of the part, then weld in direction.
- 2 When the electrodes reach the end of the part, the electrodes move back to the middle of the part again without welding, then the electrodes begin welding again in direction.

When the Y-side is finished welding, the part rotates counter-clockwise, and then weld the X-side is welded with the same procedure as the first.

In this shape mode, the electrodes always end the weld pass in the corners.



Large Four Pass

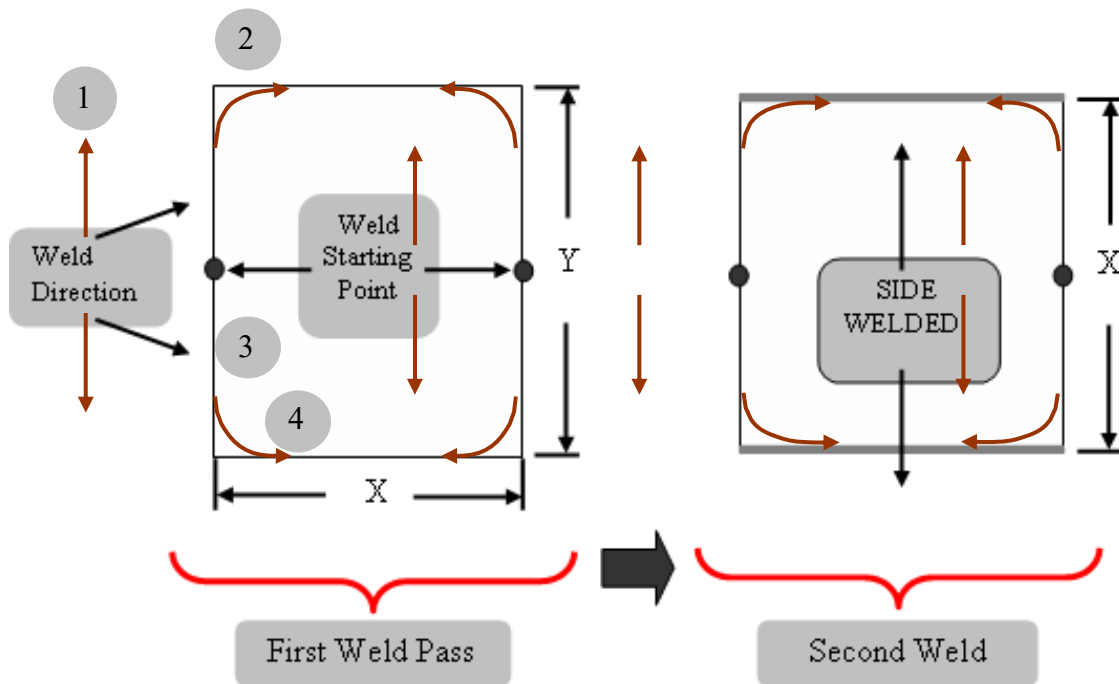
The large four pass shape operates the same as four pass shape, but the welder returns to the park position before rotating. This shape is especially useful for large parts.

Corner Radius



- 1 Similar to the four pass except that the electrodes move towards the center on each corner. Electrodes move to the middle of the part, then weld in direction.
- 2 Depending on the corner radius value (in inch), both electrode will start moving to the center of the part in a quarter circle manner as shown in direction.
- 3 When the electrodes reach the end of the part, the electrodes move back to the middle of the part using the same path without welding, then the electrodes begin welding again in direction.
- 4 Depending on the corner radius value again, both electrode will start moving to the center of the part in a quarter circle manner as shown in direction.

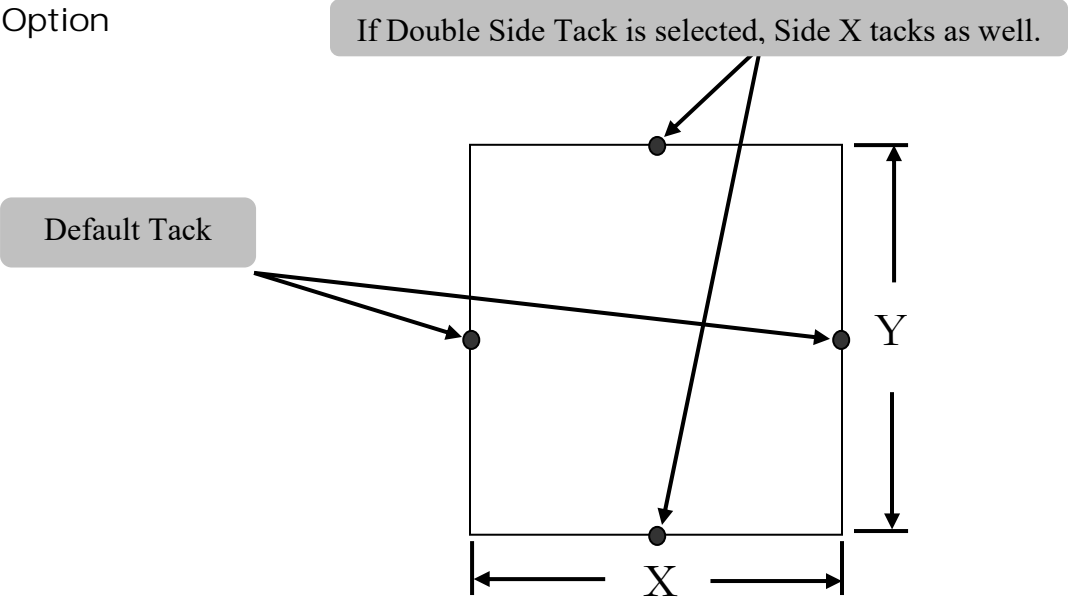
When the Y-side weld is complete, the part rotates counter-clockwise, and then the X-side is welded with the same procedure as the Y-side.



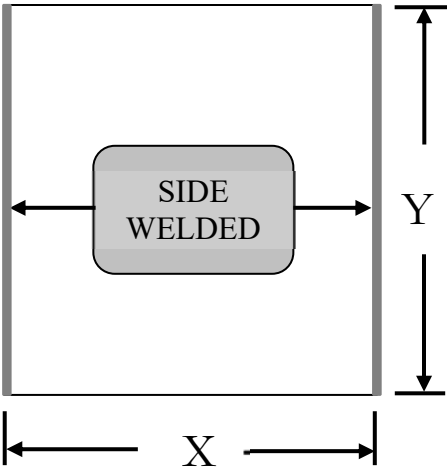
Large Corner Radius

The Large Corner Radius shape operates the same as Corner Radius shape, but the welder returns to the park position before rotating. This shape is especially useful for large parts.

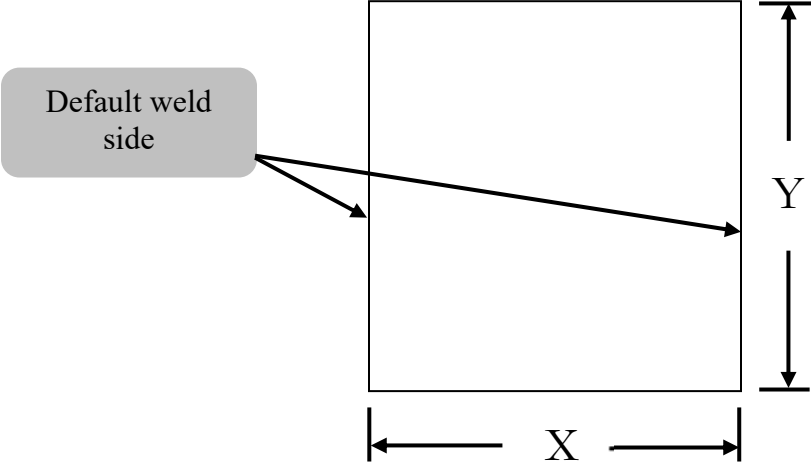
Tack Option



Weld Option
Single Side Weld



Side Option
Side Two First



By default, side Y will be welded first, then side X. If the Side Two First option is selected, then side X will be welded first, then side Y.

Tack And Weld

Tack Only

If this option is selected, the seam weld portion is not performed.

Weld Only

Weld only is the default option, the tack operation will not take place.

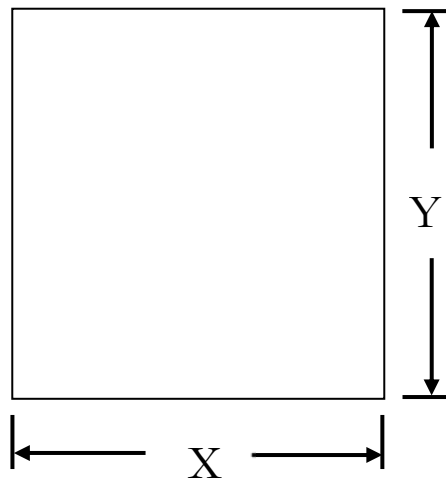
Tack And Weld

Both the tack and weld operation will take place.

Side-X and Side-Y

Size

The size determines the spacing of the electrodes during welding. Usually, the dimensions of the lid are used for this parameter. The maximum size is 8 inches, and the minimum will be 0.2 inches.



Over Travel

The over travel parameter determines the distance of travel before and after the length or width of the part. This parameter accounts for the radiuses in the corners and causes the welder to fire pulses as it rolls onto the part.

ROTARY

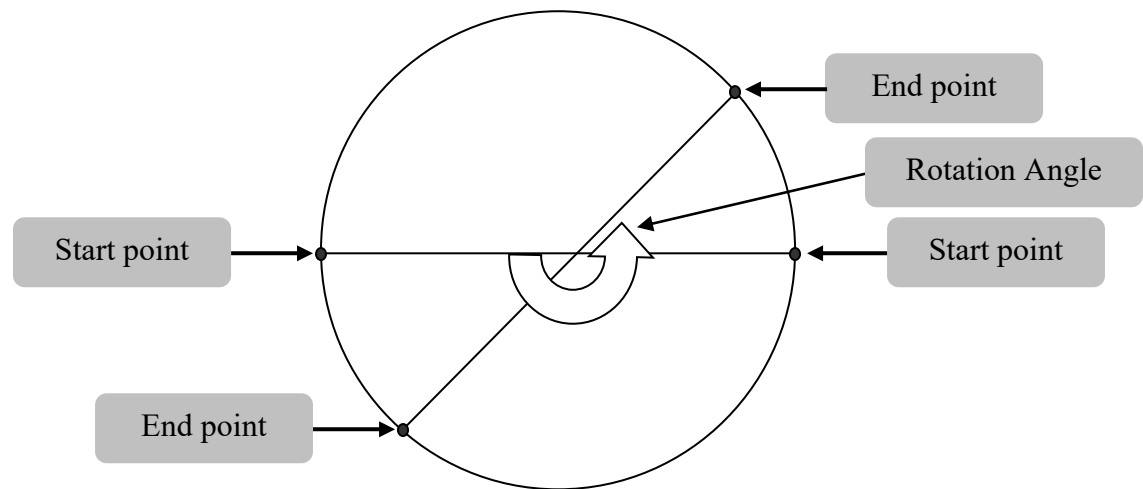
Rotation Option

Part Diameter

The part diameter determines the spacing of the electrodes during welding. Usually, the dimensions of the lid are used for this parameter. The maximum size is 8 inches, and the minimum will be 0.2 inches.

Angle Rotation

Rotation can be Clockwise or Counter Clockwise



Track Specification

The Track Specifications section allows you to set up which portion of the electrodes will contact the edge of the lids as the welding progresses and the manner in which the “auto track” feature of the SM-8500A will be implemented in the schedule. The SM-8500A’s auto track feature extends electrode life by automatically changing the portion of the electrode surface that comes in contact with the weld surface after each side welded.

The Minimum value is the minimum distance from the face of each electrode where the electrode will contact the lid being welded.

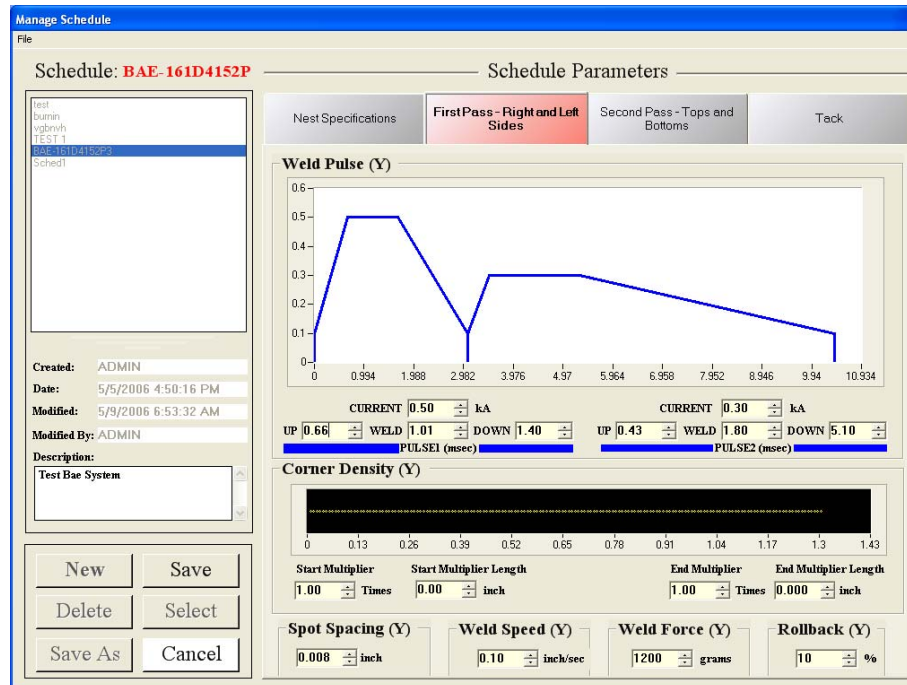
The Maximum value is the maximum distance from the face of each electrode where the electrode will contact the lid being welded.

A typical track specification might change the welding surface from 0.060 inches from face of the electrode to 0.080 inches in increments of 0.001 inches. This means that twenty tracks of 0.001 inches will be established for the electrodes and that after each side welded the distance between the electrodes will be incremented by 0.001 inches.

In setting up track specifications, it is important to keep in mind the overall size of the packages being sealed and the necessary gap between the two electrodes.

TERM	CONTENT	NOTES
Minimum	minimum distance from face of electrode	numeric of any length in inches
Maximum	maximum distance from face of electrode	numeric of any length in inches

First Pass – Right and Left Sides



Second Pass – Tops and Bottoms

Manage Schedule

File

Schedule: **BAE-161D4152P**

Schedule Parameters

Nest Specifications First Pass - Right and Left Sides **Second Pass - Tops and Bottoms** Tack

test
burnin
vgbrwh
TEST 1
BAE-161D4152P3
Sched1

Created: ADMIN
Date: 5/5/2006 4:50:16 PM
Modified: 5/9/2006 6:53:32 AM
Modified By: ADMIN
Description:
Test Bae System

New Save
Delete Select
Save As Cancel

Weld Specification(X)

CURRENT 0.48 kA WELD 1.81 DOWN 0.00 UP 0.50 WELD 1.00 DOWN 0.20
PULSE1 (msec) PULSE2 (msec)

Corner Density (X)

Start Multiplier 1.00 Times Start Multiplier Length 0.00 inch End Multiplier 1.00 Times End Multiplier Length 0.00 inch

Spot Spacing (X) **Weld Speed (X)** **Weld Force (X)** **Rollback (X)**
0.008 inch 0.50 in/sec 1200 grams 10 %

Tack

Manage Schedule

File

Schedule: **BAE-161D4152P**

Schedule Parameters

Nest Specifications First Pass - Right and Left Sides Second Pass - Tops and Bottoms **Tack**

test
burnin
vgbrwh
TEST 1
BAE-161D4152P3
Sched1

Created: ADMIN
Date: 5/5/2006 4:50:16 PM
Modified: 5/9/2006 6:53:32 AM
Modified By: ADMIN
Description:
Test Bae System

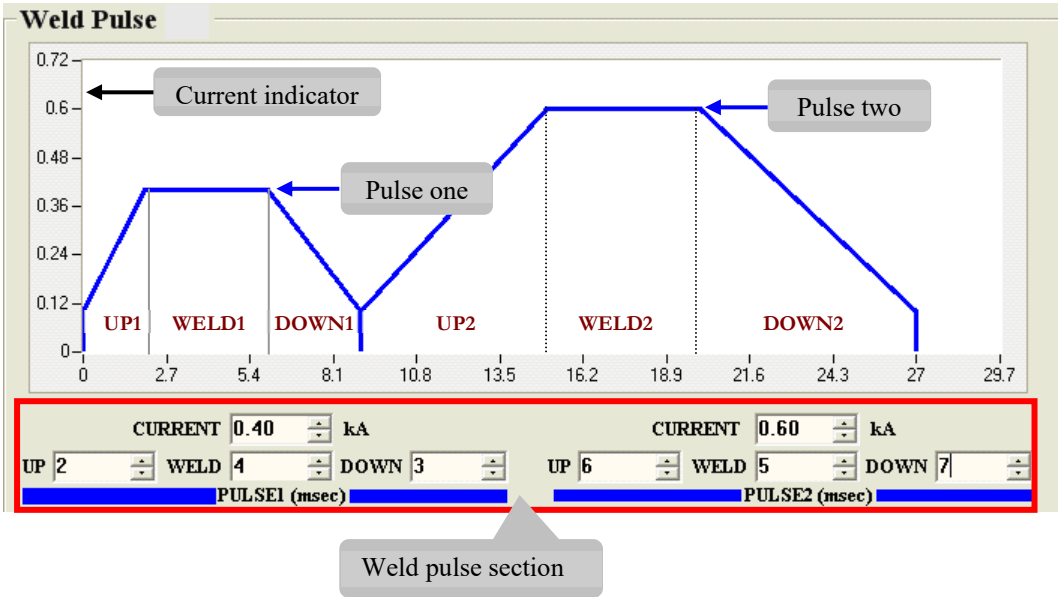
New Save
Delete Select
Save As Cancel

Weld Specification

CURRENT 0.50 kA WELD 0.98 DOWN 0.00 UP 0.00 WELD 0.00 DOWN 0.00
PULSE1 (msec) PULSE2 (msec)

Tack Hold **Tack Force**
10 msec 1200 grams

Weld Specification



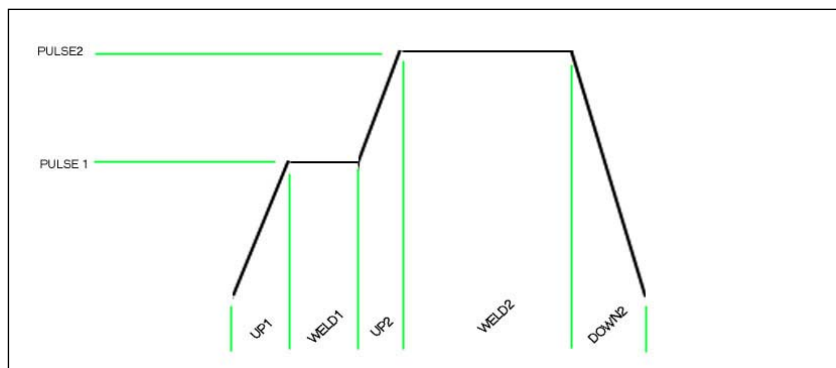
The Weld Specification section lets you set all the parameters of the dual pulse HF-2500A inverter. For users transitioning from an HF2 Power Supply, the pulse shape would be square with no upslope or down slope. The current minimum is 0.1 kA. In order to use only one pulse simply enter zero for the weld times of pulse 2.

This Weld Pulse section allows you to set the timing for each segment of a dual weld pulse and can include any or all of the following:



The dual pulse can improve welding results by placing a lower current weld first to condition the surfaces. The HF-2500A Power Supply allows you to program current, for both of the two pulses. If you set a current level, the power supply will apply as much voltage necessary to flow the amount of current that was programmed.

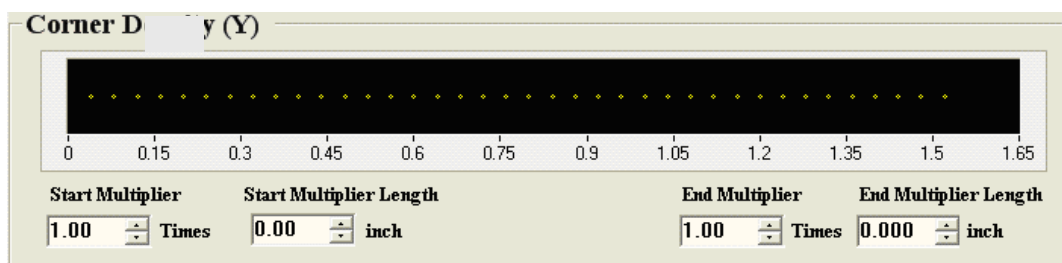
Typically, the dual pulse in seam sealing applications only uses some of these available segments. The initial down1 are usually set to zero. This results in a weld pulse shape shown in the following picture.



TERM	CONTENT	NOTES
Up1	Time period to ramp from no power to the power level of Weld1	numeric of any length in milliseconds
Weld1	Time period of Conditioning Pulse	numeric of any length in milliseconds
Pulse1	Current of Weld1	numeric of any length
Down1	Time period to ramp Weld1 power to no power	numeric of any length in milliseconds
Up2	Time period to ramp from no power to the power level of Weld2	numeric of any length in milliseconds
Weld2	Time period of Welding Pulse	numeric of any length in milliseconds
Pulse2	Current of Weld2	numeric of any length
Down2	Time period to ramp Weld2 power to no power	numeric of any length in milliseconds

Corner Density

The parameters provided by the variable power settings allow you to adjust the amount of energy you apply to the part during the portions of the weld near the corners. By entering a value greater than 1.000, more energy will be applied by way of decreasing the spot spacing by an amount equal to the inverse of the start multiplier. For example, if the multiplier is set at 2.000, the spot spacing will be halved during welding of the corner portions of the part welding.



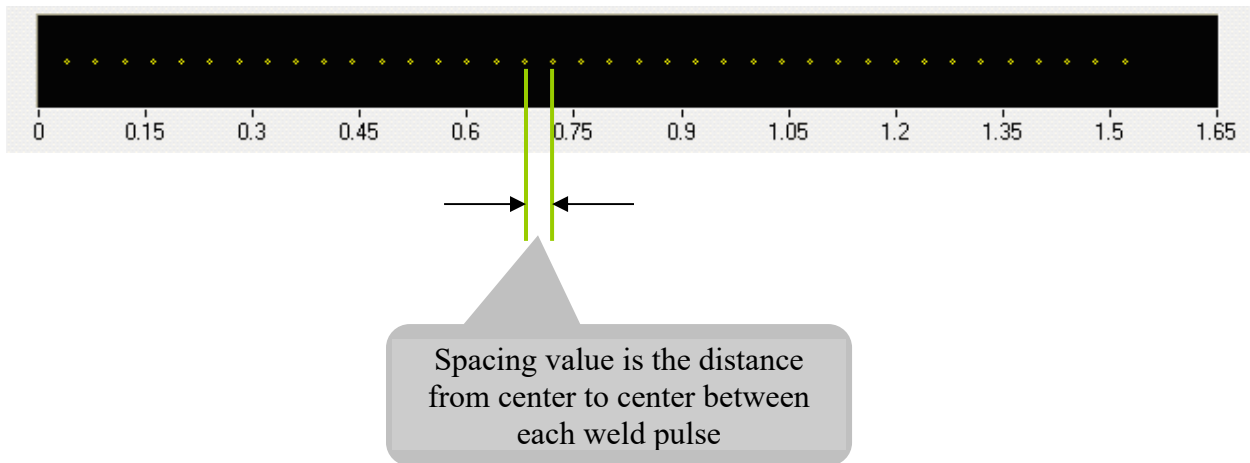
TERM	CONTENT	NOTES
Start Multiplier	Multiplier during the Start Multiplier Length.	Values > 0.0
Start Multiplier Length	Length at the beginning of the weld that the corner density is increased or decreased.	Values > 0.0
End Multiplier	Multiplier during the End Multiplier Length.	Values > 0.0
End Multiplier Length	Length at the end of the weld that the corner density is increased or decreased.	Values > 0.0

NOTE: In Corner Radius/Large Corner Radius shape, the Start/End Multiplier Length must be equal or greater than the corner radius value.

Spot Spacing

The Spot Spacing value is the distance from center to center between each weld pulse used in the schedule. The initial weld pulse for each package is delivered to the location equal to one half the width or length of the lid plus the over travel. Each subsequent weld pulse is spaced evenly based upon the spot spacing set in this variable. The SM-8500A uses precision encoders and high accuracy servo motors to deliver this weld spot spacing with high accuracy. The distance between weld pulses is set in inches and can vary to a minimum of 0.005 inches. In setting the spot spacing in conjunction with the weld speed, it is important to keep in mind the repetition rate of the HF-2500A power supply. It is possible to program the SM-8500A to attempt to lay down weld pulses closer and faster than the HF-2500A can accommodate. In this situation, although the electrodes will travel at the requested speed and the power supply will be triggered to send a weld pulse, the requested energy will not be delivered to the weld site.

To check that your desired weld schedule is being delivered by the HF-2500A power supply, compare the number of pulses displayed on the front panel of the HF-2500A power supply after welding a package to the expected number of weld pulses. The counter on the front panel of the HF-2500A can be reset by following the following series of commands (Menu > 2- > 1- > 0- > Run) Start at a slow speed (say 0.25 inches per second) Do a weld on a single part and note the number of pulses. The value displayed on the front of the HF-2500A is the actual number of pulses delivered by the power supply. Assuming that the part height is now set, remove the nest and increase the weld speed. Run the schedule again and note the number of weld pulses (a variance of +/-1 pulse is normal due to rounding error.) Continue increasing speed until you notice a significant drop in the number of weld pulses.



Weld Speed

The Speed value is set in inches per second. It governs how fast the electrodes move over the surface of the package lids during welding. The speed of the SM-8500A can be set from 0.1 to up to 1.5 inches per second. As noted above, it is important to keep in mind the repetition rate of the HF-2500A power supply. It is possible to program the SM-8500A to attempt to lay down weld pulses closer and faster than the HF-2500A can deliver.

Weld Force

The Force value is the force in grams that will be applied to the contact area between the electrodes and the package being sealed. The range of force that can be applied varies from 250 grams to up to 5000 grams. Typical force applied to the ceramic package used for a small crystal oscillator part is 1400 grams.

Rollback

Rollback is a unique feature of the SM-8500A. It keeps the packages (especially low mass) from sticking to the electrodes after the final spot weld. The rollback is set up as a percentage of the total distance along the edge of the package.

TERM	CONTENT	NOTES
Spot Spacing	distance between weld pulses	numeric of any length in inches
Force	weight in grams applied at weld site	numeric of any length in grams
Speed	rate of travel during sealing	numeric of any length in inches per second
Rollback	distance electrode moves backward after final weld pulse on lid	Percentage of the total length of either the width or length to roll-back (to prevent the electrode from sticking to the part)

In order to insure that the tacked package lids remain securely in place during the seam sealing process, our recommendation is that the first side to be sealed be the side of the package that is not tacked. At the same time, for the best weld quality, our recommendation is that the narrowest part of the package be welded first. So, ideally, the parts should be tacked on their longest dimension and sealed on the shortest dimension.

Error Codes

ERROR NUMBER	ERROR DESCRIPTION
1	The System cannot HOME
2	The system cannot PARK
3	Table Rotation Error at 0 degree
4	Table Rotation Error at 90 degree
5	Apply Force Error (Side = 1)
6	Apply Force Error (Side = 2)
7	Apply Force Error (Side = 3)
8	Apply Tack Force Error
9	Move to TACK position Error
10	Double Side Tack Error, size = 1
11	Double Side Tack Error, size = 2
12	Quad weld 0-Pass Error
13	Quad weld 90-Pass Error
14	Quad weld Error, Quad Weld Two
15	Four-Pass weld Zero-Pass
16	Four-Pass weld Ninety-Pass
17	Rotary weld Error
18	Table Center Error
19	Apply Test Force Error
20	Rotary Stage Time Out Error. Correct issue then restart software.
21	
22	No response from Power Supply within 2 seconds after SM-8500 sends Schedule change "0". Check RS-232 connection.
23	No response from Power Supply within 2 seconds after SM-8500 sends Schedule change "1". Check RS-232 connection.
24	No response from Power Supply within 2 seconds after SM-8500 sends Schedule change "2". Check RS-232 connection.
25	SM-8500A has lost communication with the Power Supply. Check RS-232 connection.

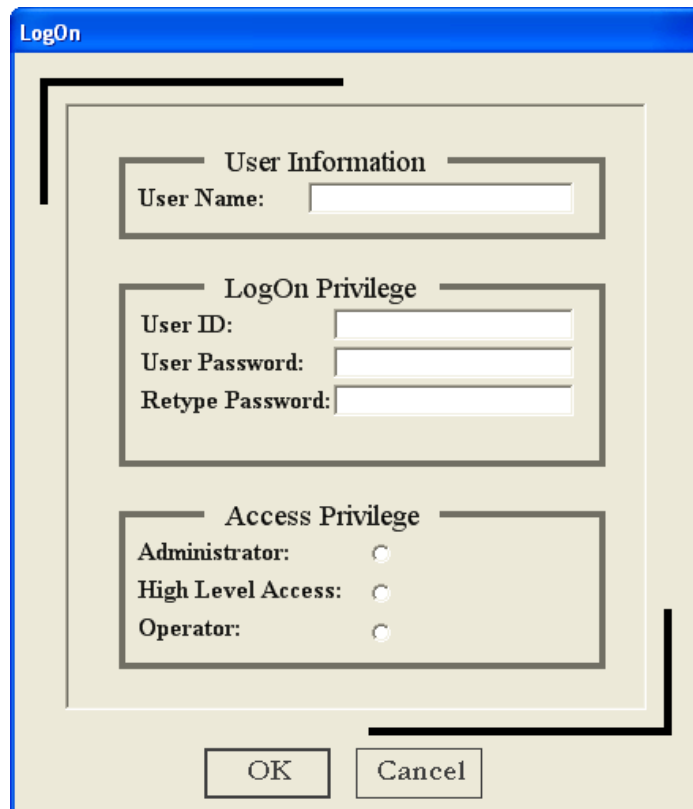
Using the Login Administrator



The User menu contains four options:

- 1_ Add User
- 2_ Edit User
- 3_ Change User
- 4_ Delete User

Add User



The LogOn dialog box is titled "LogOn" and contains three sections: "User Information", "LogOn Privilege", and "Access Privilege".

- User Information:** Contains a "User Name:" label and a text input field.
- LogOn Privilege:** Contains "User ID:", "User Password:", and "Retype Password:" labels, each followed by a text input field.
- Access Privilege:** Contains three radio button options: "Administrator:", "High Level Access:", and "Operator:".

At the bottom of the dialog are "OK" and "Cancel" buttons.

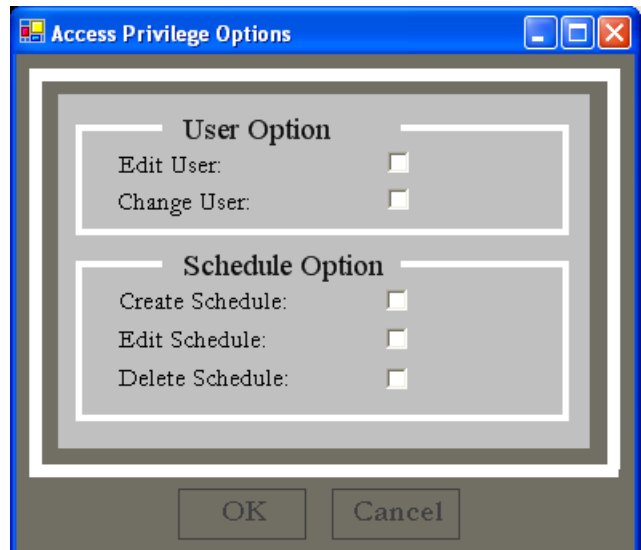
The user name cannot match any other user name in the database, the user name needs to be unique. When the OK button is clicked, the SM-8500A application will search for any match in database. If a match is found, the user must enter another name which is unique to the application.

If Access Privilege is selected as "Administrator", the creator must be a master user, because only a master user can create an "Administrator" user.

If Access privilege was selected as "High Level Access":

- 1_ the creator must be an "Administrator" user, because only an "Administrator" user can create a "High Level Access" user.
- 2_ The "Administrator" should choose one or more of the following privileges to grant the user:

NOTE: Only Master user and Administrator can add new user

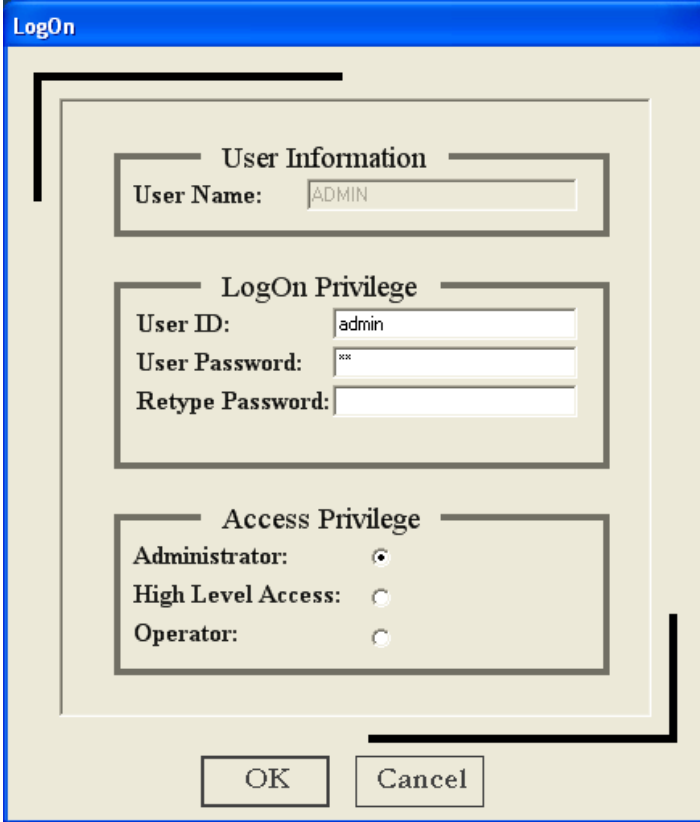


The Access Privilege Options dialog box is titled "Access Privilege Options" and contains two sections: "User Option" and "Schedule Option".

- User Option:** Contains "Edit User:" and "Change User:" labels, each followed by a checkbox.
- Schedule Option:** Contains "Create Schedule:", "Edit Schedule:", and "Delete Schedule:" labels, each followed by a checkbox.

At the bottom of the dialog are "OK" and "Cancel" buttons.

Edit User



The image shows a Windows-style dialog box titled "LogOn". It contains three main sections: "User Information", "LogOn Privilege", and "Access Privilege".

- User Information:** Contains a "User Name:" label and a text box with the value "ADMIN".
- LogOn Privilege:** Contains three labels and text boxes: "User ID:" with the value "admin", "User Password:" with the value "xx", and "Retype Password:" with an empty box.
- Access Privilege:** Contains three labels and radio buttons: "Administrator:" with a selected radio button, "High Level Access:" with an unselected radio button, and "Operator:" with an unselected radio button.

At the bottom of the dialog box are two buttons: "OK" and "Cancel".

User can change the User ID with new User ID and User Password with a new password.

Also, the user can keep the same Access Privilege or can pick different access privileges, but the user cannot change their user name.

Change user

[illegible]

A user can change to a different user by selecting one of the users shown in the list. The user needs to provide the User ID and User Password to logon under new selected user.

LogOn

LogOn Privilege

User ID

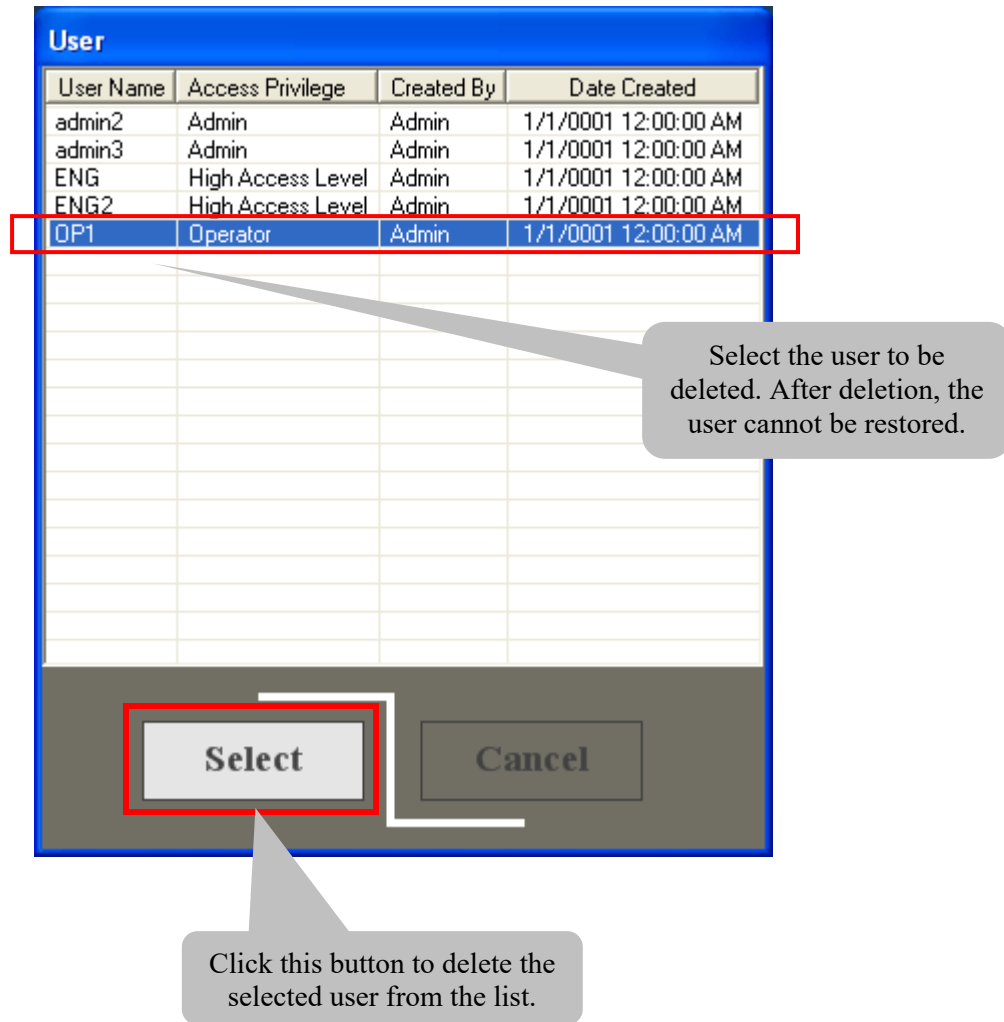
User Password:

OK Cancel

Delete user

Delete a user from the list of different users, and the rules are the following:

- 1_ Only a factory-trained user can delete an “Administrator” user
- 2_ An “Administrator” user cannot delete a different “Administrator” user
- 3_ An “Administrator” user can delete a High Level Access user and operator user
- 4_ A High Level Access user can add an Operator user only but cannot delete any user



Appendix A – Spare Parts List

Consumables

AMADA WELD TECH PART NUMBER	DESCRIPTION
112-00091-000	Arbor, Standard and Quick Change, 1”
112-00026-000	Insulator
112-00091-003	Arbor-offset, Straight Shank
112-01265-000	Washer, Offset

Spares List

Qualified Technician serviceable items

AMADA WELD TECH PART NUMBER	QTY	DESCRIPTION
006-00006-000	1	CIRCUIT BREAKER-8 A,115V ETA
010-00018-000	1	SWITCH, PLUNGER ACTUATOR
010-00060-000	1	SWITCH,ROTARY HOME
015-00110-000	1	SERVO MOTOR, N23
016-00076-000	1	SENSOR,OPTICAL
040-00002-000	1	BEARING, FLANGED
045-00042-000	1	TERMINAL BLOCK, 1-IN 1-OUT,
045-00043-000	1	TERMINAL BLOCK, 2-IN 2-OUT,
050-00001-000	1	COUPLING, FLEXIBLE - ZERO MAX
067-00173-000	1	DIGITAL OUTPUT MODULE
091-00002-000	1	CYLINDER-#MM2
099-00023-000	1	TRANSDUCER,0-60 PSI
112-00125-000	1	SCREW,LEAD,& NUT ASSEMBLY
130-00044-000	1	PCB ASSY, PULSE STRETCHER
132-00360-000	1	CABLE ASM, ELECTRODE
132-00361-000	1	CABLE ASM, TRANSFORMER
525-004	1	POWER SUPPLY, 24VDC

Service Technician Spare Parts List

AMADA WELD TECH PART NUMBER	QTY	DESCRIPTION
112-00022-001	1	ARMS,LEAD SCREW
016-00152-000	1	MOTION CONT, SERV AMPS

Appendix B – Preventative Maintenance

Frequency: Daily

1. Inspect electrodes for pits or damage. Resurface electrodes as needed.

Frequency: Weekly

1. Inspect arbors for pits or damage. Replace as needed.
2. Tack a part in the center. Measure the accuracy. Re-calibrate the Y table center if needed.

Frequency: Monthly

1. Check the force accuracy using a force gauge. Re-calibrate if needed.
2. Check the weld cable connections for tightness. Tighten as necessary.
3. Check weld arms for lateral movement in the static position. Replace the bearings if needed.

Frequency: Yearly

1. Turn off the motors and rotate the axes using the knobs, look for any resistance. Apply grease or lubrication to the lead screw.

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