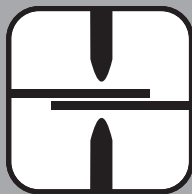


(EN) INSTRUCTION MANUAL  
 (IT) MANUALE D'ISTRUZIONE  
 (FR) MANUEL D'INSTRUCTIONS  
 (ES) MANUAL DE INSTRUCCIONES  
 (DE) BEDIENUNGSANLEITUNG  
 (RU) РУКОВОДСТВО ПОЛЬЗОВАТЕЛЯ  
 (PT) MANUAL DE INSTRUÇÕES  
 (EL) ΕΓΧΕΙΡΙΔΙΟ ΧΡΗΣΗΣ  
 (NL) INSTRUCTIEHANDLEIDING  
 (HU) HASZNÁLATI UTASÍTÁS  
 (RO) MANUAL DE INSTRUCȚIUNI  
 (SV) BRUKSANVISNING  
 (DA) INSTRUKTIONSMANUAL  
 (NO) BRUKERVEILEDNING  
 (FI) OHJEKIRJA  
 (CS) NÁVOD K POUŽITÍ  
 (SK) NÁVOD NA POUŽITIE  
 (SL) PRIROČNIK Z NAVODILI ZA UPORABO  
 (HR-SR) PRIRUČNIK ZA UPOTREBU  
 (LT) INSTRUKCIJŲ KNYGELĖ  
 (ET) KASUTUSJUHEND  
 (LV) ROKASGRĀMATA  
 (BG) РЪКОВОДСТВО С ИНСТРУКЦИИ  
 (PL) INSTRUKCJA OBSŁUGI  
 (AR) دليل التشغيل

EN IT FR ES DE RU PT  
 EL NL HU RO SV DA  
 NO FI CS SK SL HR-SR  
 LT ET LV BG PL AR



- (EN) Spot welder  
 ► (IT) Puntatrice  
 ► (FR) Poste de soudage par points  
 ► (ES) Soldadora por puntos  
 ► (DE) Punktschweißmaschine  
 ► (RU) Аппарат для точечной сварки  
 ► (PT) Aparelho de soldar por pontos  
 ► (EL) Πόντρα  
 ► (NL) Puntlasmachine  
 ► (HU) Ponthegesztő  
 ► (RO) Aparat de sudură în puncte  
 ► (SV) Punktsvets  
 ► (DA) Punktsvejsmaskine  
 ► (NO) Punktesveiseapparat  
 ► (FI) Pistehitsauslaite  
 ► (CS) Bodovačka  
 ► (SK) Bodovačka  
 ► (SL) Točkalnik  
 ► (HR-SR) Stroj za točkasto varenje  
 ► (LT) Taškinio suvirinimo aparatas  
 ► (ET) Punktkeevitusseade  
 ► (LV) Punkmetināšanas aparāts  
 ► (BG) Апарат за точково заваряване  
 ► (PL) Spawarka punktowa  
 ► (AR) آلة لحام بالتدريس

(EN)	EXPLANATION OF DANGER, MANDATORY AND PROHIBITION SIGNS.	(DA)	OVERSIGT OVER FARE, PLIGT OG FORBUDSSIGNALER.
(IT)	LEGENDA SEGNALI DI PERICOLO, D'OBBLIGO E DIVIETO.	(NO)	SIGNALERINGSTEKST FOR FARE, FORBLIKTELSER OG FORBUDT.
(FR)	LEGENDE SIGNAUX DE DANGER, D'OBLIGATION ET D'INTERDICTION.	(FI)	VAROITUS, VELVOITUS, JA KIELTOMERKIT.
(ES)	LEYENDA SEÑALES DE PELIGRO, DE OBLIGACIÓN Y PROHIBICIÓN.	(CS)	VYSVĚTLIVKY K SIGNÁLŮM NEBEZPEČÍ, PŘÍKAZŮM A ZÁKAZŮM.
(DE)	LEGENDE DER GEFÄHREN-, GEBÖTS- UND VERBOTSSZEICHEN.	(SK)	VYSVĚTLIVKY K SIGNÁLŮM NEBEZPEČENSTVA, PŘÍKAZOM A ZÁKAZOM.
(RU)	ЛЕГЕНДА СИМВОЛОВ БЕЗОПАСНОСТИ, ОБЯЗАНОСТИ И ЗАПРЕТА.	(SL)	LEGENDA SIGNALOV ZA NEVARNOST, ZA PREDPISANO IN PREPOVEDANO.
(PT)	LEGENDA DOS SINAIS DE PERIGO, OBRIGAÇÃO E PROIBIDO.	(HR-SR)	LEGENDA OZNAKA OPASNOSTI, OBAVEZA I ZABRANA.
(EL)	ΛΕΞΑΝΤΑ ΣΗΜΑΤΩΝ ΚΙΝΔΥΝΟΥ, ΥΠΟΧΡΕΩΣΗΣ ΚΑΙ ΑΠΑΓΟΡΕΥΣΗΣ.	(LT)	PAVOJAUS, PRIVALOMUJU IR DRAUDŽIAMUJU ŽENKLŲ PAAIŠKINIMAS.
(NL)	LEGENDE SIGNALEN VAN GEVAAR, VERPLICHTING EN VERBOD.	(ET)	OHUD, KOHUSTUSED JA KEELUD.
(HU)	A VESZÉLY, KÖTELEZÉSTÉSÉS ÉS TILTÁS JELZÉSEINEK FELIRATAI.	(LV)	BĪSTAMĪBA, PIENĀKUMU UN AIZLĪEGUMA ZĪMJŪ PASKAIDROJUMI.
(RO)	LEGENDA INDICATOARE DE AVERTIZARE A PERICOLELOR, DE OBLIGARE ŞI DE INTERZICERE.	(BG)	ЛЕГЕНДА НА ЗНАЦИТЕ ЗА ОПАСНОСТ, ЗАДЪЛЖИТЕЛНО И ЗА ЗАБРАНА.
(SV)	BILDTEXT SYMBOLER FÖR FARA, PÅBUD OCH FÖRBUD.	(PL)	OBJAŚNIENIA ZNAKÓW OSTRZEŻAWCZYCH, NAKAZU I ZAKAZU.
		(AR)	مفاتيح رموز الخطر والإلزام والحظر

	(EN) DANGER OF ELECTRIC SHOCK - (IT) PERICOLO SHOCK ELETTRICO - (FR) RISQUE DE CHOC ÉLECTRIQUE - (ES) PELIGRO DESCARGA ELÉCTRICA - (DE) STROMSCHLAGGEFAHR - (RU) ОПАСНОСТЬ ПОРАЖЕНИЯ ЭЛЕКТРИЧЕСКИМ ТОКОМ - (PT) PERIGO DE CHOQUE ELÉTRICO - (EL) ΚΙΝΔΥΝΟΣ ΗΛΕΚΤΡΟΠΛΗΞΙΑΣ - (NL) GEVAAR ELEKTROSHOCK - (HU) ÁRAMÚTÉS VESZÉLYE - (RO) PERICOL DE ELECTROCUTARE - (SV) FARA FÖR ELEKTRISK STÖT - (DA) FARE FOR ELEKTRISK STØD - (NO) FARE FOR ELEKTRISK STØT - (FI) SÄHKÖISKUN VAARA - (CS) NEBEZPEČÍ ZÁSAHU ELEKTRICKÝM PROUDEM - (SK) NEBEZPEČENSTVO ZÁSAHU ELEKTRICKÝM PRUDEM - (SL) NEVARNOST ELEKTRIČNEGA UDARA - (HR-SR) OPASNOST STRUJNOG UDARA - (LT) ELEKTROS SMŪGIO PAVOJUS - (ET) ELEKTRILŌOGIOHT - (LV) ELEKTROŠOKA BĪSTAMĪBA - (BG) ОПАСНОСТ ОТ ТОКОВ УДАР - (PL) NIEBEZPIECZENSTWO SZOKU ELEKTRYCZNEGO - (AR) خطر الصدمة الكهربائية
	(EN) DANGER OF WELDING FUMES - (IT) PERICOLO FUMI DI SALDATURA - (FR) DANGER FUMÉES DE SOUDAGE - (ES) PELIGRO HUMOS DE SOLDADURA - (DE) GEFAHR DER ENTWICKLUNG VON RAUCHGASEN BEIM SCHWEISSEN - (RU) ОПАСНОСТЬ ДЫМОВ СВАРКИ - (PT) PERIGO DE FUMACAS DE SOLDAGEM - (EL) ΚΙΝΔΥΝΟΣ ΚΑΠΝΩΝ ΣΥΓΚΟΛΛΗΣΗΣ - (NL) GEVAAR LASROOK - (HU) HEGESZTÉS KÖVETKEZTÉBEN KELETKEZTETT FŰST VESZÉLYE - (RO) PERICOL DE GAZE DE SUDURĂ - (SV) FARA FÖR RÖK FRÅN SVETSNING - (DA) FARE P.G.A. SVEJSEDMÅG - (NO) FARE FOR SVEIJSERØYK - (FI) HITSAUSAUVATTUMEN VAARA - (CS) NEBEZPEČÍ SVAŘOVAČICH DÝMŮ - (SK) NEBEZPEČENSTVO VÝBUCHU ZO ZVÁRANIA - (SL) NEVARNOST VARILNEGA DIMA - (HR-SR) OPASNOST OD DIMA PRILIKOM VARENJA - (LT) SUVIRINIMO DŪMŲ PAVOJUS - (ET) KEEVITAMISEL SUITSU OHT - (LV) METINĀŠANAS IZTVAIKOJUMU BĪSTAMĪBA - (BG) ОПАСНОСТ ОТ ПУШЕКА ПРИ ЗАВАРЯВАНЕ - (PL) NIEBEZPIECZENSTWO OPARÓW SPAWALNICZYCH - (AR) خطر أذخنة اللحام
	(EN) DANGER OF EXPLOSION - (IT) PERICOLO ESPLOSIONE - (FR) RISQUE D'EXPLOSION - (ES) PELIGRO EXPLOSIÓN - (DE) EXPLOSIONSGEFAHR - (RU) ОПАСНОСТЬ ВЗРЫВА - (PT) PERIGO DE EXPLOSAO - (EL) ΚΙΝΔΥΝΟΣ ΕΚΡΗΞΗΣ - (NL) GEVAAR ONTPLOFFING - (HU) ROBBANÁS VESZÉLYE - (RO) PERICOL DE EXPLOZIE - (SV) FARA FÖR EXPLOSION - (DA) SPRÆNGFARE - (NO) FARE FOR EKSPLOSION - (FI) RÄJÄHDYSVAARA - (CS) NEBEZPEČÍ VYBUCHU - (SK) NEBEZPEČENSTVO VÝBUCHU - (SL) NEVARNOST EKSPLOZIJE - (HR) OPASNOST OD EKSPLOZIJE - (LT) SPROGIMO PAVOJUS - (ET) PLAHVATUSOHT - (LV) SPRĀDIENBĪSTAMĪBA - (BG) ОПАСНОСТ ОТ ЕКСПЛОЗИЯ - (PL) NIEBEZPIECZENSTWO WYBUCHU - (AR) خطر الانفجار
	(EN) WEARING PROTECTIVE CLOTHING IS COMPULSORY - (IT) OBBLIGO INDOSSARE INDUMENTI PROTETTIVI - (FR) PORT DES VÊTEMENTS DE PROTECTION OBLIGATOIRE - (ES) OBLIGACIÓN DE LLEVAR ROPA DE PROTECCIÓN - (DE) DAS TRAGEN VON SCHUTZKLEIDUNG IST PFLICHT - (RU) ОБЯЗАНОСТЬ НАДЕВАТЬ ЗАЩИТНУЮ ОДЕЖДУ - (PT) OBRIGATORIO O USO DE VESTUÁRIO DE PROTEÇÃO - (EL) ΥΠΟΧΡΕΩΣΗ ΝΑ ΦΟΡΑΤΕ ΠΡΟΣΤΑΤΕΥΤΙΚΑ ΕΝΔΥΜΑΤΑ - (NL) VERPLICHT BESCHERMENDE KLEDIJ TE DRAGEN - (HU) VÉDŐRUHA HASZNÁLATA KÖTELEZŐ - (RO) FOLOSIREA ÎMBRĂCĂMIŢEI DE PROTECTIE OBLIGATORIE - (SV) OBLIGATORISKT ATT BÅRA SKYDDSPLAGG - (DA) PLIGT TIL AT ANVENDE BESKYTTELSESTØJ - (NO) FORPLIKTELSE Å BRUKE VERNEHANSKER - (FI) SUOJAJAATETUKSEN KÄYTTÖ PAKOLLISTA - (CS) POVINNÉ POUŽITÍ OCHRANNÝCH PROSTŘEDKŮ - (SK) POVINNÉ POUŽITIE OCHRANNÝCH PROSTRIEDKOV - (SL) OBEZNO OBLICITE ZAŠČITNA OBLAČILA - (HR-SR) OBAVEZNO KORISTENJE ZAŠTITNE ODJEĆE - (LT) PRIVALOMA DĖVĖTI APSAUGINES APRANGA - (ET) KOHUSTUSLIK KANDA KAITSERIETUST - (LV) PIENĀKUMS ĢĒRBT AIZSARGTĒRPUS - (BG) ЗАДЪЛЖИТЕЛНО НОСЕНЕ НА ПРЕДПАЗНО ОБЛЕКЛО - (PL) NAKAZ NOSZENIA ODZIEŻY OCHRONNEJ - (AR) الالتزام بارتداء الملابس الواقية
	(EN) WEARING PROTECTIVE GLOVES IS COMPULSORY - (IT) OBBLIGO INDOSSARE GUANTI PROTETTIVI - (FR) PORT DES GANTS DE PROTECTION OBLIGATOIRE - (ES) OBLIGACIÓN DE LLEVAR GUANTES DE PROTECCIÓN - (DE) DAS TRAGEN VON SCHUTZHANDSCHUHEN IST PFLICHT - (RU) ОБЯЗАНОСТЬ НАДЕВАТЬ ЗАЩИТНЫЕ ПЕРЧАТКИ - (PT) OBRIGATORIO O USO DE LUVAS DE SEGURANÇA - (EL) ΥΠΟΧΡΕΩΣΗ ΝΑ ΦΟΡΑΤΕ ΠΡΟΣΤΑΤΕΥΤΙΚΑ ΓΑΝΤΙΑ - (NL) VERPLICHT BESCHERMENDE HANDSCHOENEN TE DRAGEN - (HU) VÉDŐKESZTŰ HASZNÁLATA KÖTELEZŐ - (RO) FOLOSIREA MĂNUŞILOR DE PROTECTIE OBLIGATORIE - (SV) OBLIGATORISKT ATT BÅRA SKYDDSHANDSKAR - (DA) PLIGT TIL AT BRUGE BESKYTTELSESHANDSKER - (NO) FORPLIKTELSE Å BRUKE VERNEHANDSKER - (FI) SUOJAKÄSINENIDEN KÄYTTÖ PAKOLLISTA - (CS) POVINNÉ POUŽITÍ OCHRANNÝCH RUKAVIC - (SK) POVINNÉ POUŽITIE OCHRANNÝCH RUKAVIC - (SL) OBEZNO NADENITJE ZAŠČITNE ROKAVICE - (HR-SR) OBAVEZNO KORISTENJE ZAŠTITNIH RUKAVICA - (LT) PRIVALOMA MŪVĖTI APSAUGINES PIRŠTINES - (ET) KOHUSTUSLIK KANDA KAITSERIETUST - (LV) PIENĀKUMS ĢĒRBT AIZSARGCIMDUS - (BG) ЗАДЪЛЖИТЕЛНО НОСЕНЕ НА ПРЕДПАЗНИ РЪКAVИЦИ - (PL) NAKAZ NOSZENIA RĘKAWIC OCHRONNYCH - (AR) الالتزام بارتداء القفازات الواقية
	(EN) DANGER OF ULTRAVIOLET RADIATION FROM WELDING - (IT) PERICOLO RADIAZIONI ULTRAVIOLETTE DA SALDATURA - (FR) DANGER RADIATIONS ULTRAVIOLETTES DE SOUDAGE - (ES) PELIGRO RADIACIONES ULTRAVIOLETAS - (DE) GEFAHR ULTRAVIOLETTER STRahlungen BEIM SCHWEISSEN - (RU) ОПАСНОСТЬ УЛЬТРАФИОЛЕТОВОГО ИЗЛУЧЕНИЯ СВАРКИ - (PT) PERIGO DE RADIACOES ULTRAVIOLETAS DE SOLDADURA - (EL) ΚΙΝΔΥΝΟΣ ΥΠΕΡΙΘΑΥΣ ΑΚΤΙΝΟΒΟΛΙΑΣ ΑΠΟ ΣΥΓΚΟΛΛΗΣΗΣ - (NL) GEVAAR ULTRAVIOLET STRALEN VAN HET LASSEN - (HU) HEGESZTÉS KÖVETKEZTÉBEN LÉTREJÖTT IBOLYANTŰLI SUGÁRZÁS VESZÉLYE - (RO) PERICOL DE RADIATII ULTRAVIOLETE DE LA SUDURĂ - (SV) FARA FÖR ULTRAVIOLETT STRÅLNING FRÅN SVETSNING - (DA) FARE FOR ULTRAVIOLETTE SVEJSESTRÅLER - (NO) FARE FOR ULTRAVIOLETT STRÅLNING UNDER SVEISJESPROSEDYREN - (FI) HITSAUKSEN AIHEUTTAMAN ULTRAVIOLETTISÄTELYN VAARA - (CS) NEBEZPEČÍ ULTRAFIALOVÉHO ŽÁŘENÍ ZE SVAŘOVÁNÍ Í - (SK) NEBEZPEČENSTVO ULTRAFIALOVÉHO ŽÁRENIA ZO ZVÁRANIA - (SL) NEVARNOST SEVANJA ULTRAVIJOLIČNIH ŽARKOV ZARADI VARJENJA - (HR-SR) OPASNOST OD ULTRALJUBIČASTIH ZRAKA PRILIKOM VARENJA - (LT) ULTRAVIOLETINIO SPINDULIAVIMO SUVIRINIMO METU PAVOJUS - (ET) KEEVITAMISEL ERALDUSA ULTRAVIOLETTKIIRGUSEHT - (LV) METINĀŠANAS ULTRAVIOLETĀ IZSTAROJUMA BĪSTAMĪBA - (BG) ОПАСНОСТ ОТ УЛТРАВИОЛЕТОВО ОБЛЪЧВАНЕ ПРИ ЗАВАРЯВАНЕ - (PL) NIEBEZPIECZENSTWO PROMIENIOWANIA NADFIOLETOWEGO PODCZAS SPRAWANIA - (AR) خطر التعرض للاشعة تحت البنفسجية الناتجة عن اللحام
	(EN) DANGER OF FIRE - (IT) PERICOLO INCENDIO - (FR) RISQUE D'INCENDIE - (ES) PELIGRO DE INCENDIO - (DE) BRANDGEFAHR - (RU) ОПАСНОСТЬ ПОЖАРА - (PT) PERIGO DE INCENDIO - (EL) ΚΙΝΔΥΝΟΣ ΠΥΡΚΑΓΙΑΣ - (NL) GEVAAR VOOR BRAND - (HU) TŰZVESZÉLY - (RO) PERICOL DE INCENDIU - (SV) BRANDRISK - (DA) BRANDFARE - (NO) BRANNFARE - (FI) TULIPALON VAARA - (CS) NEBEZPEČÍ POŽÁRU - (SK) NEBEZPEČENSTVO POŽIARU - (SL) NEVARNOST POŽARA - (HR-SR) OPASNOST OD POŽARA - (LT) GAISRO PAVOJUS - (ET) TULEOHT - (LV) UGUNSGRĒKA BĪSTAMĪBA - (BG) ОПАСНОСТ ОТ ПОЖАР - (PL) NIEBEZPIECZENSTWO POŻARU - (AR) خطر التسبب في إندلاع حريق
	(EN) DANGER OF BURNS - (IT) PERICOLO DI USTIONI - (FR) RISQUE DE BRÛLURES - (ES) PELIGRO DE QUEMADURAS - (DE) VERBRENUNGSGEFAHR - (RU) ОПАСНОСТЬ ОЖОГОВ - (PT) PERIGO DE QUEIMADURAS - (EL) ΚΙΝΔΥΝΟΣ ΕΓΚΑΥΜΑΤΩΝ - (NL) GEVAAR VOOR BRANDWONDEN - (HU) EGÉSI SÉRÛLES VESZÉLYE - (RO) PERICOL DE ARSURI - (SV) RISK FÖR BRÄNNSKADA - (DA) FARE FOR FORBRÆNDINGER - (NO) FARE FOR FORBRENNINGER - (FI) PALOVAMMOJEN VAARA - (CS) NEBEZPEČÍ POPALENIN - (SK) NEBEZPEČENSTVO POPALENIA - (SL) NEVARNOST OPEKLIN - (HR-SR) OPASNOST OD OPEKLINJA - (LT) NUSIDĖGINIMO PAVOJUS - (ET) PÕLETUSHAVADE SAAMISE OHT - (LV) APDEGUMU GÛŠANAS BĪSTAMĪBA - (BG) ОПАСНОСТ ОТ ИЗГАРЯНИЯ - (PL) NIEBEZPIECZENSTWO OPARZEN - (AR) خطر التعرض لحروق
	(EN) DANGER OF STRONG MAGNETIC FIELD - (IT) PERICOLO CAMPI MAGNETICI INTENSI - (FR) DANGER CHAMPS MAGNÉTIQUES INTENSES - (ES) PELIGRO CAMPOS MAGNÉTICOS INTENSOS - (DE) GEFAHR STARKER MAGNETFELDER - (RU) ОПАСНОСТЬ ИНТЕНСИВНЫХ МАГНИТНЫХ ПОЛЕЙ - (PT) PERIGO DE CAMPOS MAGNÉTICOS INTENSOS - (EL) ΚΙΝΔΥΝΟΣ ΕΝΤΟΝΩΝ ΗΛΕΚΤΡΟΜΑΓΝΗΤΙΚΩΝ ΠΕΔΙΩΝ - (NL) GEVAAR INTENSE MAGNETISCHE VELDLEN - (HU) INTENZÍV MÁGNESES MEZŐK VESZÉLYE - (RO) PERICOL CĂMPURI MAGNETICE INTENSE - (SV) RISK FÖR INTENSIVA MAGNETFÄLT - (DA) FARE STERKE MAGNETISKE FELTER - (NO) FARE FOR INTENSIVE MAGNETISKE FELT - (FI) VOIMAKKAI DEN MAGNETTIKENTTIEN VAARA - (CS) NEBEZPEČÍ INTENZIVNÍCH MAGNETICKÝCH POLÍ - (SK) NEBEZPEČENSTVO INTENZIVNYCH MAGNETICKÝCH POLÍ - (SL) NEVARNOST MOČNIH MAGNETNIH POLJ - (HR-SR) OPASNOST OD INTENZIVNIH ELEKTROMAGNETSKIH POLJA - (LT) INTENSŲVAUS MAGNETINIO LAUKO PAVOJUS - (ET) OHT - TUGEVA D MAGNETVÄLJAD - (LV) SPĒCĪGA MAGNĒTISKĀ LAUKA BĪSTAMĪBA - (BG) ОПАСНОСТ ОТ СИЛНИ МАГНИТНИ ПОЛЕТА - (PL) NIEBEZPIECZENSTWO SILNYCH PÓL MAGNETYCZNYCH - (AR) خطر حقول مغناطيسية كثيفة
	(EN) DANGER OF NON-IONISING RADIATION - (IT) PERICOLO RADIAZIONI NON IONIZZANTI - (FR) DANGER RADIATIONS NON IONISANTES - (ES) PELIGRO RADIACIONES NO IONIZANTES - (DE) GEFAHR NICHT IONISIERENDE STRahlungen - (RU) ОПАСНОСТЬ НЕ ИОНИЗИРУЮЩЕЙ РАДИАЦИИ - (PT) PERIGO DE RADIACOES NÃO IONIZANTES - (EL) ΚΙΝΔΥΝΟΣ ΜΗ ΙΟΝΙΖΟΝΤΩΝ ΑΚΤΙΝΟΒΟΛΙΩΝ - (NL) GEVAAR NIET IONISERENDE STRALEN - (HU) NEM IONOG EN SUGÁRZÁS VESZÉLYE - (RO) PERICOL DE RADIATII NEIONIZANTE - (SV) FARA FÖR IKKE JONISERANDE - (DA) FARE FOR IKKE-JONISERENDE STRÅLER - (NO) FARE FOR UJONISERT STRÅLNING - (FI) IONISOMATTOMAN SÄTELYN VAARA - (CS) NEBEZPEČÍ NEIONIZUJÍCÍHO ŽÁŘENÍ - (SK) NEBEZPEČENSTVO NEIONIZUJÚCEHO ŽARIADENIA - (SL) NEVARNOST NEJONIZIRANEGA SEVANJA - (HR-SR) OPASNOST NEJONIZIRAJUĆIH ZRAKA - (LT) NEJONIZUOTO SPINDULIAVIMO PAVOJUS - (ET) MITTEIONISEERITUDKIIRGUSTE OHT - (LV) NEJONIZĒJOŠĀ IZSTAROJUMA BĪSTAMĪBA - (BG) ОПАСНОСТ ОТ НЕ ИОНИЗИРАНО ОБЛЪЧВАНЕ - (PL) ZAGROZENIE PROMIENIOWANIEM NIEJONIZUJĄCYM - (AR) خطر التعرض لاشعاعات غير مؤينة
	(EN) GENERAL HAZARD - (IT) PERICOLO GENERICO - (FR) DANGER GÉNÉRIQUE - (ES) PELIGRO GENÉRICO - (DE) GEFAHR ALLGEMEINER ART - (RU) ОБЩАЯ ОПАСНОСТЬ - (PT) PERIGO GERAL - (EL) ΓΕΝΙΚΟΣ ΚΙΝΔΥΝΟΣ - (NL) ALGEMEEN GEVAAR - (HU) ÁLTALÁNOS VESZÉLY - (RO) PERICOL GENERAL - (SV) ALLMÄN FARA - (DA) ALMEN FARE - (NO) GENERISK FARE STRÅLNING - (FI) YLEINEN VAARA - (CS) VŠEOBECNĚ NEBEZPEČÍ - (SK) VŠEOBECNĚ NEBEZPEČENSTVO - (SL) SPLOŠNA NEVARNOST - (HR-SR) OPĆA OPASNOST - (LT) BENDRAS PAVOJUS - (ET) ÜLDINE OHT - (LV) VISPĀRĪGA BĪSTAMĪBA - (BG) ОБЩИ ОПАСНОСТИ - (PL) OGÓLNE NIEBEZPIECZENSTWO - (AR) خطر عام
	(EN) EYE PROTECTIONS MUST BE WORN - (IT) OBBLIGO DI INDOSSARE OCCHIALI PROTETTIVI - (FR) PORT DES LUNETTES DE PROTECTION OBLIGATOIRE - (ES) OBLIGACIÓN DE USAR GAFAS DE PROTECCIÓN - (DE) DAS TRAGEN EINER SCHUTZBRILLE IST PFLICHT - (RU) ОБЯЗАНОСТЬ НОСИТЬ ЗАЩИТНЫЕ ОЧКИ - (PT) OBRIGAÇÃO DE VESTIR ÓCULOS DE PROTEÇÃO - (EL) ΥΠΟΧΡΕΩΣΗ ΝΑ ΦΟΡΑΤΕ ΠΡΟΣΤΕΥΤΙΚΑ ΓΥΑΛΙΑ - (NL) VERPLICHT DRAGEN VAN BESCHERMENDE BRIL - (HU) VÉDŐSZEMÉLVEG VISELÉTE KÖTELEZŐ - (RO) ESTE OBLIGATORIE PURTAREA OCHELARILOR DE PROTECTIE - (SV) OBLIGATORISKT ATT ANVÄNDA SKYDDSGLASÖG - (DA) PLIGT TIL AT ANVENDE BESKYTTELSESRILLER - (NO) DET ER OBLIGATORISK Å NÅ PÅ SEG VERNEBRILLEN - (FI) SUOJALASIJEN KÄYTTÖ PAKOLLISTA - (CS) POVINNOST POUŽIVÁNÍ OCHRANNÝCH BRYLÍ - (SK) POVINNOST POUZIVANIA OCHRANNÝCH OKULIAROV - (SL) OBEZNO UPORABA ZAŠČITNIH OČAL - (HR-SR) OBAVEZNA UPOTREBA ZAŠTITNIH NAOCALA - (LT) PRIVALOMA DIRBTI SU APSAUGINIAIS AKINIJAIS - (ET) KOHUSTUS KANDA KAITSEPRILLE - (LV) PIENĀKUMS VILKT AIZSARGBRILLES - (BG) ЗАДЪЛЖИТЕЛНО ДА СЕ НОСЯТ ПРЕДПАЗНИ ОЧИЛА - (PL) NAKAZ NOSZENIA OKULARÓW OCHRONNYCH - (AR) الالتزام بارتداء نظارات واقية
	(EN) NO ENTRY FOR UNAUTHORISED PERSONNEL - (IT) DIVIETO DI ACCESSO ALLE PERSONE NON AUTORIZZATE - (FR) ACCÈS INTERDIT AUX PERSONNES NON AUTORISÉES - (ES) PROHIBIDO EL ACCESO A PERSONAS NO AUTORIZADAS - (DE) UNBEFUGTEN PERSONEN IST DER ZUTRITT VERBOTEN - (RU) ЗАПРЕТ ДЛЯ ДОСТУПА ПОСТОРОННИХ ЛИЦ - (PT) PROIBIÇÃO DE ACESSO ÀS PESSOAS NÃO AUTORIZADAS - (EL) ΑΠΑΓΟΡΕΥΣΗ ΠΡΟΣΒΑΣΗΣ ΣΤΗ ΜΗ ΕΠΙΤΡΑΜΕΝΑ ΑΤΟΜΑ - (NL) TOEGANGSERBOD VOOR NIET GEAUTORISEERDE PERSONEN - (HU) FELT NEM JOGOSÍTOTT SZEMÉLYEK SZÁMÁRA TILOS A BELÉPÉS - (RO) ACCESUL PERSOANELOR NEAUTORIZATE ESTE INTERZIS - (SV) TILLTRÄDE FÖRBJUDET FÖR IKKE AUKTORISERADE PERSONER - (DA) ADGANG FORBUDT FOR UVEDKOMMENDE - (NO) PERSONER SOM IKKE ER AUTORISERTE MÅ IKKE HA ADGANG TIL APPARATEN - (FI) PÄÄSY KIELLETTY ASIATTOMILTA - (CS) ZÁKAZ VSTUPU NEPOVOLANÝM OSOBÁM - (SK) ZÁKAZ NEOPRÁVNĚNÉHO PRISTUPU K OSOBĚ - (SL) DOSTOP PREDPREDAN NEPOOBLASTENIM OSEBAM - (HR-SR) ZABRANA PRISTUPA NEOVLAŠTENIM OSOBAMA - (LT) PAŠALINIAMS ĮEITI DRAUDŽIAMA - (ET) SELLEKS VOLITAMATA ISIKUTEL ON TÕDALAS VIBIMINE KEELATUD - (LV) NEPIEDĒROŠĀM PERSONĀM IEĒJĀ AIZLĪEGTA - (BG) ЗАБРАНЕНО Е ДОСТЪПЪТ НА НЕУПЪЛНОМОЩЕНИ ЛИЦА - (PL) ZAKAZ DOSTĘPU OSOBOM NIEUPOWAŻNIONYM - (AR) يحظر دخول الأشخاص الغير مصرح لهم

	(EN) WEARING A PROTECTIVE MASK IS COMPULSORY - (IT) OBBLIGO USARE MASCHERA PROTETTIVA - (FR) PORT DU MASQUE DE PROTECTION OBLIGATOIRE - (ES) OBLIGACION DE USAR MÁSCARA DE PROTECCIÓN - (DE) DER GEBRAUCH EINER SCHUTZMASKE IST PFLICHT - (RU) ОБЯЗАТЕЛЬНОСТЬ ПОЛЬЗОВАТЬСЯ ЗАЩИТНОЙ МАСКОЙ - (PT) OBRIGATORIO O USO DE MÁSCARA DE PROTEÇÃO - (EL) ΥΠΟΧΡΕΩΣΗ ΧΡΗΣΗΣ ΜΑΣΚΑΣ - (NL) VERPLICHT GEBRUIK VAN BESCHERMENDE MASKER - (HU) VÉDŐMASZK HASZNÁLATA KÖTELEZŐ - (RO) FOLOSIREA MĂȘTI DE PROTECȚIE OBLIGATORIE - (SV) OBLIGATORISKT ATT BÄRA SKYDDSMASK - (DA) PLIGT TIL AT ANVENDE BESKYTTELSESMÅSKE - (NO) FORPLIKTELSE Å BRUKE VERNEBRILLER - (FI) SUOJAJAMASKIN KÄYTTÖ PAKOLLISSA - (CS) POUVĚZNOST POUŽITÍ OCHRANNÉHO ŠTÍTU - (SK) POUVĚZNOST POUŽITIE OCHRANNÉHO ŠTÍTU - (SL) OBEVZORNOST UPORABI ZAŠČITNE MASKE - (HR-SR) OBAVEZNO KORISTENJE ZAŠTITNE MASKE - (LT) PRIVALOMA UŽSIDėti APSAUGOS PRIEMONĖS KLAUSO - (ET) KOHUSTUSLIK KANDA KAITSEMASKI - (LV) PIENĀKUMS IZMANTOT AIZSARGMASKU - (BG) ЗАДЪЛЖИТЕЛНО ИЗПОЛЗВАНЕ НА ПРЕДПАЗНА ЗАВАРЪЧНА МАСКА - (PL) NAKAZ UŻYWANIA MASKI OCHRONNEJ - (AR) الالتزام باستخدام قناع واقی
	(EN) WEARING EAR PROTECTORS IS COMPULSORY - (IT) OBBLIGO PROTEZIONE DELL'UDITO - (FR) PROTECTION DE L'OUÏE OBLIGATOIRE - (ES) OBLIGACIÓN DE PROTECCIÓN DEL OÍDO - (DE) DAS TRAGEN VON GEHÖRSCHUTZ IST PFLICHT - (RU) ОБЯЗАТЕЛЬНОСТЬ ЗАЩИЩАТЬ СЛУХ - (PT) OBRIGATORIO PROTEGER O OUVÍDO - (EL) ΥΠΟΧΡΕΩΣΗ ΠΡΟΤΑΣΙΑΣ ΑΚΟΗΣ - (NL) VERPLICHTE OORBESCHERMING - (HU) HALLÁSVÉDELEM KÖTELEZŐ - (RO) PROTECȚIA AZULUI OBLIGATORIE - (SV) OBLIGATORISKT ATT SKYDDA HÖRSELN - (DA) PLIGT TIL AT ANVENDE HØREVÆRN - (NO) FORPLIKTELSE Å BRUKE HØRSELVERN - (FI) KUULUSUOJAUUS PAKOLLINEN - (CS) POUVĚZNOST OCHRANY SLUCHU - (SK) POUVĚZNOST OCHRANA SLUCHU - (SL) OBEVZNA UPORABA GLUŠNİKOV - (HR-SR) OBAVEZNA ZAŠTITA SLUHA - (LT) PRIVALOMOS APSAUGOS PRIEMONĖS KLAUSOS ORGANAMOS - (ET) KOHUSTUS KANDA KUULMIKAITSEVAHNENDEID - (LV) PIENĀKUMS AIZSARGĀT DZIRDĒS ORGANĀUS - (BG) ЗАДЪЛЖИТЕЛНО ДА СЕ НОСЯТ ПРЕДПАЗНИ СРЕДСТВА ЗА СЛУХА - (PL) NAKAZ OCHRONY SŁUCHU - (AR) الالتزام بحماية الأذن
	(EN) DANGER OF CRUSHING UPPER LIMBS - (IT) PERICOLO SCHIACCIAMENTO ARTI SUPERIORI - (FR) RISQUE D'ÉCRASEMENT DES MEMBRES SUPÉRIEURS - (ES) PELIGRO DE APLASTAMIENTO DE LOS MIEMBROS SUPERIORES - (DE) QUETSCHGEFAHR FÜR DIE OBEREN GLIEDMASSEN - (RU) ОПАСНОСТЬ РАЗДАВЛИВАНИЯ ВЕРХНИХ КОНЕЧНОСТЕЙ - (PT) PERIGO DE ESMAGAMENTO DOS Membros SUPERIORES - (EL) ΚΙΝΔΥΝΟΣ ΣΥΝΑΦΛΗΣ ΑΝΩ ΜΕΛΩΝ - (NL) GEVAAR VOOR VERPLETTING BOVENSTE LIDEMATEN - (HU) FELSŐ VÉGTAGOK ÖSSZENYOMÁSÁNAK VESZÉLYE - (RO) PERICOL DE STRIVIRE A MEMBRELOR SUPERIOARE - (SV) RISK FÖR KLÄMNING AV DE ÖVRE EXTREMITETERNÄ - (DA) FARE FOR FASTKLEMNING AF DE ØVRE LEMMER - (NO) FARE FOR Å KLEMME ARMENE - (FI) ULÄÄRAAJOJEN PURISTUMISVAARA - (CS) NEBEZPEČÍ PRITLAČENÍ HORNÍCH KONČETIN - (SK) NEBEZPEČENSTVO PRITLAČENIA HORNÝCH KONČATÍN - (SL) NEVARNOST ZMEČKANJA ZGORNJIH UDOV - (HR-SR) OPASNOST OD GNJEČENJA GORNJIH UDOVA - (LT) VIRŠUTINIŲ GALUNIŲ SUSPAUDIMU PAVOJUS - (ET) ULÄJÄSEMETE MULJUDASAAMISE OHT - (LV) AUGŠĒJO EKSTREMĪTĀSU SASPIESĀNAS BĪSTAMĪBA - (BG) ОПАСНОСТ ОТ ПРЕМАЗВАНЕ НА ГОРНИТЕ КРАЙНИЦИ - (PL) NIEBEZPIECZENSTWO ZGNIĘCENIA KONCYNY GÓRNYCH - (AR) خطر دهس الاطراف العلوية
	(EN) WARNING: MOVING PARTS - (IT) ATTENZIONE ORGANI IN MOVIMENTO - (FR) ATTENTION ORGANES EN MOUVEMENT - (ES) ATENCIÓN ORGANOS EN MOVIMIENTO - (DE) VORSICHT BEWEGUNGSELEMENTE - (RU) ВНИМАНИЕ, ЧАСТИ В ДВИЖЕНИИ - (PT) CUIDADO ORGÃOS EM MOVIMENTO - (EL) ΠΡΟΣΟΧΗ ΟΡΓΑΝΑ ΣΕ ΚΙΝΗΣΗ - (NL) OPGELET ORGANEN IN BEWEGING - (HU) VIGYÁZAT: GÉPALKATRÉSZEK MOZGÁSBAN VANNAK - (RO) ATENȚIE PIESE ÎN MIȘCARE - (SV) VARNING FÖR ORGAN I RÖRELSE - (DA) PAS PÅ DELE I BEVÆGELSE - (NO) ADVARSEL: BEVEGELIGE DELER - (FI) VARO LIUKKUVIA OSIA - (CS) POZOR NA POHYBUJÍCÍ SE SOUCÁSTI - (SK) POZOR NA ROHYBUJÚCE SA SÚČASTI - (SL) POZOR, NAPRAVE DELUJEJO - (HR-SR) POZOR DIJELOVI U POKRETU - (LT) DĖMESIO! JUDANČIOS DETALĖS - (ET) TÄHELEPANU! LIIKUVAD MASINAOSAD - (LV) UZMANĪBU KUSTĪGĀS DAĻĀS - (BG) ВНИМАНИЕ ДВИЖЕЩИ СЕ МЕХАНИЗМИ - (PL) UWAGA: RUCHOME CZĘŚCI MASZYNY - (AR) إنبه أجزاء متحركة
	(EN) USERS OF VITAL ELECTRICAL AND ELECTRONIC APPARATUS MUST NEVER USE THE MACHINE - (IT) VIETATO L'USO DELLA MACCHINA AI PORTATORI DI APPARECCHIATURE ELETTRICHE ED ELETTORNICHE VITALI - (FR) L'UTILISATION DE LA MACHINE EST DÉCONSEILLÉE AUX PORTEURS D'APPAREILS ÉLECTRIQUES OU ÉLECTRONIQUES MÉDICAUX - (ES) PROHIBIDO EL USO DE LA MÁQUINA A LOS PORTADORES DE APARATOS ELÉCTRICOS Y ELECTRÓNICOS VITALES - (DE) TRÄGERN LEBENSERHALTENDER ELEKT RISCHER UND ELEKTORNISCHER GERÄTE IST DER GEBRAUCH DER MASCHINE UNTERSAGT - (RU) ИСПОЛЬЗОВАНИЕ УСТАНОВКИ ЗАПРЕЩЕНО ЛИЦАМ, ИСПОЛНЯЮЩИМ ЭЛЕКТРОННУЮ И ЭЛЕКТРОАППАРАТУРУ ОБЕСПЕЧЕНИЕ ЖИЗНЕДЕЯТЕЛЬНОСТИ - (PT) É PROIBIDO O USO DA MÁQUINA AOS PORTADORES DE APARELHAGENS ELÉCTRICAS E ELECTRONICAS VITAIS - (EL) ΑΠΑΓΟΡΕΥΕΤΑΙ Η ΧΡΗΣΗ ΤΩ ΜΗΧΑΝΗΜΑΤΟΣ ΣΕ ΑΤΟΜΑ ΠΟΥ ΦΕΡΟΥΝ ΗΛΕΚΤΡΙΚΕΣ ΚΑΙ ΗΛΕΚΤΡΟΝΙΚΕΣ ΣΥΣΚΕΥΕΣ ΖΩΤΙΚΗΣ ΣΗΜΑΣΙΑΣ - (NL) HET GEBRUIK VAN DE MACHINE IS VERBODEN AAN DRAGERS VAN ELEKTISCHE EN ELEKTRONISCHE VITALE APPARATUUR - (HU) TILOS A GÉP HASZNÁLATA MINDAZOK SZÁMÁRA, AKIK SZERVEZETÉBEN ÉLETLENARTÓ ELEKTROMOS VAGY ELEKTRONIKUS KÉSZÜLÉK VAN BEÉPÍTVE - (RO) SE INTERZICE FOLOSIREA MĂȘINI DE CĂTRE PERSOANELE PURTĂTOARE DE APARATE ELECTRICE ȘI ELECTRONICE VITALE - (SV) FÖRBUDET FÖR ANVÄNDARE AV LIVSUPPEHÅLLANDE ELEKTROSKA ELLER ELEKTROKONISK APPARATER ATT ANVÄNDA DENNA MASKIN - (DA) DET ER FORBUDT FOR PERSONER, DER ANVENDER LIVSVIKTIGE ELEKTRISKE OG ELEKTROKONISK APPARATUR, AT ANVEND E MÅSKINEN - (NO) DET ER FORBUDT FOR PERSONER SOM BRUKER LIVSVIKTIGE ELEKTRESKE ELLER ELEKTROKONISKE APPARATER Å BRUKE MÅSKINEN - (FI) KONEEN KÄYTTÖKIELTO SÄHKÖISTEN JA ELEKTROKONISTEN HENKILÖNSUOJAALAITTEIDEN KÄYTTÄJILLE - (CS) ZÁKAZ POUŽITÍ STROJE NOSITELŮM ELEKTROKÝCH A ELEKTROKONÝCH ŽIVOTNĚ DŮLEŽITÝCH ZAŘIZENÍ - (SK) ZÁKAZ POUŽIVANIA STROJA OSOBÁM SO ŽIVOTNĚ DŮLEŽITÝMI ELEKTROKÝMI A ELEKTROKONÝMI ZARIADENAMI - (SL) PREPOVEDANA UPORABA STROJA ZA UPORABNIKE ŽIVLJENJSKO POMEMBNIH ELEKTRIČNIH IN ELEKTROKONISNIH NAPRAV - (HR-SR) ZABRANJENO JE UPOTREBLJAVATI STROJ OSOBAMA KOJE IMAJU UGRADENE VITALNE ELEKTRIČNE ILI ELEKTRONIČKE UREĐAJE - (LT) GRIEZTAI DRAUŽIAMA SU ĮRANGA DIRBTI ASMENIMS, BESINAUDOJANTIEMS GYVYBIAIS SVARBIAIS ELEKTRINIAMS AR ELEKTROINIAMS PRIETAISAMS - (ET) SEADET EI TOHI KASUTADA ISIKUD, KES KASUTAVAD MEDITSIINILISI ELEKTRI-JA ELEKTROONIKASEADMEID - (LV) ELEKTRISKO VAI ELEKTROKONISKO MEDICĪNISKO IERĪCI LIETOTĀJĒM IR AIZLIEGTS IZMANTOT MĀŠĪNU - (BG) ЗАБРАНЕНО Е ПОЛЗВАНЕТО НА МАШИНАТА ОТ ЛИЦА, НОСИТЕЛИ НА ЕЛЕКТРИЧЕСКИ И ЕЛЕКТРОНИИ МЕДИЦИНСКИ УСТРОЙСТВА - (PL) ZABRONIONE JEST UŻYWANIE URZĄDZENIA OSOBOM STOSUJĄCYM ELEKTRYCZNE I ELEKTROKONICZNE URZĄDZENIA WSPOMAGAJĄCE FUNKCJE ŻYCIOWE - (AR) يحظر استخدام الآلة لحاملي الأجهزة الكهربائية والالكترونية الحيوية
	(EN) PEOPLE WITH METAL PROSTHESES ARE NOT ALLOWED TO USE THE MACHINE - (IT) VIETATO L'USO DELLA MACCHINA AI PORTATORI DI PROTESI METALLICHE - (FR) L'UTILISATION INTERDITE DE LA MACHINE AUX PORTEURS DE PROTHÈSES MÉTALLIQUES - (ES) PROHIBIDO EL USO DE LA MÁQUINA A LOS PORTADORES DE PROTESIS METÁLICAS - (DE) TRÄGERN VON METALLPROTHESEN IST DER UMGANG MIT DER MASCHINE VERBOTEN - (RU) ИСПОЛЬЗОВАНИЕ МАШИНЫ ЗАПРЕЩАЕТСЯ ЛЮДЯМ, ИМЕЮЩИМ МЕТАЛЛИЧЕСКИЕ ПРОТЕЗЫ - (PT) PROIBIDO O USO DA MÁQUINA AOS PORTADORES DE PROTESES METÁLICAS - (EL) ΑΠΑΓΟΡΕΥΕΤΑΙ Η ΧΡΗΣΗ ΤΩ ΜΗΧΑΝΗΣ ΣΕ ΑΤΟΜΑ ΠΟΥ ΦΕΡΟΥΝ ΜΕΤΑΛΛΙΚΕΣ ΠΡΟΘΕΣΕΙΣ - (NL) HET GEBRUIK VAN DE MACHINE IS VERBODEN AAN DE DRAGERS VAN METALEN PROTHESSEN - (HU) TILOS A GÉP HASZNÁLATA FÉMPROTEZIST VESELŐ SZEMÉLYEK SZÁMÁRA - (RO) SE INTERZICE FOLOSIREA MĂȘINI DE CĂTRE PERSOANELE PURTĂTOARE DE PROTEZE METALICE - (SV) FÖRBUDET FÖR PERSONER SOM BÄR METALLPROTES ATT ANVÄNDA MÅSKINEN - (DA) DET ER FORBUDT FOR PERSONER MED METALLPROTESER AT BENYTT E MÅSKINEN - (NO) BRUK AV MÅSKINEN ER IKKE TILLATT FOR PERSONER MED METALLPROTESER - (FI) KONEEN KÄYTTÖ KIELLETTY METALLIPROTEESIEN KANTAJILTA - (CS) ZÁKAZ POUŽITÍ STROJE NOSITELŮM KOVOVÝCH PROTEZ - (SK) ZÁKAZ POUŽIVANIA STROJA OSOBÁM S KOVOVÝMI PROTEZAMI - (SL) PREPOVEDANO UPORABA STROJA ZA NOSILCE KOVINSKIH PROTEZ - (HR-SR) ZABRANJENA UPOTREBA STROJA OSOBAMA KOJE NOSE METALNE PROTEZE - (LT) SU SUVRINIMO APARATU DRAUŽIAMA DIRBTI ASMENIMS, NAUDOJANTIEMS METALINIUS PROTEZIS - (ET) SEADET EI TOHI KASUTADA ISIKUD, KES KASUTAVAD METALLPROTEESE - (LV) CILVĒKIEM AR METĀLA PROTEZĒM IR AIZLIEGTS LIETOT IERĪCI - (BG) ЗАБРАНЕНО Е УПОТРЕБАТА НА МАШИНАТА ОТ НОСИТЕЛИ НА МЕТАЛНИ ПРОТЕЗИ - (PL) ZAKAZ UŻYWANIA URZĄDZENIA OSOBOM STOSUJĄCYM PROTEZY METALOWE - (AR) يحظر استخدام الآلة على مستخدمي أجهزة السمع المعدنية
	(EN) DO NOT WEAR OR CARRY METAL OBJECTS, WATCHES OR MAGNETISED CARDS - (IT) VIETATO INDOSSARE OGGETTI METALLICI, OROLOGI E SCHEDE MAGNETICHE - (FR) INTERDICTION DE PORTER DES OBJETS MÉTALLIQUES, MONTRES ET CARTES MAGNÉTIQUES - (ES) PROHIBIDO LLEVAR OBJETOS METÁLICOS, RELOJES, Y TARJETAS MAGNÉTICAS - (DE) DAS TRAGEN VON METALLOBJEKTEN, UHREN UND MAGNETKARTEN IST VERBOTEN - (RU) ЗАПРЕЩАЕТСЯ НОСИТЬ МЕТАЛЛИЧЕСКИЕ ПРЕДМЕТЫ, ЧАСЫ ИЛИ МАГНИТНЫЕ ПЛАТЬЮ - (PT) PROIBIDO VESTIR OBJECTOS METÁLICOS, RELOGIOS E FICHAS MAGNÉTICAS - (EL) ΑΠΑΓΟΡΕΥΕΤΑΙ Η ΧΡΗΣΗ ΜΕΤΑΛΛΙΚΑ ΑΝΤΙΚΕΙΜΕΝΑ, ΡΟΛΟΙΑ ΚΑΙ ΜΑΓΝΗΤΙΚΕΣ ΠΛΑΚΕΤΕΣ - (NL) HET IS VERBODEN METALEN VOORVERPEN, UURWERKEN EN MAGNETISCHE FICHES TE DRAGEN - (HU) TILOS FÉM TÁRGYVÁK, KARÓRÁK VISELÉTE ÉS MÁGNÉSÉS KÁRTYÁK MAGUKNÁL TARTÁSA - (RO) ESTE INTERZISĂ PURTAREA OBIECTELOR METALICE, A CEASURILOR ȘI A CARTELELOR MAGNETICE - (SV) FÖRBUDET ATT BÄRA METALLFÖREMÅL, KLOCKOR OCH MAGNETKORT - (DA) FORBUD MOD AT BÆRE METALGENSTANDE, URE OG MAGNETISKE KORT - (NO) FORBUDT Å HA PÅ SEG METALLFORMÅL, KLOKKER OG MAGNETISKE KORT - (FI) METALLISTEN EISENIDEIN, KELLOJEN JA MAGNEETTIKORTTIEN MUKANA PITÄMINEN KIELLETTY - (CS) ZÁKAZ NOSENÍ KOVOVÝCH PŘEDMĚTŮ, HODINEK A MAGNETICKÝCH KARET - (SK) ZÁKAZ NOSENIA KOVOVÝCH PREDMETOV, HODINIEK A MAGNETICKÝCH KARIET - (SL) PREPOVEDANO NOSENE KOVINSKIH PREDMETOV, UR IN MAGNETNIH KARTIC - (HR-SR) ZABRANJENO NOSENJE METALNIH PREDMETA, SATOVA I MAGNETSKIH ČIPOVA - (LT) DRAUŽIAMA PRIE SAVES TURĖTI METALINIŲ DAIKTŲ, LAIKRODŽIŲ AR MAGNETINIŲ PLOKŠTELII - (ET) KEELATUD ON KANDA METALLESEMEID, KELLASID JA MAGNETKAAARTE - (LV) IR AIZLIEGTS VILKT METĀLA PRIEKŠMETUS, PULKSTENUS UN NĒMŤ LIZĒGI MAGNĒTISKĀS KĀRTEIS - (BG) ЗАБРАНЕНО Е НОСЕНОТО НА МЕТАЛНИ ПРЕДМЕТЫ, ЧАСОВНИЦИ И МАГНИТНИ СХЕМИ - (PL) ZAKAZ NOSZENIA PRZEDMIOTÓW METALOWYCH, ZEGRARÓW I KART MAGNETYCZNYCH - (AR) يحظر استخدام أشياء معدنية، ساعات وطاقات مخزنة
	(EN) NOT TO BE USED BY UNAUTHORISED PERSONNEL - (IT) VIETATO L'USO ALLE PERSONE NON AUTORIZZATE - (FR) UTILISATION INTERDITE AU PERSONNEL NON AUTORISÉ - (ES) PROHIBIDO EL USO A PERSONAS NO AUTORIZADAS - (DE) DER GEBRAUCH DURCH UNBEFUGTE PERSONEN IST VERBOTEN - (RU) ИСПОЛЬЗОВАНИЕ ЗАПРЕЩАЕТСЯ ЛЮДЯМ, НЕ ИМЕЮЩИМ РАЗРЕШЕНИЯ - (PT) PROIBIDO O USO AS PESSOAS NÃO AUTORIZADAS - (EL) ΑΠΑΓΟΡΕΥΕΤΑΙ ΧΡΗΣΗ ΣΕ ΜΗ ΕΠΙΤΡΕΜΕΝΑ ΑΤΟΜΑ - (NL) HET GEBRUIK IS VERBODEN AAN NIET GEAUTORISEERDE PERSONEN - (HU) TILOS A HASZNÁLATA A FEL NEM JOGOSÍTOTT SZEMÉLYEK SZÁMÁRA - (RO) FOLOSIREA DE CĂTRE PERSOANELE NEAUTORIZATE ESTE INTERZISĂ - (SV) FÖRBUDET FÖR IKKE AUTORISERADE PERSONER ATT ANVÄNDA APPARATEN - (DA) DET ER FORBUDT FOR UVEDKOMMENDE AT ANVEND E MÅSKINEN - (NO) BRUK ER IKKE TILLATT FOR UAUTORISERTE PERSONER - (FI) KÄYTTÖ KIELLETTY VALTUUTAMATTOMILLA HENKILÖILTÄ - (CS) ZÁKAZ POUŽITÍ NEPOVOLANÝM OSOBÁM - (SK) ZÁKAZ POUŽIVANIA NEPOVOLANÝM OSOBÁM - (SL) NEPOVBLESČENIM OSOBAM UPORABA PREPOVEDANA - (HR-SR) ZABRANJENA UPOTREBA NEOVAŠTENIM OSOBAMA - (LT) PAZINLIANIM NAUDOTIS DRAUŽIAMA - (ET) SELLEKS VOLITAMATA ISIKUTEL ON SEADME KASUTAMINE KEELATUD - (LV) NEPIŅĻAVARĀTĀI PERSONĀM IR AIZLIEGTS IZMANTOT APARĀTU - (BG) ЗАБРАНЕНО Е ПОЛЗВАНЕТО ОТ НЕУПЪЛНОМОЩЕНИ ЛИЦА - (PL) ZAKAZ UŻYWANIA OSOBOM NIEAUTORYZOWANYM - (AR) يحظر الاستخدام من قبل الأشخاص الغير مصرح لهم
	(EN) Symbol indicating separation of electrical and electronic appliances for refuse collection. The user is not allowed to dispose of these appliances as solid, mixed urban refuse, and must do it through authorised refuse collection centres. - (IT) Simbolo che indica la raccolta separata delle apparecchiature elettriche ed elettroniche. L'utente ha l'obbligo di non smaltire questa apparecchiatura come rifiuto municipale solido misto, ma di rivolgersi ai centri di raccolta autorizzati. - (FR) Symbole indiquant la collecte différenciée des appareils électriques et électroniques. L'utilisateur ne peut éliminer ces appareils avec les déchets ménagers solides mixtes, mais doit s'adresser à un centre de collecte autorisé. - (ES) Símbolo que indica la recogida por separado de los aparatos eléctricos y electrónicos. El usuario tiene la obligación de no eliminar este aparato como desecho urbano sólido mixto, sino de dirigirse a los centros de recogida autorizados. - (DE) Symbol für die getrennte Erfassung elektrischer und elektronischer Geräte. Der Benutzer hat pflichtgemäß dafür zu sorgen, daß dieses Gerät nicht mit dem gemischt erfaßten festen Siedlungsabfall entsorgt wird. Stattdessen muß er eine der autorisierten Entsorgungsstellen einschalten. - (RU) Символ, указывающий на раздельный сбор электрического и электронного оборудования. Пользователь не имеет права выбрасывать данное оборудование в качестве смешанного твердого бытового отхода, а обязан обращаться в специализированные центры сбора отходов. - (PT) Símbolo que indica a recolha separada das aparelhagens eléctricas e electrónicas. O utente tem a obrigação de não eliminar esta aparelhagem como lixo municipal sólido misto, mas deve procurar os centros de recolha autorizados. - (EL) Σύμβολο που δείχνει τη διαφοροποιημένη συλλογή των ηλεκτρικών και ηλεκτρονικών συσκευών. Ο χρήστης υποχρεούται να μην διοχετεύει αυτή τη συσκευή σαν μικτό στερεό αστικό απόβλητο, αλλά να απευθύνεται σε ειδικευμένα κέντρα συλλογής. - (NL) Symbool dat wijst op de gescheiden inzameling van elektrische en elektronische toestellen. De gebruiker is verplicht deze toestellen niet te lozen als gemengde vaste stadsafval, maar moet zich wenden tot de geautoriseerde ophaalcentra. - (HU) Jelölés, mely az elektrómos és elektronikus felszerelések szelektív hulladékgyűjtését jelzi. A felhasználó köteles azt a felszerelést nem a városi törmelék hulladékkal együttessen gyűjteni, hanem erre engedélyelt rendelkező hulladékgyűjtő központhoz fordulni. - (RO) Simbol ce indică depozitarea separată a aparatelor electrice și electronice. Utilizatorul este obligat să nu depoziteze acest aparat împreună cu deșeurile solide mixte ci să-l predea într-un centru de depozitare a deșeurilor autorizat. - (SV) Symbol som indikerar separat sortering av elektriska och elektroniska apparater. Användaren får inte sortera denna anordning tillsammans med blandat fast hushållsavfall, utan måste vända sig till en auktoriserad insamlingsstation. - (DA) Symbol, der står for særlig indsamling af elektriske og elektroniske apparater. Brugeren har pligt til ikke at bortskaffe dette apparat som blandet, fast affald; der skal rettes henvendelse til et autoriseret indsamlingscenter. - (NO) Symbol som angir separat sortering av elektriske og elektroniske apparater. Brukeren må oppfylle forpliktelser å ikke kaste bort dette apparatet sammen med vanlige hjemmeavfall, utan henvende seg til autoriserte oppsamlingsentraler. - (FI) Symboli, joka ilmoittaa sähkö- ja elektroniikkalaitteiden erillisen keräyksen. Käyttäjän velvollisuus on käännyttä valtuutettujen keräyspisteiden puoleen eikä littää läitetä kunnallisen sekajätteenä. - (CS) Symbol označující separovaný sběr elektrických a elektronických zařízení. Uživatel je povinen neklidivovat toto zařízení jako pevný smíšený komunální odpad, ale obrátit se s ním na autorizované sběrný. - (SK) Symbol označujúci separovaný zber elektrických a elektronických zariadení. Užívateľ nesmie likvidovať toto zariadenie ako pevný zmiešaný komunálny odpad, ale je povinný doručiť ho do autorizovaný zberní. - (SL) Simbol, ki označuje ločeno zbiranje električnih in elektronskih aparatov. Uporabnik tega aparata ne sme zavreči kot navaden gospodinjstki trdn odpad, ampak se mora obrniti na pooblašene centre za zbiranje. - (HR-SR) Simbol koji označava posebno sakupljanje električnih i elektronskih aparata. Korisnik ne smije odložiti ovaj aparat kao običan kruti otpad, već se mora obratiti ovlaštenim centrima za sakupljanje. - (LT) Simbols, nurodantis atskirti nebenaudojamų elektrinių ir elektroninių prietaisų surinkimą. Vartotojas negali išmesti šių prietaisų kaip mišrų kietųjų komunalinių atliekų, bet privalo kreiptis į specializuotus atliekų surinkimo centrus. - (LV) Simbols, mis tāhstibat elektriski-ja elektroniskaseadmetē eraldi kugumist. Kasutāja kohustuseks on pöörduda volitatud kogumiskeskuste poole ja mitte käsitleda seda aparati kui munitsipaalne segajättee. - (PL) Symbol, kas nõruda uz to, ka utlizacja ier i jaweic atsewisi ki na citam elektriskajam a elektroniskajam iercom. Lietotaja pienakums ir neizmett šo aparatu kopā ar citu atkritumu izgāztuvē, bet nodarēt to pilnvarotaj atkritumu savākšanas centrā. - (BG) Символ, който означава разделяно събиране на електрическата и електронна апаратура. Ползвателят се задължава да не изхвърля тази апаратура като смесен твърд отпадък в контейнерите за смет, поставени от общината, а трябва да се обърне към специализираните за това центрове. - (PL) Symbol, który oznacza sortowanie odpadów aparatury elektrycznej i elektronicznej. Zabrania się likwidowania aparatury jako mieszaných odpadów miejskich stałych, obowiązkiem użytkownika jest skierowanie się do autoryzowanych ośrodków gromadzących odpady. - (AR) رمز يشير إلى التجميع المنفصل للأجهزة الكهربائية والإلكترونية. يجب على المستخدم عدم التخلص من هذا الجهاز وكأنه نفايات البلدية الصلبة المختلطة، بل عليه التوجه إلى مراكز تجميع النفايات المصرح بها

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**APPLIANCES FOR RESISTANCE WELDING FOR INDUSTRIAL AND PROFESSIONAL USE**

Note: In the following text the term "spot welder" will be used.

**1. GENERAL SAFETY RULES FOR RESISTANCE WELDING**

The operator should be properly trained to use the spot welder safely and should be informed of the risks connected with resistance welding procedures, of related protection measures and of emergency procedures. (Only for pneumatic cylinder-operated versions) The spot welder is provided with a main switch with emergency functions, fitted with a padlock for locking it in the "O" (open) position.

The padlock key should be handed over only and exclusively to an expert operator or to an operator who has been trained for the tasks assigned to him and has been warned of the possible hazards arising from this welding procedure and from neglectful use of the spot welder.

When the operator is absent the switch should be set to the "O" position, the padlock should be closed and the key removed.



- Electrical installation should be carried out following accident-prevention legislation and standards.
- The spot welder should be connected only and exclusively to a power supply with the neutral conductor connected to earth.
- Make sure the power supply outlet is correctly connected to the earth protection.
- Do not use cables with worn or damaged insulation or with loosened connections.
- Use the spot welder in an ambient air temperature ranging from 5°C to 40°C, with relative humidity equal to 50% up to a temperature of 40°C, and 90% for temperatures up to 20°C.
- Do not use the spot welder in damp or wet environments or in the rain.
- The connection of the welding cables and any routine maintenance operations on the arms and/or electrodes must be carried out with the spot welder switched off and disconnected from the electric and pneumatic (if present) power supply networks.
- Pneumatic cylinder-operated spot welders should be locked with the main switch in the "O" position and the padlock closed. The same procedure must be respected for connection to the water mains or a cooling unit with closed circuit (liquid cooled spot welding machines) and in any case repair work (extraordinary maintenance).
- It is forbidden to use the equipment in environments comprising areas classed as being at risk of explosion because of the presence of gas, dust or mist.



- Do not weld on containers, receptacles or piping that contain or have contained flammable liquid or gas products.
- Do not operate on materials cleaned with chlorinated solvents or near such substances.
- Do not weld on pressurised containers.
- Remove all flammable substances from the work area (e.g. wood, paper, rags etc.).
- Allow newly-welded pieces to cool! Do not leave the piece near flammable substances.
- Make sure there is sufficient ventilation or provide means for removing welding fumes near the electrodes; a systematic approach is necessary to evaluate limits of exposure to the welding fumes depending on their composition and concentration and on the length of exposure.



- Always protect the eyes with suitable eye protectors.
- Wear protective gloves and clothing suitable for resistance welding work.
- Noise levels: If the personal daily exposure level (LEPd) is found to be greater than 85db(A) due to particularly intensive welding operations, wearing personal protection devices is compulsory.



- The flowing of spot welding currents generates electromagnetic fields (EMF) around the spot welding circuit.

Electromagnetic fields can interfere with certain medical equipment (e.g. Pace-makers, respiratory equipment, metallic prostheses etc.).

Adequate protective measures must be adopted for persons with these types of medical apparatus. For example, they must be forbidden access to the area in which spot welding machines are in operation.

This spot welder conforms to technical product standards for exclusive use in an industrial environment for professional purposes. It does not assure compliance with the basic limits relative to human exposure to electromagnetic fields in the domestic environment.

The operator must adopt the following procedures in order to reduce exposure to electromagnetic fields:

- Fasten the two spot welding cables (if present) as close together as possible.
- Keep head and trunk as far away as possible from the spot welding circuit.
- Never wind spot welding cables around the body.
- Avoid spot welding with the body within the spot welding circuit. Keep both cables on the same side of the body.
- Connect the spot welding current return cable to the piece being spot welded, as close as possible to the welding joint.
- Do not spot weld while close to, sitting on or leaning against the spot welder (keep at least 50 cm away from it).
- Do not leave objects in ferromagnetic material in proximity of the spot welding circuit.
- Minimum distance:
  - d= 3cm, f= 50cm (Fig. M);
  - d= 3cm, f= 50cm (Fig. N);
  - d= 30cm (Fig. O);
  - d= 20cm (Fig. P) Studder.



- Class A equipment: This spot welder conforms to technical product standards for exclusive use in an industrial environment and for professional purposes. It does not assure compliance with electromagnetic compatibility in domestic dwellings and in premises directly connected to a low-voltage power supply system feeding buildings for domestic use.

**INTENDED USE**

The system was designed to be used only and exclusively in body shops to repair vehicles: it must be used for spot welding one or more steel plates with a low carbon content, having a shape and size that vary according to the work to be carried out.



## RESIDUAL RISKS

### RISK OF UPPER LIMBS BEING CRUSHED DO NOT PLACE HANDS NEAR MOVING PARTS!

Both the operating method for the spot welder and the variability in shape and size of the piece being welded make it impossible to provide integrated protection against the danger of the upper limbs being crushed: fingers, hands, forearm.

The risk should be reduced by appropriate preventive measures:

- The operator should either be expert or trained in resistance welding procedures using this type of appliance.
- A risk evaluation must be performed for each type of work to be carried out; it is necessary to use equipment and masks that support and guide the piece to be worked in order to distance hands from the electrode danger area.
- When using a portable spot welder: solidly grasp the clamp with both hands placed on the relative handles; always keep hands away from the electrodes.
- Whenever the shape of the piece allows it, adjust the electrode distance so that the stroke does not exceed 6 mm.
- Do not allow more than one person to work on the same spot welder at the same time.
- Unauthorised persons should not be allowed in the working area.
- Do not leave the spot welder unattended: in such a case it should be disconnected from the power supply; for pneumatic cylinder-operated spot welders turn the main switch to "O" and lock it with the supplied padlock, take out the key and leave it with the person in charge.
- Only use electrodes that are recommended for the machine (see spare parts list) without altering their shape.

### RISK OF BURNS

Some parts of the spot welder (electrodes arms and nearby areas) may reach temperatures of over 65°C: suitable protective clothing must be worn. Allow newly-welded pieces to cool before touching them.

### RISK OF TIPPING AND FALLING

- Place the spot welder on a level horizontal surface that is able to support its weight; confine the spot welder to the support surface (when required in the "INSTALLATION" section of this manual). Otherwise with inclined or uneven floors or moveable supporting surfaces there is the danger of tipping.
- Never lift the spot welder unless explicitly required by the "INSTALLATION" section of this handbook.
- When using machines on wheels: disconnect the spot welder from the electric and pneumatic (if present) power supplies before moving the unit to another work area. Pay attention to obstacles and unevenness on the ground (for example cables and piping).

### UNINTENDED USE

It is dangerous to use the spot welder for any purpose other than that for which it is intended (see INTENDED USE).



## PROTECTIONS

The safeguards and moveable parts of the spot welder casing should all be in position before connection to the power supply.

**WARNING:** All manual operations on moveable accessible parts of the spot welder, for example:

- Electrode replacement or maintenance
- Adjusting the position of the arms or electrodes

**MUST BE CARRIED OUT WITH THE SPOT WELDER SWITCHED OFF AND DISCONNECTED FROM THE ELECTRIC AND PNEUMATIC (if present) POWER SUPPLY.**

**MAIN SWITCH LOCKED AT "O" WITH LOCK CLOSED AND KEY REMOVED** in the models with PNEUMATIC CYLINDER movement).

## STORAGE

- Place the machine and its accessories (with or without packaging) in closed areas.
  - The relative humidity of the air must not exceed 80%.
  - The environmental temperature must be between -15°C and 45°C.
- If the machine is planned with liquid cooling and an ambient temperature under 0°C: use the anti-freeze liquid suggested by the manufacturer or completely empty the hydraulic circuit and the tank of liquid.  
Always use adequate measures to protect the machine from humidity, dirt and corrosion.

## 2. INTRODUCTION AND GENERAL DESCRIPTION

### 2.1 Introduction

Mobile system for resistance welding (spot welder) controlled by a microprocessor, medium frequency inverter technology, three-phase power supply and direct output current.

The spot welder is equipped with a pneumatic clamp that contains the transforming and rectifying unit. In this way higher welding currents are obtained than from traditional spot welders, with reduced network absorption and fewer magnetic fields near the cables. Longer, lighter cables can be used to improve handling and give a wider working range.

The spot welder can work on iron plates with a low carbon content, galvanized iron plates, high resistance steel plates and boron steel plates. Equipped with quick couplings for use with the accessory equipment (Studder, X Clamp), it can be used for many different types of hot machining on panels and all the specific work of car body shops.

The main system characteristics are:

- Backlit TFT display that shows the controls and the set parameters;
- Manual choice (MANUAL), semi-automatic (EASY) or completely automatic (SMART) of the spot welding parameters;
- Possibility of setting pre-heating and post-heating of the sheet metal to optimise welding of the high resistant and galvanised materials;
- Possibility of setting different types of electrodes and arms;
- Automatic recognition of the clamp or studder connected;
- Automatic control of the spot welding current;
- Manual and automatic control of the electrode forces;
- USB port.

### 2.2 STANDARD ACCESSORIES

- Arm support;
- Clamp cable support;
- Regulator filter group (supply of compressed air);

- "C" clamp with standard arms, complete with cable with a plug that can be disconnected from the generator and built-in sensors for automatic spot;
- Cooling system (integrated GRA).

### 2.3 ACCESSORIES ON DEMAND

- Arms and electrodes with a different length and/or shape for "C" clamp (see spare parts list);
- Electrodes kit (see spare parts list);
- Supporting pole and weight discharger for the clamp;
- "X" clamp (see spare parts list);
- Studder kit;
- "C" clamp ring kit.

## 3. TECHNICAL INFORMATION

### 3.1 RATING PLATE (Fig. A)

The main information about use and performance of the spot welder is summarised on the rating plate and has the following meanings:

- 1 - Number of phases and frequency of the power line
- 2 - Power supply voltage
- 3 - Network output at permanent capacity (100%).
- 4 - Nominal network output with duty cycle of 50%.
- 5 - Maximum no-load voltage to electrodes.
- 6 - Maximum current with electrodes in short-circuit.
- 7 - Secondary output at permanent capacity (100%).
- 8 - Arm gauge and length (standard).
- 9 - Minimum and maximum adjustable force to electrodes.
- 10 - Nominal pressure of the compressed air source.
- 11 - Compressed air pressure required to obtain maximum force to the electrodes.
- 12 - Cooling liquid capacity.
- 13 - Drop in nominal pressure of the cooling liquid.
- 14 - Spot welder device earthing
- 15 - Safety symbols whose meanings are illustrated in Chapter 1 "General safety for resistance welding".

**N.B.:** The rating plate shown is an example to explain the meanings of the symbols and figures; the exact technical specifications for your machine should be taken directly from the rating plate on the machine itself.

### 3.2 OTHER TECHNICAL DATA

#### 3.2.1 Spot welder

##### General features

- |                                      |   |                             |
|--------------------------------------|---|-----------------------------|
| - Power supply voltage and frequency | : | 400V (±15%) ~ 3-ph-50/60 Hz |
| - Electric protection rating         | : | I                           |
| - Insulation rating                  | : | H                           |
| - Casing protection rating           | : | IP 20                       |
| - Cooling type                       | : | liquid                      |
| - (*) Overall size (LxWxH)           | : | 710 x 450 x 910 mm          |
| - (**) Weight                        | : | 62 kg                       |

##### Input

- |                                     |   |                        |
|-------------------------------------|---|------------------------|
| - Max. power in short-circuit (Scc) | : | 43 kVA                 |
| - Delayed network fuses             | : | 16 A                   |
| - Automatic circuit breaker         | : | 16A ("C" - IEC60947-2) |
| - Power supply cable (L≤8m)         | : | 4 x 6 mm <sup>2</sup>  |

##### Output

- |  |   |                            |
|--|---|----------------------------|
| - Loadless secondary voltage (U <sub>d</sub> )   | : | 9V                         |
| - Max. spot welding current (I <sub>2</sub> max) | : | 9kA                        |
| - Spot welding capacity                          | : | max 3 + 3 + 3 mm           |
| - Intermittence ratio                            | : | 2%                         |
| - Maximum power at electrodes                    | : | 400 daN                    |
| - Length of "C" arm                              | : | 95 mm standard             |
| - Spot welding current adjustment                | : | automatic and programmable |
| - Spot welding current time adjustment           | : | automatic and programmable |
| - Squeeze time adjustment                        | : | automatic and programmable |
| - Slope time adjustment                          | : | automatic and programmable |
| - Maintenance time adjustment                    | : | automatic and programmable |
| - Cold time adjustment                           | : | automatic and programmable |
| - Adjustment of number of impulses               | : | automatic and programmable |
| - Pre-heating time/current adjustment            | : | automatic and programmable |
| - Post-heating time/current adjustment           | : | automatic and programmable |
| - Post-heating time adjustment                   | : | automatic and programmable |

(\*) NOTE: the overall dimensions do not include the cables and the supporting pole.

(\*\*) NOTE: the generator weight does not include the clamp and the supporting pole.

#### 3.2.2 Cooling system (GRA).

##### General features

- |                                 |   |         |
|---------------------------------|---|---------|
| - Maximum pressure (pmax)       | : | 3 bar   |
| - Cooling capacity (P @ 1l/min) | : | 2 kW    |
| - Tank capacity                 | : | 8 l     |
| - Cooling liquid                | : | coolant |

## 4. DESCRIPTION OF THE SPOT WELDER

### 4.1 SPOT WELDER UNIT AND MAIN COMPONENTS (Fig. B)

**On the front:**

**On front:**

- 1 - Control panel;
- 2 - USB port;
- 3 - Outlet for clamp connection;
- 4 - Rapid hold to attach the cooling tubes;
- 5 - Outlet for connecting the sensors used with the automatic spot;
- 6 - Clamp cable support.

**On the back:**

- 7 - Main switch;
- 8 - Supply cable input;
- 9 - Arm supports;
- 10 - Pressure regulator, pressure gauge and air intake filter;
- 11 - Cooling system tank cap (GRA);
- 12 - GRA liquid level;
- 13 - GRA air exhauster.



### 4.2 CONTROL AND ADJUSTMENT DEVICES

#### 4.2.1 Control panel (Fig. C)

- 1- TFT Display.
- 2- Cooling unit locking button. It allows you to lock the "GRA" during the welding process to facilitate replacement of the arm and/or electrodes.
- 3- "Quick Menu" button. Rapid access to the useful menus during welding.
- 4- Multi-function button:



- access to the "SERVICE" menu in alarm conditions or before pressing START;

- **START REC** : enabling/disabling recording of a welding job;
- 5- Browser knob and START button:
  - rotate the knob to scroll through the various menu items;
  - press to access the selected item, rotate to change the setting, press again to confirm the value;
  - if pressed on start-up or following an alarm, it enables the machine to spot weld (START button)
- 6- ESC button:
  -  : back to the main menu;
  -  : back to the previous menu.
- 7- USB port.

#### 4.2.2 Pressure regulator and gauge unit (Fig. B-10)

It allows you to adjust the pressure exerted on the electrodes of the pneumatic clamp using the adjustment knob (only for pneumatic clamps in "Manual" mode).

### 4.3 SAFETY FUNCTIONS AND INTERLOCK

#### 4.3.1 Protection and alarms (TAB. 1)

##### a) Thermal protection:

This is triggered by overheating of the spot welding machine due to low capacity or total lack of cooling fluid, or by a work cycle that exceeds the allowed threshold permitted.

Intervention is described and signalled in the display.

EFFECT: all movement is blocked, the electrodes open (exhauster cylinder); power is shut down (welding inhibited).

RESET: manual (action on "START" button after falling within the allowed temperature limits).

##### b) Main switch:

- Position "O" = open and lockable (see chapter 1).


WARNING! The internal power cable connection terminals (L1+L2+L3) are live when turned to the "O" position.

- Position "I" = closed: spot welding machine powered up but not operating (STAND BY - requires pressing of the START button).

- Emergency function

Opening the spot welding machine when it is operating (pos. "I" => pos. "O") will instantly stop the machine in safe shutdown mode with:

- current inhibited;
- opening of the electrodes (exhauster cylinder);
- automatic restart inhibited.

 **WARNING! PERIODICALLY MAKE SURE THE SAFE SHUTDOWN FUNCTION OPERATES CORRECTLY.**

##### c) Cooling unit safety

This is triggered in the event of no or loss of cooling liquid pressure;

Intervention is described and signalled in the display.

EFFECT: all movement is blocked, the electrodes open (exhauster cylinder); power is shut down (welding inhibited).

RESET: top-up cooling liquid then switch off and back on the machine (also see Par. 5.6 "preparation of the cooling unit").

##### d) Compressed air safety

This is triggered in the event of no or loss of pressure ( $p < 3\text{bar}$ ) of the compressed air power supply;

Intervention is described and signalled in the display.

EFFECT: all movement is blocked, the electrodes open (exhauster cylinder); power is shut down (welding inhibited).

RESET: manual (using the "START" button) after the machine pressure falls within the allowed threshold (indication on the gauge >3bar).

##### e) Short circuit safety outboard (pneumatic clamp only)

Before carrying out the welding cycle, the machine checks the poles (positive and negative) of the secondary spot welding circuit is free of accidental contact points. Intervention is described and signalled in the display.

EFFECT: all movement is blocked, the electrodes open (exhauster cylinder); power is shut down (welding inhibited).

RESET: manual (pressing the "START" button having removed the cause of the short circuit).

##### f) Phase failure trip switch

Intervention is described and signalled in the display.

EFFECT: all movement is blocked, the electrodes open (exhauster cylinder); power is shut down (welding inhibited).

RESET: manual (pressing the "START" button).

##### g) Overvoltage and undervoltage trip switch

Intervention is described and signalled in the display.


EFFECT: all movement is blocked, the electrodes open (exhauster cylinder); power is shut down (welding inhibited).

RESET: manual (pressing the "START" button).


##### h) "START" button (Fig. C-5).

This push-button must be pressed to control welding in each of the following conditions:

- every time the main switch has tripped (pos. "O" => pos. "I");
- each time the safety/protection devices cut in;
- when the power supply is reinstated (electricity and compressed air) following a shutdown of power supplies or a malfunction;

 **WARNING! PERIODICALLY MAKE SURE THE SAFE START FUNCTION OPERATES CORRECTLY**

## 5. INSTALLATION

 **WARNING! ALL INSTALLATION OPERATIONS AND ELECTRICAL AND PNEUMATIC CONNECTIONS MUST ALWAYS BE CARRIED OUT WITH THE SPOT WELDER SWITCHED OFF AND DISCONNECTED FROM THE POWER SUPPLY. THE ELECTRIC AND PNEUMATIC CONNECTIONS MUST ONLY BE CARRIED OUT BY EXPERT OR QUALIFIED TECHNICIANS.**

### 5.1 UNPACKING

Unpack the spot welder, assemble the separate parts (to be found in the packaging) as indicated in this chapter (Fig. D).

### 5.2 LIFTING MEANS (Fig. E)

The spot welder must be lifted using a double cable and hooks that are suitably sized

for the machine weight, and using the relative M12 rings. It is forbidden to sling the spot welder using means other than those indicated.

### 5.3 POSITIONING

Make sure the installation area is suitably large and without obstacles to guarantee that the control panel, the main switch and the working area can be accessed in complete safety.

Make sure there are no obstacles near the cooling air entry or exit points, and make sure that conductive dust, corrosive vapours, humidity, etc. cannot be sucked in. Position the spot welder on a flat surface made of homogeneous, compact material that is suitable for supporting the weight of the machine (see "technical data") to avoid the danger of toppling or dangerous movements.


### 5.4 CONNECTION TO THE MAINS


#### 5.4.1 Warnings

Before carrying out any electric connection, make sure the machine plate data corresponds with the voltage and frequency of the mains available in the installation place.

The spot welder must be connected only and exclusively to a power supply with the neutral conductor connected to earth.

To guarantee protection against indirect contact use these types of residual current device;

- A type () for single-phase machines;

- B type () for three-phase machines.

- The IEC/EN 61000-3-12 Standard is not applicable to the spot welder.

If the welding machine is connected to a public electricity grid, the installer or user must make sure that the machine can be connected (if necessary, consult the company that manages the electricity grid).

#### 5.4.2 Plug and mains outlet

Connect the power supply cable to a standard (3P + T) plug of appropriate capacity and prepare a power supply outlet fitted with fuses or an automatic circuit-breaker; the corresponding earth terminal must be connected to the (yellow-green) earth conductor of the power supply.

The capacity and intervention characteristics of the fuses and circuit-breaker switch are given in the "OTHER TECHNICAL DATA" paragraph.



**WARNING! Not observing the regulations above renders the manufacturer's safety system (class I) inefficient, with resulting serious risks to people (e.g. electric shock) and goods (e.g. fire).**

### 5.5 PNEUMATIC CONNECTION

- Prepare a compressed air line with a working pressure of 8 bar.
- Fit one of the available compressed air connections to the filter group reducer to make the reducer suitable for the connections where the spot welder is to be installed.

### 5.6 PREPARATION OF THE COOLING UNIT (GRA)



**WARNING! The filling operations should always be performed with the machine switched off and disconnected from the mains supply. Never use polypropylene based antifreeze liquids.**

**Only use the coolant recommended by the manufacturer of the cooling unit.**

- Open the discharge valve (FIG. B-13).
- Fill the tank with coolant using the nozzle (Fig. B-11): capacity of the tank = 8 l; pay attention to avoid excess leakage of liquid at the end of filling.
- Close the tank cap.
- Close the discharge valve.

### 5.7 PNEUMATIC CLAMP CONNECTION (Fig. F)



**WARNING! Presence of dangerous voltage! Never connect the spot welder sockets to plugs other than those planned by the manufacturer. Do not attempt to insert any other type of object in the sockets!**

- Machine disconnected from the power supply mains.
- Insert the polarised plug (Fig. F-1) in the clamp in the specific socket of the machine, then lift the two levers until complete fastening of the plug is obtained.
- Insert the 8 pin polarised plug in Figure F-2 to use the automatic spot welding mode.
- Insert the cooling tubes(\*), respecting the colours (blue tube on blue socket, red tube on red socket). Check rapid coupling of the tubes is correctly carried out (Fig. F-3).

**NOTE(\*): if the cooling tubes are not inserted, the clamp is NOT cooled correctly resulting in thermal stress which damages the electric parts.**

### 5.8 CLAMP "C": CONNECTION TO THE ARM



**WARNING! Residual risk of crushing the upper limbs!**

**Follow the instructions below in the exact order indicated!**

- Disconnect the machine from the mains.
- Turn the block as seen in Fig. G1.
- Now assemble the clamp support (Fig. G2) if used.
- Angle the arm as necessary and slide it into its seat (Fig. G3).
- Align the arm with the piston electrode and tighten the block in place (Fig. G4-A).
- Connect the cooling tubes to the relative quick couplings (Fig. G4-B).
- Check that the pipe quick coupling is fastened firmly in place.
- Now assemble the clamp support sleeve from the correct side (Fig. G5) if used.

**NOTE: if the cooling tubes are not connected, the clamp will NOT be cooled properly which will cause thermal stress and damage to the electrical parts.**

## 6. WELDING (Spot welding)

### 6.1 PRELIMINARY OPERATIONS

#### 6.1.1 Main switch at "O" and lock closed!

A series of checks and adjustments must be carried out before starting to spot weld, with the main switch in the "O" position and the lock closed.

**Connecting to the electric and pneumatic supply sources:**

- Make sure the electric connection has been carried out correctly in compliance with the instructions given previously.
- Check compressed air connection: connect the supply hose to the pneumatic

supply point and adjust the pressure using the reducer knob until the manometer shows a value close to 8 bar (116 psi).

#### 6.1.1.1 Adjusting and fixing the "C" clamp arm

This operation must only be carried out if the arm moves horizontally even after having been locked as explained in paragraph 5.8 (Fig. Q)

For this operation proceed as follows:

- Release the arm by rotating the release lever (Fig. R);
- Loosen the dowel (Fig. S-1) and tighten the ring nut (Fig. S-2) by one-eighth of a turn (approx. 45 degrees);
- Lock the ring nut, tightening the locking dowel (Fig. S-1);
- Lock the arm, following the operation shown in Fig. T.

This operation may need to be carried out several times, either tightening or loosening the ring nut (Fig. S-2), until the arm is locked horizontally and the locking lever, using rotational power that is suitable for manual release, simultaneously closes at the stop created by the reference plug (Fig. T-1).

NOTE: when the operation ends, the lever must be against the end stop plug (Fig. T-1). This position guarantees that the "C" arm is locked mechanically and therefore safe.

#### 6.1.2 Main switch at the "I" position

The following checks must be carried out before doing any spot welding, and with the main switch at "I" (ON).

Clamp electrode alignment:

- Place a shim having the same thickness as the panels to be spot welded between the electrodes; make sure the electrodes, which are now "squeezing" the panels (see paragraph 6.2.2), are aligned.
- If necessary, make sure that the arm is correctly fixed (see previous paragraphs).

### 6.2 ADJUSTING THE SPOT WELDING PARAMETERS

The parameters that determine the diameter (section) and mechanical seal of the spot are:

- Power applied by the electrodes.
- Spot welding current.
- Spot welding time.

If the operator does not have specific experience, it is best to try some spot welding on pieces of panel with the same thickness and of the same quality as the ones to be spot welded.

#### 6.2.1 Setting the arm and the electrode

Press the "START" key (Fig. U-1) and set the arm among those available (Fig. U-2) turning the central knob (Fig. C-5).

#### 6.2.2 Adjustment of force and approach function (pneumatic clamp only)

Adjustment of force takes place in automatic or manual mode (using the pressure regulator on the air unit).

Setting the automatic mode (default setting) or manual mode allows you to choose from the main menu selecting the icon  and then the icon  as in the figures U-3-4.

Automatic adjustment "AUTO daN":

Choosing "AUTO daN", you can set the desired value of the force expressed in "deca Newton" using the "MANUAL" mode (Fig. U-5).

In "SMART AUTOSET" and "EASY" mode, during the spot welding cycle, the force of the electrodes is automatically adjusted.

Manual adjustment:

Choosing "no AUTO daN" you can set the force value manually on the pressure regulator (Fig. B-10).

During the spot welding cycle, the force of the electrodes will be manually regulated according to the procedure described above.

#### Approach function

It allows approach of the electrodes with the force set without supplying current.

You can approach the electrodes in any spot welding program with the following procedure (double click):

Press and release the clamp button and then immediately press the button. The clamp approaches and keeps closed the electrodes up to subsequent release of the button. The led in clamp flashes.



**WARNING:** using the protective gloves can make it difficult to approach by double clicking. It is therefore advisable to select the approach function .



**WARNING!**  
**RESIDUAL RISK!** This operating mode also causes the residual risk of crushing of the upper limbs: take all necessary precautions (see safety chapter).

#### 6.2.3 Automatic setting the spot welding parameters (Fig. U-6)

The spot welding parameters are all set automatically by the machine: "SMART AUTOSET" mode. You need that both the plugs on the clamps C are connected to the machine (Fig. F).

#### 6.2.4 Semi-automatic setting the spot welding parameters **EASY** (Fig. U-7)

The spot welding parameters are set by the machine selecting the thickness and the material (\*) of the sheet metal to weld.

The spot weld is deemed to have been performed correctly when a piece undergoes a traction test and causes the extraction of the welding point kernel from one of the two sheets.

(\*) NOTE: the standard materials available are:

- "Fe": sheet metal in iron with low carbon content;
- "FeZn": galvanised sheet metal in iron with low carbon content;
- "Hss": sheet metal in steel with high tensile strength (700 MPa max);
- "Br": sheet metal in boron steel.

#### 6.2.5 Manual setting of the spot welding parameters and creation of a customised program **MANUAL** (Fig. U-8)

You can manually set the spot welding parameter to execute test welding or to create a customised program.

### 6.3 AUTOMATIC SPOT WELDING PROCEDURE

This function is available with the pneumatic clamp "C" in standard supply with the

machine.

Select "SMART AUTOSET" mode using the "MODE" icon: you enter the preliminary "ZEROING" procedure (Fig. U-9).

For correct zeroing, keep the clamp button pressed for the entire time necessary following the instructions on the display; then proceed as follows:

- Rest the electrode on the fixed arm of the surface of one of the two metal sheets to spot weld.
- Press the button on the handle of the clamp to obtain:
  - a) Closing of the sheet metal between the electrodes.
  - b) Start-up of the spot welding cycle with current passage.
- At the end of the spot welding, the average spot welding current is displayed (excluding the initial and final ramps), the force of the electrodes, the time of spot welding and the energy supplied to the electrodes for the spot. The values displayed may also have an added "warning", signalled by the red led on the flashing clamp (see TAB. 1), based on the result obtained with spot welding.
- At the end of the work, place the clamp back in the specific support on the trolley.

To carry out zeroing again, press the "ESC" key (Fig. C-6) until the icon 

appears on the display, then select it. To exit this procedure, without zeroing, press the "ESC" key.

#### IMPORTANT:

For a good outcome of automatic spot welding, repeat zeroing when:

- you replace the electrodes.
- you clean the electrodes (recommended after 30 spots approx.).
- you change the arm.
- you change welding job.



**WARNING:** during zeroing of the clamp, execute a particular spot welding cycle by supplying current and closing the electrodes on multiple occasions. Repeat all the provisions outlined in the paragraph "GENERAL SAFETY" IN THIS MANUAL!

### 6.4 SEMI-AUTOMATIC **EASY** OR MANUAL SPOT WELDING PROCEDURE

#### **MANUAL**

- In "EASY" mode, select the sheet metal to weld (materials and thicknesses) using the knob (Fig. U-7-11).
- In "MANUAL" mode, you can create your own spot welding program by setting the value of each parameter (Fig. U-5-8):



Force of electrodes.



Pre-heating time/current.



Pause time.



Ramp time.



Spot welding time/current.



Number of impulses.



Cold time.



Post-heating time/current.



Maintenance time.

#### 6.4.1 PNEUMATIC CLAMP

- Rest the electrode on the fixed arm of the surface of one of the two metal sheets to spot weld.
- Press the button on the handle of the clamp to obtain:
  - a) Closing of the sheet metal between the electrodes.
  - b) Start-up of the spot welding cycle with current passage.
- At the end of spot welding, the average current of spot welding is displayed (excluding the initial and final ramps) and the force of the electrodes. The values displayed may also have an added "warning", signalled by the red led on the flashing clamp (see TAB. 1), based on the result obtained with spot welding.
- At the end of the work, place the clamp back in the specific support on the trolley.



**WARNING:** presence of dangerous voltage! Always check the integrity of the power supply cable of the clamp; the protective corrugated tube must not be cut, broken or crushed! Before and during use of the clamp, check the cable is far from moving parts, heat sources, sharp surfaces, liquids, etc.



**WARNING:** the clamp contains the transformation, isolation and straightening assembly necessary for spot welding; if in doubt on the integrity of the clamp (due to falls, violent knocks, etc.) disconnect the spot welding machine and consult an authorised support centre.

#### 6.4.2 STUDDER GUN



- **WARNING!**
- To fasten or dismantle the accessories from the chuck of the gun, use two fixed hex keys to prevent rotation of the chuck.
- If working on doors or bonnets, it is compulsory to connect the earth bar on these parts to prevent passage of current through the hinges, and however near the zone to spot weld (long current paths reduce the efficiency of the spot).

##### 6.4.2.1 Connection of the earth cable to the sheet metal

- a) Bare the sheet metal as near as possible to the point where you intend to work, for a surface corresponding to the contact surface of the earth bar.
- b1) Fasten the copper bar to the sheet metal surface using an ARTICULATED CLAMP (model for welding).  
An alternative to mode "b1" (impractical) implement the solution:
- b2) Spot weld a washer on the surface of the previously prepared sheet metal; pass the washer through the slit of the copper bar and fasten it with a specific washer terminal supplied.



#### 6.4.2.2 Procedure to spot weld and use various tools

Connect the studder gun and the earth cable to the clamp supplied, carefully following the instructions sheet contained in the Studder kit. Press the "START" button pressing the knob and select the tool you want to use (Fig. U-1-10).

Select the material and the thickness of the sheet metal you want to weld (Fig. U-18). Based on the tool selected, follow the procedures described below:

#### Washer spot welding for earth terminal fastening

On the chuck of the gun, assemble the specific electrode (POS.9, Fig. I) and insert the washer (POS.13, Fig. I).

Rest the washer in the chosen zone. Place in contact, in the same zone, the earth terminal; press the gun button implementing welding of the washer on which fastening should be carried out as previously described.

 Spot welding of screws, washers, nails and rivets

Equip the gun of the suitable electrode by inserting the element on it to spot weld and rest it on the sheet metal on the desired spot; press the button on the gun; release the button only having passed the time set.

#### Sheet metal spot welding from one side only

On the gun chuck, assemble the electrode planned (POS.6, Fig. I) pressing on the surface to spot weld. Activate the gun button, release the button only having passed the time set.

#### WARNING!

Maximum thickness of the sheet metal for spot welding, from one side only: 1+1 mm. This spot welding is not permitted on support structures of the bodywork.

To obtain correct spot welding results on the sheet metal, you need to take some fundamental precautions:

- 1 - A perfect earth connection.
- 2 - The two parts to spot weld must be free of paint, grease and oil.
- 3 - The parts to spot weld must be in contact with one another, without air gaps, if necessary press with a tool, not with the gun. Too heavy pressure leads to poor results.
- 4 - The thickness of the upper part must not exceed 1 mm.
- 5 - The tip of the electrode must have a diameter of 2.5 mm.
- 6 - Tighten the nut well fastening the electrode, check the connectors of the welding cable are fastened.
- 7 - Then spot weld, resting the electrode to exert light pressure (3+4 kg). Press the button and pass the spot welding time, only then move away with the gun.
- 8 - Never move more than 30 cm from the fastening point of the earth.

#### Spot welding and simultaneous traction of the special washers

This function should be carried out assembling and fully tightening the chuck (POS.4, Fig. I) on the body of the extractor (POS.1, Fig. I), couple and tighten the other terminal of the extractor on the gun (Fig. I). Insert the special washer (POS.14, Fig. I) on the chuck (POS.4, Fig. I), fastening it with the specific screw (Fig. I). Spot weld the relevant zone, adjusting the spot welding machine as for spot welding the washers and start traction.

When complete, turn the extractor 90° to detach the washer, which can be spot welded again in a new position.

#### Heating and sheet metal recalculation

In this operating mode, the TIMER is disabled by default: by selecting the welding time, the display shows "inf" = Infinite time.

Operation duration is therefore manual, being determined by the time for which the gun button is kept pressed.

Current intensity is adjusted automatically according to the thickness of the selected sheet.

#### Sheet metal heating

Assemble the carbon electrode (POS. 12, Fig. I) on the gun chuck and block in place with the ring nut. Touch the area, that was previously bared, with the carbon tip and tighten with the gun button. Work from the outside to the inside, using a circular movement to heat the sheet which undergoes work hardening and returns to its original position.

To prevent the sheet from drawing too much, treat small areas and immediately after wipe using a damp cloth to cool the treated part.

#### Sheet metal recalculation

In this position, working with the specific electrode, you can flatten the sheet metal that underwent localised deformation.

#### Intermittent spot welding (patching)

This function is suitable for spot welding small rectangles of sheet metal to cover holes due to rust or other causes.

Place the specific electrode (POS.5, Fig. I) on the chuck, accurately tighten the fastening ring nut. Bare the relevant zone and ensure the piece of sheet metal you want to spot weld is clean and free of grease or paint.

Position the piece and rest on the electrode, then push the gun button keeping the button always pressed, advance rhythmically following the work/rest intervals given by the spot welding machine.

NB: During the work, exert light pressure (3+4 kg), working following an ideal line 2+3 mm from the edge of the new piece to weld.

To obtain good results:

- 1 - Do not move more than 30 cm from the fastening point of the earth.
- 2 - Use coverage sheet metal with a maximum thickness of 0.8 mm, better if stainless steel.
- 3 - Rhythm advanced movement with the frequency dictated by the spot welder. Advance during the pause time, stop during spot welding time.

#### Use the extractor supplied (POS. 1, Fig. I)

##### Washer coupling and traction

This function is carried out by assembling and tightening the chuck (POS.3, Fig. I) on the body of the electrode (POS.1, Fig. I). Couple the washer (POS.13, Fig. I), spot welded as previously described, and start traction. In the end, rotate the extractor 90° to detach the washer.

##### Plug coupling and traction





This function is carried out by assembling and tightening the chuck (POS.2, Fig. I) on the body of the electrode (POS.1, Fig. I). Insert the plug (POS.15-16, Fig. I), spot welded as previously described in the chuck (POS.1, Fig. I) keeping the terminal itself pulled towards the extractor (POS.2, Fig. I). With insertion complete, release the chuck and start traction. On completion, pull the chuck towards the hammer to remove the

plug.

## 7. SETTINGS MENU

### 7.1 MENU MODE (Fig. U-7)

It enables setting the different work modes described in the previous paragraph:

-  : automatic mode.
-  : semi-automatic mode.
-  : manual mode.
-  : approach mode.




### 7.2 MENU (Fig. U-12)

Used to set the following:

-  : adjustment of automatic force.

#### 7.2.1 SETUP MENU (Fig. U-13)




Used to set the following:

-  : language.
-  : time and date.
-  : unit of metric or imperial measurement.




#### 7.2.2 SERVICE MENU (Fig. U-14)

This provides information on the spot welding machine status.

##### 7.2.2.1 INFO MENU

-  : spot welding machine operation in days (DDDD), hours (HH), minutes (mm).
-  : number points.
-  : list of alarms.

##### 7.2.2.2 FIRMWARE MENU







-  : use to update the spot welding machine software via USB pen drive.
-  : use to reset the spot welding machine to its default settings.
-  : software release installed.

##### 7.2.2.3 REPORT MENU

Use to generate a report and save it to a USB pen drive. The report contains various information on the machine status (software installed, life/working hours, alarms, selected spot welding process etc.).



### 7.3 JOBS MENU (Fig. U-15)

Used to:


-  : save a job in the spot welding machine internal memory.
-  : load a previously saved job.
-  : delete a previously saved job.
-  : import jobs from a USB device.
-  : export jobs on a USB device.
-  : allow saving of spot welding parameters to the USB device.

### 7.4 "QUICK MENU" KEY (Fig. U-16-17)

Used to set the following:

-  : spot welding block: the spot welding parameters are always blocked at the same value for all the points executed.
-  : maximum number of points and countdown of the points executed.

## 8. MAINTENANCE

 **WARNING! BEFORE CARRYING OUT MAINTENANCE, MAKE SURE THE MACHINE IS OFF AND DISCONNECTED FROM THE MAINS. The switch must be locked at "O" using the supplied lock.**

### 8.1 ROUTINE MAINTENANCE

**ROUTINE MAINTENANCE CAN BE CARRIED OUT BY THE OPERATOR.**

- adaptation/restoration of the diameter and profile of the electrode tip;
- replacement of the electrodes and the arms;
- electrode alignment check;
- cooling check on cables and clamp;
- condensate discharge from the compressed air entry filter.
- periodic control of the level of the cooling liquid tank.
- periodic control of the total absence of liquid leaks.
- control the power supply cable is intact on the spot welding machine and the clamp.
- change of the cooling liquid every 6 months.

### 8.2 SPECIAL MAINTENANCE

**SPECIAL MAINTENANCE MUST ONLY BE CARRIED OUT BY TECHNICIANS WHO ARE EXPERT OR QUALIFIED IN AN ELECTRIC-MECHANICAL AMBIT.**

 **WARNING! BEFORE REMOVING THE SPOT WELDER OR CLAMP PANELS AND LOOKING INSIDE, MAKE SURE THE SPOT WELDER IS OFF AND DISCONNECTED FROM THE ELECTRIC AND PNEUMATIC (if present) POWER SUPPLIES.**

Carrying out checks while the inside of the spot welder is live can cause serious

electric shock due to direct contact with live parts and/or injury due to direct contact with moving parts.

Periodically and as frequently as required by the use and environmental conditions, inspect inside the spot welder and clamp and remove the dust and metal particles that have deposited on the transformer, diode module, power terminal board, etc. using a blast of dry compressed air (max. 5 bar).

Do not direct the jet of compressed air onto the electronic circuit board; if necessary clean with a very soft brush or suitable solvents.

At the same time:

- Make sure the wiring does not show signs of insulation damage or loose-oxidised connections.
- Make sure the screws that connect the transformer secondary with the output bars / wires are tight and that there are no signs of oxidation or overheating.

### 8.2.1 Intervention on the GRA

In case of:

- excess need to restore the liquid level in the tank;
- excess frequency of alarm 7 activation;
- liquid leaks;

you should proceed to check for any problems inside the cooling unit.

Always refer to section 7.2 for overall warnings and however having disconnected the spot welding machine from the power supply mains, proceed with removing the side panel (FIG. L).

Check there are no leaks both on connections and tubing. If liquid is leaking, replace the damaged part. Eliminate the liquid residue possibly leaked during maintenance and close the side panel again.

Then proceed to reset the spot welding machine using the appropriate information indicated in paragraph 6 (Spot welding).

### 8.2.2 Replacing the internal battery

If the memory does not maintain the correct date and time, replace the battery (CR2032 - 3V) found in the compartment at the back of the control panel.

When the spot welder is disconnected from the mains, remove the control panel screws, remove the connectors and replace the battery.



**WARNING! Make sure all the connectors have been connected before returning the panel to the machine.**

## 9. TROUBLESHOOTING

SHOULD MACHINE OPERATION NOT BE SATISFACTORY, AND BEFORE CARRYING OUT MORE SYSTEMATIC CHECKS OR CONTACTING YOUR TECHNICAL ASSISTANCE CENTRE, MAKE SURE THAT:

- With the main switch of the spot welder closed (pos. " I ") the display is lit; if not the problem is in the power line (cables, plug and socket, fuses, excessive voltage drop, etc.).
- The display does not have any alarm signals (see TAB. 1): once the alarm stops, press "START" to re-activate the spot welding machine; check correct circulation of the cooling liquid and, if necessary, reduce the intermittence ratio of the work cycle.
- The elements that are part of the secondary circuit (fuses – arm-holders – arms – electrode holders – cables) are not inefficient because of loose screws or oxidation.
- The welding parameters are suitable for the work to be carried out
- After having carried out maintenance or repairs, restore the connections and wiring as they were before, making sure they do not come into contact with moving parts or parts that can reach high temperatures. Band all the wires as they were before, being careful to keep the primary high voltage connections separate from the secondary low voltage ones.

Use all the original washers and screws when re-closing the structural work.