MANUAL NO: P10135-1

Tech Pub Ref: 430429-455

OWNER'S MANUAL

FOR

270XSR

MODEL: CPTXS-270 P10135

DO NOT DESTROY

IMPORTANT: Read and understand the entire contents of this manual, with special emphasis on the safety material throughout the manual, before installing, operating, or maintaining this equipment. This equipment and this manual are for use only by persons trained and experienced in the safety operation of welding equipment. Do not allow untrained persons to install, operate or maintain this equipment. Contact your distributor if you do not fully understand this manual.

DAIHEN CORPORATION WELDING PRODUCTS DIVISION

AA: June 20, 2000

Upon contact, advise MODEL and MANUAL NO.

INTRODUCTION

How To Use This Manual

This Owner's Manual usually applies to just the underlined specification or part numbers listed on the cover. If none are underlined, they are all covered by this manual.

To ensure safe operation, read the entire manual, including the chapter on safety instructions and warnings.

Throughout this manual, the word **WARNING, CAUTION,** and **NOTE** may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

WARNING: A procedure which, if not properly followed, may cause injury to the operator or others in the operating area. Warnings will be enclosed in a box such as this.

CAUTION: A procedure which, if not properly followed, may cause damage to the equipment. Cautions will be shown in bold type.

NOTE: An operation, procedure, or background information which requires additional emphasis or is helpful in efficient operation of the system. Notes will be shown in italics.

Equipment Identification

The unit's identification number (specification or part number), model, and serial number usually appear on a nameplate attached to the machine. Equipment which does not have a nameplate attached to the machine is identified only by the specification or part number printed on the shipping container. Record these numbers for future reference.

Receipt Of Equipment

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to DAIHEN Inc., Order Department, 5311 W. T. Harris BLVD. West, Charlotte, NC 28269. Include all equipment identification numbers as described above along with a full description of the parts in error.

Additional copies of this manual may be purchased by contacting DAIHEN Inc. at the address given above. Include the Owner's Manual number and equipment identification numbers.

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ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS

⚠ WARNING

ARC WELDING can be hazardous.

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR. DO NOT LOSE THESE INSTRUCTIONS. READ OPERATING/INSTRUCTION MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.

Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld. Certain of the practices apply to equipment connected to power lines; other practices apply to engine driven equipment.

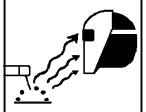
Safe practices are outlined in the American National Standard Z49.1 entitled: SAFETY IN WELDING AND CUTTING. This publication and other guides to what you should learn before operating this equipment are listed at the end of these safety precautions.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workpiece to a good electrical (earth) ground.
11. Do not touch electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
14. Wear a safety harness to prevent falling if working above floor level.
15. Keep all panels and covers securely in place.



ARC RAYS can burn eyes and skin; NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

1. Wear a welding helmet fitted with a proper shade of filter (see ANSI Z49.1 listed in Safety Standards) to protect your face and eyes when welding or watching.
2. Wear approved safety glasses. Side shields recommended.
3. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved ear plugs or ear muffs if noise level is high.

Eye protection filter shade selector for welding or cutting (goggles or helmet), from AWS A6.2-73.

Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade No.
Torch soldering	—	2
Torch brazing	—	3 or 4
Oxygen cutting		
Light	Under 1 in., 25 mm	3 or 4
Medium	1 to 6 in., 25-150 mm	4 or 5
Heavy	Over 6 in., 150 mm	5 or 6
Gas welding		
Light	Under 1/8 in., 3 mm	4 or 5
Medium	1/8 to 1/2 in., 3-12 mm	5 or 6
Heavy	Over 1/2 in., 12 mm	6 or 8
Shielded metal-arc welding (stick) electrodes	Under 5/32 in., 4 mm	10
	5/32 to 1/4 in., 4 to 6.4 mm	12
	Over 1/4 in., 6.4 mm	14

Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade No.
Gas metal-arc welding (MIG)		
Non-ferrous base metal	All	11
Ferrous base metal	All	12
Gas tungsten arc welding (TIG)	All	12
Atomic hydrogen welding	All	12
Carbon arc welding	All	12
Plasma arc welding	All	12
Carbon arc air gouging		
Light		12
Heavy		14
Plasma arc cutting		
Light	Under 300 Amp	9
Medium	300 to 400 Amp	12
Heavy	Over 400 Amp	14

FUMES AND GASES can be hazardous to your health.

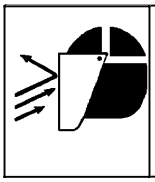
Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

1. Keep your head out of the fumes. Do not breath the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for metals, consumables, coatings, and cleaners.
5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.
6. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

WELDING can cause fire or explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

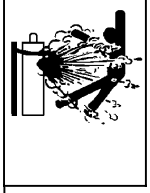
1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
11. Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.



FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.



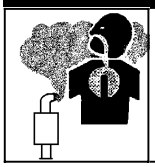
CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.
3. Keep cylinders away from any welding or other electrical circuits.
4. Never allow a welding electrode to touch any cylinder.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

⚠ WARNING

ENGINES can be hazardous.



ENGINE EXHAUST GASES can kill.

Engines produce harmful exhaust gases.

1. Use equipment outside in open, well-ventilated areas.
2. If used in a closed area, vent engine exhaust outside and away from any building air intakes.

ENGINE FUEL can cause fire or explosion.

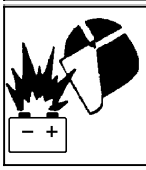
Engine fuel is highly flammable.

1. Stop engine before checking or adding fuel.
2. Do not add fuel while smoking or if unit is near any sparks or open flames.
3. Allow engine to cool before fueling. If possible, check and add fuel to cold engine before beginning job.
4. Do not overfill tank — allow room for fuel to expand.
5. Do not spill fuel. If fuel is spilled, clean up before starting engine.

MOVING PARTS can cause injury.

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.
3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.



SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin.

Batteries contain acid and generate explosive gases.

1. Always wear a face shield when working on a battery.
2. Stop engine before disconnecting or connecting battery cables.
3. Do not allow tools to cause sparks when working on a battery.
4. Do not use welder to charge batteries or jump start vehicles.
5. Observe correct polarity (+ and –) on batteries.

STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin.

The coolant in the radiator can be very hot and under pressure.

1. Do not remove radiator cap when engine is hot. Allow engine to cool.
2. Wear gloves and put a rag over cap area when removing cap.
3. Allow pressure to escape before completely removing cap.

WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Sec. 25249.5 et seq.)

NOTE: Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, Biological Effects of Power Frequency Electric & Magnetic Fields — Background Paper, OTA-BP-E-63 (Washington, DC: U.S. Government Printing Office, May 1989): "... there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields can interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks."

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around the body.
4. Keep welding power source and cables as far away from body as practical.

About Pacemakers:

The above procedures are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

PRINCIPAL SAFETY STANDARDS

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

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PRECAUTIONS DE SECURITE EN SOUDAGE A L´ARC

MISE EN GARDE

LE SOUDAGE A L´ARC EST DANGEREUX

PROTEGEZ-VOUS, AINSI QUE LES AUTRES, CONTRE LES BLESSURES GRAVES POSSIBLES OU LA MORT. NE LAISSEZ PAS LES ENFANTS S'APPROCHER, NI LES PORTEURS DE STIMULATEUR CARDIAQUE (A MOINS QU'ILS N'AIENT CONSULTE UN MEDECIN). CONSERVEZ CES INSTRUCTIONS. LISEZ LE MANUEL D'OPERATION OU LES INSTRUCTIONS AVANT D'INSTALLER, UTILISER OU ENTRETENIR CET EQUIPEMENT.

Les produits et procédés de soudage peuvent sauser des blessures graves ou la mort, de même que des dommages au reste du matériel et à la propriété, si l'utilisateur n'adhère pas strictement à toutes les règles de sécurité et ne prend pas les précautions nécessaires.

En soudage et coupage, des pratiques sécuritaires se sont développées suite à l'expérience passée. Ces pratiques doivent être apprises par étude ou entraînement avant d'utiliser l'equipement. Toute personne n'ayant pas suivi un entraînement intensif en soudage et coupage ne devrait pas tenter de souder. Certaines pratiques concernent les équipements raccordés aux lignes d'alimentation alors que d'autres s'adressent aux groupes électrogènes.

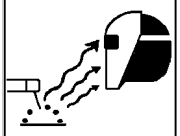
La norme Z49.1 de l'American National Standard, intitulée "SAFETY IN WELDING AND CUTTING" présente les pratiques sécuritaires à suivre. Ce document ainsi que d'autres guides que vous devriez connaître avant d'utiliser cet équipement sont présentés à la fin de ces instructions de sécurité.

SEULES DES PERSONNES QUALIFIEES DOIVENT FAIRE DES TRAVAUX D'INSTALLATION, DE REPARATION, D'ENTRETIEN ET D'ESSAI.

L'ELECTROCUTION PEUT ETRE MORTELLE.

Une décharge électrique peut tuer ou brûler gravement. L'électrode et le circuit de soudage sont sous tension dès la mise en circuit. Le circuit d'alimentation et les circuits internes de l'équipement sont aussi sous tension dès la mise en marche. En soudage automatique ou semi-automatique avec fil, ce dernier, le rouleau ou la bobine de fil, le logement des galets d'entrainement et toutes les pièces métalliques en contact avec le fil de soudage sont sous tension. Un équipement inadéquatement installé ou inadéquatement mis à la terre est dangereux.

1. Ne touchez pas à des pièces sous tension.
2. Portez des gants et des vêtements isolants, secs et non troués.
3. Isolez-vous de la pièce à souder et de la mise à la terre au moyen de tapis isolants ou autres.
4. Déconnectez la prise d'alimentation de l'équipement ou arrêtez le moteur avant de l'installer ou d'en faire l'entretien. Bloquez le commutateur en circuit ouvert ou enlevez les fusibles de l'alimentation afin d'éviter une mise en marche accidentelle.
5. Veuillez à installer cet équipement et à le mettre à la terre selon le manuel d'utilisation et les codes nationaux, provinciaux et locaux applicables.
6. Arrêtez tout équipement après usage. Coupez l'alimentation de l'équipement s'il est hors d'usage ou inutilisé.
7. N'utilisez que des porte-électrodes bien isolés. Ne jamais plonger les porte-électrodes dans l'eau pour les refroidir. Ne jamais les laisser traîner par terre ou sur les pièces à souder. Ne touchez pas aux porte-électrodes raccordés à deux sources de courant en même temps. Ne jamais toucher quelqu'un d'autre avec l'électrode ou le porte-électrode.
8. N'utilisez pas de câbles électriques usés, endommagés, mal épissés ou de section trop petite.
9. N'enroulez pas de câbles électriques autour de votre corps.
10. N'utilisez qu'une bonne prise de masse pour la mise à la terre de la pièce à souder.
11. Ne touchez pas à l'électrode lorsqu'en contact avec le circuit de soudage (terre).
12. N'utilisez que des équipements en bon état. Réparez ou remplacez aussitôt les pièces endommagées.
13. Dans des espaces confinés ou mouillés, n'utilisez pas de source de courant alternatif, à moins qu'il soit muni d'un réducteur de tension. Utilisez plutôt une source de courant continu.
14. Portez un harnais de sécurité si vous travaillez en hauteur.
15. Fermez solidement tous les panneaux et les capots.



LE RAYONNEMENT DE L´ARC PEUT BRÛLER LES YEUX ET LA PEAU; LE BRUIT PEUT ENDOMMAGER L´OUIE.

L'arc de soudage produit une chaleur et des rayons ultraviolets intenses, susceptibles de brûler les yeux et la peau. Le bruit causé par certains procédés peut endommager l'ouïe.

1. Portez une casque de soudeur avec filtre oculaire de nuance appropriée (consultez la norme ANSI Z49 indiquée ci-après) pour vous protéger le visage et les yeux lorsque vous soudez ou que vous observez l'exécution d'une soudure.
2. Portez des lunettes de sécurité approuvées. Des écrans latéraux sont recommandés.
3. Entourez l'aire de soudage de rideaux ou de cloisons pour protéger les autres des coups d'arc ou de l'éblouissement; avertissez les observateurs de ne pas regarder l'arc.
4. Portez des vêtements en matériaux ignifuges et durables (laine et cuir) et des chaussures de sécurité.
5. Portez un casque antibruit ou des bouchons d'oreille approuvés lorsque le niveau de bruit est élevé.

SELECTION DES NUANCES DE FILTRES OCULAIRES POUR LA PROTECTION DES YEUX EN COUPAGE ET SOUDAGE
(selon AWS A 8.2-73)

Opération de Coupage ou soudage	Dimension d'électrode ou Epaisseur de métal ou Intensité de courant	Nuance de de filtre oculaire
Brasage tendre au chalumeau	toutes conditions	2
Brasage fort au chalumeau	toutes conditions	3 ou 4
Oxycoupage		
mince	moins de 1 po. (25 mm)	2 ou 3
moyen	de 1 à 6 po. (25 à 150 mm)	4 ou 5
épais	plus de 6 po. (150 mm)	5 ou 6
Soudage aux gaz		
mince	moins de 1/8 po. (3 mm)	4 ou 5
moyen	de 1/8 à 1/2 po. (3 à 12 mm)	5 ou 6
épais	plus de 1/2 po. (12 mm)	6 ou 8
Soudage à l'arc avec	moins de 5/32 po. (4 mm)	10
electrode enrobées (SMAW)	de 5/32 à 1/4 po. (4 à 6.4 mm)	12
	plus de 1/4 po. (6.4 mm)	14
Soudage à l'arc sous gaz avec fil plein (GMAW)		
métaux non-ferreux	toutes conditions	11
métaux ferreux	toutes conditions	12
Soudage à l'arc sous gaz avec électrode de tungstène (GTAW)	toutes conditions	12
Soudage à l'hydrogène atomique (AHW)	toutes conditions	12
Soudage à l'arc avec électrode de carbone (CAW)	toutes conditions	12
Soudage à l'arc Plasma (PAW)	toutes dimensions	12
Gougeage Air-Arc avec électrode de carbone		
mince		12
épais		14
Coupage à l'arc Plasma (PAC)		
mince	moins de 300 ampères	9
moyen	de 300 à 400 ampères	12
épais	plus de 400 ampères	14

LES VAPEURS ET LES FUMEES SONT DANGEREUSES POUR LA SANTE.

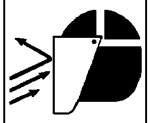
Le soudage dégage des vapeurs et des fumées dangereuses à respirer.

1. Eloignez la tête des fumées pour éviter de les respirer.
2. A l'intérieur, assurez-vous que l'aire de soudage est bien ventilée ou que les fumées et les vapeurs sont aspirées à l'arc.
3. Si la ventilation est inadequate, portez un respirateur à adduction d'air approuvé.
4. Lisez les fiches signalétiques et les consignes du fabricant relatives aux métaux, aux produits consummables, aux revêtements et aux produits nettoyants.
5. Ne travaillez dans un espace confiné que s'il est bien ventilé; sinon, portez un respirateur à adduction d'air. Les gaz protecteurs de soudage peuvent déplacer l'oxygène de l'air et ainsi causer des malaises ou la mort. Assurez-vous que l'air est propre à la respiration.
6. Ne soudez pas à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir avec des vapeurs et former des gaz hautement toxiques et irritants.
7. Ne soudez des tôles galvanisées ou plaquées au plomb ou au cadmium que si les zones à souder ont été grattées à fond, que si l'espace est bien ventilé; si nécessaire portez un respirateur à adduction d'air. Car ces revêtements et tout métal qui contient ces éléments peuvent dégager des fumées toxiques au moment du soudage.

LE SOUDAGE PEUT CAUSER UN INCENDIE OU UNE EXPLOSION

L'arc produit des étincellies et des projections. Les particules volantes, le métal chaud, les projections de soudure et l'équipement surchauffé peuvent causer un incendie et des brûlures. Le contact accidentel de l'électrode ou du fil-électrode avec un objet métallique peut provoquer des étincelles, un échauffement ou un incendie.

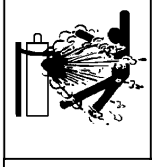
1. Protégez-vous, ainsi que les autres, contre les étincelles et du métal chaud.
2. Ne soudez pas dans un endroit où des particules volantes ou des projections peuvent atteindre des matériaux inflammables.
3. Enlevez toutes matières inflammables dans un rayon de 10, 7 mètres autour de l'arc, ou couvrez-les soigneusement avec des bâches approuvées.
4. Méfiez-vous des projections brulantes de soudage susceptibles de pénétrer dans des aires adjacentes par de petites ouvertures ou fissures.
5. Méfiez-vous des incendies et gardez un extincteur à portée de la main.
6. N'oubliez pas qu'une soudure réalisée sur un plafond, un plancher, une cloison ou une paroi peut enflammer l'autre côté.
7. Ne soudez pas un récipient fermé, tel un réservoir ou un baril.
8. Connectez le câble de soudage le plus près possible de la zone de soudage pour empêcher le courant de suivre un long parcours inconnu, et prévenir ainsi les risques d'électrocution et d'incendie.
9. Ne dégelez pas les tuyaux avec un source de courant.
10. Otez l'électrode du porte-électrode ou coupez le fil au tube-contact lorsqu'inutilisé après le soudage.
11. Portez des vêtements protecteurs non huileux, tels des gants en cuir, une chemise épaisse, un pantalon revers, des bottines de sécurité et un casque.



LES ETINCELLES ET LES PROJECTIONS BRULANTES PEUVENT CAUSER DES BLESSURES.

Le piquage et le meulage produisent des particules métalliques volantes. En refroidissant, la soudure peut projeter du éclats de laitier.

1. Portez un écran facial ou des lunettes protectrices approuvées. Des écrans latéraux sont recommandés.
2. Portez des vêtements appropriés pour protéger la peau.



LES BOUTEILLES ENDOMMAGEES PEUVENT EXPLOSER

Les bouteilles contiennent des gaz protecteurs sous haute pression. Des bouteilles endommagées peuvent exploser. Comme les bouteilles font normalement partie du procédé de soudage, traitez-les avec soin.

1. Protégez les bouteilles de gaz comprimé contre les sources de chaleur intense, les chocs et les arcs de soudage.
2. Enchainez verticalement les bouteilles à un support ou à un cadre fixe pour les empêcher de tomber ou d'être renversées.
3. Eloignez les bouteilles de tout circuit électrique ou de tout soudage.
4. Empêchez tout contact entre une bouteille et une électrode de soudage.
5. N'utilisez que des bouteilles de gaz protecteur, des détendeurs, des boyauxs et des raccords conçus pour chaque application spécifique; ces équipements et les pièces connexes doivent être maintenus en bon état.
6. Ne placez pas le visage face à l'ouverture du robinet de la bouteille lors de son ouverture.
7. Laissez en place le chapeau de bouteille sauf si en utilisation ou lorsque raccordé pour utilisation.
8. Lisez et respectez les consignes relatives aux bouteilles de gaz comprimé et aux équipements connexes, ainsi que la publication P-1 de la CGA, identifiée dans la liste de documents ci-dessous.

MISE EN GARDE

LES MOTEURS PEUVENT ETRE DANGEREUX

LES GAZ D'ECHAPPEMENT DES MOTEURS PEUVENT ETRE MORTELS.

Les moteurs produisent des gaz d'échappement nocifs.

1. Utilisez l'équipement à l'extérieur dans des aires ouvertes et bien ventilées.
2. Si vous utilisez ces équipements dans un endroit confiné, les fumées d'échappement doivent être envoyées à l'extérieur, loin des prises d'air du bâtiment.

LE CARBURANT PEUR CAUSER UN INCENDIE OU UNE EXPLOSION.

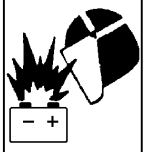
Le carburant est hautement inflammable.

1. Arrêtez le moteur avant de vérifier le niveau de carburant ou de faire le plein.
2. Ne faites pas le plein en fumant ou proche d'une source d'étincelles ou d'une flamme nue.
3. Si c'est possible, laissez le moteur refroidir avant de faire le plein de carburant ou d'en vérifier le niveau au début du soudage.
4. Ne faites pas le plein de carburant à ras bord: prévoyez de l'espace pour son expansion.
5. Faites attention de ne pas renverser de carburant. Nettoyez tout carburant renversé avant de faire démarrer le moteur.

DES PIECES EN MOUVEMENT PEUVENT CAUSER DES BLESSURES.

Des pièces en mouvement, tels des ventilateurs, des rotors et des courroies peuvent couper doigts et mains, ou accrocher des vêtements amples.

1. Assurez-vous que les portes, les panneaux, les capots et les protecteurs soient bien fermés.
2. Avant d'installer ou de connecter un système, arrêtez le moteur.
3. Seules des personnes qualifiées doivent démonter des protecteurs ou des capots pour faire l'entretien ou le dépannage nécessaire.
4. Pour empêcher un démarrage accidentel pendant l'entretien, débranchez le câble d'accumulateur à la borne négative.
5. N'approchez pas les mains ou les cheveux de pièces en mouvement; elles peuvent aussi accrocher des vêtements amples et des outils.
6. Réinstallez les capots ou les protecteurs et fermez les portes après des travaux d'entretien et avant de faire démarrer le moteur.



DES ETINCELLES PEUVENT FAIRE EXPLOSER UN ACCUMULATEUR; L'ELECTROLYTE D'UN ACCUMULATEUR PEUT BRULER LA PEAU ET LES YEUX.

Les accumulateurs contiennent de l'électrolyte acide et dégagent des vapeurs explosives.

1. Portez toujours un écran facial en travaillant sur un accumulateur.
2. Arrêtez le moteur avant de connecter ou de déconnecter des câbles d'accumulateur.
3. N'utilisez que des outils anti-étincelles pour travailler sur un accumulateur.
4. N'utilisez pas une source de courant de soudage pour charger un accumulateur ou survolter momentanément un véhicule.
5. Utilisez la polarité correcte (+ et –) de l'accumulateur.

LA VAPEUR ET LE LIQUIDE DE REFROIDISSEMENT BRULANT SOUS PRESSION PEUVENT BRULER LA PEAU ET LES YEUX.

Le liquide de refroidissement d'un radiateur peut être brûlant et sous pression.

1. N'ôtez pas le bouchon de radiateur tant que le moteur n'est pas refroidi.
2. Mettez des gants et posez un torchon sur le bouchon pour l'ôter.
3. Laissez la pression s'échapper avant d'ôter complètement le bouchon.

PRINCIPALES NORMES DE SECURITE

Safety in Welding and Cutting, norme ANSI Z49.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

Safety and Health Standards, OSHA 29 CFR 1910, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, norme AWS F4.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

National Electrical Code, norme 70 NFPA, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, document P-1, Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, norme CSA W117.2 Association canadienne de normalisation, Standards Sales, 276 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, norme ANSI Z87.1, American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, norme 51B NFPA, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

GENERAL INFORMATION

The 270XSR is a semi-automatic Gas Metal Arc Welders (GMAW-commonly MIG) with either integrated or separate wire feed unit. The Power Supplies are designed to meet the broad operating needs of the metal fabrication industry where production efficiency is vital. They are designed and manufactured, to IEC974-1 and CE.

The 270XSR range gives excellent performance on mild steel, stainless steel, aluminum, silicon bronze and some hard facing wires with Argon based shielding gases. The Power Supplies also give excellent results on mild steel using Carbon Dioxide shielding gas.

The 270XSR range is supplied as a complete package ready to weld (apart from gas cylinder and electrode wire). The following instructions detail how to correctly set up the welder and give guidelines on gaining the best production efficiency from the Power Supply. Please read these instructions thoroughly before using your 270XSR welder.

Safety

The following basic safety rules should always be followed:

i) Ensure the machine is correctly installed, if necessary, by a qualified electrician.

ii) Ensure the Power Supply is grounded correctly (electrically) in accordance with local regulations.

iii) Excessive heat in the welding cables may cause fire. Never weld with poor electrical connections, damaged welding cables or exceed the welding cable current rating as this will produce excessive heat and may cause a fire.

iv) Always wear the correct protective clothing for protection from sparks, molten particles and arc rays.

v) When welding in confined spaces, always ensure adequate ventilation and constant observation of the operator.

vi) Keep combustible materials away from the welding area. Have a suitable fire extinguisher handy.

vii) Never watch the welding arc with naked eyes. Always use and wear a welding mask fitted with the correct filter lens.

viii) Do not stand on damp ground when welding.

ix) For more complete safety advice please read the safety literature included with the equipment before starting to weld.

Protective Filter Lenses

Protective filter lenses are provided to reduce the intensity of radiation entering the eye thus filtering out harmful infra-red, ultra-violet radiation and a percentage of the visible light. Such filter lenses are incorporated within face shields. To prevent damage to the filter lenses from molten or hard particles an additional hard clear glass or special plastic external cover lens should be used. This cover lens should always be kept in place and replaced before the damage impairs your vision while welding.

Welding Protection

It is recommended to use a welding helmet, conforming to the local relevant Standards when electric arc welding. Use a welding helmet in serviceable condition with the correct filter lens fitted as per Table 3-1.

Approximate range of welding current	Filter lens required for MIG
Up to 150	Shade 10
150-250	Shade 11
250-300	Shade 12
300-350	Shade 13
Over 350	Shade 14

Table 3-1 Filter Lens Size Verses Welding Current

User Responsibility

This equipment will perform as per the information contained herein when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically. Defective equipment (including welding leads) should not be used. Parts that are broken,

missing, plainly worn, distorted or contaminated, should be replaced immediately. Should such repairs or replacements become necessary, it is recommended that such repairs be carried out by appropriately qualified persons approved by DAIHEN Inc.. Advice in this regard can be obtained by contacting DAIHEN Inc..

This equipment or any of its parts should not be altered from standard specification without prior written approval of DAIHEN Inc.. The purchaser of this equipment shall have the sole responsibility for any malfunction which results from improper use or unauthorized modification from standard specification, faulty maintenance, damage or improper repair by anyone other than appropriately qualified persons approved by DAIHEN Inc..

Duty Cycle

The rated duty cycle of a welding Power Supply is the operating time it may be used at its rated output current without exceeding the temperature limits of the insulation of the component parts. To explain the ten minute duty cycle period the following example is used. Suppose a welding Power Supply is designed to operate at 40% duty cycle, 270 amperes at 27 volts. This means that it has been designed and built to provide the rated amperage (270A) at the rated load voltage (27V), for 5.0 minutes out of every 10 minute period (50% of 10 minutes is 5.0 minutes). During the other 5.0 minutes of the 10 minute period the Power Supply must idle and be allowed to cool. The thermal cut-out will operate if the duty cycle is exceeded.

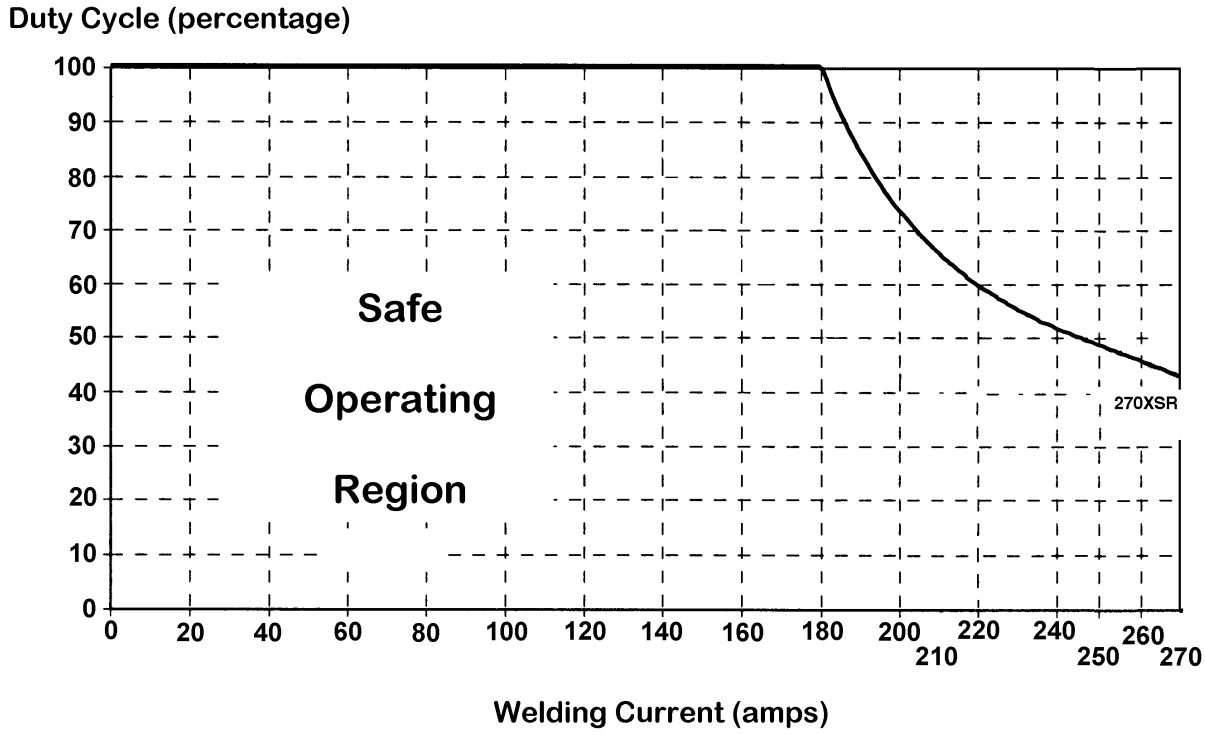


Figure 3-1 270XSR Duty Cycle Curves

SPECIFICATIONS

MIG Gun Specifications

Gun Catalog Number	T830788
Gun Type	TWECO 250A (Spray Master Consumables)
Gun Cable Length	3.6 meters (12 ft)

Machine Specifications

	270XSR	+
Unit Assembly	P10135	
Unit Weight	103kg (227lbs)	
Unit Dimensions (including wheels and cylinder carrier)	H 910mm x W 365mm x D 900mm (H 35.8" x W 14.4" x D 35.5")	
Power Supply	CPTXS-270	
Power Supply Weight	93kg (205lbs)	
Power Supply Dimensions (including wheels and cylinder carrier)	H 800mm x W 355mm x D 820mm (H 31.5" x W 14.0" x D 32.3")	
Primary Input Voltage	208V	230V
Number Of Phases	1∅	
Frequency	60 Hz	
Rated Input Current @ 100% Duty Cycle	∇36A	∇ 32A
Rated kVA @ 100% Duty Cycle	8 kVA	8 kVA
Maximum Input Current	55A	50A
Generator Requirements	♣ 12 kVA	♣ 12 kVA
Supply VA @ no load	1170 VA	1060 VA
Supply Watts @ no load	660W	660W
Supply VA @ max. output	11.5kVA	11.5kVA
Supply Watts @ max. output	9450W	9450W
Machine Efficiency @ max. output	58%	58%
Power Factor @ max. output	0.85	0.85
Recommended Input Power Outlet Size	40A	40A
Recommended Fuse Size	✦ 80A	✦ 80A
Open Circuit Voltage Range	17.9 to 43.1V	18.8 to 42.9V
Output Current Range	30 to 270A	30 to 270A
Rated Output Duty Cycle	270A@ 40%	270A@ 40%
100% Duty Cycle Output Rating	180A	180A
Duty Cycle Period	10 minutes	

	270XSR	+
Number Of Output Voltage Values	16	
Wire Size Range	0.6mm (.024") - 1.2mm (.045") Hard 0.9mm (.035") - 1.2mm (.045") Soft 0.8mm (.030") - 1.2mm (.045") Fluxcored	

∇ The Rated Input Current should be used for the determination of cable size & supply requirements.

✦ **CAUTION: The method of installation, conductor size, and overcurrent protection shall conform to the requirements of the local electrical code, the National Electrical Code, or other national codes, as applicable. All installation wiring and machine reconnection shall be done by qualified persons.**

♣ Generator Requirements at the Rated Output Duty Cycle.

Wire Drive Specifications

Motor Supply Voltage	36VAC	
Motor Supply VA	216VA	
Control Supply Voltage	24VAC	
Control Supply VA	30VA	
Minimum Wire Speed	1m per minute (40 ipm)	
Maximum Wire Speed	20m per minute (787 ipm)	
Wire Diameter	Mild Steel:	0.6mm (.024"), 0.8mm (.030"), 0.9mm (.035") 1.0mm (.040"), 1.2mm (.045")
	Stainless Steel:	0.8mm (.030"), 0.9mm (.035")
	Aluminum:	0.9mm (.035"), 1.0mm (.040"), 1.2mm (.045")
	Flux Cored:	0.8mm (.030"), 0.9mm (.035"), 1.2mm (.045")
Wire Spool Size	15Kg (33lb)Maximum	
Spot Time Range	0 to 4.0 Seconds	
Stitch ‘on’ Time	0 to 4.0 Seconds	
Stitch ‘off ‘ Time	0 to 4.0 Seconds	
Burnback Time Range	0 to 0.40 Seconds	

Power Supply Contents

	270XSR
Power Supply	✓
Owner’s Manual	✓
3 Meter (10ft) Work Lead	✓
Cable Stowage Hook	✓
Regulator/Flowmeter	✓
TWECO MIG Gun 250A	✓
Feed Roller 0.6/0.8 Hard	✓
Feed Roller 0.9/1.2 Hard	✓
Feed Roll, 1.0/1.2 - 1.4/1.6 Flux Cored	✓
Set Of Contact Tips	✓

Optional Accessories

Catalogue Number	Description	270XSR
T600119	Digital Meter Kit	✓
MS412116	400A Spraymaster Gun (fits 270XSR adaptor)	✓
T10-6120	Feed Roll, 0.6/0.8 Hard Wire	✓
T10-6151	Feed Roll, 0.9/1.2 Hard Wire	✓
T10-6121	Feed Roll, 1.0/1.2 Hard Wire	✓
T10-6179	Feed Roll, 0.8/0.9 Soft Wire	✓
T10-6134	Feed Roll, 1.0/1.2 Soft Wire	✓
T10-6180	Feed Roll, 0.8/0.9 Flux Cored	✓
T10-6022	Feed Roll, 1.0/1.2 - 1.4/1.6 Flux Cored	✓
ELC96L	Spraymaster Mig Gun Trigger Lock (Tweco Gun)	✓
T10-4209	Regulator, Gas	✓

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INSTALLATION RECOMMENDATIONS

Environment

The 270XSR is NOT designed for use in environments with increased hazard of electric shock.

a) Examples of environments with increased hazard of electric shock are -

i) In locations in which freedom of movement is restricted, so that the operator is forced to perform the work in a cramped (kneeling, sitting or lying) position with physical contact with conductive parts;

ii) In locations which are fully or partially limited by conductive elements, and in which there is a high risk of unavoidable or accidental contact by the operator, or

iii) In wet or damp hot locations where humidity or perspiration considerable reduces the skin resistance of the human body and the insulation properties of accessories.

b) Environments with increased hazard of electric shock do not include places where electrically conductive parts in the near vicinity of the operator, which can cause increased hazard, have been insulated.

Location

Be sure to locate the Power Supply according to the following guidelines:

a) In areas, free from moisture and dust.

b) In areas, free from oil, steam and corrosive gases.

c) In areas, not subjected to abnormal vibration or shock.

d) In areas, not exposed to direct sunlight or rain.

e) Place at a distance of 30cm (1ft) or more from walls or similar that could restrict natural air flow for cooling.

f) The minimum ground clearance for these products is 140mm (5.5")

Ventilation

Since the inhalation of welding fumes can be harmful, ensure that the welding area is effectively ventilated.

Input Power Supply Voltage Requirements

The input power supply voltage should be within ± 10% of the rated input power supply voltage. Too low a voltage may cause poor welding performance or the wirefeeder malfunction. Too high a supply voltage will cause components to overheat and possibly fail.

The 270XSR is supplied with an input lead to which an appropriate plug should be fitted.

Install a power outlet for each Power Supply and fit fuses as per the Machine Specifications.

WARNING: DAIHEN Coporation advises that your 270XSR be electrically connected by a qualified electrician.

The 270XSR Power Supply is factory connected for the following input power supply voltages:

Machine	Input Power Supply Lead Size	Lead Current Rating	Lead Length	Machine Voltage Setting	Duty Cycle
270XSR	8 AWG	40 Amps	3 meters (10ft)	230V	270A @ 40%

Table 5-1 Factory Fitted Input Power Supply Leads Fitted To The 270XSR Power Suppy

WARNING: The 270XSR input power supply leads should be replaced with leads as specified in section Alternative Input Power Supply Voltages when the 270XSR input power supply voltage is changed.

Alternative Input Power Supply Voltages

The Power Supplies are suitable for the following Input Power supply voltages:

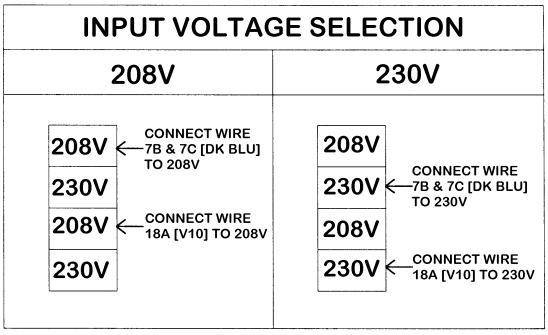

Figure 5-1 Voltage Settings For 270XSR

	Input Power Supply Voltage Setting	Input Power Supply Lead Size	Input Power Outlet Size	Fuse Size	Machines Duty Cycle
270XSR See Figure 5-1	208V	8.0mm^2 (8AWG)	40 Amp	✦80Amp	270A @ 40%
	230V	8.0mm^2 (8AWG)	40 Amp	✦80Amp	

✦ Motor start fuses or thermal circuit breakers are recommended for this application. National Electrical Code Standards permits the rating of the fuse or thermal circuit breaker protecting the circuit conductors to be double the outlet current rating for any circuit used exclusively for an electric arc welder. Check local requirements for your situation in this regard.

Table 5-2 Input Power Supply Lead Sizes For Alternative Input Power Supply Voltages

SET UP FOR 270XSR

a) Remove all packaging materials.

CAUTION : To obtain adequate air flow and cooling for the Power Supply components, the four wheels must be fitted. Alternatively, the Power Supply may be raised 140mm (5.5") from the floor using supports that do not restrict airflow.

b) Connect the work lead to the negative (–) socket (positive (+) for Flux Cored Wire)

c) Connect the GUN lead to the positive (+) socket (negative (–) for Flux Cored Wire)

d) Position a gas cylinder on the rear tray and lock securely to the Power Supply cylinder bracket with the chain provided. If this arrangement is not used then ensure that the gas cylinder is secured to a building pillar, wall bracket or otherwise securely fixed in an upright position.

Fix the cable stowage hook to the Power Supply cylinder bracket with the bolts provided.

e) Fit the gas Regulator/Flowmeter to the gas cylinder.

f) Connect the gas hose from the rear of the Power Supply to the Flowmeter outlet.

g) Three dual groove feed rollers are supplied as standard with the Power Supply. These can accommodate 0.6mm (.024"), 0.8mm (.030"), 0.9mm (.035") and 1.2mm (.045") diameter hard wires as well as 1.0mm (.040") and 1.2mm (.045") flux cored wires. Select the roller required with the chosen wire size marking facing outwards.

h) Fit the electrode wire spool to the wire reel hub located behind the electrode wire compartment door. Ensure that the drive dog-pin engages the mating hole in the wire spool. Push the 'R' clip into place to retain the wire spool securely. The wire should feed from the bottom of the spool.

i) Fit the TWECO MIG gun to the wire feed unit by releasing the gun locking screw in the brass gun adaptor and pushing in the gun fitting until the plastic gun casing meets the brass adaptor. Tighten the gun locking screw securely. Remove the contact tip from the gun.

j) Connect the two black gun trigger leads to the gun trigger terminals.

k) Lift up the wire feeder pressure lever and pass the electrode wire through the inlet guide, between the rollers, through the outlet guide and into the gun.

l) Lower the pressure lever and with the gun lead reasonably straight, feed the wire through the gun. Fit the appropriate contact tip.

WARNING: The electrode wire will be at welding voltage potential while it is being fed through the system.

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POWER SUPPLY CONTROLS, INDICATORS AND FEATURES

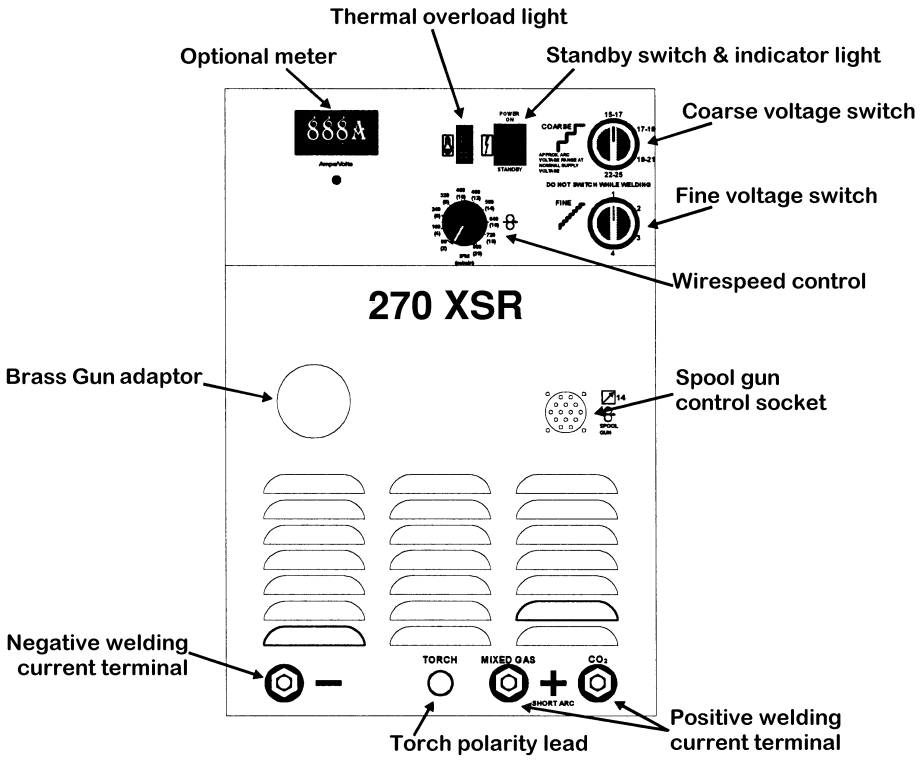

Figure 7-1 270XSR Controls

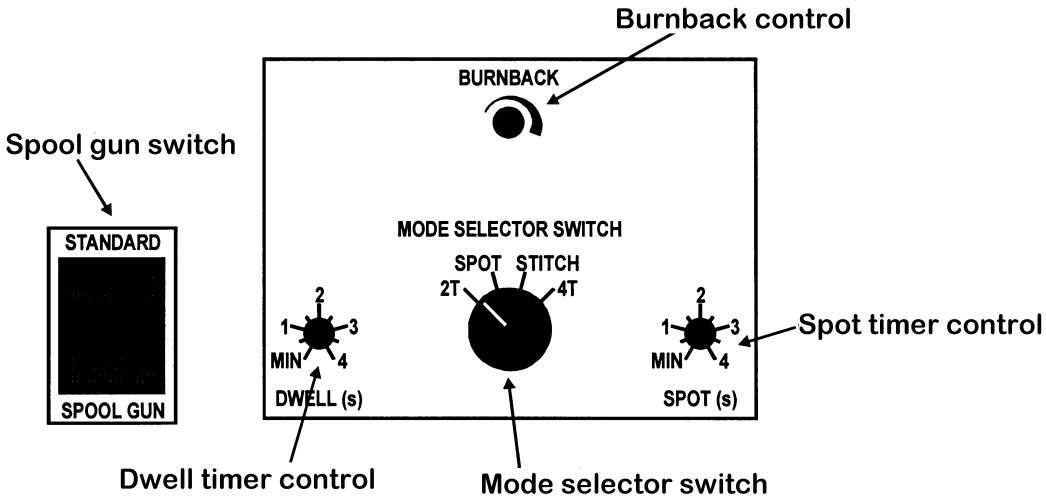

Figure 7-2 Internal 270XSR Controls

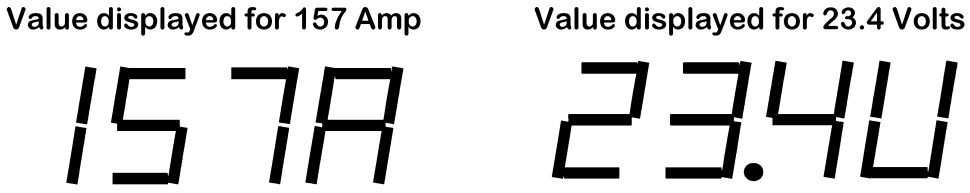

Figure 7-3 Examples Of The Digital Read Outs

Standby Switch With In-built Indicator Light

The indicator light is provided to indicate when the 270XSR is connected to the input power supply voltage.

With the switch in the STANDBY position, the auxiliary power and the fan are turned off.

WARNING: When the light is lit, the machine is connected to the input power supply voltage and the internal electrical components are at input power voltage potential.

Coarse Voltage Control Switch And Fine Voltage Control Switch

The Coarse Voltage Control sets the voltage level to the welding terminals as it is rotated in the clockwise direction. The Fine Voltage Control switch increases the voltage (in smaller increments than the Coarse switch) as it is rotated in the clockwise direction.

CAUTION: The Coarse & Fine Voltage Control switches MUST NOT BE SWITCHED during the welding process.

Digital Ammeter And Voltmeter (optional)

Where fitted an average reading ammeter and voltmeter is provided to allow accurate monitoring (5% tolerance) of welding current and voltmeter to facilitates precise welding condition adjustment. Refer to Improved Current Accuracy Calibration Procedure for the Digital Meter in Chapter 10, Page 10-1.

The Digital Meter will display both welding current and voltage. To toggle between the current and voltage readings depress the push button switch mounted below the meters display. See Figure 7-3 for an example of current and voltage display.

The Digital Meter will hold the last reading at completion of welding for 10 seconds to allow for easy operator setup.

Gun Polarity Lead

This lead selects the welding voltage polarity of the electrode wire. Plug it into the positive welding terminal (+) when using steel, stainless steel or aluminum electrode wire. Plug the Gun Polarity Lead into the negative welding terminal (–) when using gasless electrode wire. If in doubt, consult the manufacturer of the electrode wire for the correct polarity.

Positive And Negative Welding Terminals

Welding current flows from the Power Supply via heavy duty DINSE terminals. It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

CAUTION: Loose welding terminal connections can cause overheating and result in the male plug being fused in the bayonet terminal.

Spool Gun Control Socket

The SPOOL GUN 14 pin receptacle is used to connect a spool gun to the welding power Supply circuitry:

To make connections, align keyway, insert plug, and rotate threaded collar fully clockwise. The socket information is included in the event the supplied cable is not suitable and it is necessary to wire a plug or cable to interface with the SPOOL GUN 14-pin receptacle.

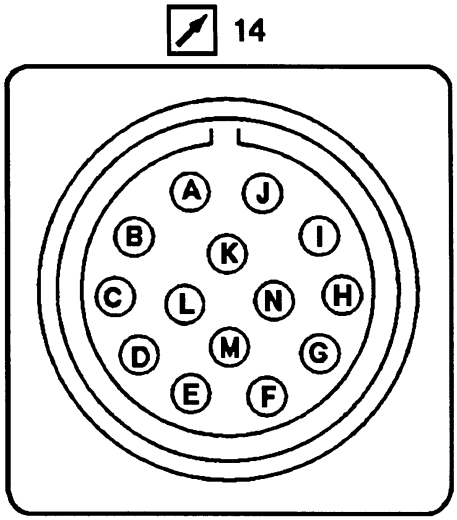

Figure 7-4 Spool Gun 14 Pin Receptacle

Socket Pin	Function
A	Input Supply 24VAC 1.0A with respect to Socket G (circuit common).
B	Output to energize the power supply contactor, 24VAC (contact closure is provided between socket pins A and B to energize the contractor).
C	Not Used.
D	Not Used.
E	Not Used.
F	Not Used.
G	24 Circuit Common.
H	Not Used.
I	Not Used.
J	Not Used.
K	Not Used.
L	Not Used.
M	Not Used.
N	Not Used.

Thermal Overload

The critical component for thermal protection is the rectifier stack, which is fitted with a thermal overload cut out device. If the overload operates then the machine should be left to cool for approximately 15 minutes before resuming welding.

The thermal overload will not operate and there will be no danger of transformer damage if the Power Supply is operated within its duty cycle, refer to Chapter 3, Page 3-2 for an explanation of duty cycle and Chapter 4 for the specifications.

Choice Of Inductance Setting

The 270XSR has two inductance settings. These inductance terminals are the positive welding terminals. Inductance selection can effect the spatter level and penetration characteristics of the weld. The correct choice depends upon the shielding gas, transfer mode and the material type.

CO2 (High Inductance) is used for:

- Carbon Dioxide shielded welding.
- Dip transfer with ∅1.2mm (.045") wires (Carbon Dioxide or mixed gas).
- Gives a hotter weld in DIP transfer.
-

MIXED GASES (Low Inductance) is used for:

- Spray transfer
- Aluminum and Flux Cored wires.
- Gives a cooler weld in DIP transfer.

NOTE: If in doubt, use the high inductance setting.

Wirespeed Control

The Wirespeed Control knob controls the welding current via the electrode wire feed rate. ie the speed of the wire feed motor.

Mode Selector Switch

The Mode Selector switch selects the method of welding mode.

a) CONTINUOUS (2T) — This mode of welding is used to weld two or more components together with a continuous weld.

b) SPOT — This mode of welding is used to weld two plates together at a desired location by melting the top & bottom plates together to form a nugget between them. The spot time period is set by the SPOT TIME control shaft located in the electrode wire compartment.

NOTE: A spot nozzle should be used on the MIG gun to obtain consistent spot welds.

c) STITCH — This mode of welding is used to weld two or more components together with a stitch weld. The SPOT TIME shaft controls the welding or 'ON' time while the DWELL TIME shaft controls the interval or 'OFF' time for stitch welding.

d) LATCH (4T) — This mode of welding is mainly used for long weld runs, as the operator need only press the trigger to activate the weld, then press the trigger again to stop. This obviates the need for the operator to depress the trigger for the complete length of the weld run.

Spot Timer

When the MODE SELECTOR switch is switched to the SPOT position, the SPOT TIME shaft controls the duration of a single spot weld.

When the MODE SELECTOR switch is switched to the STITCH position, the SPOT TIME shaft controls the welding or 'ON' time while stitch welding.

Dwell Timer

The DWELL TIME shaft controls the interval or 'OFF' time while stitch welding.

Burnback Control

Burnback time is the difference between the wire-feed motor stopping and switching off of the welding current. The Burnback time allows the electrode wire to burn out of the molten metal weld pool. The Burnback time is factory set for optimum performance.

Burnback time is adjusted by placing a flat bladed screwdriver into the Burnback adjustment access hole and adjusting the trim potentiometer. Clockwise adjustment increases Burnback time.

Spool Gun/Standard Switch

The 270XSR comes ready with a “STANDARD/SPOOL GUN” selector switch which is located inside the wire drive compartment of the power supply. This switch allows either the built-in wire drive system (“STANDARD” mode) or the (“SPOOL GUN” mode) to operate.

NOTE: When in the SPOOL GUN mode the internal gas control and the internal wire feed system of the power supply are disabled.

Wirefeeder Drive Roller Pressure Adjustment

The moveable roller applies pressure to the grooved roller via screw adjustable spring pressure. The adjustable spring screw should be adjusted to a minimum pressure that will provide satisfactory wire feed without slippage. If slipping occurs, and inspection of the wire contact tip reveals no wear, distortion or burn-back jam, the conduit liner should be checked for kinks and clogging by metal flakes and swarf. If this is not the cause of slipping, the feedroll pressure can be increased by rotating the adjustable spring screw clockwise. The use of excessive pressure may cause rapid wear of the feed roller, motor shaft and motor bearings.

NOTE: Genuine TWECO contact tips and liners should be used. Many non-genuine liners use inferior materials which can cause wire feed problems.

Wire Reel Brake

The wire reel hub incorporates a friction brake which is adjusted during manufacture for optimum braking. If it is considered necessary, adjustment can be made by turning the large nut inside the open end of the wire reel hub. Clockwise rotation will tighten the brake. Correct adjustment will result in the wire reel circumference continuing no further than 20mm (0.75") after release of the Gun trigger switch. The wire should be slack without becoming dislodged from the reel.

CAUTION: Excessive tension on the brake will cause rapid wear of mechanical wire feed parts, overheating of electrical componentry and possibly an increased incidence of wire Burnback into the contact tip.

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TWECO MIG GUN (Torch #T830788)

Introduction

The TWECO 250A gun fitted to the 270XSR offers robust construction, unparalleled reliability and easy replacement of consumable parts. The TWECO 250A has an operating capacity in excess of the capacity of the 270XSRs and can be expected to give trouble free service.

TWECO MIG guns may be fitted to many different types of MIG welding Power Supplies so that your whole shop can be converted to TWECO. Not only will this give greater reliability (and hence greater productivity), but it will reduce stockholding of consumable parts. See your DAIHEN distributor for details.

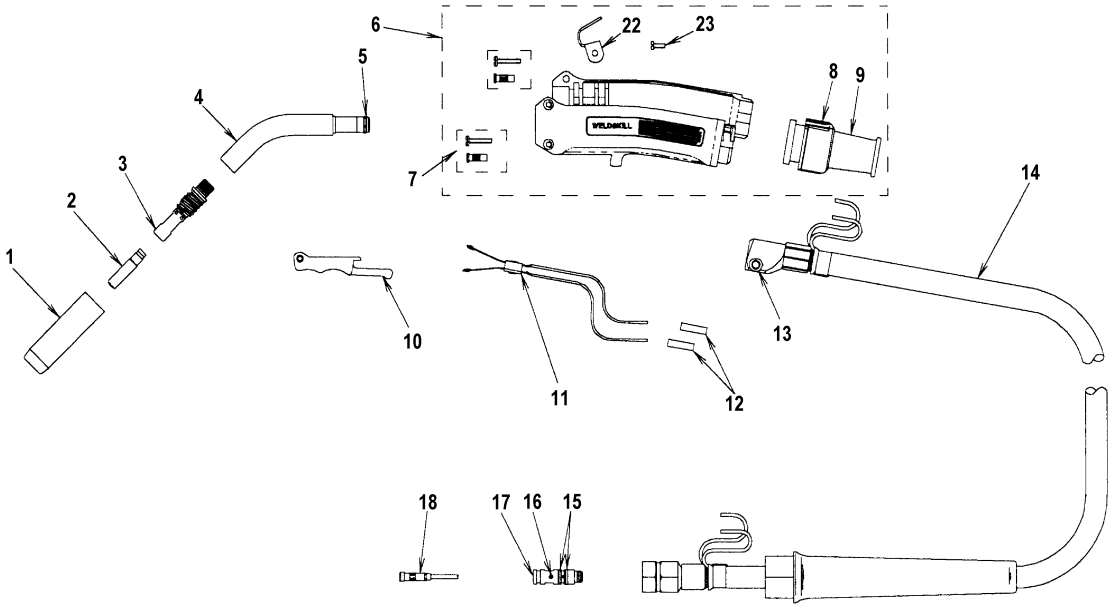

Figure 8-1 Exploded View Of MIG Gun

TWECO MIG Gun Components

Item	Part No.	Description			Qty
1	—	Nozzle	(refer to Table 8-4)	(Page 8-2)	1
2	—	Contact tip	(refer to Table 8-3)	(Page 8-2)	1
3	—	Gas diffuser	(refer to Table 8-2)	(Page 8-2)	1
4	MS63-605	Conductor tube			1
5	N/A	O-Ring, Gun Handle			1
6	MS84	Handle kit (includes items 7, 8, 9, 22 & 23)			1
7	—	Insert & screw	(refer to item 6)		2
8	—	Handle cap	(refer to item 6)		1
9	—	Support	(refer to item 6)		1
10	ELC94	Trigger Lever			1
11	ELC94BL	Trigger blades			1
12	—	Butt Splice (insulateAd crimp link 1.5mm^2)			2
13	ELC104-2	Cap screw			1
14	MS210	Cable assembly	(Cablehoz) 10ft.		1
15	350-174H	Connector Plug			2
16	44C	Set screw 8/32 UNC			1
17	350174H-F	Connector plug			1
18	—	Conduit	(refer to Table 8-5)	(Page 8-2)	1
22	—	Gun hanger	(refer to item 6)		1
23	—	Hanger screw	(refer to item 6)		1
24	N/A	Locking Trigger (not shown) (option)			—

Table 8-1 Mig Gun Components

Gun Consumable Parts

*NOTE: * Denotes parts that are supplied as standard with TWECO gun*

a) **Gas Diffusers**

Part No.
*HD52-11 (slide on nozzles)

Table 8-2 Mig Gun Gas Diffusers

b) **Contact Tips**

STANDARD

Wire Size	Part No.
0.6mm (.024")	11-23
0.8mm (.030")	11H-30
0.9mm (.035")	*11H-35
1.0mm (.040")	11H-40
1.2mm (.045")	11H-45
1.2mm (.045") Alum	11AH-364

TAPERED

Wire Size	Part No.
0.6mm (.024")	11HT-23
0.8mm (.030")	11HT-30
0.9mm (.035")	11HT-35
1.0mm (.040")	11HT-40
1.2mm (.045")	11HT-45

Table 8-3 Mig Gun Contact Tips

c) **Nozzles**

Bore Size	Part No.
9.5mm (3/8")	HD22-37
9.5mm (3/8")	HD22-37F
12.7mm (1/2")	HD22-50
12.7mm (1/2")	HD22-50F
15.9mm (5/8")	HD22-62
15.9mm (5/8")	HD22-62F

F = Flush Tip

Table 8-4 Mig Gun Nozzles

d) **Conduits**

HARD ELECTRODE WIRE

Wire Size	Part No.
0.6 mm (.024")	42-23-15
0.8-0.9 mm (.030"/0.35")	42-3035-15
1.0/1.2 mm (.040"/.045")	42-4045-15

SOFT ELECTRODE WIRE

Wire Size	Part No.
.035/.045 (0.9-1.2mm)	42N/3545-15

Table 8-5 Mig Gun Conduits

Installing A New Wire Conduit

a) Be sure the MIG Gun cable is arranged in a straight line, free from twists, when installing or removing a wire conduit. Remove the old conduit by first removing the MIG guns nozzle, contact tip and gas diffuser. Then loosen Allen screws in the conductor tube and connector plug and pull the old wire conduit out of the cable assembly from the connector plug end.

b) To install a new wire conduit, first inspect the o-ring gas seal on the conduit for cuts or damage. Start from the connector plug end of the assembly and begin pushing the conduit through the connector plug, cable assembly and into the gun. If the conduit should lodge along the way, gently whip or work the cable assembly to aid forward movement.

c) When the wire conduit stop meets the end of the connector plug and the new raw end extends through the end of the conductor tube, the Allen screw in the connector plug must be securely tightened onto the conduit to prevent its backward movement.

NOTE: When the conduit is fully inserted into the cable assembly and the conduit stop is firmly against the Connector Plug, the "raw end" of the conduit will protrude out of the open end of the gun conductor tube. Trim the conduit as shown in Figure 8-2. The trimmed end which seats in the Gas Diffuser must be filed and reamed smooth on the inside and outside radii so wire feed will not be obstructed.

d) Replace Gas Diffuser, Contact Tip, and Nozzle.

e) Tighten the Allen screw in the conductor tube.

CAUTION: Do not over tighten the conductor tube screw as this action will result in the distortion of the conduit and will lead to wire feedability problems.

MIG Gun Maintenance

Remove dust and metallic particles from the gun conduit by forcing clean, dry compressed air into the conduit once a week. This will minimize wire feeding problems.

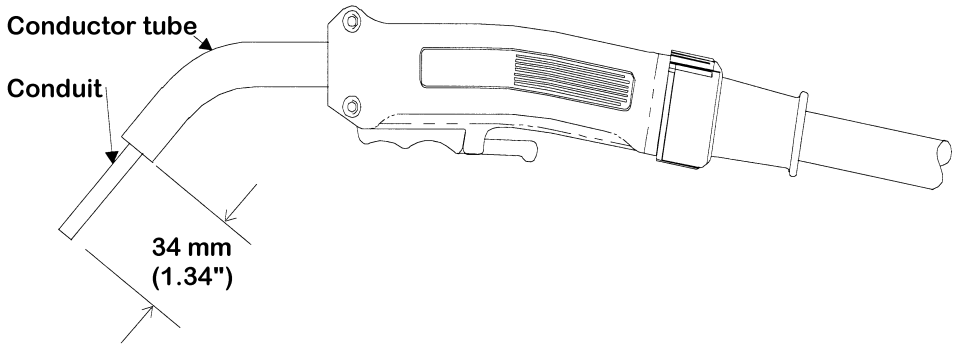

Figure 8-2 Conduit Trim Length

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BASIC WELDING TECHNIQUE

Setting Of The Power Supply

The setting of the 270XSR requires some practice by the operator, the welding Power Supply having two control settings that have to balance. These are the Wirespeed control and the Voltage Control switches. The welding current is determined by the Wirespeed control, the current will increase with increased Wirespeed, resulting in a shorter arc. Less wire speed will reduce the current and lengthen the arc. Increasing the welding voltage hardly alters the welding current level, but lengthens the arc. By decreasing the voltage, a shorter arc is obtained with little change in welding current.

When changing to a different electrode wire diameter, different control settings are required. A thinner electrode wire needs more Wirespeed to achieve the same current level.

A satisfactory weld cannot be obtained if the wirespeed and voltage switch settings are not adjusted to suit the electrode wire diameter and dimensions of the workpiece.

If the Wirespeed is too high for the welding voltage, “stubbing” will occur as the wire dips into the molten pool and does not melt. Welding in these conditions normally produces a poor weld due to lack of fusion. If, however, the welding voltage is too high, large drops will form on the end of the electrode wire, causing spatter. The correct setting of voltage and Wirespeed can be seen in the shape of the weld deposit and heard by a smooth regular arc sound.

Position of MIG Gun

The angle of MIG gun to the weld has an effect on the width of the weld run. Refer to Figure 9-1.

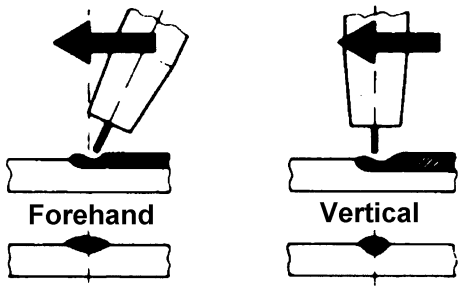

Figure 9-1 MIG Gun Angle

Distance From The MIG Gun Nozzle To The Work Piece

The electrode stick out from the MIG Gun nozzle should be between 2.0mm (5/64") to 5.0mm. (13/64") This distance may vary depending on the type of joint that is being welded.

Travel Speed

Speed at which a weld travels influences the width of the weld and penetration of the welding run.

Electrode Wire Size Selection

The choice of electrode wire size in conjunction with shielding gas used depends on:

a) Thickness of the metal to be welded,

b) Type of joint,

c) Capacity of the wire feed unit and power supply,

d) The amount of penetration required,

e) The deposition rate required,

f) The bead profile desired,

g) The position of welding and

h) Cost of the electrode wire.

Weld metal deposition rate is proportional to current density. Current density is defined as the current per cross sectional area of the electrode wire and is normally expressed as amps per mm^2. An example is tabled below.

Electrode Wire Size	Current (Amps)	Current Density ($Amps/mm^2$)	Deposition Rate (lbs/hour)
0.9mm (.035")	200	314	7.0
1.2mm (.045")	200	177	6.2

**Table 9-1 0.9mm (.035")/1.2mm (.045")
Wire Deposition Rate**

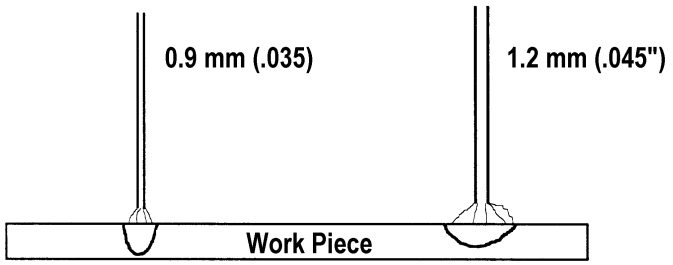

Figure 9-2 Wire Penetration Comparison

This demonstrates that where the upper limit of current is limited by machine capacity and duty cycle, higher deposition rates and therefore greater productivity will be achieved by using smaller electrode wire. The 270XSR is a particularly efficient MIG welder with the 0.9mm steel wire in spray transfer mode. The savings from decreased welding time will more than cover the small cost penalty of the smaller electrode wire sizes. (0.9mm (.035") wire cost approx. 10% more than 1.2mm (.045"), but is deposited approx. 15% faster).

Higher current density (or smaller diameter wire) also gives deeper penetration as shown Figure 9-2.

Stitch Welding Operation

Stitch welding is normally used to bridge excessive gaps between panels or when welding very thin material to prevent heat build up and distortion. Set the controls as follows for stitch welding:

a) Coarse & Fine Voltage Selector Switches and Wirespeed Control
Set these controls to obtain the desired welding conditions for the wire and material being welded.

b) Mode Selector Switch
Set the *MODE SELECTOR* switch to *STITCH.*

c) Spot Time
Adjust the *SPOT TIME* control shaft for the desired weld or 'ON' time while stitch welding.

d) Dwell Time
Adjust the *DWELL TIME* control shaft for the desired interval or 'OFF' time while stitch welding.

Spot Welding Operation

Fit a spot welding nozzle to the MIG Gun for consistent spot welding operations. The 270XSR will operate effectively using 0.8mm (.030") electrode wire when spot welding. Penetration depth is limited when using 0.6mm (.024") electrode wire for spot welding. Set the controls as follows for spot welding:

a) Coarse & Fine Voltage Selector Switches and Wirespeed Control
Select higher Voltage Selector switch positions and set the Wirespeed Control between 354 to 590 ipm (9 to 15 meters/minute) for maximum penetration.

b) Mode Selector Switch
Set the *MODE SELECTOR* switch to *SPOT.*

c) Spot Time
Adjust the *SPOT TIME* control shaft for the desired weld or 'ON' time for spot welding.

d) Dwell Time
The *DWELL TIME* control shaft has no affect in this mode of operation.

MAINTENANCE & INSPECTION

The only routine maintenance required for the 270XSR is a thorough cleaning and inspection, with the frequency depending on the usage and the operating environment.

WARNING: ***Disconnect the 270XSR from the Input Power supply voltage before disassembling.***

Special maintenance is not necessary for the control unit parts in the Power Supply. If these parts are damaged for any reason, replacement is recommended.

CAUTION: ***Do not blow air into the Power Supply during cleaning. Blowing air into the Power Supply can cause metal particles to interfere with sensitive electronic components and cause damage to the Power Supply.***

To clean the Power Supply, disconnect it from the input power supply voltage then open the enclosure and use a vacuum cleaner to remove any accumulated dirt and dust. The Power Supply should also be wiped clean. If necessary, solvents that are recommended for cleaning electrical apparatus may be used.

Troubleshooting and repairing the 270XSR should be carried out only by those who are familiar with electrical equipment.

WARNING: ***Do not attempt to diagnose or repair unless you have had training in electronic measurement and troubleshooting techniques.***

Improved Current Accuracy Calibration Procedure For The Digital Meter

WARNING: This calibration procedure should be carried out by a qualified electrical tradesperson.

The following procedure will give a current measurement accuracy of better than the factory standard of approximately 5%.

Equipment Required:	**270XSR**
DC Ammeter (certified up to ±1% accuracy)	300A
LOAD RESISTANCE of 0.1Ω	8kW
Output Connecting Leads	✓

a) Procedure:

i) With the 270XSR switched off, connect the LOAD RESISTANCE and DC AMMETER to the output terminals.

ii) Open the wirefeeder compartment door or remove the left-hand side cover (when viewing the 270XSR from the front).

iii) Select maximum voltage switch positions:
Coarse 19-23V Fine 4 (270XSR)

iv) Switch the input power supply voltage to the 270XSR ON.

v) Ensure the DIGITAL METER is selected to read current.

vi) Short circuit the GUN TRIGGER terminals to energize output welding terminals.

CAUTION: Do not allow the 270XSR to remain ON under load for more than ONE minute!

vii) Determine the output current as given by the DC AMMETER.

viii) Adjust SHUNT CAL. potentiometer on DIGITAL METER to read identically with DC AMMETER.

ix) Open circuit the GUN TRIGGER terminals to deactivate output welding terminals.

x) Select minimum voltage switch positions:
Coarse 15-17V Fine 1 (270XSR)

xi) Short circuit the GUN TRIGGER terminals to energize output welding terminals. Refer to CAUTION on page 10-1.

xii) Determine output current as given by the DC AMMETER.

xiii) Confirm the minimum DIGITAL METER reading is within ±2% of DC AMMETER.

xiv) If the above is not met, offset the SHUNT CAL. potentiometer such that both the minimum and maximum values are within ±2%.

xv) The improved accuracy for DIGITAL METER is now complete.

xvi) Where fitted, position the meter cover over the hexagonal brass spacers taking care not to trap loom wiring.

xvi i) Fit the M3 flat washers and M3x10 screws through the meter cover and into the hexagonal brass spacers.

xvi ii) Close wire-feeder compartment or replace side panel.

TROUBLESHOOTING

The basic level of troubleshooting is that which can be performed without special equipment or knowledge, and without removing the covers from the Power Supply.

If major components are faulty, then the Power Supply should be returned to an Accredited DAIHEN CORPORATION Service Agent for repair.

Solving Problems Beyond the Welding Terminals

The general approach to fix Gas Metal Arc Welding (GMAW) problems is to start at the wire spool then work through to the MIG gun. There are two main areas where problems occur with GMAW:

a) Porosity

When there is a gas problem the result is usually porosity within the weld metal. Porosity always stems from some contaminant within the molten weld pool which is in the process of escaping during solidification of the molten metal.

Contaminants range from no gas around the welding arc to dirt on the work piece surface. Porosity can be reduced by checking the following points:

1. Gas cylinder contents and flow meter.	- Ensure that the gas cylinder is not empty and the flow meter is correctly adjusted to 15 liters per minute (0.5 Cubic Feet per minute).
2. Gas leaks.	- Check for gas leaks between the regulator/cylinder connection and in the gas hose to the Power Supply.
3. Internal gas hose in the Power Supply.	- Ensure the hose from the solenoid valve to the Mig gun adaptor has not fractured and that it is connected to the Mig gun adaptor.
4. Welding in a windy environment.	- Shield the weld area from the wind or increase the gas flow.
5. Welding dirty, oily, painted, oxidized or greasy plate.	- Clean contaminates off the plate
6. Distance between the MIG gun	- Keep the distance between the MIG gun nozzle and the work piece to a minimum. Refer to Distance From The MIG Gun Nozzle To The Work Piece in Chapter 8.
7. Maintain the MIG gun in good working order.	- Ensure that the gas holes are not blocked and gas is exiting out of the gun nozzle. Refer to WARNING. Do not restrict gas flow by allowing spatter to build up inside the Mig gun nozzle. Check that the MIG gun O-rings are not damaged.

WARNING: ***Disengage the drive roll when testing for gas flow by ear.***

b) Inconsistent wire feed

Wire feeding problems can be reduced by checking the following points:

1. Wire spool brake is too tight.	- Feed roller driven by motor in the cabinet will slip.

2. Wire spool brake is too loose. - Wire spool can unwind and tangle.

3. Worn or incorrect feed roller size. - Use 'U' groove drive feed roller matched to the aluminum wire size you are welding.

   Use 'V' groove drive feed roller matched to the steel wire size you are welding.

   Use 'knurled V' groove drive feed roller matched to the flux cored wire size you are welding.

4. Mis-alignment of inlet/outlet guides. - Wire will rub against the mis-aligned guides and reduces wire feedability.

5. Liner blocked with debris. - Debris is produced by the wire passing through the feed roller, if excessive pressure is applied to the pressure roller adjuster.

   Debris can also be produced by the wire passing through an incorrect feed roller groove shape or size.

   Debris is fed into the liner where it accumulates thus reducing wire feedability.

6. Incorrect or worn contact tip. - The contact tip transfers the weld current to the electrode wire. If the hole in the contact tip is to large then arcing may occur inside the contact tip resulting in the electrode wire jamming in the contact tip.

   When using soft electrode wire such as aluminum it may become jammed in the contact tip due to expansion of the wire when heated. A contact tip designed for soft electrode wires should be used.

7. Poor work lead contact to work piece. - If the work lead has a poor electrical contact to the work piece then the connection point will heat up and result in a reduction of power at the arc.

8. Bent liner. - This will cause friction between the wire and the liner thus reducing wire feedability

Welding Problems

FAULT	CAUSE	REMEDY
1 Undercut.	A Welding arc voltage too high.	A Reduce voltage by reducing the voltage selection switches position or increase the wire feed speed.
	B Incorrect gun angle	B Adjust angle
	C Excessive heat input	C Increase the gun travel speed and/or reduce welding current by reducing the voltage selection switches position or reducing the wire feed speed.

FAULT	CAUSE	REMEDY
2 Lack of penetration.	A Welding current too low	A Increase welding current by increasing wire feed speed and increasing voltage selection switch position.
	B Joint preparation too narrow or gap too tight	B Increase joint angle or gap
	C Shielding gas incorrect	C Change to a gas which gives higher penetration
3 Lack of fusion.	Voltage too low	Increase voltage by increasing voltage selection switches position.
4 Excessive spatter.	A Voltage too high	A Lower voltage by reducing the voltage selection switches or increase wirespeed control.
	B Voltage too low	B Raise voltage by increasing the voltage selection switches or reduce wirespeed control.
5 Irregular weld shape.	A Incorrect voltage and current settings. Convex, voltage too low. Concave, voltage too high.	A Adjust voltage and current by adjusting the voltage selection switches and the wirespeed control.
	B Wire is wandering	B Replace contact tip
	C Incorrect shielding gas	C Check shielding gas.
	D Insufficient or excessive heat input	D Adjust the wirespeed control or the voltage selection switches.
6 Weld cracking.	A Weld beads too small	A Decrease travel speed
	B Weld penetration narrow and deep	B Reduce current and voltage and increase Mig gun travel speed or select a lower penetration shielding gas.
	C Excessive weld stresses	C Increase weld metal strength or revise design
	D Excessive voltage	D Decrease voltage by reducing the voltage selection switches.
	E Cooling rate too fast	E Slow the cooling rate by preheating part to be welded or cool slowly.

FAULT	CAUSE	REMEDY
7 Cold weld puddle.	A Faulty rectifier unit	A Have an Accredited DAIHEN CORPORATION Service Agent to test then replace the faulty component.
	B Loose welding cable connection.	B Check all welding cable connections.
	C Low Primary Voltage	C Contact supply authority
8 Arc does not have a crisp sound that short arc exhibits when the wirefeed speed and voltage are adjusted correctly.	The MIG gun has been connected to the wrong voltage polarity on the front panel.	Connect the MIG gun to the positive (+) welding terminal for solid wires and gas shielded flux cored wires. Refer to the electrode wire manufacturer for the correct polarity.

Power Supply Problems

FAULT	CAUSE	REMEDY
1 Indicator light is ON but welding arc can not be established.	Voltage switch in *standby* position.	Switch the voltage selection switches to a welding setting.
2 Input power supply voltage is ON. Indicator light is not lit and welding arc can not be established.	A Primary fuse is blown.	A Replace primary fuse.
	B Broken connection in primary circuit.	B Have an Accredited DAIHEN Corporation Service Agent check primary circuit.
3 Input power indicator light is not lit but welding arc can be established.	Indicator light is open circuit.	Have an Accredited DAIHEN Corporation Service Agent replace Indicator light.
4 Input power supply voltage is ON and Indicator light is lit but when the gun trigger switch is depressed nothing happens.	Gun trigger switch leads are disconnected.	Reconnect.
5 Input power supply voltage is ON, no wire feed but gas flows from the MIG gun when the gun trigger switch is depressed.	A Electrode wire stuck in conduit liner or contact tip (burn-back jam).	A Check for clogged/kinked MIG gun conduit or worn contract tip. Replace faulty component(s).
	B Faulty control PCB or Tweco gun	B Have an Accredited DAIHEN Corporation Service Agent investigate the fault.
6 Wire feeds when the gun trigger switch is depressed but arc can not be established.	Poor or no work lead connection.	Clean work clamp area and ensure good electrical contact.
7 Wire continues to feed when the gun trigger switch is released.	The Mode Selector Switch has been set to 4T (latch operation).	Set the Mode Selector Switch has been set to 2T (normal operation).

FAULT	CAUSE	REMEDY
8 Jerky wire feed	A Worn or dirty contact tip B Worn feed roll. C Excessive back tension from wire reel hub. D Worn, kinked or dirty conduit liner	A Replace B Replace C Reduce brake tension on spool hub D Clean or replace conduit liner
9 No gas flow	A Gas hose is cut. B Gas passage contains impurities. C Gas regulator turned off.	A Replace or repair. B Disconnect gas hose from the rear of 270XSR or then raise gas pressure and blow out the impurities. C Turn on.
10 Gas flow continues after the gun trigger switch has been released.	Gas valve has jammed open due to impurities in the gas or the gas line.	Have an Accredited DAIHEN Corporation Service Agent repair or replace gas valve.

Parts List

Equipment Identification

All identification numbers as described in the Introduction chapter must be furnished when ordering parts or making inquiries. This information is usually found on the nameplate attached to the equipment. Be sure to include any dash numbers following the Specification or Assembly numbers.

How To Use This Parts List

The Parts List is a combination of an illustration (Figure Number) and a corresponding list of parts which contains a breakdown of the equipment into assemblies, subassemblies, and detail parts. All parts of the equipment are listed except for commercially available hardware, bulk items such as wire, cable, sleeving, tubing, etc., and permanently attached items which are soldered, riveted, or welded to another part. The part descriptions may be indented to show part relationships.

To determine the part number, description, quantity, or application of an item, simply locate the item in question from the illustration and refer to that item number in the corresponding Parts List.

An “Application Code” is used to distinguish parts that are applicable only to certain Specifications and/or Assemblies. This code is found in the rightmost column of the Parts List. If an item in the Parts List applies to all Specifications or Assemblies, the word “ALL” will be in the Application Code column. Refer to the following list to determine the appropriate Application Codes for the Specifications or Assemblies covered by this manual. If only the assembly or specification number is listed, the use of an Application Code does not apply to this manual.

PART NUMBER

10135-1

THIS PAGE IS IN TROUBLESHOOTING CHAPTER

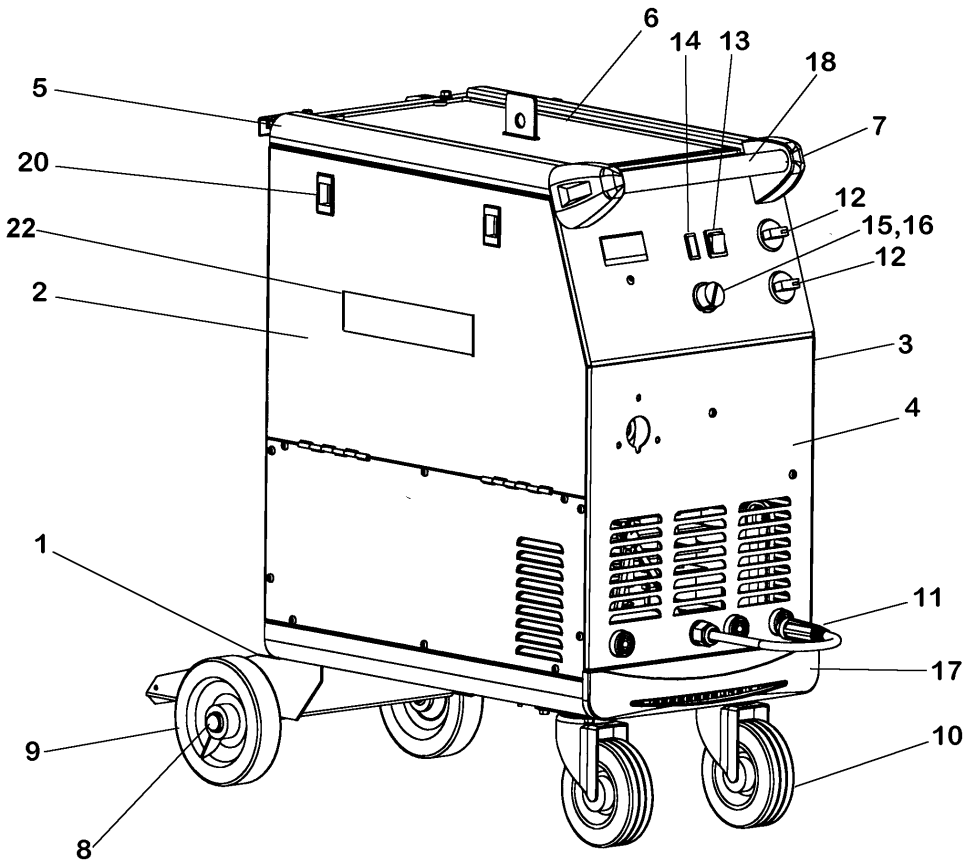

Figure 11-1

Parts List for Figure 11-1

Item No	Part Number	Description	Qty per Assy
	CPTXS-270	270XSR	1
1	T830616-2	Base, Welder	1
2	T830614-2	Door, L. H.	1
3	T830615-2	Side, R. H.	1
4	T830613-3	Panel, Front	1
5	T830611-2	Panel, Top	1
6	T800071	Mat, Top	1
7	T600069	Handle, End Moulding	2
8	T10-6305	Cap, Axle	2
9	T10-6261	Wheel	2
10	T10-6146	Castor, Swivel	2
11	T830622	Cable, Torch, Assy	1
12	T10-6155	Switch, Range	2
13	T600047	Switch, STBY	1
14	T600046	Indicator, OVLD	1
15	T406806-3	Knob	1
16	T401428-5	Potentiometer, Wire Feed Speed	1
17	T600070	Moulding, Front	
18	T600074	Handle, Bar	1
19	T830788	Torch, Spraymaster	1
20	T830551	Latch, Slide	2
21	T830620-1	Clamp, Work, Assy	1
22	T830721	Label, OTC	2

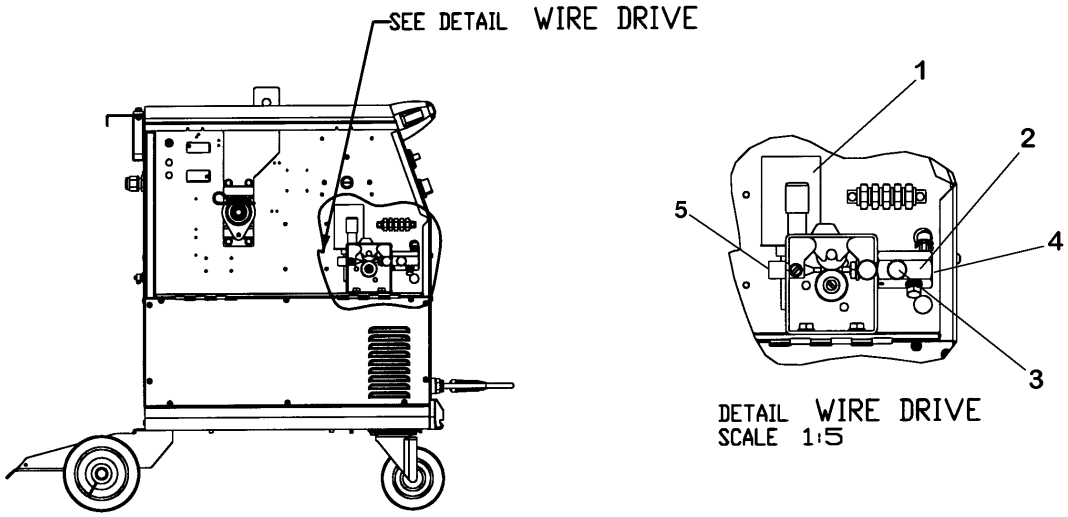

Figure 11-2

Parts List for Figure 11-2

Item No	Part Number.	Description	Qty per Assy
1	T10-6150	Drive Motor Assy	1
2	T10-6039	Adaptor, Gun Assy	1
3	T10-6187	Screw, Locking Mig Torch	1
4	T10-6040	Output Liner	
5	T10-6144	Input Guide	1

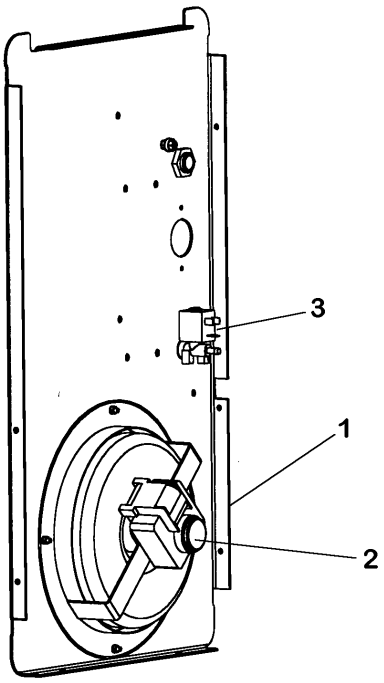

Figure 11-3

Parts List for Figure 11-3

Item No	Part Number	Description	Qty per Assy
1	T830619-3	Panel, Rear	1
2	T600049-1	Fan, Assy	1
3	T600045	Valve, Gas	1
—	T401840-3	Cable, Input Power	1

— Not Illustrated

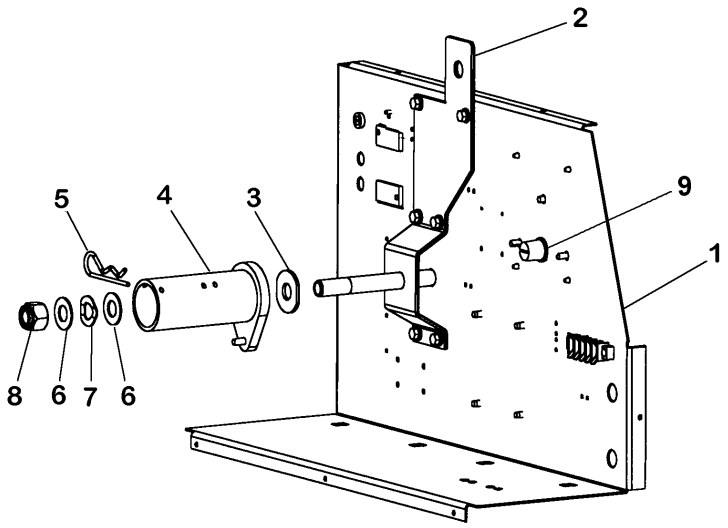

Figure 11-4

Parts List for Figure 11-4

Item No	Part Number	Description	Qty per Assy
1	T830618-2	Panel, Interior	1
2	T830617-2	Bracket, Reel, Lug	1
3	T830496	Washer, Friction	1
4	T10-6018	Hub, Spool	1
5	T830534	Clip, Retaining	
6	TW11242-27	Washer, Flat	2
7	T10-6132	Washer, Tension	1
8	T830623-1	Nut, Nylok	1
9	T406807-6	Knob	1

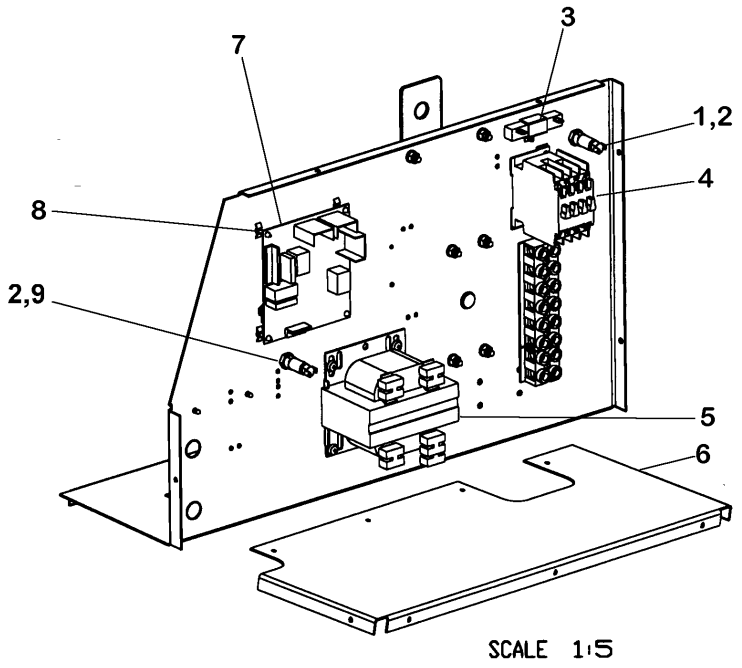

Figure 11-5

Parts List for Figure 11-5

Item No	Part Number	Description	Qty per Assy
1	TW-11166-10	Fuse, AGC - 3 Amp	1
2	T402658	Holder, Fuse	2
3	T600093	Resistor	1
4	T600042	Contactor	1
5	T600037	Transformer, Aux	1
6	T830612-2	Panel, Baffle	1
7	T600041	Board, PC Control	1
8	T600107	Support, PC Board, 16.6mm	1
9	TW-11166-1	Fuse, AGC - 2 Amp	1

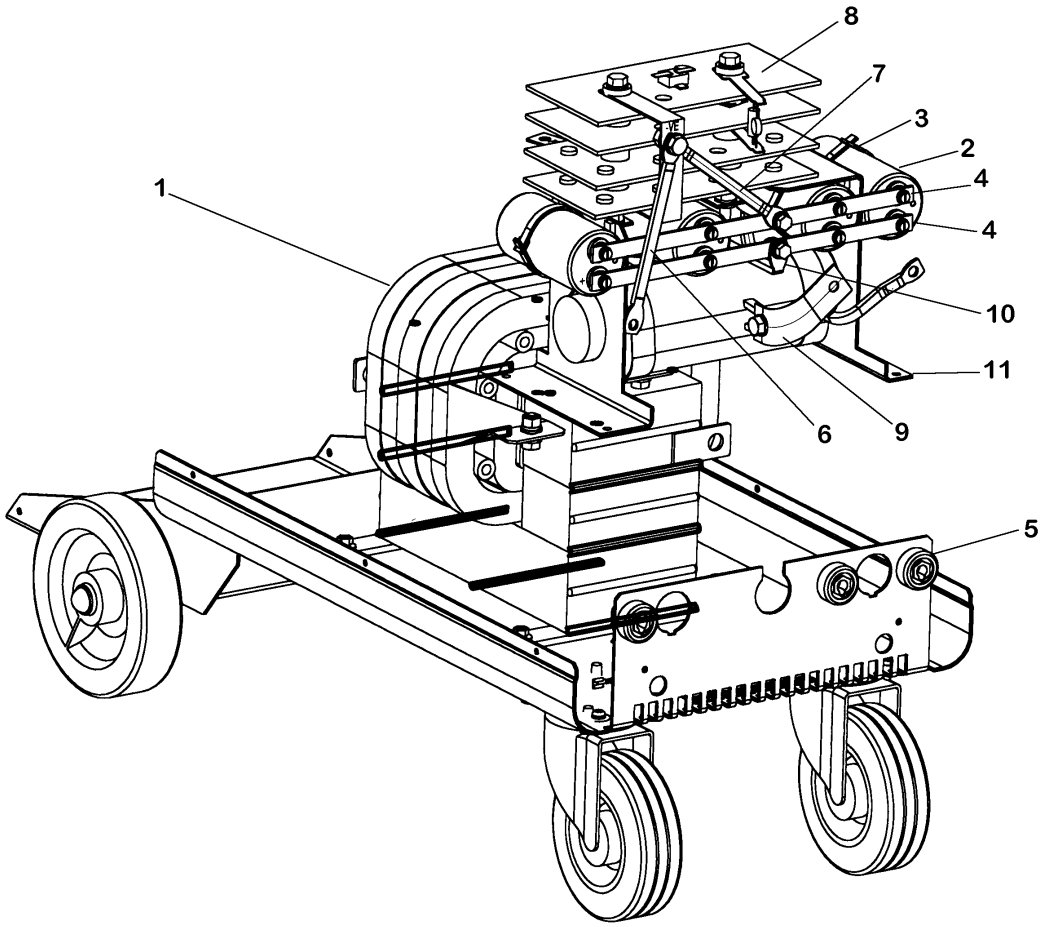

Figure 11-6

Parts List for Figure 11-6

Item No	Part Number	Description	Qty per Assy
1	T830648	Transformer, Power Assy, 250	1
2	T10-6131	Capacitor, Electrolitic	5
3	T400828-7	Tie, Cable	5
4	T830589	Bar, Bus	1
5	T10-6127	Socket, 25mm	3
6	T830592	Link, (-) Output	1
7	T830591	Link, (-) Capacitor	1
8	T600040	Rectifier, Output	1
9	T830593	Link, Ind, Output	1
10	T830590	Link, (+) Capacitor	1
11	T830651-1	Assy, Inductor	1

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VOLT/AMP GRAPHS

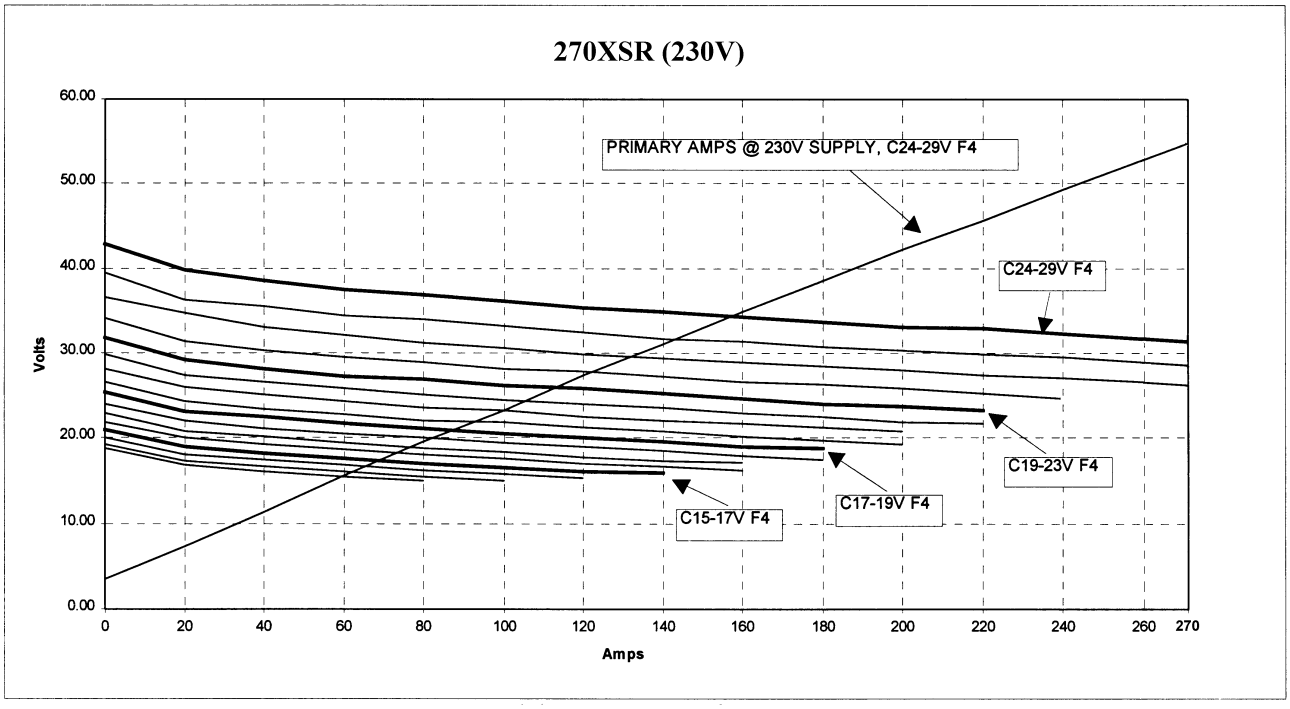

Figure 12-1 Volt/Amp Curves Of The 270XSR

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270XSR SUPPLY CIRCUIT DIAGRAM

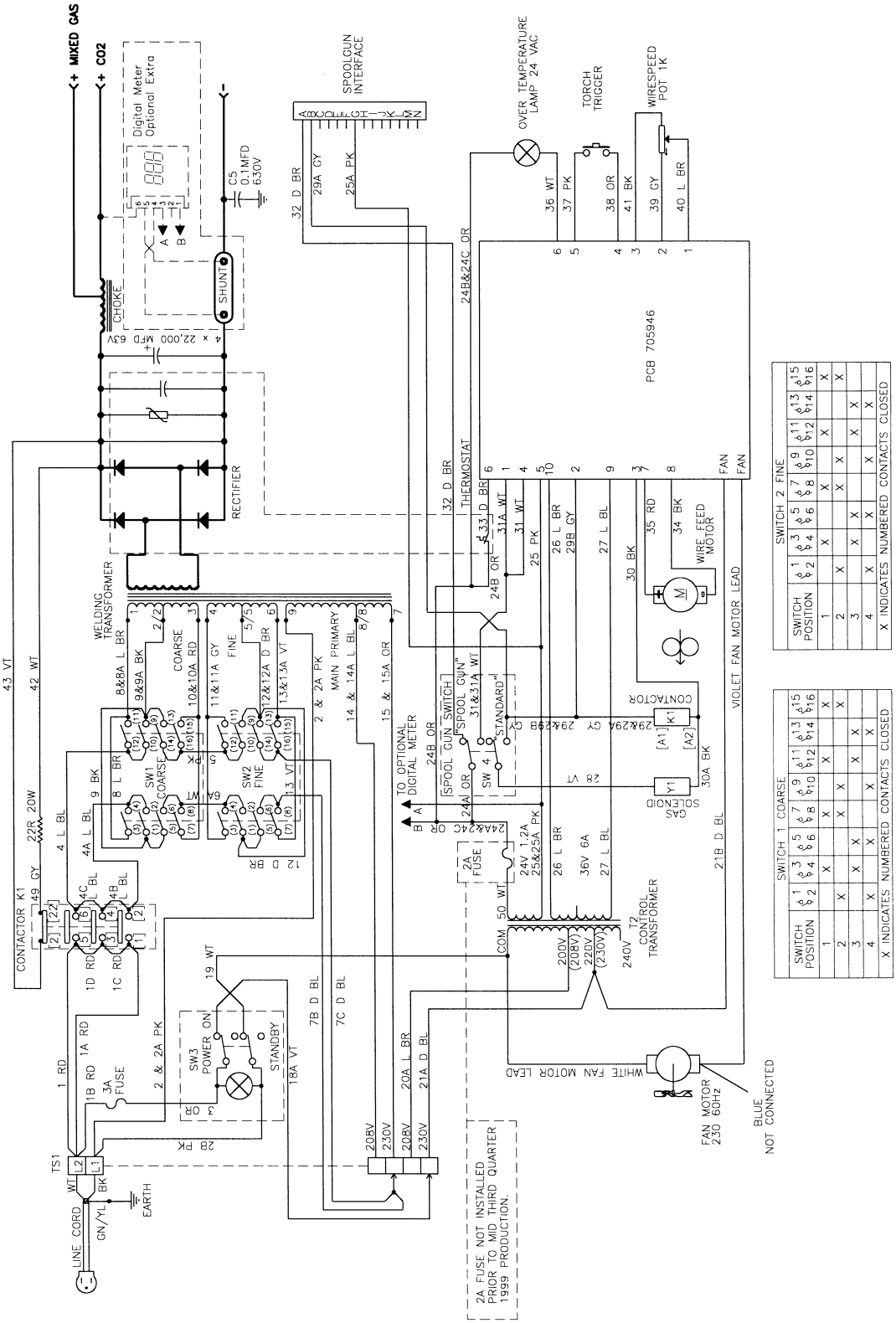

Figure 13-1 Power Supply Schematic

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PRINTED CIRCUIT BOARD CIRCUIT DIAGRAM

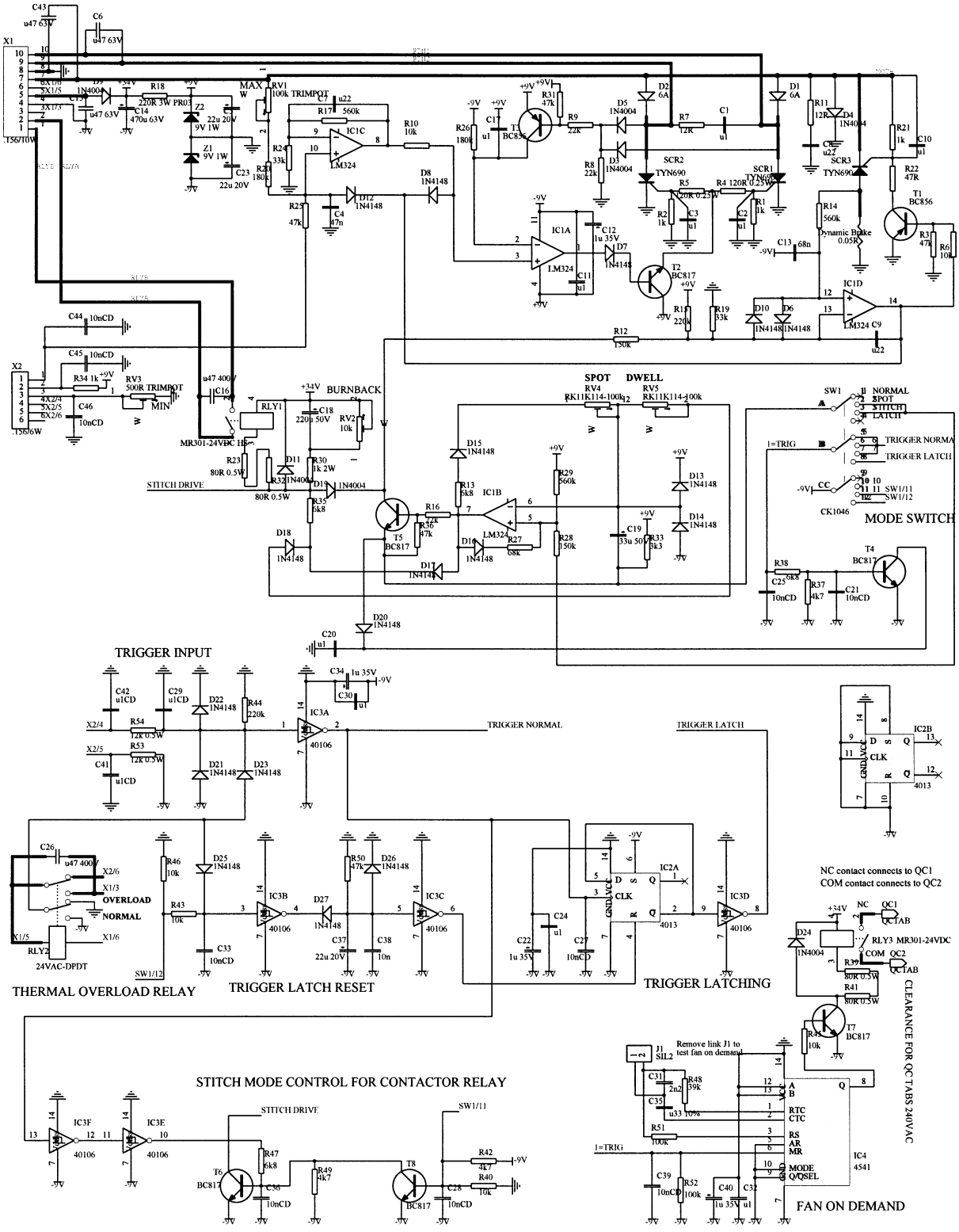

Figure 14-1 Circuit Diagram For Control PCB T600041

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Publications

Refer to the following standards or their latest revisions for more information:

1. OSHA, SAFETY AND HEALTH STANDARDS, 29CFR 1910, obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
2. ANSI Standard Z49.1, SAFETY IN WELDING AND CUTTING, obtainable from the American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126
3. NIOSH, SAFETY AND HEALTH IN ARC WELDING AND GAS WELDING AND CUTTING, obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
4. ANSI Standard Z87.1, SAFE PRACTICES FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018
5. ANSI Standard Z41.1, STANDARD FOR MEN'S SAFETY-TOE FOOTWEAR, obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018
6. ANSI Standard Z49.2, FIRE PREVENTION IN THE USE OF CUTTING AND WELDING PROCESSES, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018
7. AWS Standard A6.0, WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES, obtainable from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126
8. NFPA Standard 51, OXYGEN-FUEL GAS SYSTEMS FOR WELDING, CUTTING AND ALLIED PROCESSES, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
9. NFPA Standard 70, NATIONAL ELECTRICAL CODE, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
10. NFPA Standard 51B, CUTTING AND WELDING PROCESSES, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
11. CGA Pamphlet P-1, SAFE HANDLING OF COMPRESSED GASES IN CYLINDERS, obtainable from the Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202
12. CSA Standard W117.2, CODE FOR SAFETY IN WELDING AND CUTTING, obtainable from the Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3
13. NWSA booklet, WELDING SAFETY BIBLIOGRAPHY obtainable from the National Welding Supply Association, 1900 Arch Street, Philadelphia, PA 19103
14. American Welding Society Standard AWSF4.1, RECOMMENDED SAFE PRACTICES FOR THE PREPARATION FOR WELDING AND CUTTING OF CONTAINERS AND PIPING THAT HAVE HELD HAZARDOUS SUBSTANCES, obtainable from the American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126
15. ANSI Standard Z88.2, PRACTICE FOR RESPIRATORY PROTECTION, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018

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