ROBOPAC

AETNAGROUP

ROBOT S5

Serial number

GB INSTRUCTIONS MANUAL CODE

SELF PROPELLED WRAPPING ROBOT

IDM - C024151100.fm

Instructions manual code **3710306641**

English Edition **0/0908**

SINCERT

CERMET AZIENDA CERTIFICATA

REG. N. 186
UNI EN ISO 9001:1994

STAMPARE SU ORIGINALE

IT **Dichiarazione “CE” di conformità**
(Direttiva 98/37 CE allegato II tipo A)
ROBOPAC s.a. dichiara che la macchina per uso artigianale e industriale, identificabile dai riferimenti in calce, è conforme ai requisiti essenziali di sicurezza e di tutela della salute come richiesto dalle Direttive 98/37 CE, 73/23 CEE, 89/336 CEE e relative modifiche.

EN **“CE” declaration of conformity**
(Directive 98/37 CE attachment II type A)
ROBOPAC s.a. declares that the machine for crafts and industrial use, identifiable by the references at the foot of the page, is in conformity with the essential safety and health requisites required by Directives 98/37 CE, 73/23 CEE, 89/336 CEE and relevant amendments.

FR **Déclaration “CE” de conformité**
(Directive 98/37 CE annexe II type A)
ROBOPAC s.a. déclare que la machine est conforme aux conditions essentielles requises concernant la sécurité et la préservation de la santé conformément aux Directives 98/37 CE, 73/23 CEE, 89/336 CEE et modifications correspondantes pour une utilisation artisanale et industrielle et pouvant être identifiée par les références citées au bas de la page.

DE **"CE"-Konformitätserklärung**
(Richtlinie 98/37 EG, Anlage II Typ A)
ROBOPAC s.a. erklärt hiermit, dass die durch die Angaben im Fuß dieses Dokuments identifizierbare Maschine für den handwerklichen und industriellen Einsatz in Übereinstimmung steht mit den grundlegenden Sicherheits- und Gesundheitschutzvorgaben gemäß den Richtlinien 98/37 EG, 73/23 EWG, 89/336 EWG und zugehörigen Änderungen.

ES **Declaración de conformidad “CE”**
(Directiva 98/37 CE anexo II tipo A)
ROBOPAC s.a. declara que la máquina para uso artesanal e industrial, que se identifica en base a las referencias al pie de página, es conforme a los requisitos esenciales de seguridad y de tutela de la salud según lo exigen las Directivas 98/37 CE, 73/23 CEE, 89/336 CEE y sus relativas modificaciones.

PT **Declaração “CE” de conformidade**
Directiva 98/37 CE anexo II tipo A)
ROBOPAC s.a. declara que a máquina para uso artesanal e industrial, identificável mediante as referências abaixo indicadas, está conforme aos requisitos essenciais de segurança e salvaguarda da saúde, previstos pelas Directivas 98/37 CE, 73/23 CEE, 89/336 CEE e relativas modificações

EL **Δήλωση συμμόρφωσης “CE” (ΕΚ)**
(Οδηγία 98/37 ΕΚ - συνημμένο II - τύπος Α)
Η ROBOPAC s.a. δηλώνει ότι η μηχανή βιομηχανικής και βιοτεχνικής χρήσης, που φέρει τα παρακάτω αναγνωριστικά στοιχεία, είναι κατασκευασμένη σε συμμόρφωση με τις βασικές απαιτήσεις ασφαλείας και προστασίας της υγείας, όπως επιβάλλεται από τις Οδηγίες 98/37 ΕΚ, 73/23 ΕΟΚ, 89/336 ΕΟΚ και περαιτέρω τροποποιήσεις.

NL **EG-Verklaring van overeenstemming**
(Richtlijn 98/37 EG bijlage II type A)
ROBOPAC s.a. verklaart dat de machine die bedoeld is voor ambachtelijke en industriële omgevingen met de hierbij vermelde identificatiegegevens voldoet aan de essentiële veiligheids- en gezondheidsvereisten zoals deze zijn voorgeschreven door de Richtlijnen 98/37 EG, 73/23 EEG, 89/336 EEG en daarop volgende wijzigingen.

DA **“EF” OVERENSSTEMMELSESERKLÆRING**
(Direktiv 98/37 CE bilag II type A)
ROBOPAC s.a. erklærer at maskinen til håndværksmæssig og industrielt brug, som kan identificeres ved referencerne ved siden af, er i overensstemmelse med de væsentlige krav om sikkerhed og helbredsbeskyttelse som krævet af Direktiverne EF 98/37, EØF 73/23, EØF, 89/336 og deres følgende ændringer.

SV **“CE”-konformitetsförklaring**
(Direktiv 98/37 CE bilaga II typ A)
ROBOPAC s.a. förklarar att denna maskin som är avsedd för hantverk och industriellt bruk, samt kan identifieras av referensinformationen nedan, motsvarar de grundläggande säkerhets- och hälsokrav som uppställts i Direktiv 98/37 CE, 73/23 CEE, 89/336 CEE och senare ändringar.

FI **“CE” Vaatimustenmukaisuusvakuutus**
(Direktiivi 98/37 CE liite II tyyppi A)
ROBOPAC s.a. vakuuttaa, että teollisuus- ja pienteollisuuskäyttöön tarkoitettu laite, joka on tunnistettavissa alla olevista viitteistä, vastaa turvallisuudesta ja työterveyssuojelusta säädettyjä vaatimuksia annettujen Direktiivien 98/37 CE, 73/23 CEE, 89/336 CEE sekä niiden myöhempien muutosten mukaisesti.

NO **“CE” samsvarerklæring**
(Direktiv 98/37 CE vedlegg II type A)
ROBOPAC s.a. erklærer at maskinen for håndverks- og industriell bruk, kjennetegnet av referansene nedenfor, samsvarer grunnleggende sikkerhetskrav og sikring av helse som påkrevd i direktivene 98/37 CE, 73/23 CEE, 89/336 CEE og gjeldende endringer.

CS **PROHLÁŠENÍ O SHODNOSTI CE**
(Směrnice 98/37 CE příloha Typ A)
ROBOPAC s.a. prohlašuje, že stroj pro řemeslnické a průmyslové využití, identifikovatelný podle údajů uvedených v záhlaví, se shoduje se základními požadavky na bezpečnost a ochranu zdraví tak, jak je to požadováno ve směrnicích 98/37 CE, 73/23 CEE, 89/339 CEE a v jejich úpravách.

ET **"EÜ" vastavustunnistus**
(Direktiiv 98/37 EÜ lisa A tüüp)
POBOPAC a.s. deklareerib, et seade on tööstuslikuks ja käsitööndustikuks kasutamiseks, identifitseerimiseks vaata allpool ära toodude viiteid, ning vastab peamistele ohtuse ja tervisekaitse nõuetele nagu seda nõutud Direktiivis 98/37 EÜ, 73/23 EMÜ, 89/336 EMÜ ja järgnevates parandustes.

LV **"CE" atbilstības apliecinājums**
(Eiropas Savienības direktīvas 98/37 CE pielikums II tips A)
Uzņēmums ROBOPAC s.a. apliecina, ka amatnieciskai un rūpnieciskai izmantošanai paredzēta mašīna, kuras identifikācijas dati atrodas apakšējā daļā, atbilst vispārējām drošības un veselības aizsardzības prasībām, kuras ir aprakstītas ES direktīvās 98/37 CE, 73/23 CEE, 89/336 CEE un atbilstošajos grozījumos.

LT **" ES" atitikimo deklaracija**
(ES Direktyva 98/37 pridėtas II tipas A)
ROBOPAC s.a pareiškia, kad meistriniam ir industriniam naudojimui irengimas pripažintas atitinkantis būtinus saugumo ir sveikatos apsaugos reikalavimus kaip nurodyta direktyvose 98/37 CE, 73/23 CEE, 89/336 CEE su atitinkamais pasikeitimais.

HU **CE megfelelősségi nyilatkozat**
(98/37 számú CE utasítás, II melléklet, A típus)
A ROBOPAC s.a. kijelenti, hogy a kisipari és ipari használatra szolgáló, a lap alján lévő hivatkozások alapján azonosítható gép, megfelel az alapvető biztonsági és egészségvédelmi követelményeknek, amint azt a 98/37 számú CE, a 73/23 számú CEE, a 89/336 számú CEE utasítások és vonatkozó módosításaik előírják.

PL **Deklaracja "CE" zgodności**
(Dyrektywa 98/37 WE załącznik II typ A)
Robopac s.a. oświadcza, że urządzenie przeznaczone do użytku drobnej wytwórczości oraz na skalę przemysłową rozpoznawalne poprzez podane poniżej oznaczenia, jest zgodne z podstawowymi wymogami w zakresie zdrowia i ochrony bezpieczeństwa zgodnie z zaleceniami Dyrektyw 98/37 WE, 73/23 EWG, 89/336 EWG wraz z późniejszymi zmianami.

SK **ES vyhlásenie o zhode**
(Smernica 98/37 ES príloha II. typ A)
Akciová spoločnosť ROBOPAC s.a., identifikovateľná podľa vyššie uvedených údajov v záhlaví, prehlasuje, že strojné zariadenie určené pre remeselné a priemyselné použitie je v súlade so základnými bezpečnostnými predpismi a s požiadavkami na ochranu zdravia v zmysle ustanovení smerníc 98/37 ES, 73/23 EHS, 89/336 EHS .

SL **Izjava "CE " o ustrezanju**
(Smernica 98/37 CE, priloga II, tip A)
ROBOPAC s.a. izjavlja, da naprava, izdelana za uporabo v industrijskih postopkih, razpoznavna po navedenih oznakah, ustreza osnovnim pogojem za varnost pri delu in za varovanje zdravja, določenim v Smernicah 98/37 CE, 73/23 CEE, 89/336 CEE ter v dodatnih predpisih.

RO **Declarație "CE" de conformitate**
(Directiva 98/37 CE anexa tip A)
ROBOPAC s.a. declară că maşina pentru uz artizanal şi industrial, identificabilă de referințele din josul paginii, este în conformitate cu cerințele esențiale de siguranță şi de protecție a sănătății conform cerințelor din directivele 98/37 CE, 73/23 CEE, 89/336 CEE şi modificările lor aferente

BG **Декларация "ЕО" за съответствие**
(Директива 98/37/ЕО, приложение II, вид А)
РОБОПАК а.д. декларира, че машината за занаятчийска и индустриална употреба, подлежаща на идентификация чрез данните в долната част, съответства на основните условия за безопасност и здравеопазване, както се изисква от Директиви 98/37 ЕО, 73/23 ЕИО, 89/336 ЕИО и съответните промени.

Modello - Model - Modèle - Modell - Modelo
Modelo - αριθμόςσειράς - Model - Model - Modell
Modell - Malli - Model - Mudel - Modelis
Modelis - Modell - Model - Model - Model - Model - Модел

Matricola - Serial number - Matricule - Seriennummer - Matrícula
Número de série - Μοντέλο - Serienummer - Serienummer - Serienr
Serienummer - Sarjanumero - Výrobní číslo - Registreerimistunnistus
Nomenklatūras numurs - Registracijos numeris - Gépszám
Numer fabryczny - Výrobné číslo - Matična številka
Număr serie - Сериен номер

Paolo Pecchenini
(Research & Development Manager)

Repubblica San Marino .....

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(GB) Warranty conditions

Robopac S.A. pledges, within the limits described herein, to replace or repair, at no charge, the parts that become defective during the 12 (twelve) months following the date indicated on the company's shipping documents.

To utilise the warranty, the user must immediately notify the company that a defect exists, always referring to the machine serial number.

Robopac S.A., in its final judgement, will decide whether to replace the defective part or request it to be shipped for tests and/or repairs.

By replacing or repairing the defective part, Robopac S.A. fully complies with its warranty obligations and will be released from all liabilities and obligations relative to transport, travel and hotel expenses for technicians and installers.

Robopac S.A. will never be held responsible for any losses due to lack of production or injuries to persons or damage to things caused by malfunctions or forced suspension in using the machine covered by the warranty.

The warranty does not cover
- damage caused by transport;
- damage due to incorrect installation;
- improper use of the machine or negligence;
- tampering or repairs by unauthorised personnel;
- lack of maintenance;
- parts subject to normal wear and tear.

For purchased components and parts, Robopac S.A. offers the user the same warranty conditions that the company obtains from the suppliers of the aforementioned components and/or parts.

Robopac S.A. does not guarantee the conformity of machines to current standards in countries that are not part of the European Union.

Concerning any adjustments to standards of the country in which the machine is installed relative, the user will be fully responsible for the changes made, releasing Robopac S.A. from any obligation and/or liability relative to any claims that may be submitted by third parties due to non-compliance with the referenced standards.

IT ITALIANO

La realizzazione di questo manuale intende essere una guida pratica per l'utilizzo corretto e sicuro della macchina nonché per una sua razionale manutenzione.
La rete di distribuzione ROBOPAC è, da questo momento, al vostro servizio per qualunque problema di assistenza tecnica, parti di ricambio e per qualunque nuova esigenza che possa far sviluppare la vostra attività.
Ogni osservazione sul presente libretto è un contributo importante per il miglioramento dei servizi che la ROBOPAC intende offrire ai propri clienti.

EN ENGLISH

The purpose of this publication is to give practical guidance concerning the maintenance and the correct use of the machine.
ROBOPAC distribution network is at Your service for any problem regarding technical assistance, spare parts and any new requirement fit for Your business.
Any remark you would like to make on our guidance is of great interest to us, in order to improve services that ROBOPAC usually offers to its own Customers.

FR FRANÇAIS

Avec ce livret nous voulons Vous donner tous les renseignements nécessaires pour l'entretien et l'emploi correct de la machine.
Dès ce moment le réseau de distribution de ROBOPAC est à Votre service pour tout problème concernant l'assistance technique, les pièces de rechange et toutes les exigences qui puissent aider au développement de Votre activité.
Vos observations à propos de ce livret seront les bienvenues, car elles pourront nous aider à améliorer les services que ROBOPAC peut offrir à ses Clients.

DE DEUTSCH

Das vorliegende Handbuch soll Ihnen alle für die Wartung und den richtigen Gebrauch der Maschine erforderlichen Informationen liefern.
Das Vertriebsnetz von ROBOPAC steht Ihnen bei Problemen technischer Natur, für die Lieferung von Ersatzteilen und für jede neue Anforderung, die sich im Laufe Ihrer Tätigkeit ergeben kann, zur Verfügung.
Jede Bemerkung von Ihnen zum vorliegenden Handbuch betrachten wir als einen bedeutenden Beitrag zur Verbesserung des Services, den ROBOPAC seinen Kunden bieten kann.

ES ESPAÑOL

Con éste libro deseamos dar todas las informaciones necesarias para la manutención y el uso correcto de la máquina.
La red de distribución ROBOPAC está desde este momento a Vuestro servicio para cualquier problema de asistencia técnica, partes de recambio y cualquier nueva exigencia que pueda ser útil a Vuestra actividad.
Cada observación que efectueis en el presente libro será una contribucion importante para mejorar los servicios que ROBOPAC puede ofrecer a sus Clientes.

PT PORTUGUÊS

A finalidade deste manual é a de ser um guia prático para a utilização correcta e segura da máquina, assim como para a sua manutenção racional.
A rede de distribuição ROBOPAC está, a partir deste momento, à sua completa disposição para qualquer problema de assistência técnica, peças sobressalentes e para qualquer nova exigência que possa se tornar necessária durante a sua actividade.
Qualquer observação a respeito deste manual representa uma contribuição importante para o melhoramento dos serviços que a ROBOPAC deseja oferecer aos próprios clientes.

EL ΕΛΛΗΝΙΚΑ

Ο σκοπός του παρόντος εγχειρίδιου είναι να δώσει πρακτικές οδηγίες για τη σωστή και ασφαλή χρήση του μηχανήματος καθώς και για τη συντήρησή του.
Το δίκτυο διανομής της ROBOPAC είναι, από αυτή τη στιγμή, στη διάθεσή σας για οποιοδήποτε πρόβλημα τεχνικής βοήθειας και ανταλλακτικών και για οποιαδήποτε νέα απαίτηση που μπορεί να είναι κατάλληλη για την επιχείρησή σας.
Κάθε παρατήρηση σχετικά με το παρόν εγχειρίδιο είναι μια συμβολή για τη βελτίωση των υπηρεσιών που η ROBOPAC έχει σκοπό να προσφέρει στους πελάτες της.

NL NEDERLANDS

De voor U liggende handleiding is bedoeld als een praktische gids voor het correcte en veilige gebruik van de machine, alsook voor een verstandig onderhoud ervan.
Het distributienet van ROBOPAC is U vanaf dit moment van dienst voor elk probleem met betrekking tot technische hulp, reserve-onderdelen en voor elke nieuwe wens die kan ontstaan uit de ontwikkeling van Uw activiteit.
Alle opmerkingen omtrent dit boekje vormen een belangrijke bijdrage voor verbetering van de service die ROBOPAC aan zijn klanten wenst te bieden.

DA DANSK

Formålet med denne manual er at forsyne brugeren med alle de oplysninger, der er nødvendige for at kunne bruge og vedligeholde maskinen korrekt.
ROBOPACs forhandlere står altid til rådighed med hjælp og vejledning, reservedele og oplysninger om de sidste nyheder.
Da vi altid er interesserede i at forbedre vores service, er enhver kommentar til denne manual velkommen.

SV SVENSKA

Avsikten med denna handbok är att utgöra en praktisk handledning för korrekt och säker drift av maskinen, samt att ge erforderlig informationer för ett korrekt underhåll.
ROBOPACs försäljningsorganisation står till förfogande för teknisk service, reservdelar samt övriga önskemål och behov som kan uppstå i Er verksamhet.
Vi är tacksamma för varje eventuell anmärkning på innehållet i denna handbok som kan hjälpa oss att förbättra vår service till våra kunder.

FI SUOMI

Tämän käsikirjan tarkoituksena on antaa käytännön ohjeita koneen huoltoa sekä oikeaa ja turvallista käyttöä varten.
ROBOPACin jakeluverkosto on Sinun palveluksessasi mitä tahansa teknistä apua tarvitessasi, varaosia tilatessasi tai muuta uutta yhtiösi toimintaa koskevaa vaatimusta varten.
Jokainen tätä kirjasta koskeva huomiosi on meille suureksi hyödyksi pystyäksemme parantamaan ROBOPAC in omille asiakkailleen tarjoamia palveluja.

NO NORSK

Hensikten med denne manualen er å gi den nødvendige informasjon om riktig bruk og vedlikehold av maskinen.
ROBOPACs forhandlere står til disposisjon med praktisk hjelp og veiledning, levering av reservedeler eller opplysninger om våre nye produkter.
Vi er takknemlige for kommentarer til boken, slik at vi kan yte en stadig bedre service overfor våre kunder.

CS CZECH

Tento návod k použití má být praktickým průvodcem při správném a bezpečném používání stroje a při jeho údržbě.
Distribuční síť ROBOPAC je od této chvíle k Vaší dispozici ohledně každého problému technické asistence, náhradních dílů a jakéhokoliv nového požadavku, který pomáhá k rozvoji Vaší aktivity.
Každý postřeh k tomuto návodu je důležitým příspěvkem ke zlepšení služeb, které ROBOPAC nabízí svým klientům.

ET EESTI KEEL

Selle käsiraamatu eesmärgiks on osutada praktilist abi seadme õigeks ja ohutuks kasutamiseks ning hooldamiseks.
ROBOPAC'i jaotusvõrk on nüüdsest teie käsutuses küsimustes, mis puudutavad tehnilist külge, varuosi ja igat uut ettevõtte arengule kasulikku nõuet.
Iga teie poolne tähelepanek käesoleva juhendi kohta on teretulnud ja abiks ROBOPAC'i poolt oma klientidele pakutavate teenuste paremaks muutmisel.

LV LATVIEŠU

Šīs rokasgrāmatas mērķis ir sniegt praktiskos norādījumus par mašīnas pareizo tehnisko apkalpošanu un lietošanu.
Jūsu rīcībā ir firmas ROBOPAC izplātītāju tīkls, kuru Jūs varēsiet izmantot, lai saņemtu nepieciešamu tehnisko palīdzību, rezerves daļas vai apmierinātu Jūsu biznesa attīstības jaunas vajadzības.
Visas piezīmes par šo rokasgrāmatu mums ir ļoti svarīgas, lai mēs varētu uzlabot pakalpojumus, kurus firma ROBOPAC parasti sniedz saviem klientiem.

LT LIETUVIŲ

Šio leidinio tikslas yra supažindinti vartotoją su tinkamu ir saugiu įrengimo naudojimu bei jo technine priežiūra.
ROBOPAC distribucijos tinklas nuo šiol jūsų paslaugoms dėl bet kokių techninio aptarnavimo problemų, pekeitimo dalių, bei bet kokių pageidavimų galinčių padėti jūsų veiklai.
Visos pastabos šiam leidiniui yra svarbios bendradarbiavimui gerinant ROBOPAC teikimo paslaugas savo klientams.

HU MAGYAR

Jelen kézikönyv összeállításának célja, hogy gyakorlati útmutató legyen a gép pontos és biztonságos használatához, valamint racionális karbantartásához.
A ROBOPAC forgalmazói hálózata ettől a pillanattól kezdve rendelkezésére áll bármilyen műszaki jellegű probléma, alkatrészek és bármely más felmerülő igény esetén, amely tevékenységének fejlesztését eredményezheti.
Bármely, a jelen gépkönyvvel kapcsolatos észrevétel jelentősen hozzájárul azoknak a szolgáltatásoknak a javításához, melyet a ROBOPAC saját ügyfeleinek igyekszik nyújtani.

PL POLSKI

Celem niniejszego podręcznika jest dostarczenie praktycznych informacji, dotyczących prawidłowego oraz bezpiecznego korzystania z urządzenia, jak również jego właściwej konserwacji .
Od tej chwili sieć dystrybucji ROBOPAC jest do Państwa dyspozycji, w przypadku zaistnienia jakichkolwiek problemów związanych z serwisem technicznym, częściami zamiennymi oraz wszelkimi innymi potrzebami czy też pytaniami, mogącymi wyniknąć w trakcie prowadzonej przez Państwa działalności.
Wszelkie uwagi dotyczące niniejszego podręcznika przyczynią się do podniesienia jakości usług, jakie ROBOPAC pragnie świadczyć na rzecz swoich klientów.

SK SLOVENSKY

Táto príručka bola spracovaná za tým účelom, aby Vám slúžila ako praktický sprievodca na správne a bezpečné používanie strojného zariadenia, ako aj na jeho racionálnu údržbu.
Distribučná sieť spoločnosti ROBOPAC je odteraz k Vašim službám pre akýkoľvek problém, čo sa týka technického servisu, náhradných dielov a pre akúkoľvek inovačnú požiadavku, ktorá môže pomôcť zlepšiť Vašu činnosť.
Každá pripomienka k predloženej príručke je pre nás dôležitým príspevkom na zlepšenie služieb, ktoré spoločnosť ROBOPAC bežne ponúka svojim zákazníkom.

SL SLOVENSKO

Namen tega priročnika je posredovati praktične nasvete za pravilno in varno uporabo stroja ter za smotrno načrtovanje vzdrževalnih del na njem.
Distribucijska mreža proizvajalca ROBOPAC Vam je v vsakem trenutku na razpolago pri tehnični podpori, nadomestnih delih, ter pri vseh novih rešitvah, ki lahko dodatno pripomorejo k izboljšanju postopkov v Vaši dejavnosti.
Vsaka pripomba bo dobrodošla, saj je pomembna za razvijanje in izboljšave storitev, ki jih želi proizvajalec ROBOPAC nuditi svojim strankam.

RO ROMÂNA

Realizarea acestui manual intenționează să fie un ghid practic pentru utilizarea corectă şi sigură a maşinii dar şi pentru efectuarea raţională a operaţiunilor de întreţinere.
Reţeaua de distribuţie ROBOPAC este, din acest moment, la dispoziţia Dvs. pentru orice problemă legată de asistenţa tehnică, piese de schimb şi pentru orice nouă cerinţă care v-ar putea favoriza dezvoltarea activităţii dvs.
Orice observaţie din prezentul manual este o contribuţie importantă pentru îmbunătăţirea serviciilor pe care ROBOPAC intenționează să le ofere propriilor clienți.

BG Български

Това упътване има за цел да бъде практически водач заз правилното и безопасно използване на машината, както и за рационалната й поддръжка.
От този момент мрежата за разпростанение РОБОПАК е на ваше разположение за всякакви проблеми по техническото обслужване, резервните части и за всяка нововъзникнала необходимост, която може да допринесе за развитието на вашата дейност.
Всяка забележка по настоящата книжка е важен принос за подобряване на обслужването, което РОБОПАК смята да предложи на своите клиенти.

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Tlx. 393 ROBOPAC SO
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ENCLOSURES

Chapter 1
GENERAL INFORMATION

1.1. AIM OF THE MANUAL

This manual is an integral part of the machine and has been produced by the manufacturer in order to furnish necessary information to those that are authorised to interact with it.

In addition to adopting good use techniques, the recipients must carefully read and strictly apply this information.

This information has been produced by the manufacturer in his own original language (Italian) and can be translated into other languages to satisfy legal and/or commercial requirements.

Time dedicated to reading this information will avoid personal safety and health risks and economic damages.

In the event that supplementary information to the actual machine set up is found in this manual it will not interfere with reading.

Keep this manual for the full machine life in a known and easily accessible place in order to have it ready available in the event consultation is required.

The manufacturer reserves the right to carry out modifications without obligation of prior notice.

To better stress the importance of some passages or to indicate important specifications, symbols, whose meanings are described as follows, have been adopted.

Danger - Warning

Indicates critically dangerous situations that if neglected can result in serious personal safety and health hazards.

Caution - Precaution

Indicates that suitable actions must be employed in order to avoid personal safety and health hazards and economic damages.

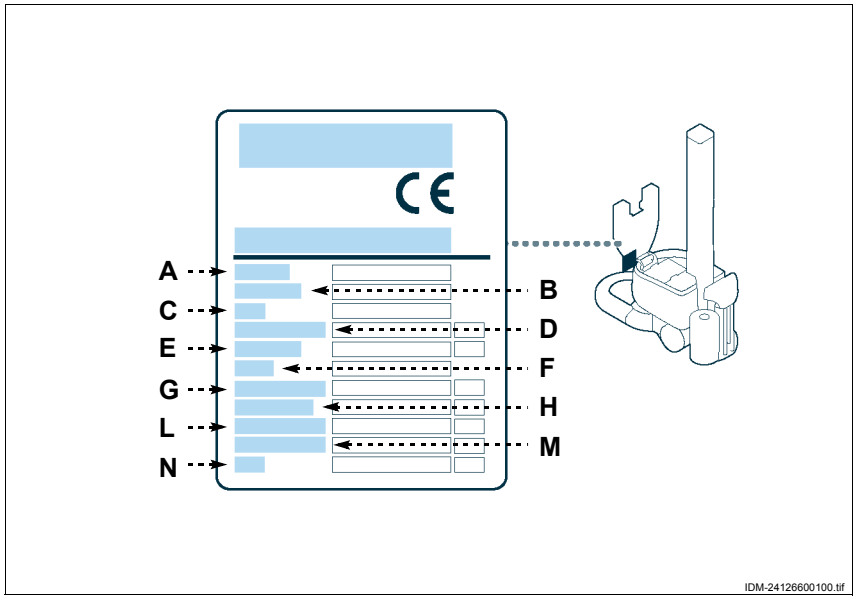
Information

Indicates particularly important technical information that should not be neglected.

1.2. MANUFACTURER AND MACHINE IDENTIFICATION

The illustrated identification plate is applied directly on the machine. It contains references and indispensable operating safety indications.

A) Model.
B) Serial number.
C) Manufacturing date.
D) Mains voltage.
E) Mains frequency.
F) Number of phases.
G) Absorption.
H) Total installed power.
L) Air consumption.
M) Maximum pressure.
N) Weight.
P) Manufacturer and address.



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1.3. ATTACHED DOCUMENTATION

The indicated documentation is given to the customer along with this manual.

– Wiring diagram and list of components
– Spare parts catalogue
– Manuals of installed commercial devices (if necessary for machine use)

1.4. MODES OF REQUESTING FOR ASSISTANCE

Please refer to authorised service centres for any need.

For every technical service request regarding the machine, please indicate the data found on the identification plate, the approximate hours of use and the type of fault detected.

1.5. GLOSSARY AND TERMINOLOGY

Some recurring terms found within the manual are described in order to provide a more complete image of their meanings.

Ordinary maintenance: group of functions necessary to maintain suitable machine operations and efficiency. Normally the manufacturer, who defines the necessary skills and intervention procedures, plans these operations.

Extraordinary maintenance: group of operations necessary to maintain suitable machine functions and efficiency. These operations are not planned by the manufacturer and must be carried out by the maintenance technician.

Expert operator: person selected among those having the necessary requirements, skills and information for the ordinary maintenance of the machine.

Maintenance technician: a person authorized and chosen among those who have the requirements, skills and information necessary to perform ordinary and extraordinary machine maintenance. He is expected, therefore, to possess precise information and skills with particular expertise in the field of intervention.

2.1. MACHINE GENERAL DESCRIPTION

This robot, hereinafter referred to as "machine", is a self-propelled winding machine designed and manufactured to wind and stabilise palletised loads of whatever shape, dimensions and weight with stretch film in different ways. For the different winding modes see § 2.3.

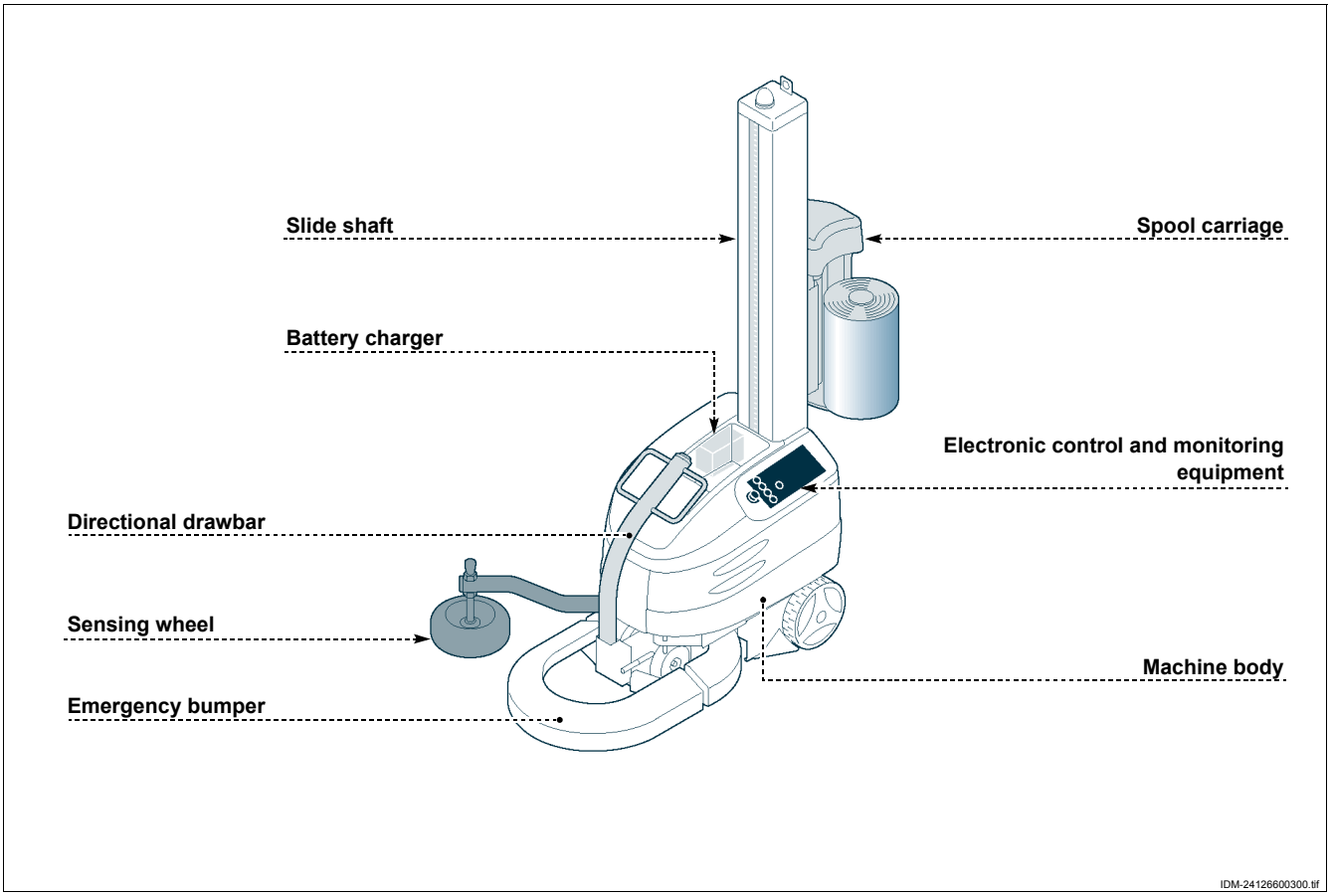
The machine is normally installed in industrial, artisan and commercial environments. Use of this machine in explosive environments or when exposed to the elements is strictly forbidden.

The machine is to be run by only one operator, who can be helped by another colleague, if necessary.

In order to meet a plurality of working requirements, the machine can be provided with various pieces of equipment, as follows.

Spool carriage models

- **PFS-type spool carriage**; with driven pre-stretch rollers and electronic film tensioning. Both pre-stretch and tensioning are to be adjusted either from the control panel or using the remote control (optional).
- **FS-type spool carriage**; with mechanical pre-stretch rollers adjustable either from the control panel or using the remote control (optional).
- **FR-type spool carriage**; with friction roller, electromagnetic brake and pre-stretch film adjustment either from the control panel or using the remote control (optional).
- **"FRD" type reel carriage**: with friction roller, mechanical brake and manual film stretch adjustment.



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2.2. ACCESSOIRES (OPTIONAL)

The following accessories, which are intended to enhance the machine performance and versatility, are available from the Manufacturer.

– **Automatic cutting device**: it cuts the film automatically at the cycle end
– **Side guide masts (increased)**: permit wrapping heights up to 2400, 2800 mm and 3000 mm.
– **Double sensing arm**: suitable for wrapping pallets in cases where the product sticks out from the edge of the pallet unevenly.
– **Sensing arm with a larger wheel (ø390 mm)**: suitable for wrapping pallets whose product is not compact.
– **Remote control**: to adjust a number of parameters while the machine is running.
– **Film breakage sensor**: detects broken film and empty reel.
– **Non-stain wheels**: wheels made of a material that reduces stain formation on the floor.
– **Reel holding carriage "FRD for net"**: carriage for winding the pallet with a net film.

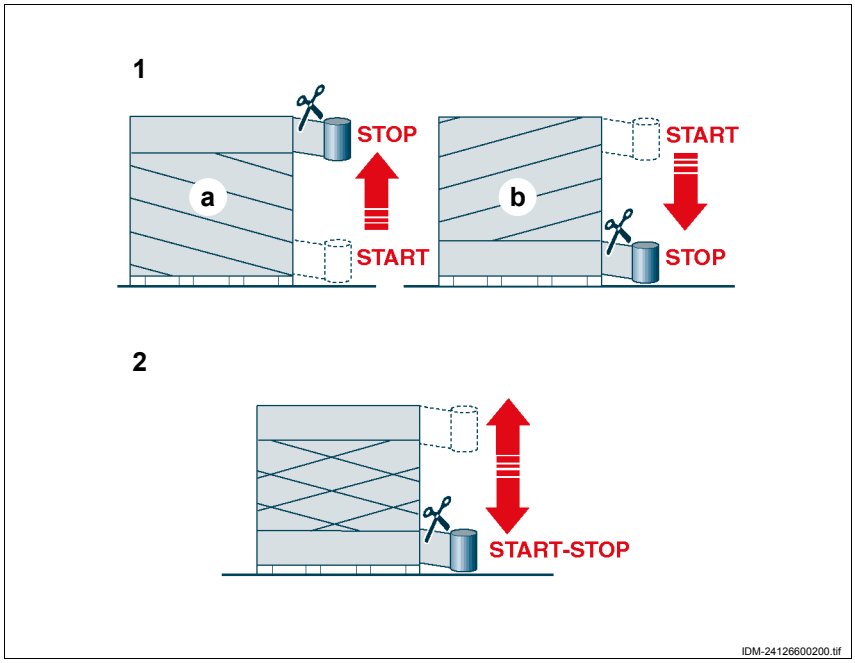
2.3. MODES OF WRAPPING

The wrapping can occur in the following modes.

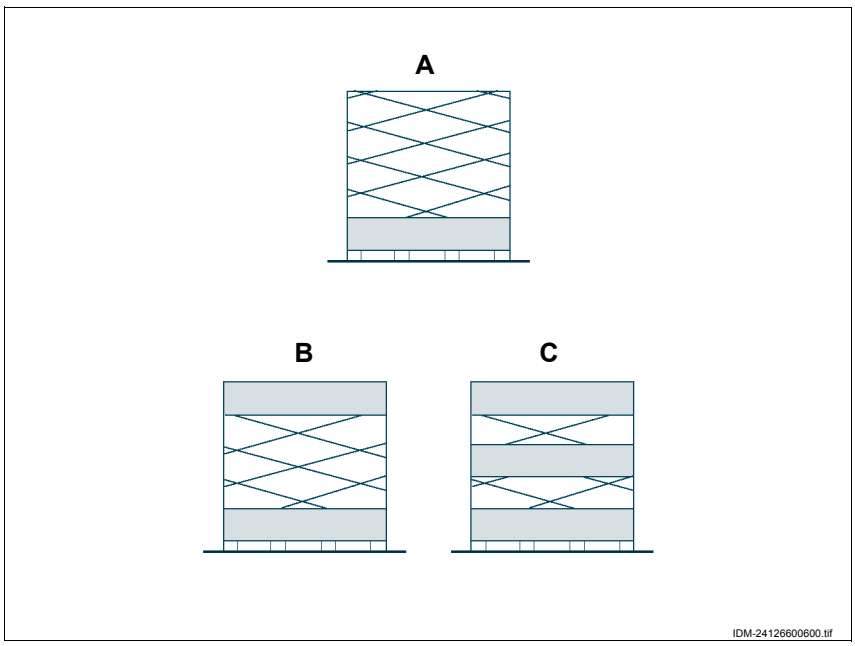
1) "Upward wrap" on a pallet **(a)** and "downward wrap" on the next pallet **(b)**.
2) "Upward and downward wrap"; it is performed on the same pallet to achieve proper balance.
The "wrap pitch" depends on the spool carriage speed.

Wrapping is generally characterised by a number of horizontal wraps from the base to the upper end of the pallet.

Wrapping types are defined by the quantity of wraps set by the operator on the control panel.



The illustration displays the wrapping types.
A) Single wrap
B) Double wrap.
The machine can also perform an intermediate reinforcement (C) wrap equal to the lower wrap. To perform this wrap, the operator must set the height from the ground level on the control panel.

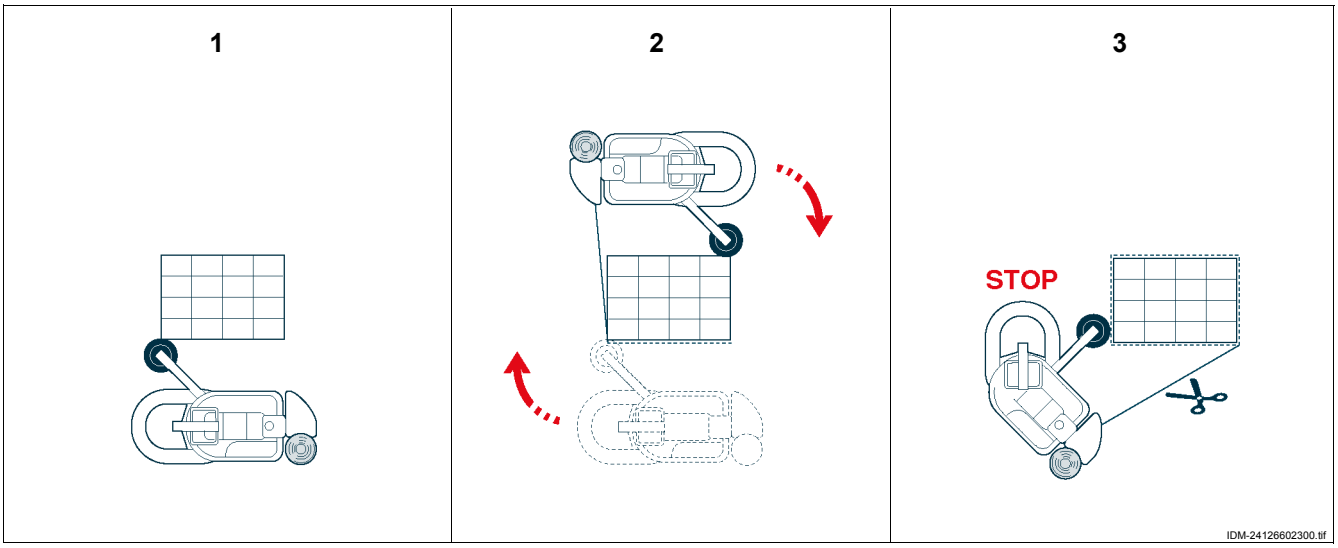


2.4. WORKING CYCLE

Step 1 - The machine is moved toward the load manually, so that the sensing arm wheel comes in contact with the pallet.

Step 2 - Upon starting the cycle, the machine rotates around the load clockwise, while the spool carriage unwraps the film according to the pre-set parameters.

Phase 3 - once the wrapping has been completed, the machine manually cuts the film and stops.



2.5. SAFETY DEVICES

The figure shows the positioning of the devices on board of the machine.

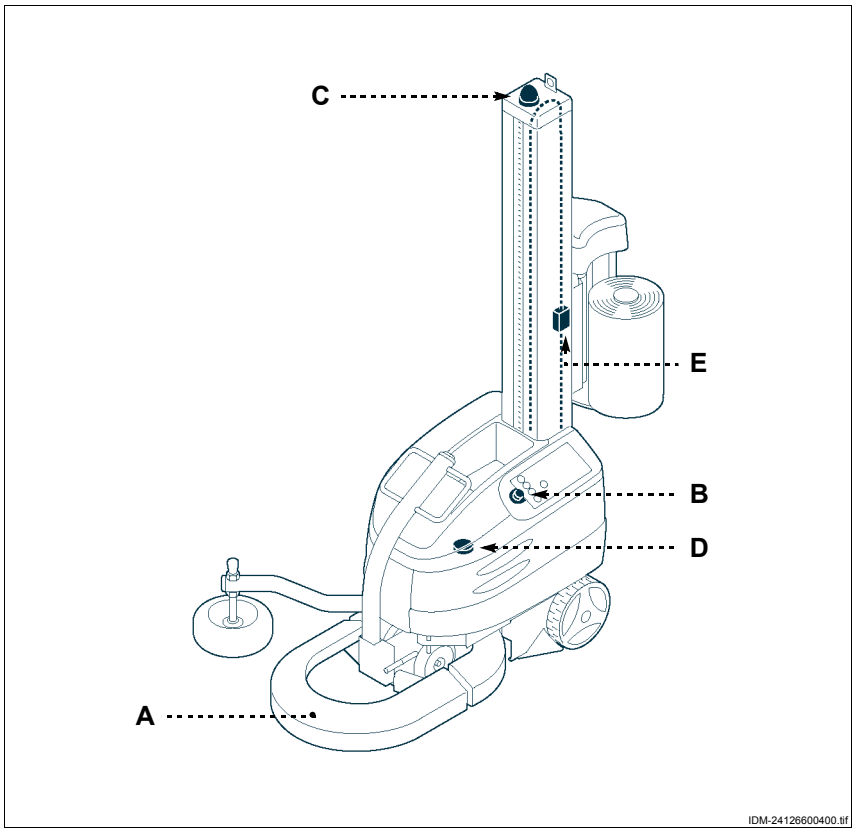
A) Emergency bumper: equipped with safety micro-switches to stop the machine automatically in the event that it is accidentally hit.

B) Emergency stop button: if activated, all machine parts stop immediately. After resetting the operating conditions, release the button with a voluntary action in order to enable the machine operation.

C) Blinking light (orange): signals that the machine is moving.

D) Acoustic signal: signals the start of the wrapping cycle.

E) Mechanical device for blocking the reel carriage: it stops the reel carriage falling in the event that the lifting rope breaks.

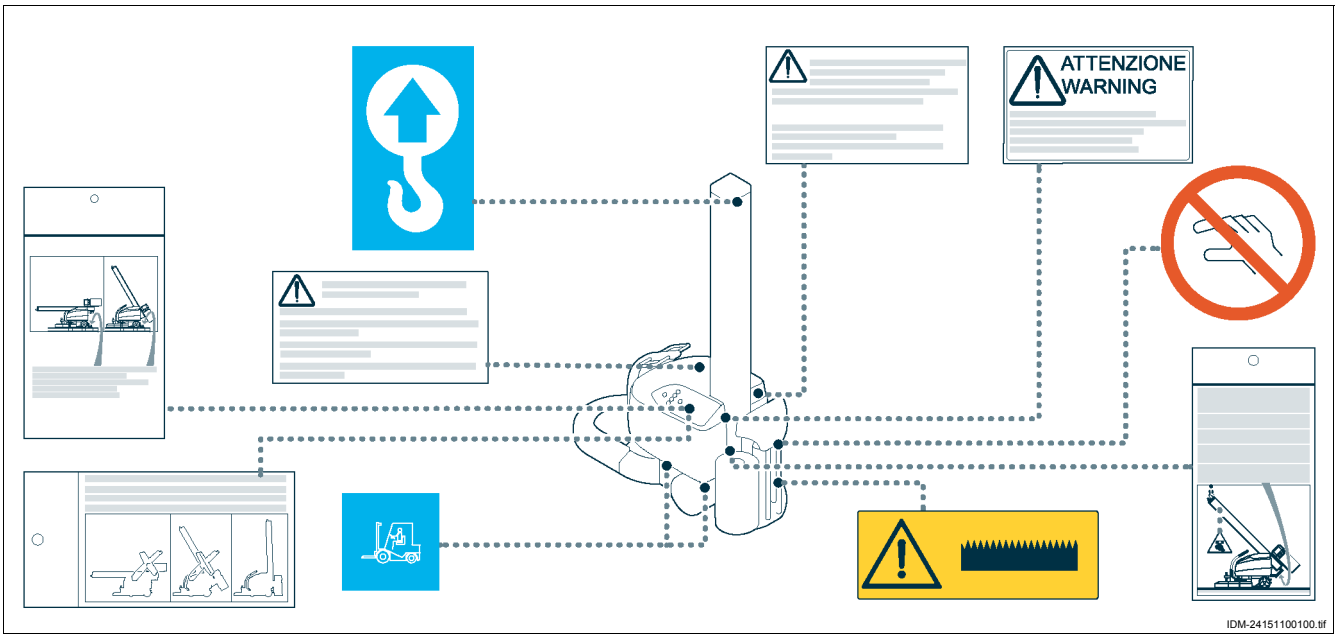


2.6. SIGNAL POSITION

The figure shows the position of the safety plates. Their meaning is described in paragraph 3.6.

Information

Check that the plates are clearly readable, and, if necessary, replace them with new ones that shall be positioned in the same places as previously.



2.7. DESCRIPTION OF THE ELECTRICAL DEVICES

The figure shows the positioning of the devices on board of the machine.

A) Photocell: detects the presence and the height of the load to be wrapped.

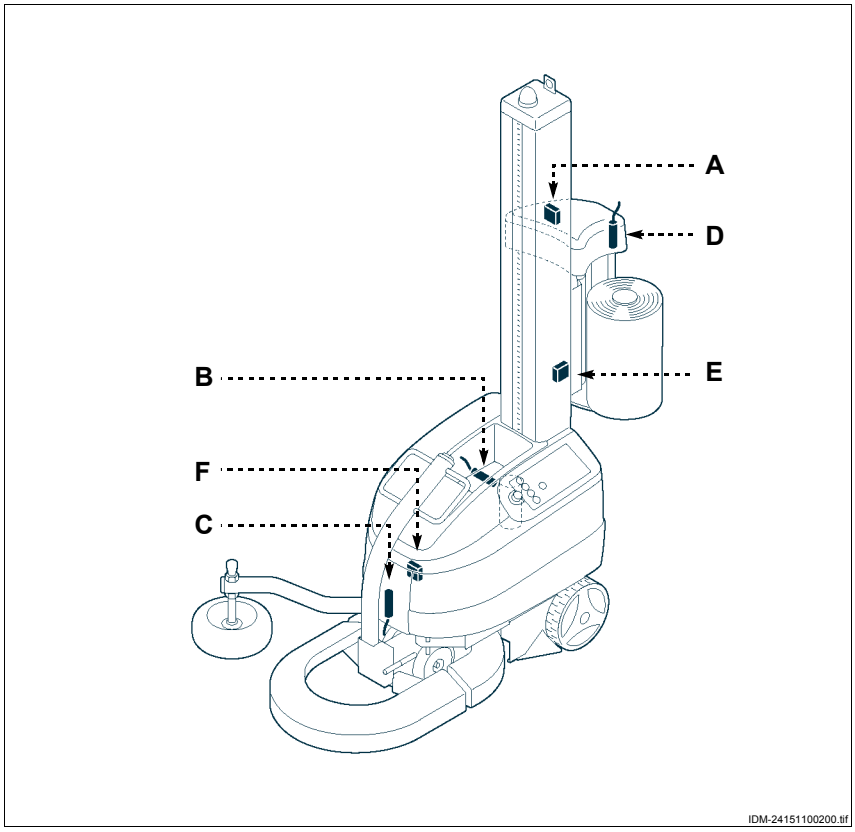
B) Sensor: detects the height of the spool carriage.

C) Inductive sensor: detects the number of rotations made around the pallet.

D) Film breakage sensor: detects broken film and empty reel.

E) Carriage limit stop microswitch: activates when the reel carriage reaches the minimum and maximum wrapping height.

F) Case microswitch: activates when the case opens and prevents the machine from starting.



2.8. TECHNICAL SPECIFICATIONS

Machine

2 lead-acid batteries for electric traction 12V 110 Ah (capacity referred to 5 h discharge)

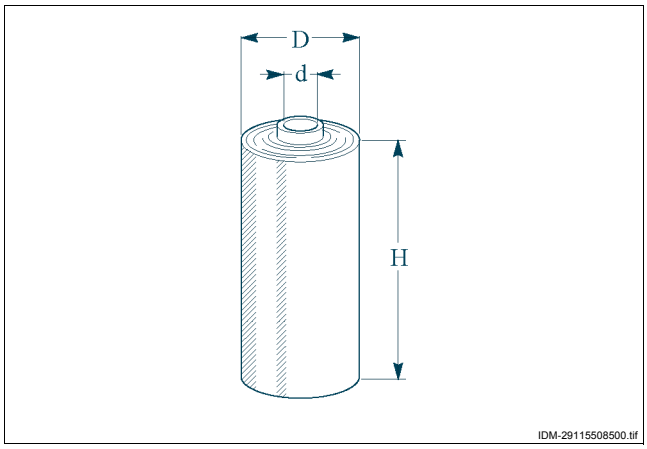
Infeed speed ..... 38/80 m/min
Carriage up/down speed ..... 1,6/6 m/min
Total weigh (STD) ..... ~350Kg

Battery charger

Voltage ..... 230V+/- 10% (1ph)
Electrical frequency ..... 50/60 Hz
Installed power ..... 0.6 Kw
Absorbed current ..... 3.2 A

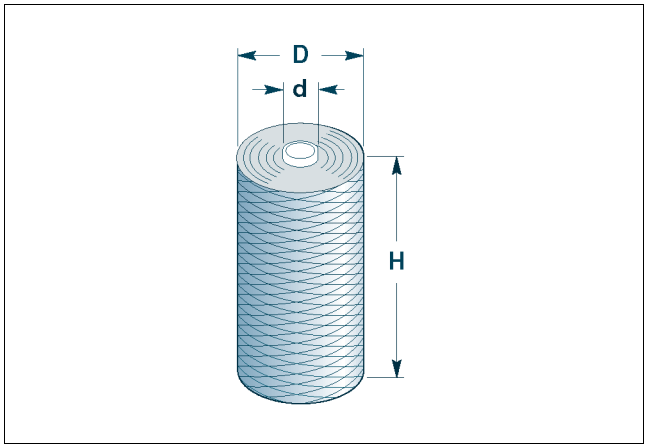
Film spool dimensions

D) External diameter ..... max 300 mm
d) Internal diameter ..... ø 76 mm
Reel height ..... 500 mm
Max. weight ..... 20 Kg
Film thickness ..... 17÷35 micron



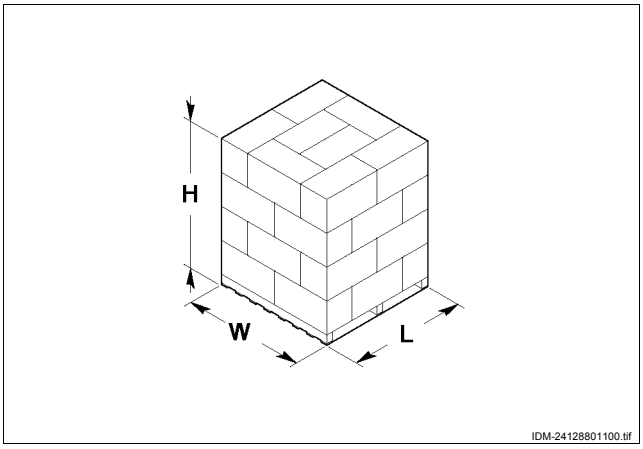
Net spool dimensions

D) External diameter ..... max 300 mm
d) Internal diameter ..... ø76 mm
H) Reel height ..... 500 mm
Max. weight ..... 20 Kg



Pallet dimensions

H) Max working height ..... 2200 mm
with optional mast ..... 2400 mm
with optional mast ..... 2800 mm
with optional mast ..... 3000 mm
h) Min. working height ..... 400 mm
LxW) Pallet min. size ..... 800x800 mm
Min. pallet weight ..... 250 Kg

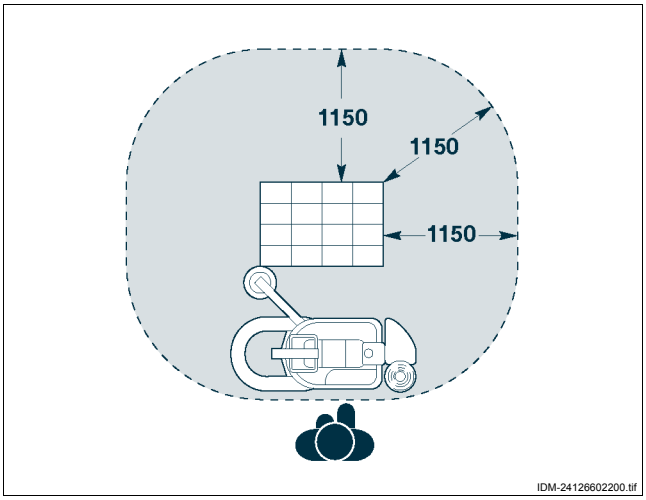


Surrounding areas

The figure shows the max overall dimensions and the operative areas.

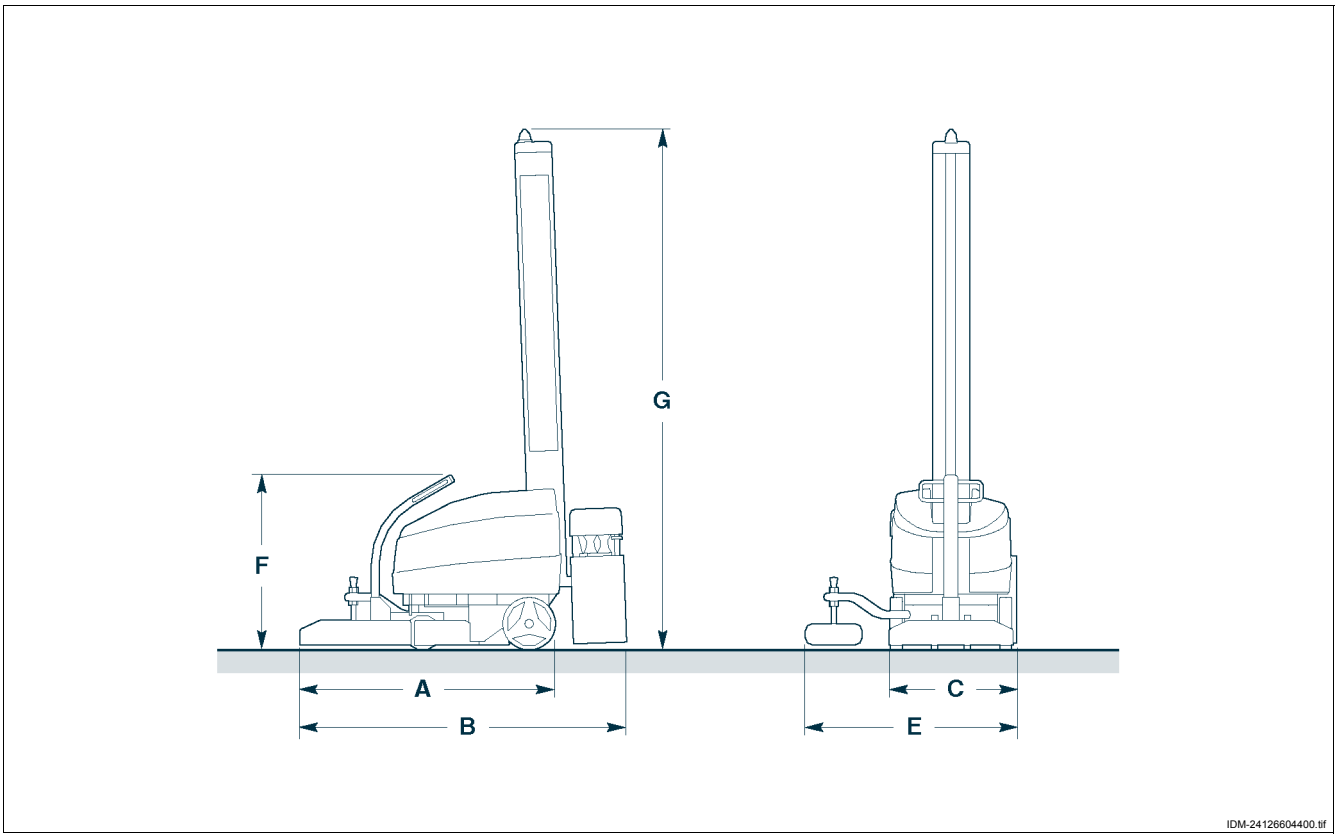
Danger - Warning

Check that no one is within the machine operation range.



Machine dimensions

Machine length **(A)**.....1492 mm
Total length of the machine **(B)**.....1842 mm
Machine width **(C)**.....720 mm
Total width of the machine **(E)**.....1192 mm
Machine body height **(F)**.....992 mm
Standard total height **(G)**..... 2742 mm
Total optional height 2400 **(G)**..... 2942 mm
Total optional height 2800 **(G)**..... 3342 mm
Total optional height 3000 **(G)**..... 3542 mm



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2.9. NOISE LEVEL

When working the machine features the noise levels shown in the figure.

	Lm	*Lw*
	dB (A)	*dB (A)*
Functioning in working conditions	63.2	83.2

Lm - Average pressure level on the surface regarding free field conditions.

Lw - Emitted noise level.

Margin of error associated with the method of measuring noise level is 3 dB.

The values were taken when wrapping a box with dimensions 800x1200 mm with a height of 1340 mm, at a carriage speed of 60 m/1' and upward-downward roller speed of 3 m/1' and 500 mm wide film wrapped on a ø 300 mm roller.

This measurement is carried out according to the following standards: ISO 3746:1995 (E).

Chapter 3
SAFETY INFORMATION

3.1. GENERAL NORMS

During design and construction, the manufacturer has carefully considered the possible hazards and personal risks that may result from interaction with the machine. In addition to observing the specific laws in force, the manufacturer has adopted all "exemplary construction technique principles". The purpose of this information is to advise the users to use extreme caution to avoid risks. However, discretion is invaluable. Safety is also in the hands of all the operators who interact with the machine.

Carefully read the instructions published in the supplied manual and found directly on the machine while strictly observing those concerning safety. Time dedicated to reading will prevent unfortunate accidents; remembering what one was supposed to do when the damage is already done is always too late.

Pay attention to the meanings of the symbols on the applied stickers; their shape and colour are significant to safety ends. Keep them legible and observe the indicated information. Never tamper, dodge, eliminate or by-pass the safety devices installed on the machine. Neglect to respect this requirement may cause serious risk to personal safety and health.

Personnel who are to perform any type of work on the machine during its lifetime must possess specific technical skills, abilities and have acquired certified experience in the specific field. Neglect to observe these requirements may prove hazardous to personal safety and health.

3.2. HANDLING AND INSTALLATION NORMS

Accomplish lifting and handling respecting the information supplied by the manufacturer directly indicated on the packing, on the machine and in the operating instructions.

Personnel who load, unload and transport the machine must possess skills and acquired certified experience in the specific field and have command of the lifting vehicles utilised.

The machine must be lifted and moved using transportation vehicles with suitable load capacities, securing the machine in the points foreseen by the manufacturer. Personnel who are authorised to perform these operations must possess specific skills and experience, to safeguard themselves and others involved.

Before loading the machine on transportation vehicles, make sure the machine and its components are well centred and that the proportions do not exceed the foreseen maximum dimensions. If necessary, arrange appropriate signals.

3.3. OPERATION AND USE NORMS

In addition to being competent on machine use the operator must possess the skills and acquired proficiency suited to the type of work to be accomplished.

Even after having been adequately trained on machine use, perform trial manoeuvres to familiarise the operator with machine controls and functions, start up and arrest in particular, on first use if necessary.

Only use the machine for the purposes specified by the manufacturer. Use of the machine for other purposes may be hazardous to personal safety and health and provoke economic loss.

The machine is designed and constructed to satisfy all the operating conditions indicated by the manufacturer. Tampering with any device to achieve services other than those may be hazardous to personal safety and health and provoke economic loss.

Do not use the machine if the safety devices are not correctly installed and efficient. Neglect to observe this requirement may be hazardous to personal safety and health. Do not use the machine on uneven or slanted floors.

3.4. ADJUSTMENTS AND MAINTENANCE NORMS

Keep the machine in maximum working conditions and perform the programmed maintenance operations advised by the manufacturer. Good maintenance achieves the best machine performance, longer machine life and constant observance of the safety regulations.

Maintenance and adjustments should be performed by authorised personnel who must establish all the necessary safety conditions according to the indicated procedures.

All maintenance procedures that require precise technical competence or specific skills must be exclusively performed by qualified personnel with acquired certified experience in the specific field.

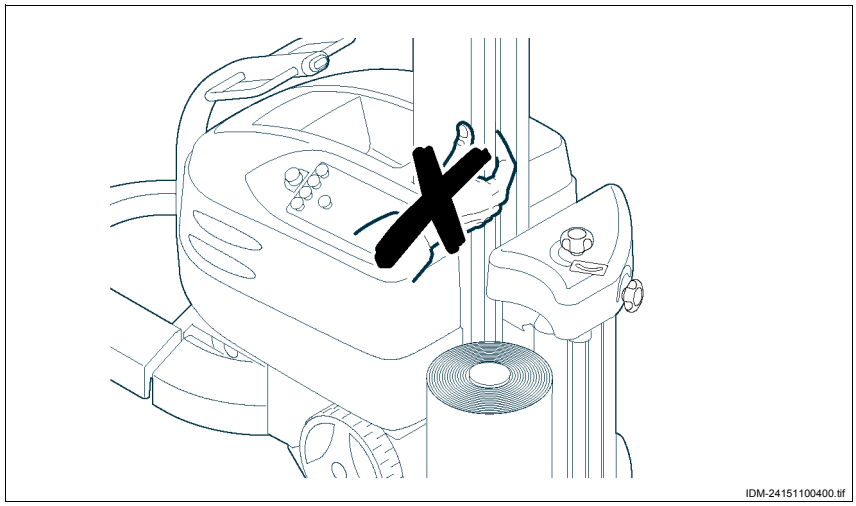
Replace worn out components with original spare parts. Use oils and greases suggested by the manufacturer. All this can ensure plant functionality and foreseen safety level. Do not litter the environment with polluting material; perform disposal according to the pertinent laws in force.

3.5. RESIDUAL RISKS

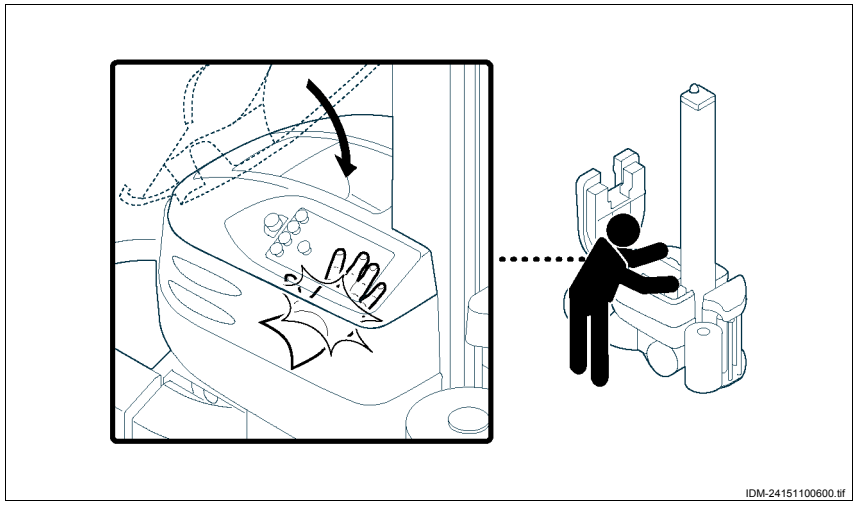
During design and construction the manufacturer has paid special attention to the aspects that may cause personal health and safety hazards for personnel who interact with the machine.

Nonetheless, some unobvious potential risks persist and are described below.

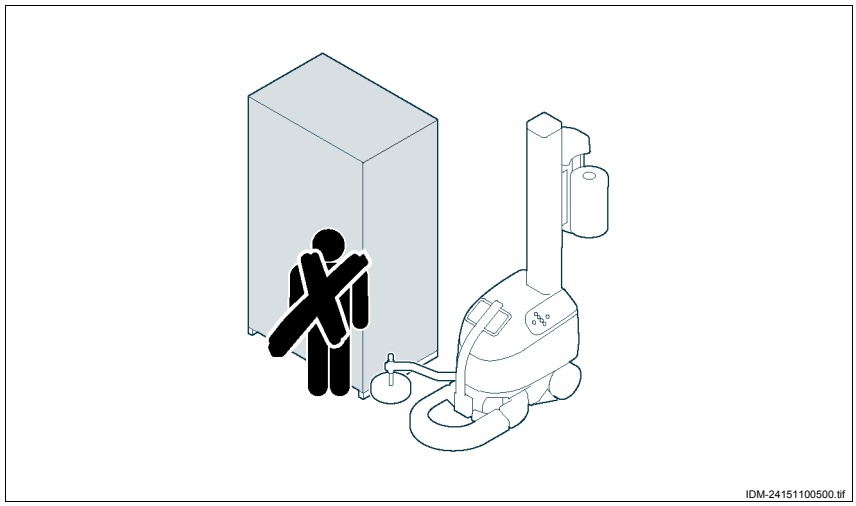
Upper limb cutting hazard: do not place hands inside components in motion.



Crushing danger of the upper limbs: when opening the battery cover, couple it properly in order to avoid that it closes by accident. To close it, lower it slowly, by avoiding to put your hands between.



Body crushing hazard: do not linger in the machine operating area.



3.6. INFORMATION AND SAFETY SIGNALS

Some among these signals are affixed to the machine; their locations are detailed in § 2.6. together with the relative explanations.

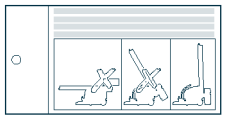
It shows the hooking points for chain lifting.

It shows the insertion points for the lifting forks.

Do not grasp with your hands.

Danger of arms cutting.

Battery harm danger.



Information sign (applied during transport). Indicates the conditions for machine use.

Information signal (applied during transport). Indicates column lifting conditions.

Information signal (applied during transport). Indicates how to remove the package from the machine.

Warning signal. Indicates the screws that should be fastened after the column is lifted.

Warning signal. Indicates the battery needs recharging after every period of prolonged disuse.

4.1. RECOMMENDATIONS FOR HANDLING AND LOADING

Information

Accomplish handling and loading according to the instructions supplied by the manufacturer to be found on the machine and in the operating instructions. The person authorized to accomplish these operations must, if necessary, organise a "safety plan" to guarantee safety to the persons directly involved.

4.2. PACKAGING AND UNPACKING

Limiting the machine dimensions, packaging is also made according to the type of transport employed.

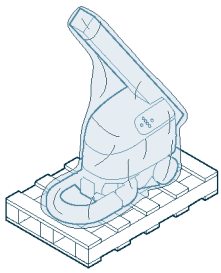
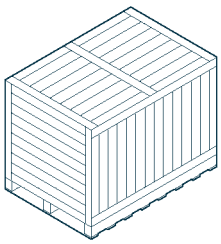
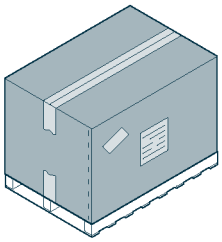
To facilitate transport, shipping can be performed with some components disassembled and appropriately protected and packaged.

Some parts, the electric parts in particular, are protected with anti-moisture nylon.

All the necessary information for loading and unloading is found on the packaging.

During unpacking, check the integrity and exact quantity of components.

Packaging material should be appropriately disposed according to the laws in force.

Package on pallet	Cage packaging	Cardboard packaging
		

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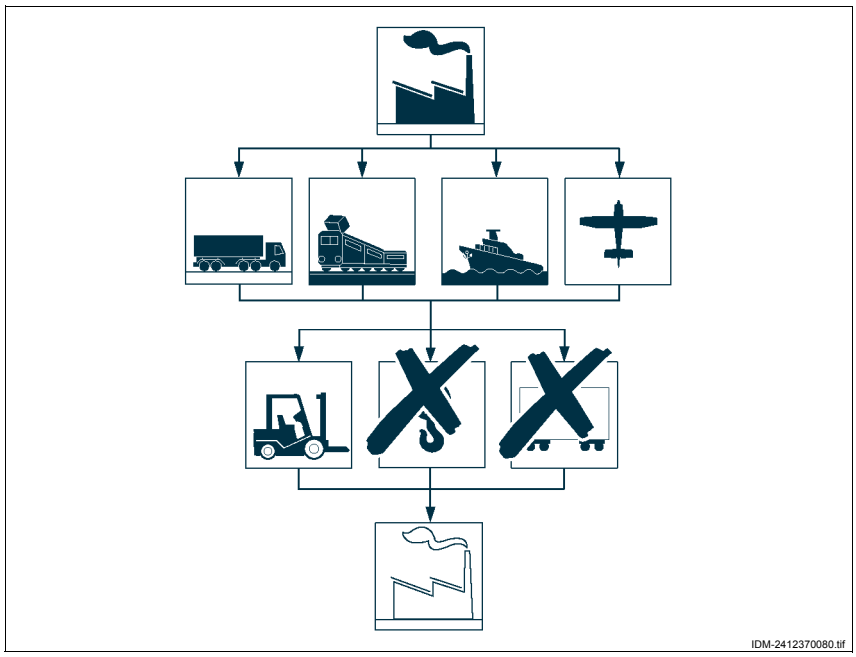
4.3. TRANSPORT AND HANDLING

Transport, also according to the destination, can be performed by different vehicles.
The diagram represents the most popular solutions.

During transport, in order to avoid inopportune movement, adequately secure the load to the transportation vehicle.



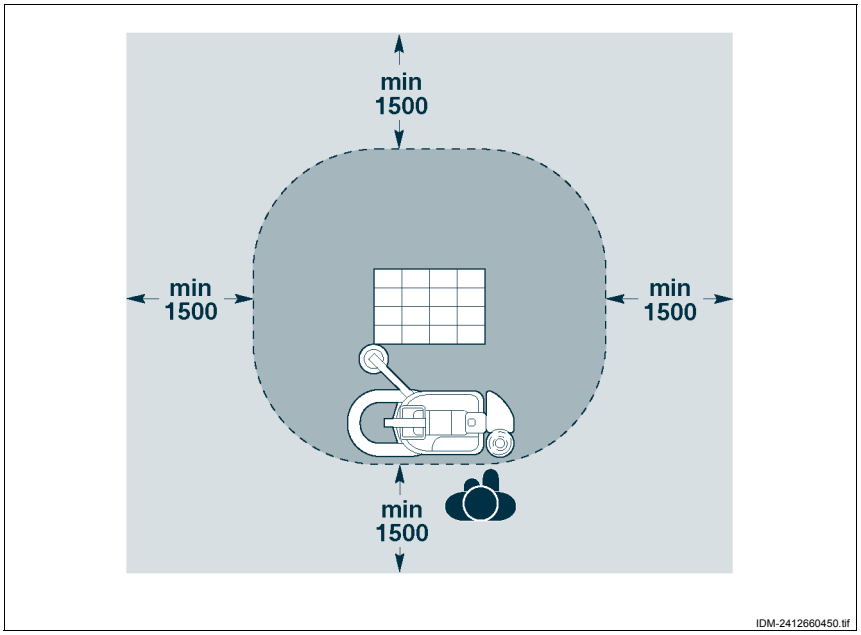
Information

For further transportation, recreate the initial packaging conditions for transport and handling.

4.4. INSTALLATION ENVIRONMENT CHARACTERISTICS

Careful consideration must be given to the place where the machine is to be installed, in order to ensure that it may be easily operated, without creating any unnecessary risks for personnel.
Therefore we suggest the following prerequisites:

- **a room temperature** of between +0°C and 40°c
- **a suitably aired place** so that when the machine is working, the degree of humidity is not unpleasantly high/ low from the point of view of the operator
- **a sufficient lighting** in order that a pleasant, relaxing working environment is created for the operator
- **a boundary area** around the immediate working area, for safety reasons, as shown in figure
- **a flat surface**, steady and without vibrations with adequate weight supporting capacity, also in consideration of the palletised loads to be wrapped.



Danger - Warning

Use of this machine in explosive environments or when exposed to the elements is strictly forbidden.

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4.5. INSTALLATION OF DISMOUNTED PARTS

Danger - Warning

Do not use the control panel before installing all parts that make up the machine.

Proceed as indicated.

Lifting the sliding mast

Information

Do not use the machine if the mast is not in the working position.

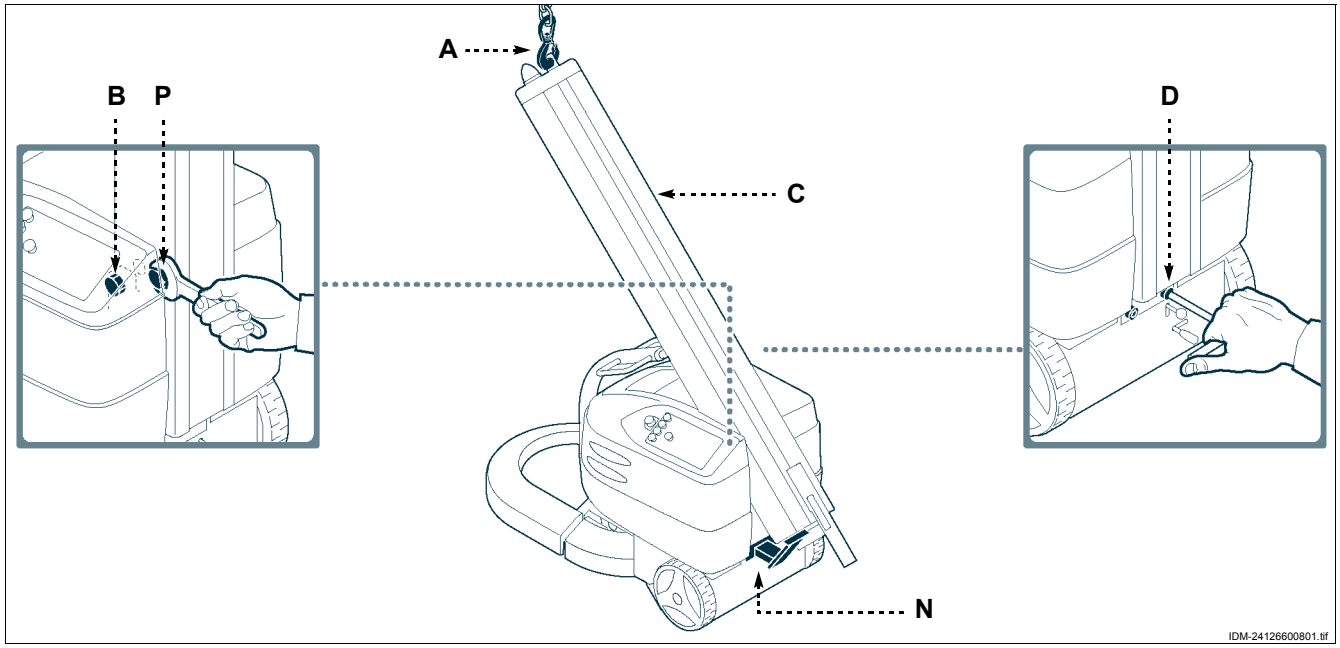
1 - Secure the hook of the lifting equipment to the bracket **(A)** of the sliding mast and tension it.

2 - If present, remove the support **(N)**.

3 - Lift the sliding mast **(C)**.

4 - Secure the sliding mast to the machine body with the screws **(D)**.

5 - Fully screw-in the hinge **(B)** and lock **(P)** screws on both sides of the column.



Assembling the spool carriage

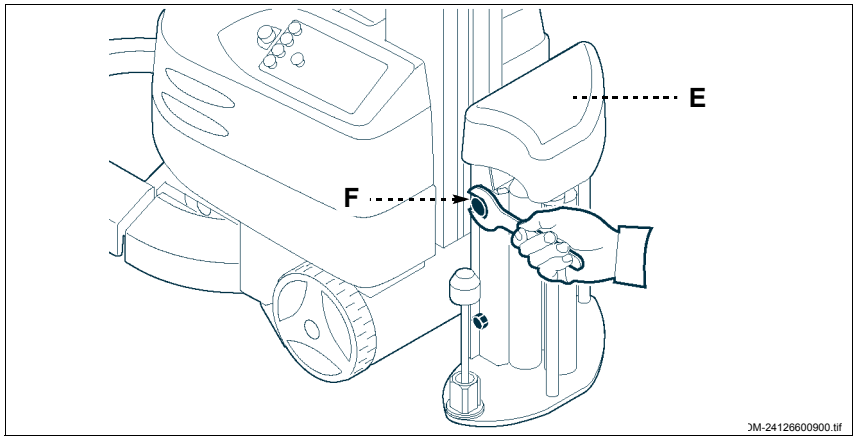
1 - Remove the guard **(E)**.

2 - Place the carriage onto the sliding mast support.

3 - Tighten screws **(F)** on both sides.

4 - Connect electric connectors.

5 - Re-assemble the guard **(E)**.



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Assembling the sensing arm wheel

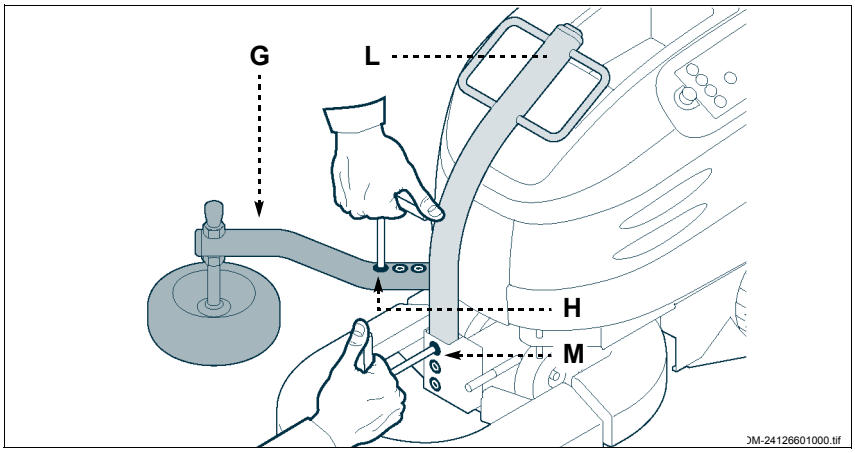
1 - Mount the wheel **(G)** on the machine body.

2 - Tighten the clamping screws **(H)**.

Assembling the steering arm

1 - Mount the steering arm **(L)** on the machine body.

2 - Tighten the clamping screws **(M)**.



5.1. ADJUSTMENT RECOMMENDATIONS

Information

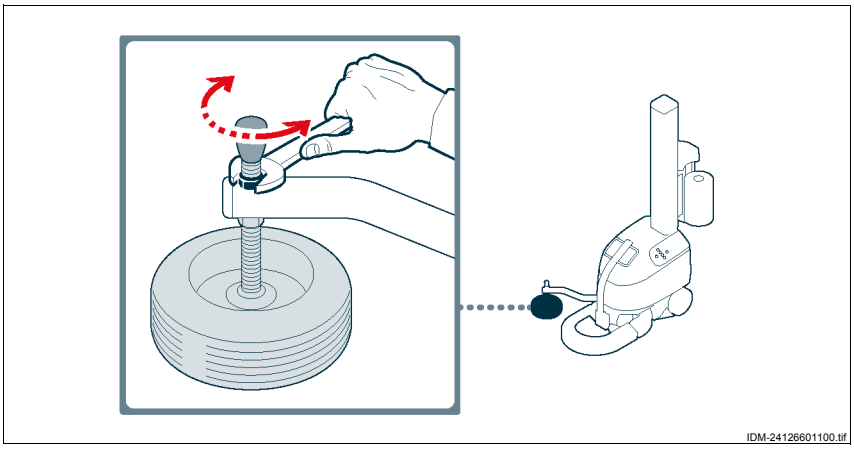
Before performing and type of adjustment, activate all foreseen safety devices and evaluate the need to warn operating personnel and those in the near vicinity. In particular, adequately mark the surrounding areas and prevent access to all devices that could, if activated, cause unexpected personal safety hazards.

5.2. ADJUSTING THE HEIGHT OF THE SENSING ARM WHEEL

Act on nut and lock nut to adjust the height of the sensing arm wheel.

Information

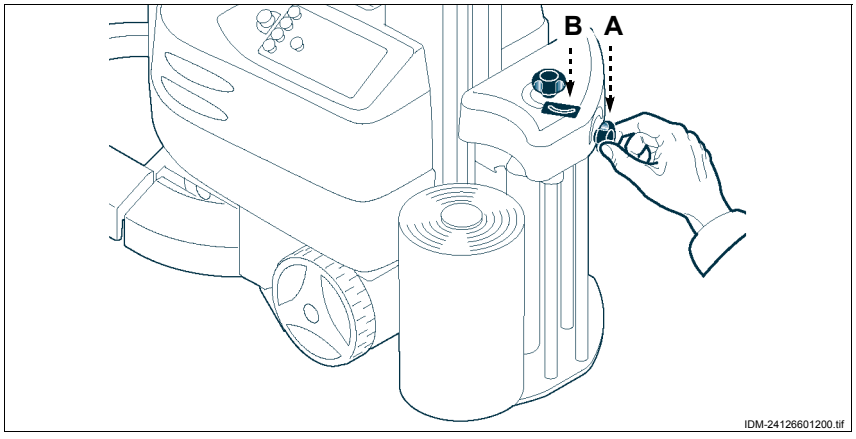
Position the wheel in correspondence with the pallet and not with the product.



5.3. ADJUSTING FILM "STRETCH"

"FRD"-type reel carriages

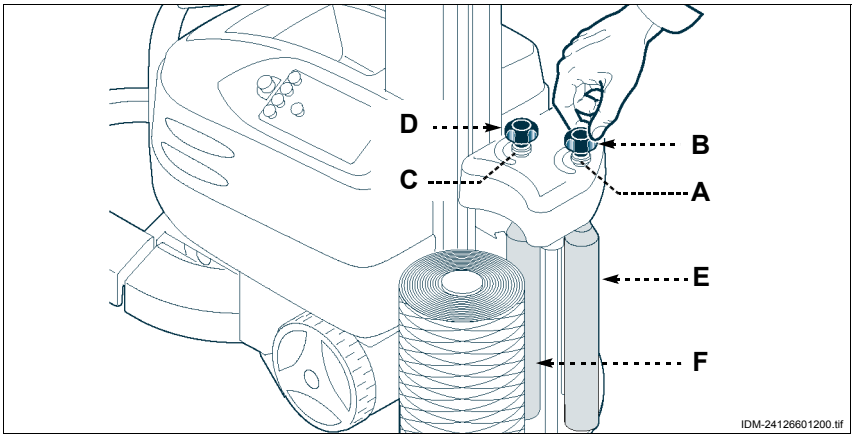
Adjust handwheel **(A)** until the desired film stretch value is set on graduated scale **(B)**.



"FRD" type spool carriage for net

1 - Loosen the ring nut **(A-C)**.

2 - Adjust hand wheel **(B-D)** to regulate the braking effect of the pre-stretch roller **(E-F)** that determines film lengthening.



Information

To obtain correct tensioning of the net, adjust the braking effect so that the outfeed roller (E) has greater braking effect respect to the infeed roller (F); furthermore, to avoid that net slides on the pre-stretch rollers, do not exceed in braking them.

3 - Tighten the ring nut **(A-C)** when finished.

PFS-, FS-, and FR-type spool carriages

Act on the control panel to perform this adjustment (see § 6.6.).

5.4. ADJUSTING THE CHAIN

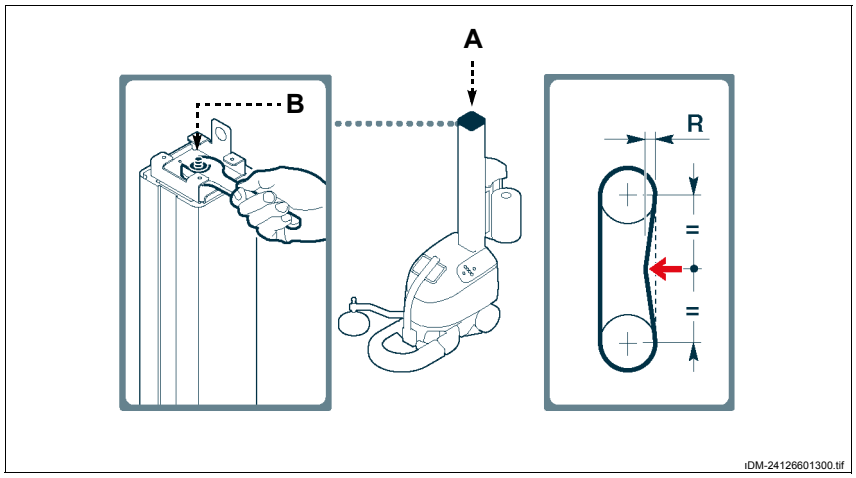
Proceed as indicated.

1 - Remove the cover guard **(A)**.

2 - Act on the nut **(B)**.

Information

To check chain tension, use the method indicated in the illustration. The resulting shift (R) should be 10÷15 mm.



5.5. ADJUSTING THE PARKING BRAKE

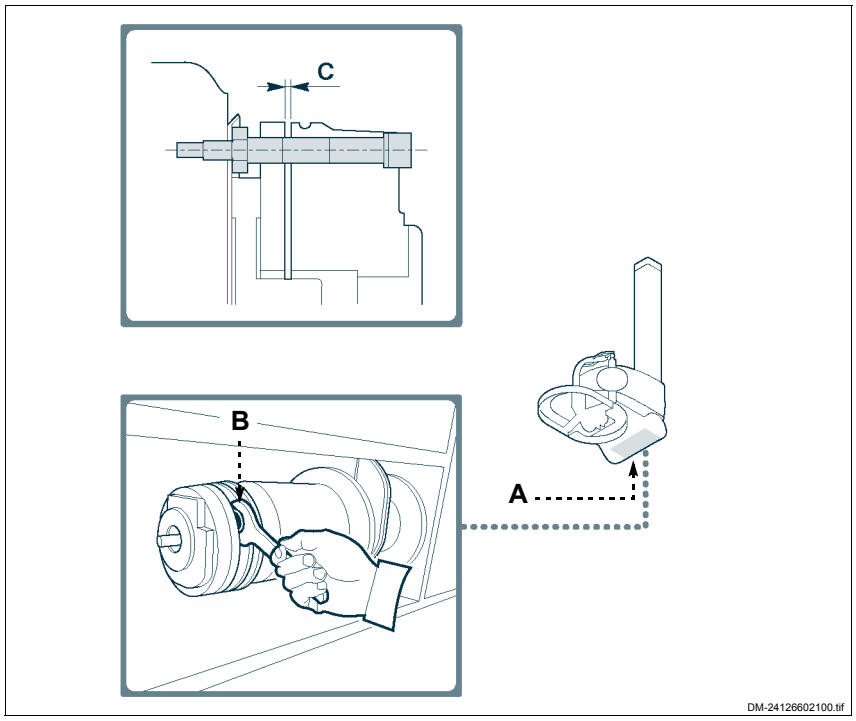
Proceed as indicated.

1 - Lift the machine from the points indicated on the signal.

2 - Remove the cover guard **(A)**.

3 - Act on the screws **(B)**.

4 - Check that the distance **(C)** between magnet and flange is 0,4÷0,6 mm.

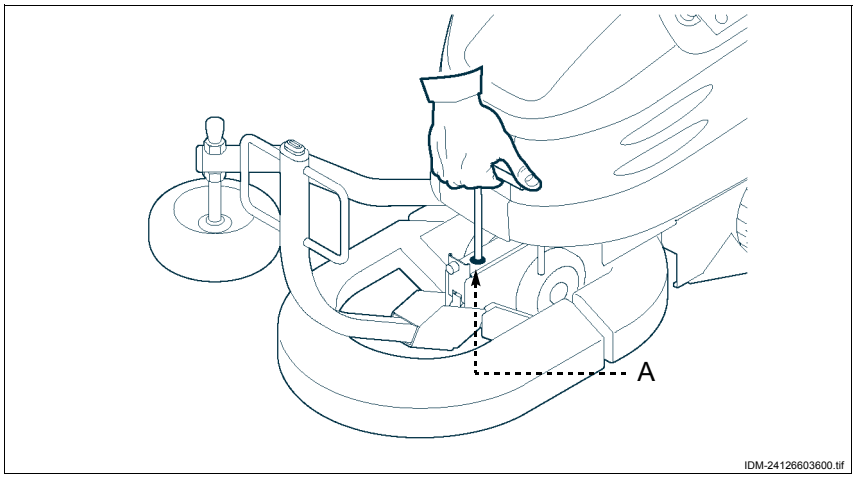


5.6. STEERING ARM RETURN SPEED ADJUSTMENT

Danger - Warning

The speed of the steering arm must not be too high to avoid causing personal safety risks.

Use the screw **(A)** to adjust the steering arm return speed.



6.1. RECOMMENDATIONS FOR USE AND FUNCTIONING

Information

Accident frequency derived from machine use depends upon many factors that cannot always be foreseen and controlled. Some accidents can depend upon unforeseeable environmental factors; others depend especially upon the user's behaviour.

In addition to being authorised and appropriately informed, on first use personnel must simulate some manoeuvres to identify the main commands and functions.

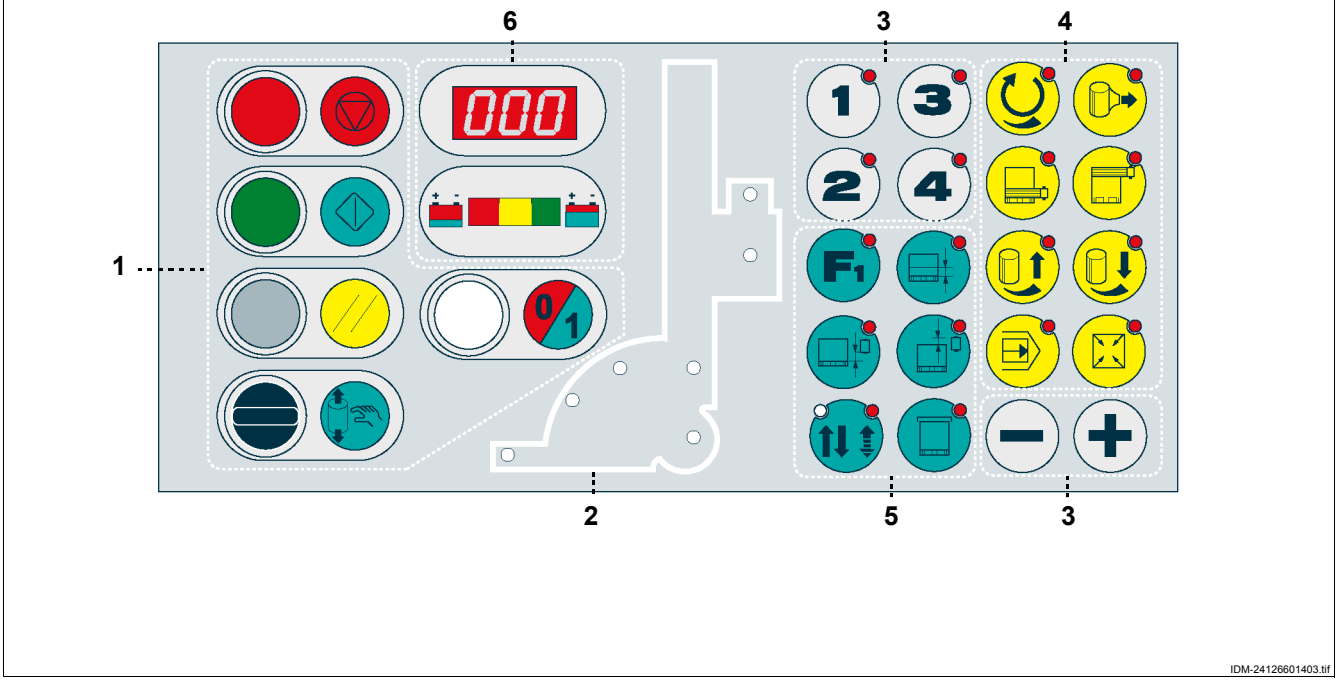
Only carry out the operations foreseen by the manufacturer and do not tamper with any device to obtain performances other than those provided. Before use, check that the safety devices are correctly installed and efficient.

Users, in addition to striving to satisfy these requirements, must apply all the safety regulations and carefully read the descriptions of the controls and start up.

6.2. CONTROL DESCRIPTION

The figure shows the major control units.
Refer to the paragraphs for further details, as indicated.

1) Electromechanical controls (see §6.3.)
2) Synoptic board (see § 6.4.)
3) (Grey) Programme setting keys (see § 6.5.)
4) (Yellow) Buttons for parameter setting (see § 6.6.)
5) (Green) Buttons for cycle selection (see § 6.7.)
6) Display (see § 6.8.).
7) Remote control (see § 6.9.).



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6.3. ELECTROMECHANICAL CONTROL DESCRIPTION

1a) "Cycle start" button: to start the automatic wrapping cycle.

1b) "Stop cycle" button: to stop the automatic wrapping cycle.

1c) "Reset" button: either to reset the machine before re-starting it after an emergency stop, or to re-start the machine after a stop caused by a power supply interruption.

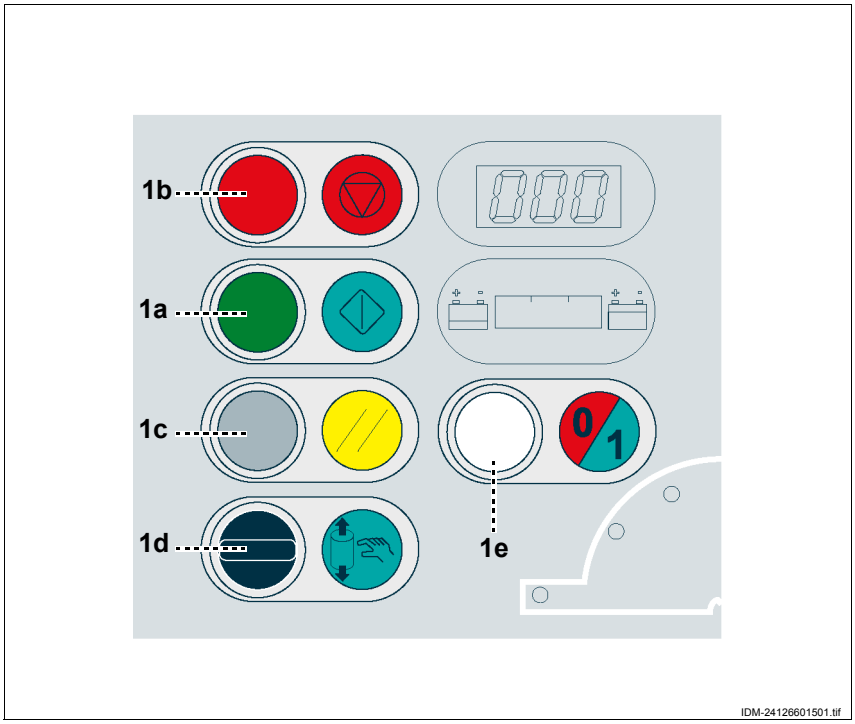
1d) "Carriage up/down" manual selector: to move the carriage manually.

Since the selector is a presence-selector, it will be possible to move it only with the activated selection up to the desired point.

1e) Main switch: to turn the power supply on and off.

Off: power off

On: power on

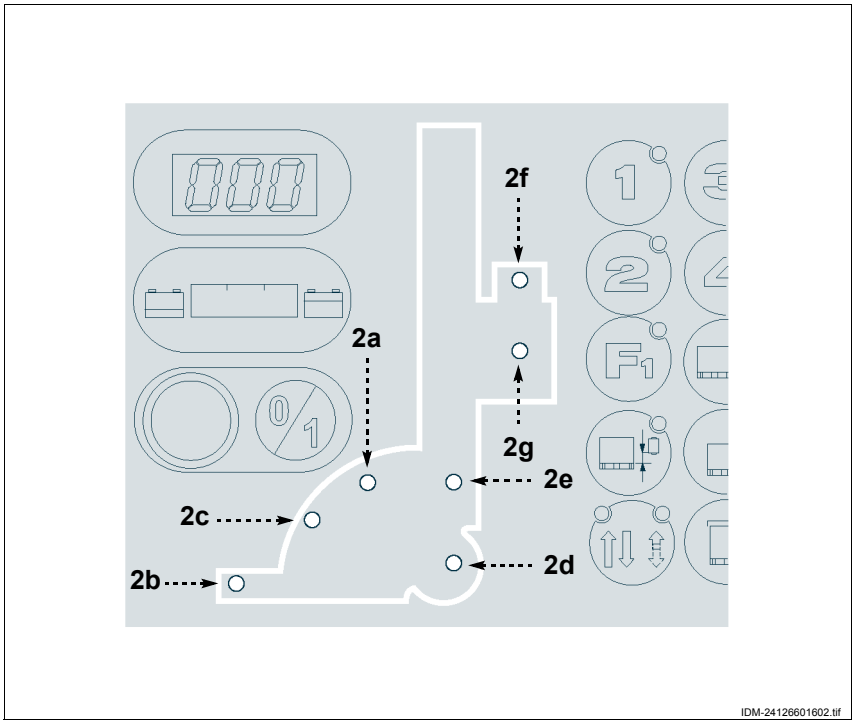


6.4. SYNOPTIC PANEL DESCRIPTION

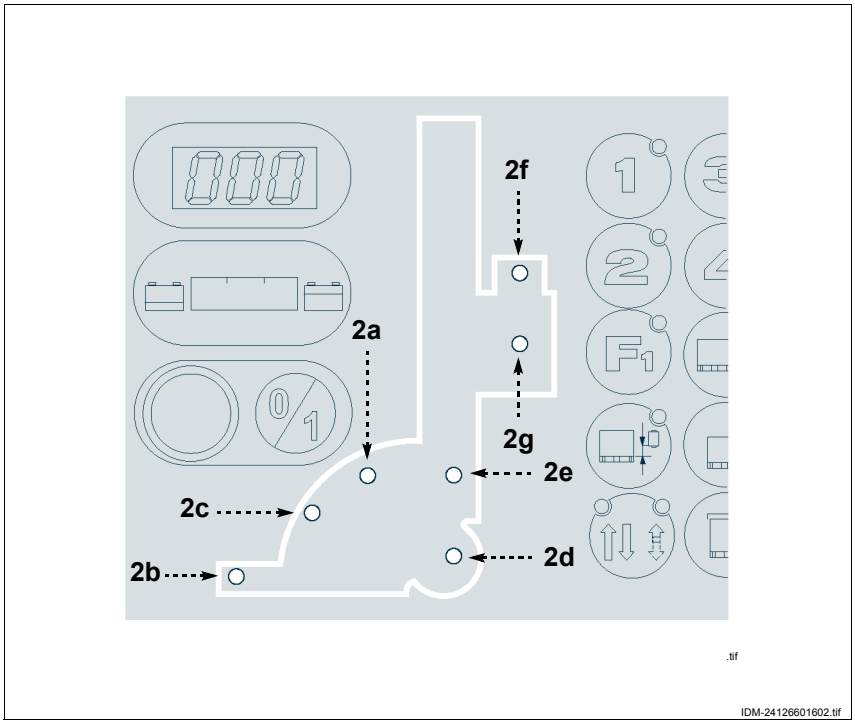
The LED indicates which part of the machine is in bad conditions. The abbreviation indicating the alarm appears on the display (see § 8.1.).

2a) Emergency push-button pressed: indicates that the machine has been stopped in emergency conditions and the pushbutton has not been released.

2b) "Emergency bumper" alarm: indicates that the machine has been stopped because the bumper has detected an obstacle within the working area.

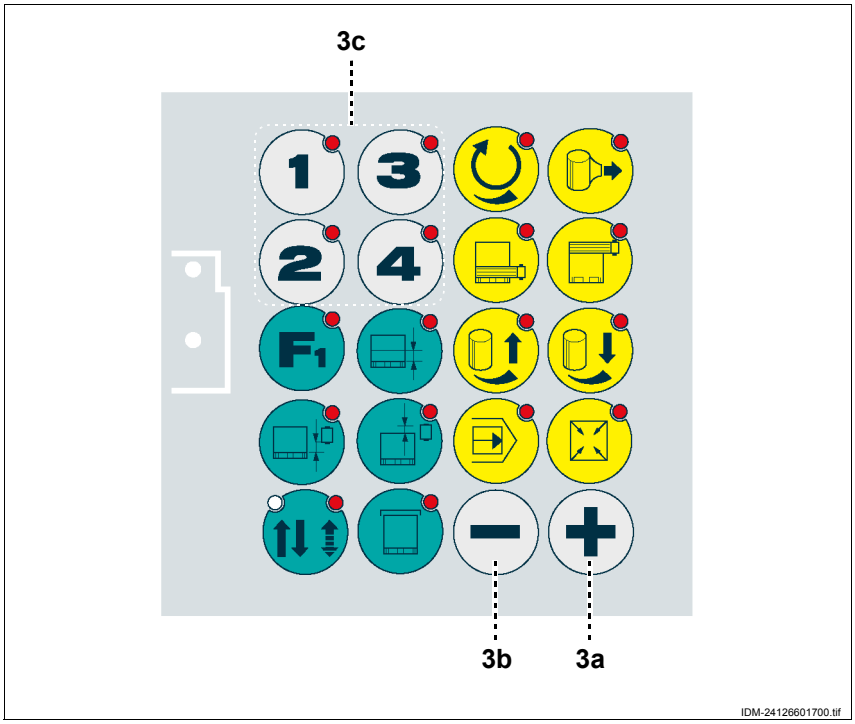


2c) "Open case" alarm: indicates that the top case is open.
2d) "Drive motor" alarm: indicates a motor failure.
2e) "Reel carriage lifting motor" alarm: indicates a motor failure.
2f) "Roller rotation motor" alarm (PFS-type carriage): indicates a motor failure.
2g) "Film breakage" alarm: indicates that the film is torn or the spool is empty.

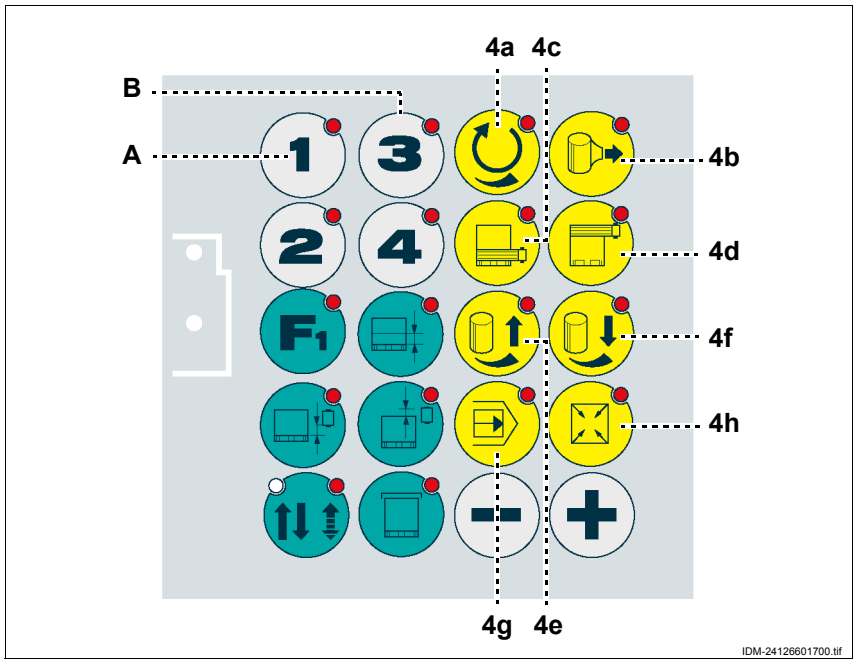


6.5. DESCRIPTION OF (GREY) BUTTONS FOR PROGRAMME SETTING

3a) "Increase values" key: to increase the value of the selected parameter. The value is increased by one unit each time the key is pressed.
3b) "Decrease values" key: to decrease the value of the selected parameter. The value decreases by one unit each time the key is pressed.
3c) "Cycle programming" keys: any of them can store one wrapping cycle.
The parameters set overwrite the previous ones and are automatically memorized.



6.6. DESCRIPTION OF (YELLOW) BUTTONS FOR PARAMETER SETTING



4a) "Feeding speed" key: to set the machine feeding speed.

4b) "Film pre-stretch/stretch" key: to achieve the desired film pre-stretch ratio ("**PFS**"-, and "**FS**"-type spool carriages) and film stretch ratio ("**FR**"-type spool carriage).

4c) "Bottom wraps" button: to set the number of bottom end wraps on the pallet.

4d) "Top wraps" button: to set the number of top end wraps on the pallet.

4e) "Carriage upward speed" key: to set the spool carriage upward speed.

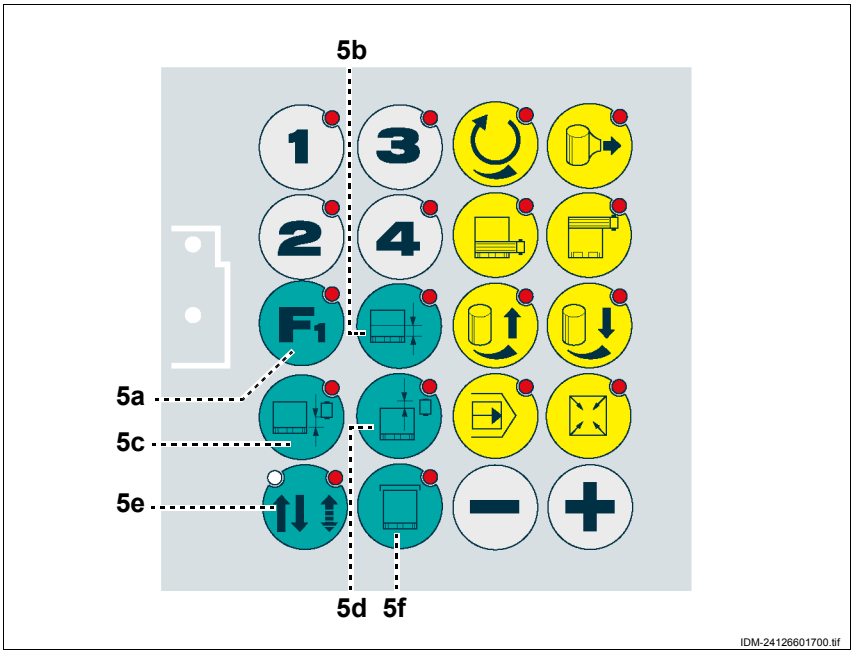
4f) "Carriage downward speed" key: to set the spool carriage downward speed.

4g) "Output data": to display the following data.
- D1 cycle partial counter.
- D2 cycle total counter 1000÷999000.
- D3 cycle total counter 0÷999.
- D4 battery voltage.
- SET to reset the cycle partial counter.

To reset, press keys simultaneously when the wordings "SET" appears. The wordings "RES" will appear next to confirm that the operation has been successfully completed.

4h) "Film tensioning" key (PFS-type spool carriage): to adjust the wrapping tension according to the various types of load.

6.7. DESCRIPTION OF (GREEN) BUTTONS FOR CYCLE SELECTION



5a) "F1" key: to select the wrapping cycle of a very large load (e.g. a container).

5b) "Reinforcement Wrap" key: to set the distance between the intermediate wrap and the bottom of the spool carriage, if necessary. The number of wrapping turns is the same as the lower wrap.

5c) "Start from ground level" key: to make the wrap start from an offset from the ground level.

5d) "Photocell/Altimeter" delay key: has two functions, hold down for three seconds to change the function.

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– To set the delay of the reel carriage stop with relation to the "end-of-pallet" detection by the photocell (LED on).
– To exclude "end-of-pallet" detection by the photocell and to set the height (in centimetres) of the pallet (flashing LED).

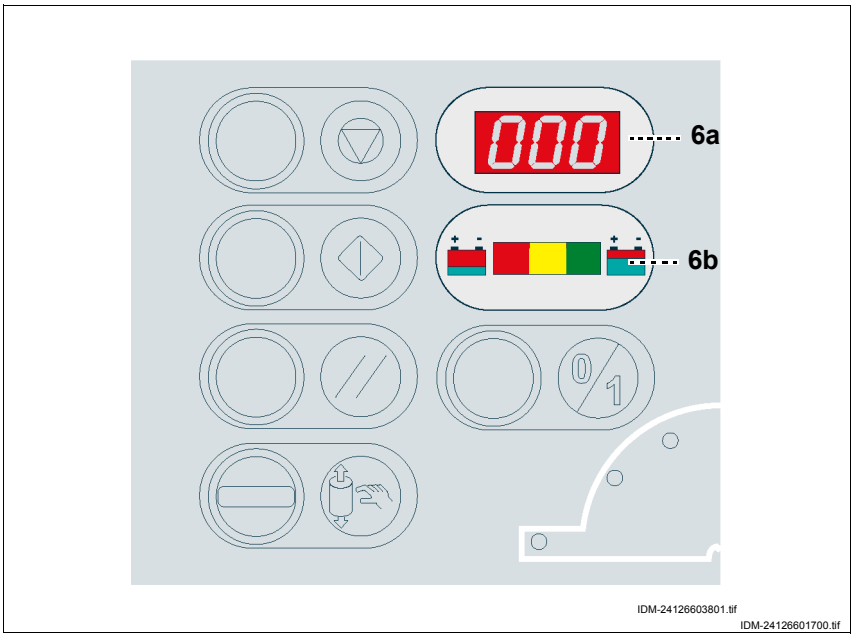
5e) "Upward/downward or alternate cycle" key: to select the upward/downward wrapping cycle, or one upward cycle and one downward cycle alternated.

5f) "Top sheet cycle" key: to select the cycle enabling the operator to top cover the pallet with the film.

6.8. DESCRIPTION OF THE DISPLAY

6a) Digital display: displays the operating parameters and the alarm signals.

6a) Battery charge state indicator: indicates battery charge state.



6.9. REMOTE CONTROL FUNCTION DESCRIPTION

7a) "Feeding speed" key: to set the machine feeding speed.

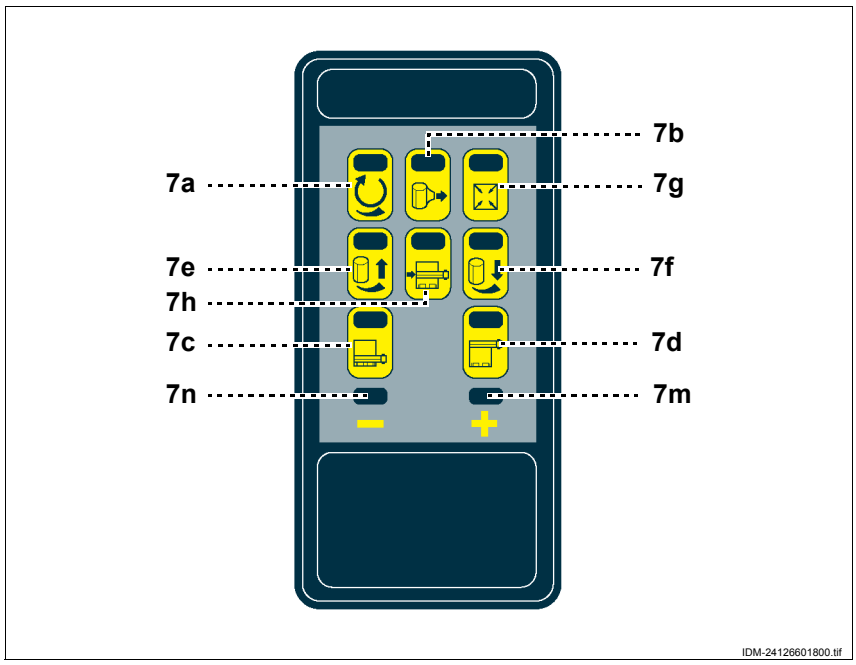
7b) "Film pre-stretch/stretch" key: to achieve the desired film pre-stretch ratio (PFS-, and FS-type spool carriages) and film stretch ratio (FR-type spool carriage).

7c) "Bottom wraps" button: to set the number of bottom end wraps on the pallet.

7d) "Top wraps" button: to set the number of top end wraps on the pallet.

7e) "Carriage upward speed" key: to set the spool carriage upward speed.

7f) "Carriage downward speed" key: to set the spool carriage downward speed.

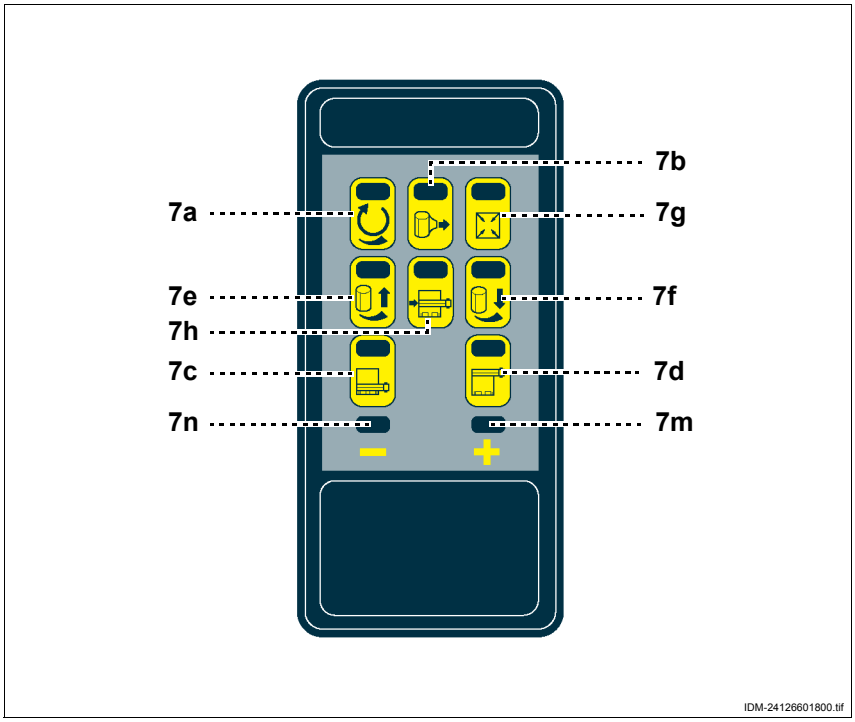


7g) "Film tensioning" key (PFS-type spool carriage): to adjust the wrapping tension according to the various types of load.

7h) "Stop carriage" key: hold down to stop the reel carriage rise or descent during wrapping in order to perform a greater number of wraps.

7m) "Increase values" key: to increase the value of the selected parameter. The value is increased by one unit each time the key is pressed.

7n) "Decrease values" key: to decrease the value of the selected parameter. The value decreases by one unit each time the key is pressed.



6.10. SWITCHING THE MACHINE ON AND OFF

Proceed as indicated.

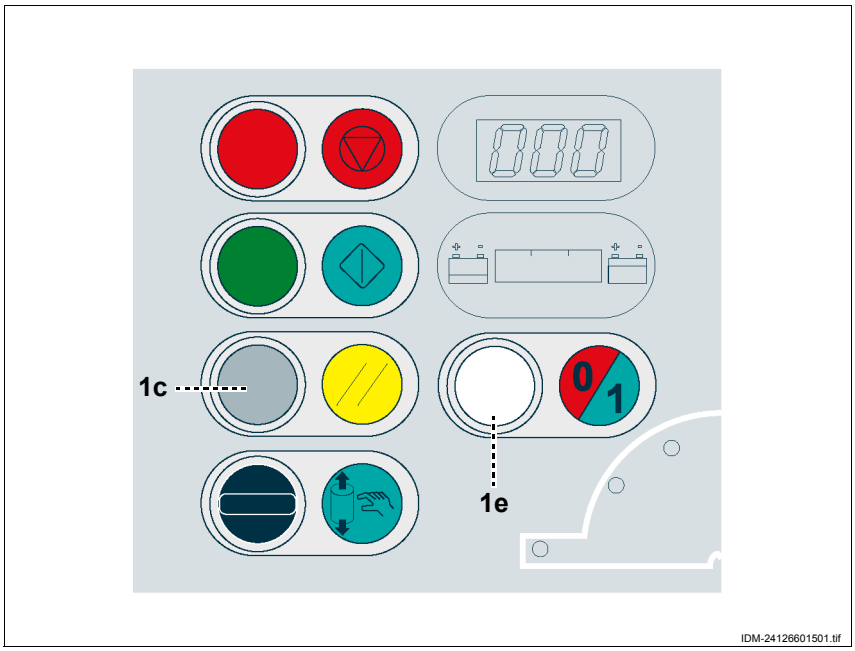
1 - Press the main switch **(1e)** to turn on the power supply. "RES" appears on the display.

2 - Press the "**Reset**" button **(1c)**; the display will enter stand-by mode.

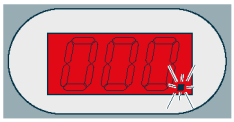
3 - Set the cycle parameters (see § 6.11.).

4 - Perform the cycle start operations (see 6.13.).

5 - Press the main switch **(1e)** to turn off the machine.



With the machine on and unused for more than 15 minutes, the "energy savings" functions is automatically activated, All the LEDs turn off. This condition is demonstrated by a flashing light on the display.



Press any key to restore operations. If the "power saving" function stays on for more than 15 minutes, the machine automatically turns off. To restart the machine functions, repeat the procedure concerning the turning on.

6.11. CYCLE PARAMETER SETTING

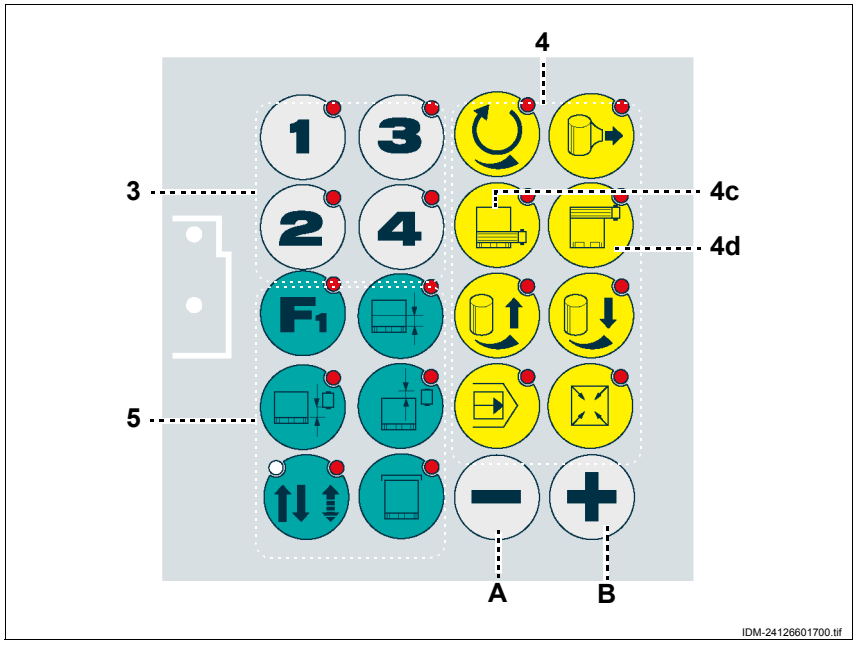
Proceed as indicated.

1 - Switch the machine on (see § 6.10.).

2 - Select the number of the program (see button 3).

3 - Press the key of the parameter to be modified to display the value set. The led on the key will turn on (buttons 4).

4 - Press keys **(A-B)** to increase or decrease the value until the required value is obtained. This new value will be saved in the relevant programme.



Information

If buttons 4c -4d are contemporaneously pressed when turning on, keyboard blocks and only allows selection of one of the memorized programs. To unlock keyboard, accomplish the same operation again.

The table indicates the value intervals of the control panel keys.

Key	Parameter	Min	Max	Increase on the display
4a	Feeding speed	38 m/min	80 m/min	1
4e/4f	Carriage up/down speed	1.6 m/min	6.0 m/min	0.1
4c/4d	Low/high turns	0	10	1
5d	Photocell delay	-20 cm	100 cm	1
5b	Reinforcement height [1]	0	230 cm	1
5c	Start from ground level[2]	0	230 cm	1
5d	Altimeter	0	275 cm	1
4h	**Film tensioning**			
	Carriage FRD	Mechanical		-
	Carriage FR	0	100	10
	Carriage FS	Not available		-
	Carriage PFS	0	100	10
4b	**Film pre-stretch**			
	Carriage FRD	Not available		-
	Carriage FR	Not available		-
	Carriage FS	0	200	10
	Carriage PFS	0	250	10

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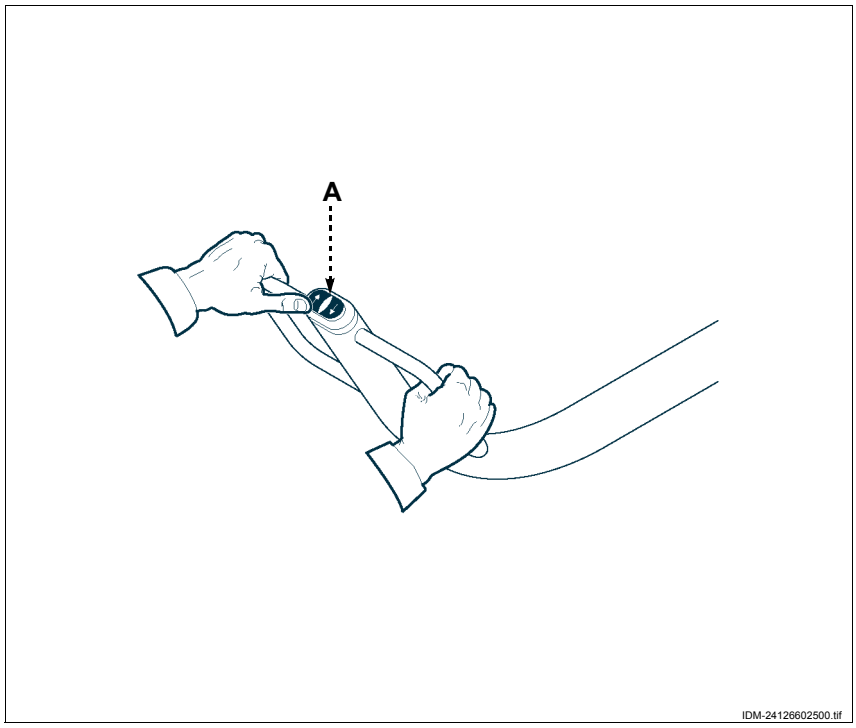
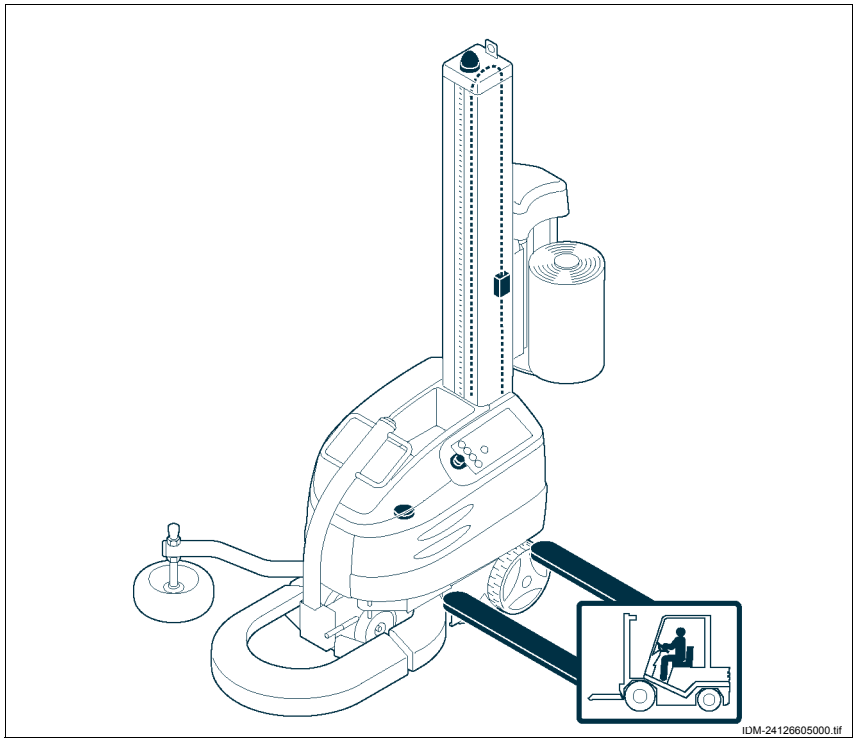
6.12. MACHINE MOVING

To move the machine in the working environment, when the machine is energized, press one of the two buttons **(A)** to move it toward the desired direction. Upon release of the button, the machine will stop immediately.



Information

If buttons (A), do not permit machine movement, it must be moved with a suitable load capacity lifting device and forks.



6.13. STARTING AND STOPPING THE CYCLE

Single and double wrapping cycle

Proceed as indicated.

1 - Position the sensing arm wheel onto the pallet.

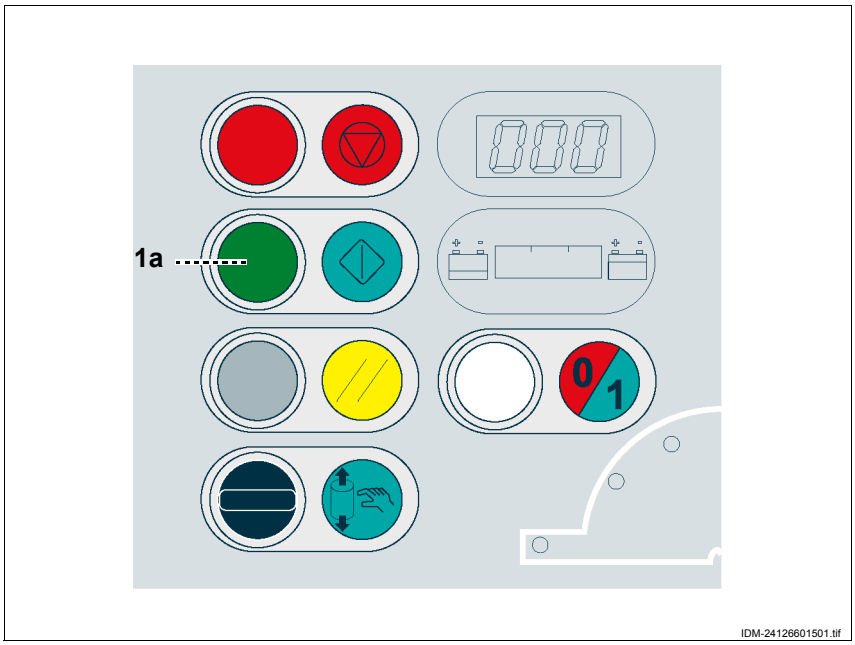
2 - Make the film adhere to the load.

3 - Press the "Cycle start" push-button **(1a)**. The machine performs a cycle and stops automatically.

4 - Cut the film.

If the automatic cut optional unit is provided on the machine, this operation will be performed automatically.

5 - Move the machine to perform a new wrapping cycle (see § 6.12.).



Top sheet cycle

Proceed as indicated.

1 - Position the sensing arm wheel onto the pallet.

2 - Make the film adhere to the load.

3 - Press the "Cycle start" button **(1a)**. The machine performs an upward wrap and stops after reaching the upper end.

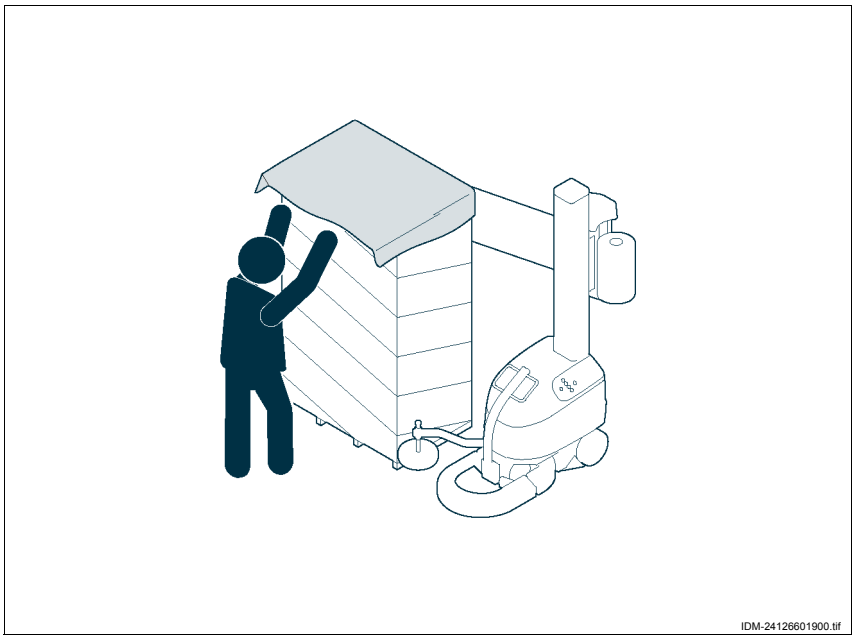
4 - Deposit the film on top of the load.

5 - Press the "Cycle start" button **(1a)**. The machine will restart the wrapping cycle until it is definitively completed.

6 - Cut the film.

If the automatic cut optional unit is provided on the machine, this operation will be performed automatically.

7 - Move the machine to perform a new wrapping cycle (see § 6.12.).

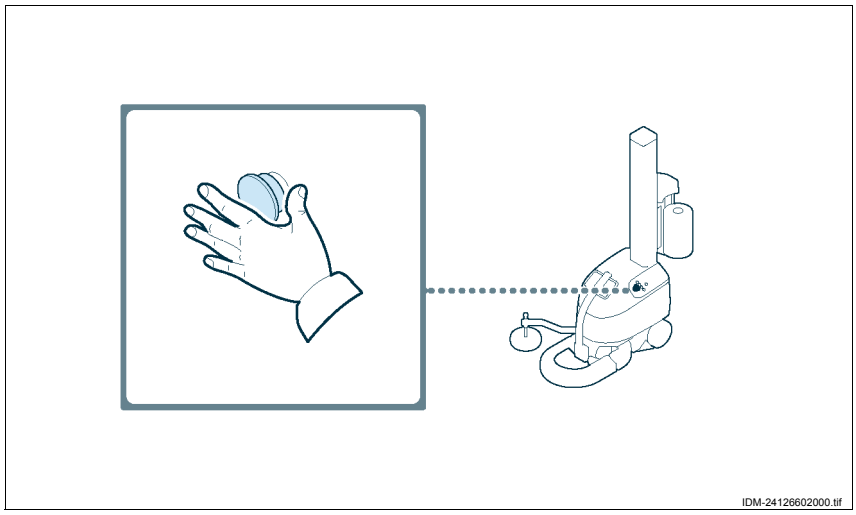


6.14. EMERGENCY STOP AND RESTART

Press the emergency button on the machine in conditions of imminent risk. Machine operation stops immediately.
After having normalized work conditions, release the button to allow operations to restart.
To restart the machine, act as follows.

1 - Press the "Reset" button to reset the machine.

2 - Repeat all the automatic cycle start operations (see § 6.13.).



Information

An emergency stop will also occur when the machine cover blockage shut-off is opened. Begin restart operations as indicated earlier.

6.15. REEL LOADING

Proceed as indicated.

1 - Position the reel with the film in its housing provided on the reel carriage.

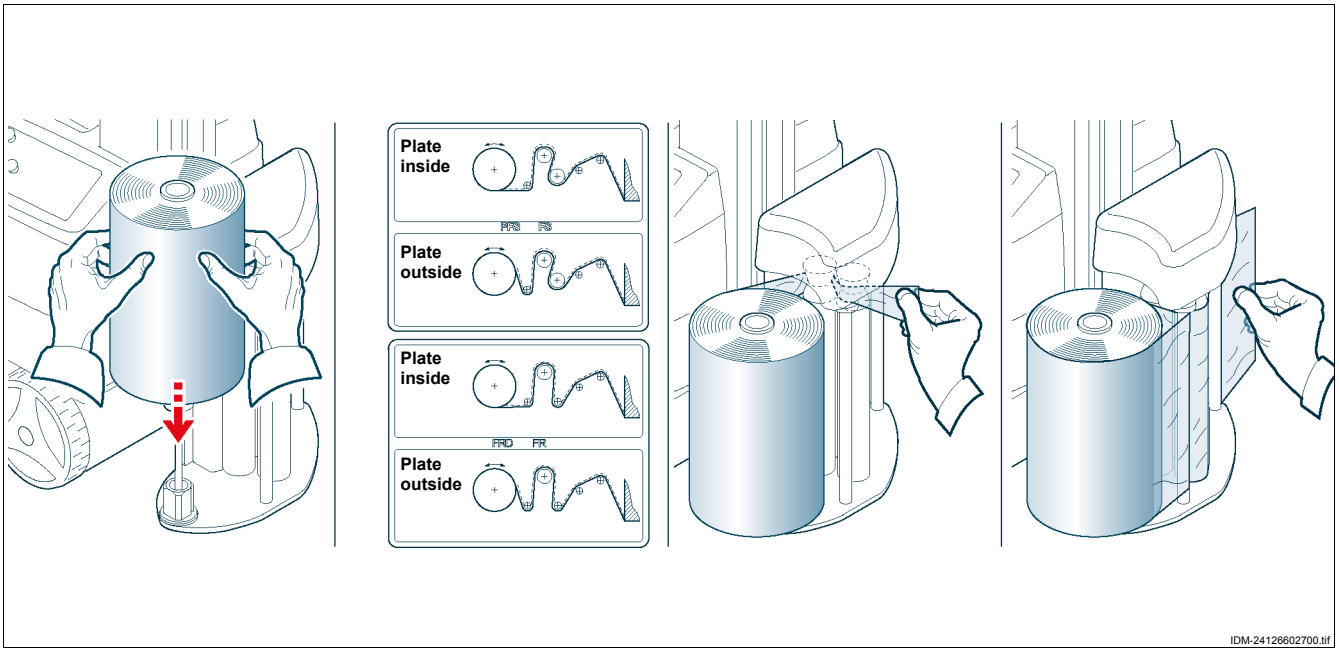
2 - Unwrap the film and place it between the rollers according to the diagram depicted on the plate.

3 - Gather the film and form a thin cord, then insert it between the double-cone surfaces.

4 - Pull the cord outwards. The film will automatically drop on the roller and cover it all along its height.

Information

The adhesive side of the reel is indicated on the plate (inside or outside) with a shading.



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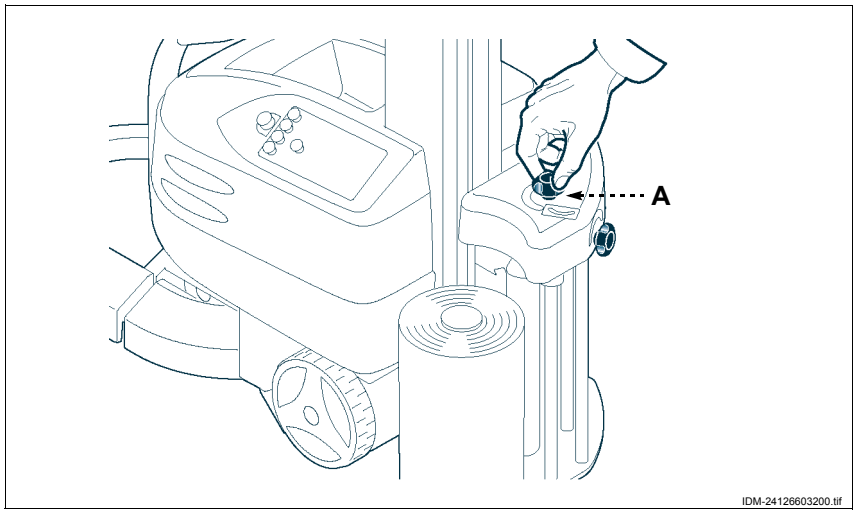
On “**FRD**”-type carriages, to allow for the film to be positioned between the rollers and be unwrapped, the brake shall be released by turning the hand-wheel **(A)** to "**0**".

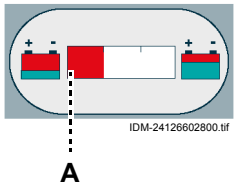
To facilitate the film positioning, the upper part of the stretch rollers is equipped with a truncated double-cone surface.



6.16. BATTERY RECHARGE

Routine recharge

Perform this operation when only the red battery state indicator light remains on **(A)**.



Message E90 (battery charge alarm) appears on the digital display and remains on the display for 15 minutes.

Afterwards a series of long sirens sound for another 15 minutes. After this period the machine automatically turns off.

Information

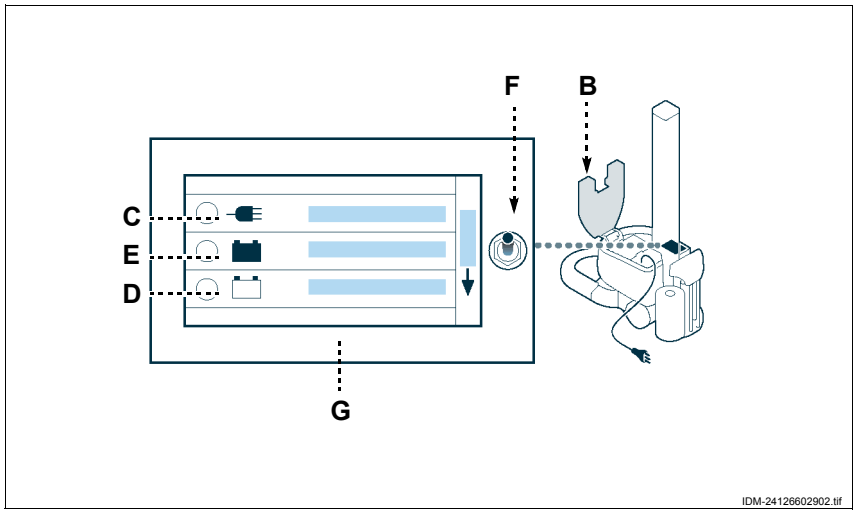
The battery is subject to a self-discharge process that may compromise its good operations in the long run. Completely recharge the battery every 2 months in the event of periods of prolonged disuse. For longer battery life the machine will automatically switch off when the charge reaches 23,7 V. Use the "Output data" key (see § 6.6. key 4), to check this value and recharge before the machine stops.

Proceed as indicated.

1 - Lift the battery cover **(B)**.

2 - Insert the plug into a socket.
The LEDs "**power supply**" **(C)** and "**Battery present**" **(D)** indicate the ongoing connection of both power supply and battery.
The LED "**Charge finished**" **(E)** flashes during final charge (approx 3 h). Once charge has been completed, the LED remains lit.

3 - Remove the plug and close the battery cover.



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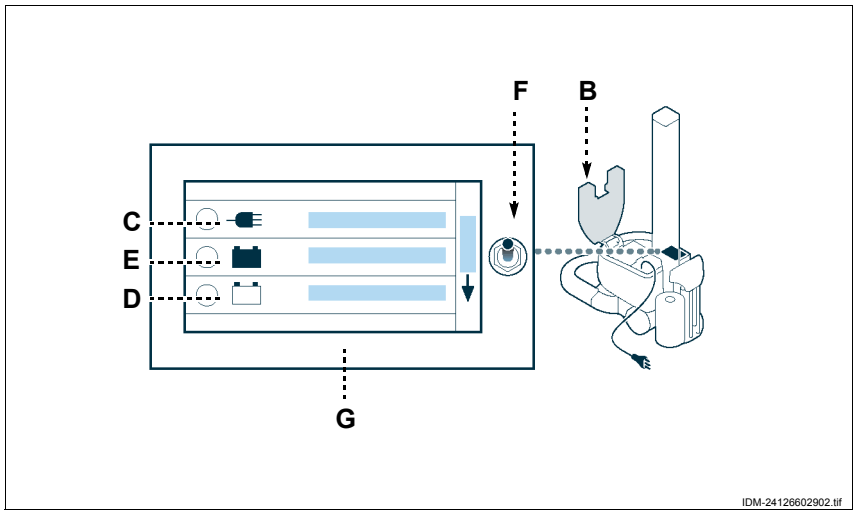
Recharging a completely uncharged battery

Perform this operation when battery voltage falls under 16.8 V.
This situation may occur when, for example, the robot is left on with the battery uncharged for several days.
In these conditions, the battery charger enters the "insufficient voltage" alarm state and will not permit recharging.



To recharge the battery, proceed as follows.

1 - Lift the battery cover **(B)**.

2 - Insert the plug into a socket.

3 - Turn on the by-pass switch **(F)**, located on the battery charge panel **(G)**, for about 3-5 minutes.

Danger - Warning

This operation must be performed with an operator in attendance and only for the indicated period of time (3-5 min.). Continued and prolonged bypass switch (F) use for more than one hour may cause irreparable damage to the batteries and violent gasification.

4 - When finished, release the button. If the red LED **(E)** does not go on after 5 seconds, repeat the above operations starting from point 3.

5 - Remove the plug and close the battery cover.

Information

In case a fault occurs during the charge, the LED "Charge finished" (E) will not light up at the end of the cycle and the LED "power supply" (C) will perform a set number of flashing series, to identify the fault type.
2 flashings: battery voltage too high.
3 flashings: battery voltage too low.
4 flashes: max charge time expired (14 h) with no voltage increase in the battery.

Danger - Warning

The battery is to be recharged in a place that is well ventilated and distant from the working environment.

7.1. MAINTENANCE INSTRUCTIONS

Information

Before performing any maintenance operation, activate all of the security devices provided and evaluate the necessity to adequately inform personnel operating in the near vicinity.

In particular, confine the neighbouring areas to impede access to the devices that could, if activated, produce unexpected danger conditions provoking hazards to personal safety and health.

7.2. MAINTENANCE PERIOD TABLE

Information

Keep the machine in maximum working conditions by performing the programmed maintenance operations advised by the manufacturer.

Good maintenance achieves the best machine performance, longer machine life and constant observance of the safety regulations.

Frequency	Component	Type of intervention	Procedure	Reference
Every 40 hours	Machine	Cleaning	Clean with a cloth or jet of air	-
	Work area	Cleaning	Clean	
Every 200 hours	Rubber coated rollers	Cleaning	Clean with alcohol	-
	Lifting chain	Greasing	-	See “Lubrication point diagram”
		Check tension	Adjust	See “Adjusting the chain”
Every 2000 hours	Lifting chain	Wearing check	-	-
	Inductive sensors	Check efficiency	Regular at 2 mm max. distance from the wheels.	
	Safety devices	Check efficiency	-	-
	Parking Brake	Check efficiency	Adjust	See “Adjusting the parking brake”

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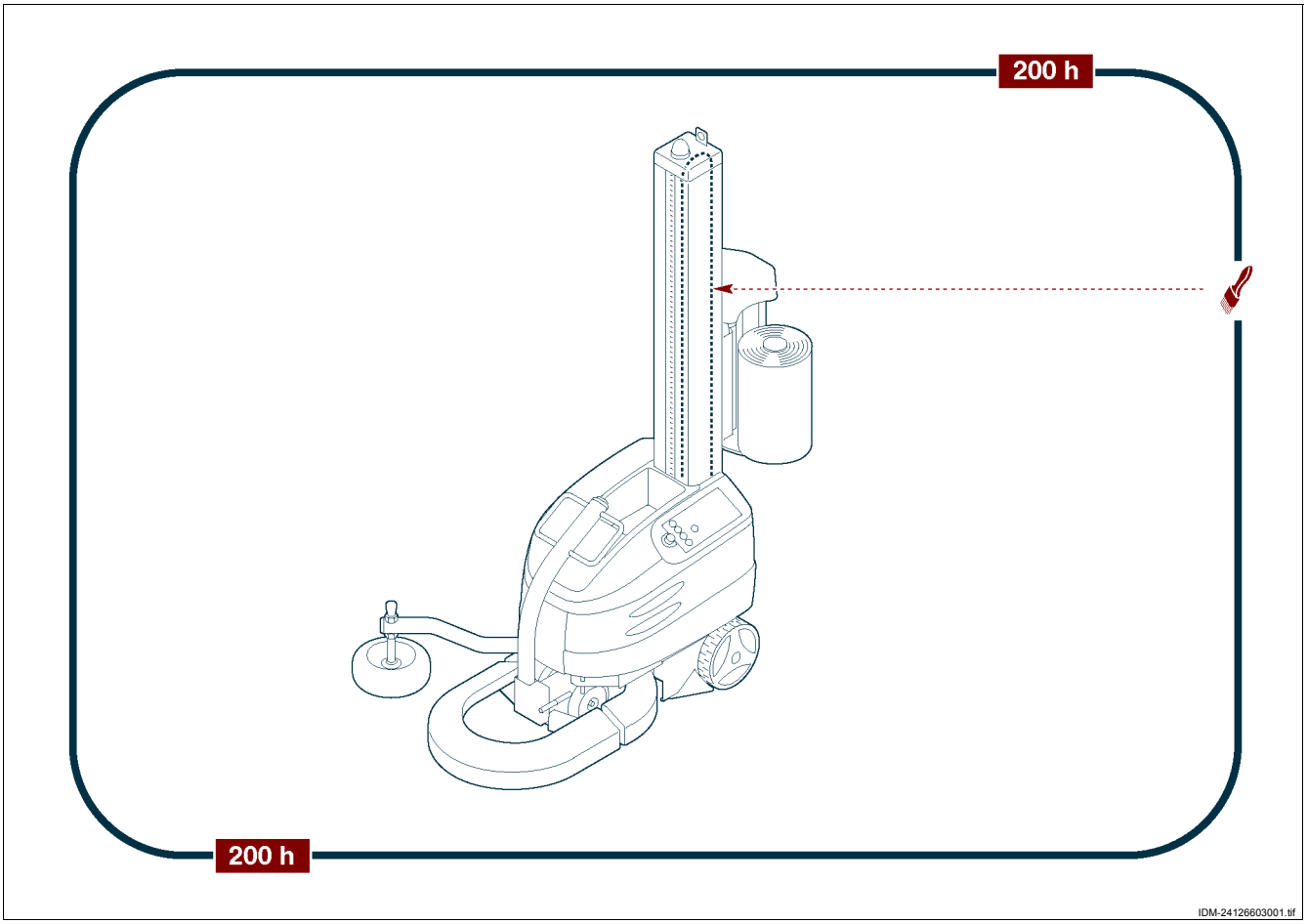
7.3. LUBRICATION POINT DIAGRAM

Lubricate the illustrated parts at the time and with the methods indicated.



Key: *Smear with grease*

8.1. ALARM MESSAGES

In the event of a breakdown during operations the machine stops automatically and alarm messages appear on the display.
The table lists the displayed messages, the type of problem, the cause and possible solutions.

Information

For these operations a precise technical skill or ability is required and must therefore be exclusively performed by qualified personnel with certified experience acquired in the specific field.

Alarm	Problem	Cause	Solution
E01	Emergency alarm mushroom button.	Emergency alarm mushroom button pressed.	Reset the button and press the Reset button.
E10	Emergency bumper alarm.	The bumper hit an obstacle in the working area.	Remove the obstacle and press the "Reset" push-button.
E11	Cover open alarm.	Protection cover open.	Close the cover and press the Reset button.
		The microswitch does not work.	Replace the microswitch.
E30	Drive motor alarm.	Drive motor failure.	Check motor operation and consult the electric plant diagram.
E31	Carriage motor alarm.	Carriage lift motor failure.	Check motor operation and consult the electric plant diagram.
E32	PFS motor alarm.	PFS-type spool carriage film stretch motor failure.	Check motor operation and consult the electric plant diagram.
E33	Inductive malfunction alarm.	Inductive sensor malfunction.	Check the conditions of the inductive sensor.
E34	Spool carriage lifting encoder alarm.	Spool carriage lifting encoder malfunction.	Check encoder operations consulting the wiring diagram.
E60	Film end/broken alarm.	The film is broken or the spool is empty.	Insert the film or replace the reel.
E70	Function disabled alarm.	A function was selected from the control panel that is not enabled for the type of spool carriage installed on the machine or the keyboard block is on.	Select another function from the control panel or release the keyboard
E80	Charge battery alarm.	Battery charge failure.	Check the battery charger and refer to the wiring diagram.
E90	Uncharged battery alarm.	The battery has run down to the safety level; the machine will stop.	Convey the machine to the next re-charge point by using the forward/ backward manual buttons positioned on the drawbar (see 6.12.).

9.1. REPLACEMENT INSTRUCTIONS

Danger - Warning

Before performing any replacement operation, activate all of the security devices provided and evaluate the necessity to adequately inform personnel operating in the near vicinity. In particular, confine the neighbouring areas to impede access to the devices that could, if activated, produce unexpected danger conditions provoking hazards to personal safety and health.

In the event deteriorated parts need replacement, only use original spare parts. The manufacturer is not liable for damages to persons or parts caused by the use of non-original parts and extraordinary operations that can modify safety requirements without express authorisation. To request parts follow the indications found in the spare parts catalogue.

9.2. BATTERY REPLACEMENT

Proceed as indicated.

1 - Lift cover **(A)** and the electric board panel.

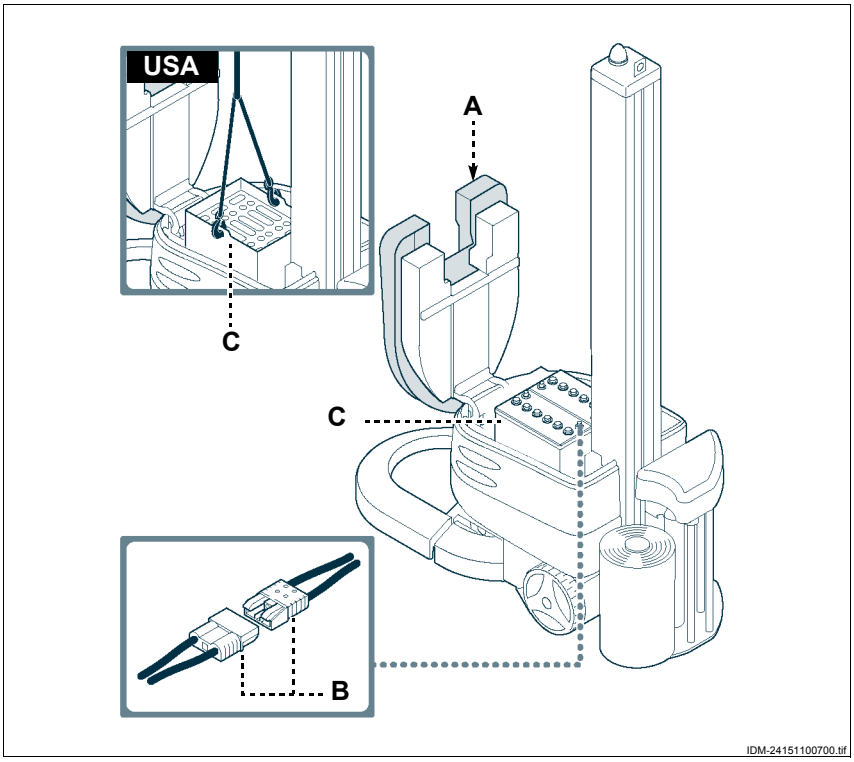
2 - Remove the connector **(B)** from the socket.

3 - Lift and replace the battery.

4 - Connect the red and blue cables to their poles respectively.

5 - Plug the connector **(B)** to the socket.

6 - Close the electric board panel and the case **(A)**.



9.3. FILM CUTTING BLADE REPLACEMENT

Proceed as indicated.

1 - Lift the reel carriage in order to facilitate the necessary operations.

2 - Remove the cover guard **(A)**.

3 - Loosen the fastening screws **(B)**.

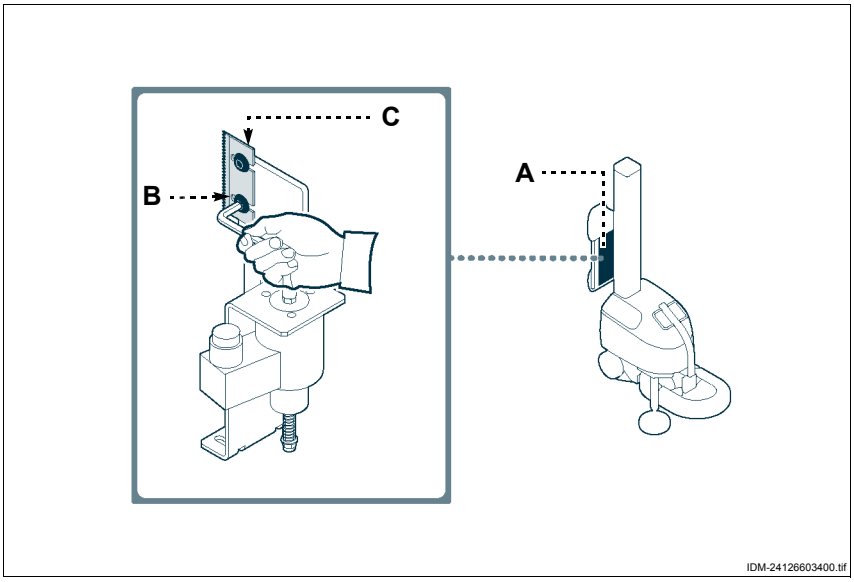
4 - Remove blade **(C)** and replace it with a new one.

5 - Tighten screws **(B)**.

6 - Re-assemble the guard **(A)**.

Danger - Warning

Handle with great care as the blade is very sharp.



9.4. REMOTE CONTROL BATTERY REPLACEMENT

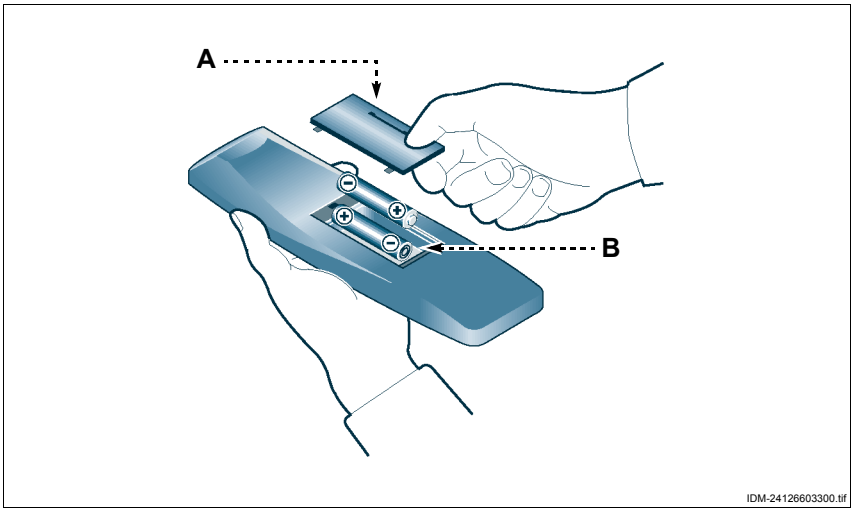
Proceed as indicated.

1 - Remove the cover **(A)**.

2 - Replace the batteries **(B)** and insert the new one according to the polarity indicated on the remote control.

Information

The used batteries shall not be dispersed in the environment, but disposed of according to the regulations in force.



9.5. MACHINE DISPOSAL

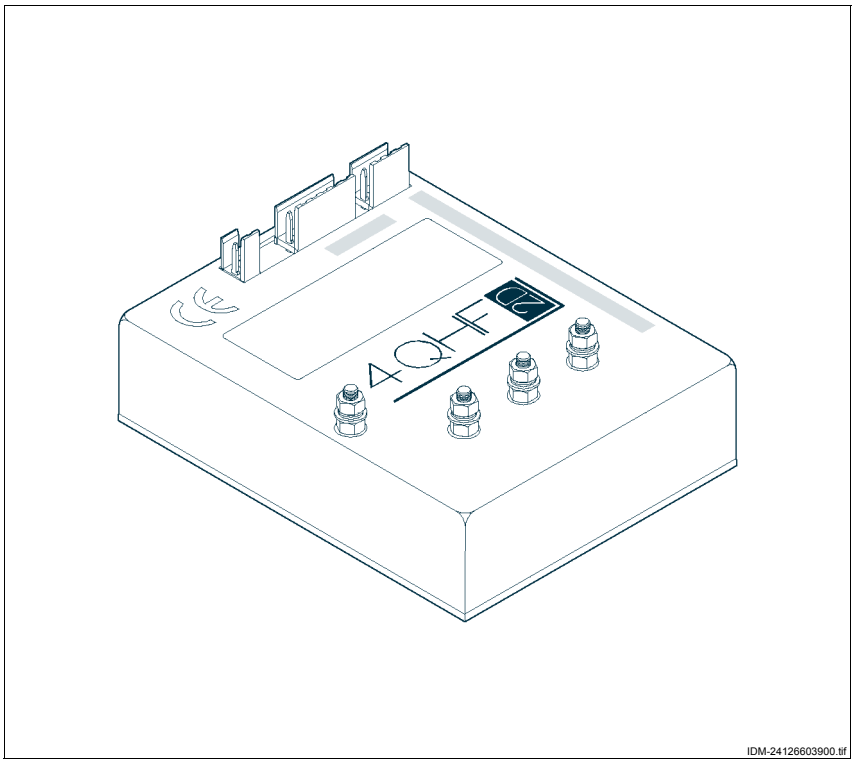
Information

This operation must be performed by skilled technicians according to the work safety laws in force. Do not litter the environment with non-biodegradable products, lubricants and non-ferrous parts (rubber, PVC, resin, etc.). Perform disposal according to the pertinent laws in force.

ENCLOSURES

4QHF 2D HIGH FREQUENCY ELECTRONIC CONTROL UNIT WITH ENERGY RECOVERY

The bidirectional high frequency electronic control unit with energy recovery and aided by microprocessor type 4QHF 2D has been added to the newest range of products manufactured by ELEKTROSISTEM.



Conceived for permanent magnete motors and realized in compliance with the most recent security provisions for the application on EC-vehicles, it is produced in a wide power range (from 45 A up to 140 A). The acceleration adjusting device allows the vehicle to gradually and regularly reach the maximum speed.

The current limiter enables the operator to adjust the max. current supplied to the motor.

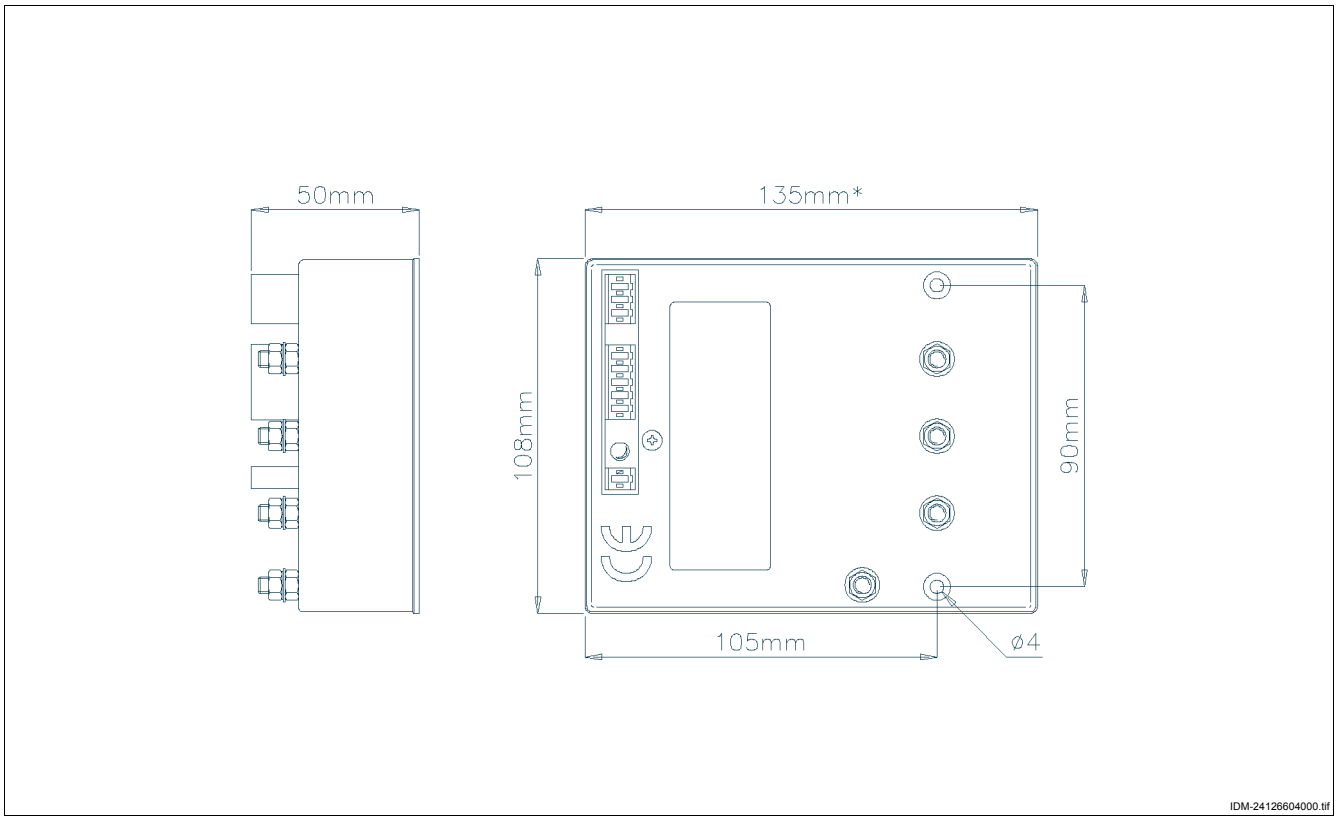
This control unit is provided with a variable regenerative braking that can be adjusted by the operator according to his needs and acts during the vehicle's deceleration, reverse and by pedal release.

MAIN TECHNICAL FEATURES

- Control unit aided by microprocessor.
- Operation parameters adjustable through a programming display or by PC.
- Slow starting through adjustable acceleration slope.
- Settable limiter of the max. current supplied to the motor.
- Proportional action thermal limiter.
- Recovery braking system activated during deceleration, by pedal release and in reverse.
- Settable limiter of the max. braking current.
- Control system by a 5K potentiometer connected to 3 wires.
- Control system by a potentiometer connected to 2 wires with adjusting angle on request.
- Total protection against battery polarity inversion thanks to an internal line relay.
- Intervention of the safety block in case of short circuit of the Mos units.
- Intervention of the safety block in case of potentiometer breakdown.
- Intervention of the safety block when, turning the key, the potentiometer is not on 0 and disabling by resetting the potentiometer to 0.

TECHNICAL SPECIFICATIONS

Voltage rating 12-24-36-48V
Allowed power
supply variation ..... from 85% to 125%
Operation frequency..... 16 KHz
Operation temperature ..... -20°C/+40°C
Humidity at 25° C ..... . 90 %
Thermal limiter action ..... from 70°C to 80°C
Weight 4QHF 2D 45/60A ..... 350 gr.
Weight 4QHF 2D 90/140A ..... 450 gr.



TROUBLE SHOOTING

Correspondence between number of led flashings and error found

1) Motor is not immobile upon start up.
2) Motor is not immobile upon start up.
3) Battery voltage too low detected.
4) Battery voltage too high detected.
5) Potentiometer is not at zero upon start up.
6) Potentiometer interrupted.
7) Overheated.
8) Braking lasted longer than maximum time.
9) EPROM programming error.
10) Control power error.

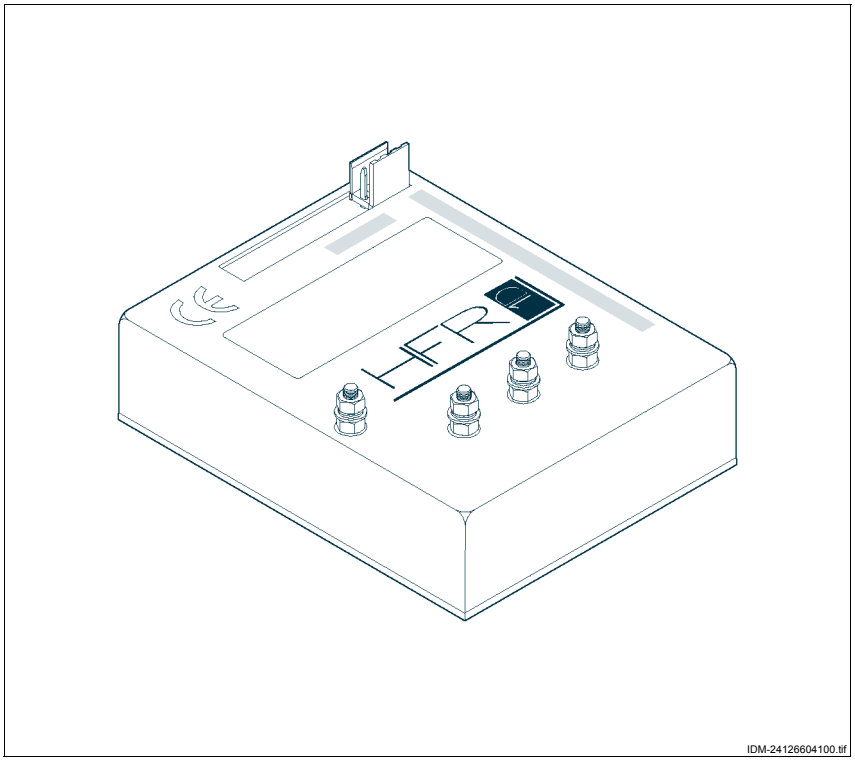
HFR 1D HIGH FREQUENCY ELECTRONIC CONTROL UNIT WITH ENERGY RECOVERY

The unidirectional high frequency electronic control unit with energy recovery type HFR 1D has been added to the wide range of products manufactured by ELEKTROSISTEM.

Conceived for permanent magnete motors, this equipment complies with the newest security provisions for the appli-cation on EC-vehicles and is produced in a wide power range (from 60 A up to 150 A. The acceleration adjusting device allows the vehicle to gradually and regularly reach the maximum speed.

The current limiter enables the operator to adjust the max. current supplied to the motor.

This control unit is provided with a variable regenerative braking whose max. value is fixed by the recovery braking adjusting device.



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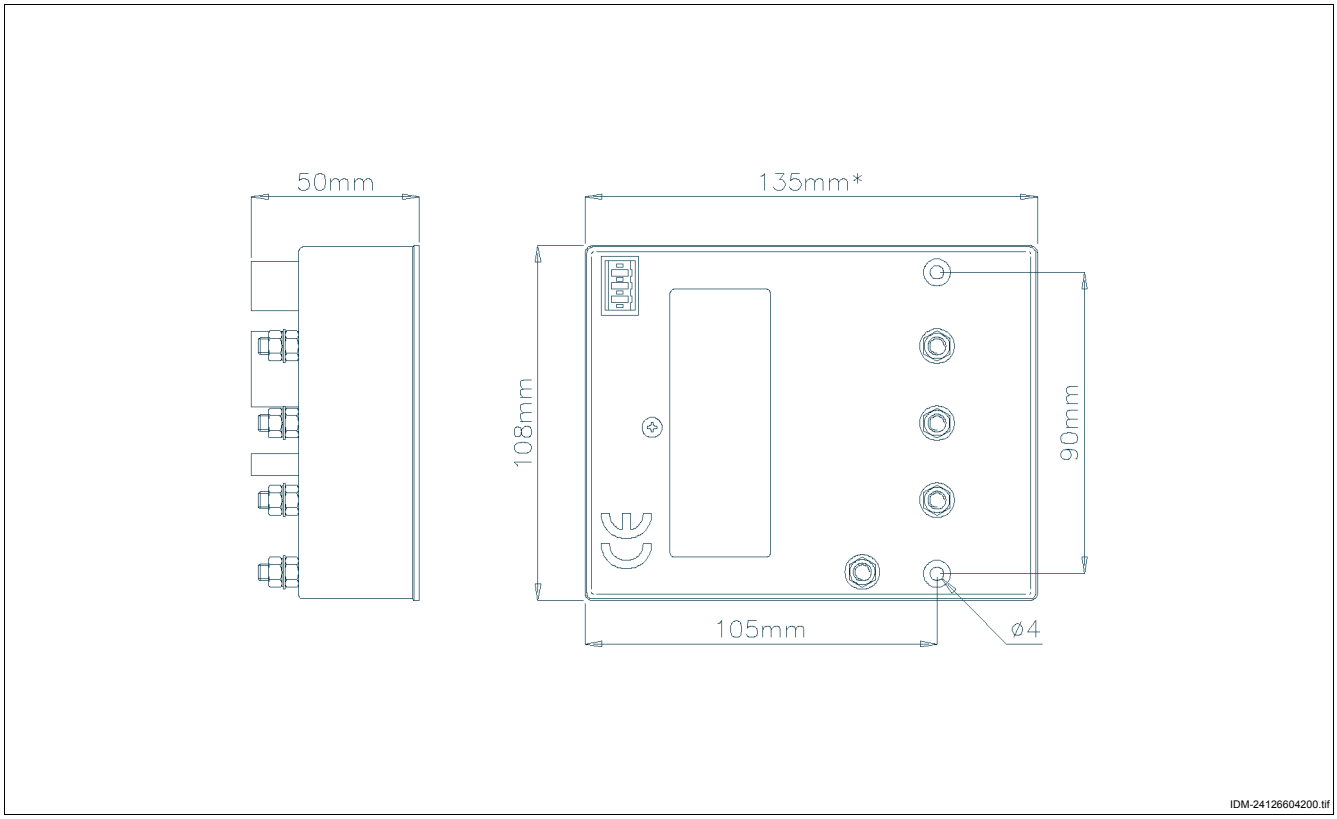
MAIN TECHNICAL FEATURES

- Slow starting through adjustable acceleration slope.
- Presettable limiter of the max. current supplied to the motor.
- Thermal limiter with a proportional action.
- Recovery braking system activated by deceleration or by pedal release.
- Presettable limiter of max. braking current.
- Control system by a 5K or a 10K potentiometer connected to 3 wires.
- Control system by a potentiometer connected to 2 wires with adjusting angle upon request.
- Total protection against battery polarity inversion by means of an internal line relay.
- Protection against short circuits of the mos units.
- Protection against potentiometer breakdown.
- Intervention of the safety block when, turning the key the potentiometer is not on the value 0.
- Disabling of the safety block by resetting the potentiometer to the value 0.

TECHNICAL SPECIFICATIONS

Voltage rating 12-24-36V
Allowed supply variation ..... from 85% to 125%
Operation frequency..... >= 18 KHz
Operation temperature ..... -20°C/+40°C
Humidity at 25°C 90%

Thermal limiter action ..... 80°C
Max voltage supplied at 12 VB..... 94%
Max voltage supplied at 36 VB..... 98%
Weight 500g



005121 Single directional drive for 24V DC motors
005122 Bi-directional drive for 24V DC motors

Introduction

The range of direct current motor drives we design and produce is enhanced by a new product, fruit of our extensive sector experience.

The new Drive (available in single and bi-directional versions) controls permanent magnet motors with PWM (pulse width modulation) control in 24V direct current with power up to 1000W.

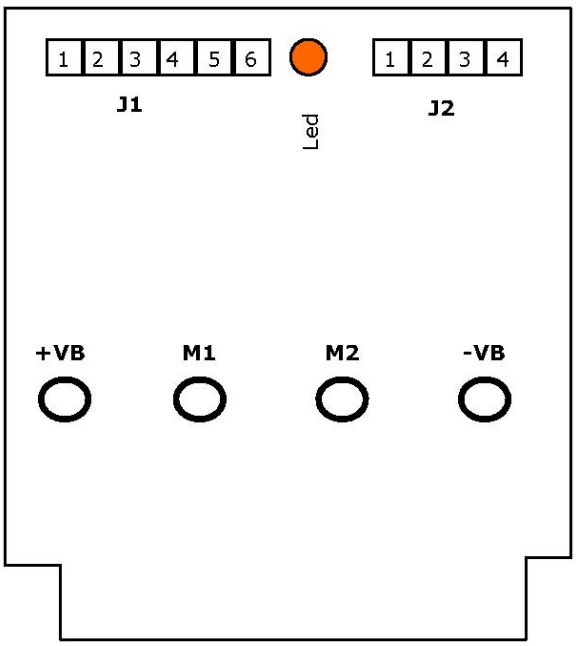
Fields of use

- Industrial automation
- Electrical vehicles
- Operating machines
- CNC

CE

005121 Single directional drive for 24V DC motors
005122 Bi-directional drive for 24V DC motors

Connections



Power connectors

Signal	Type	NOTE:
+VB	Power	+24V DC (Alimentazione di potenza dalla batteria)
M1	Uscita	Motore (polo positivo)
M2	Uscita	Motore (polo negativo)
VB	Power	Massa

Note: Ring contacts with 5 mm internal diameter must be used to wire these power signals. The wire must be stapled to the ring and welded since any imperfect staples could generate overheating and damage the drive. M5 brass nut included for the lock.

005121 Single directional drive for 24V DC motors
005122 Bi-directional drive for 24V DC motors

Signal connectors

J1 (only on 005122 bi-directional drive)

Pin	Name	Type	NOTE:
1	Block	Output	Open collector signal (sent to GND when a lock condition occurs)
2	05V	Input	Speed signal (analog) sets rotation speed
3	Forward	Input	Forward direction (TTL) Active Low
4	Back	Input	Reverse direction (TTL) Active Low
5	Start	Input	Drive start (+5V..+24V)
6	Gnd	Power	Grounding

J2

Pin	Name	Type	NOTE:
1	Gnd	Power	Gnd
2	Block	Output	Open collector signal (sent to GND when a lock condition occurs)
3	Start	Input	Drive start (+5V..+24V)
4	05V	Input	Speed signal (analog) sets rotation speed

Note: 6-ple J1 connector type AMP MODU1 6-WAY (2806111) 4-pole J2 connector type AMP MODU1 4-WAY (2806101)

Led

The led indicates the drive operating conditions.

ON drive running
OFF drive blocked or off

005121 Single directional drive for 24V DC motors
005122 Bi-directional drive for 24V DC motors

Operating description

Connect power (+VB) and (-VB) and motor (M1) and (M2)
The +24Start signal turns on the drive.
The Forward/back signal (active low) sets the rotation direction
The 0-5V analog signal sets speed.

The drive reaches the set speed with suitable acceleration ramps, editable with firmware.

If the motor is blocked, the drive detects it by the dissipater thermal shift and starts to reduce the supplied current until it Blocks if the motor is not released. The block triggers at 75° C on the cooling fin.

Installation

The aluminium dissipater is only a heat guide. If the load exceeds 300W, the drive must be externally dissipated (fastening it with 2 M4 screws to a dissipating surface (metal panel for example))

Technical specifications

Characteristic	UM	Value
Dimensions	mm	128*108*53
Weight	Kg	0,6
Working temperature	°C	20..+70 (humidity under 90% not condensed)
Power supply	V	24 (+/5%)
PWM frequency	KHz	20
Output voltage variation	%	0..96
Final Mosfet characteristics	—	110A 60V
Temperature sensor	—	NTC directly applied to the mosfet fin
Plastic characteristics	—	Self-extinguishing V0
Certifications	—	CE FCC compliant

"RBP24M20-0" BATTERY CHARGER
"RBP24M20-0-110" BATTERY CHARGER

Description

Single-phase battery charger with microprocessor control.

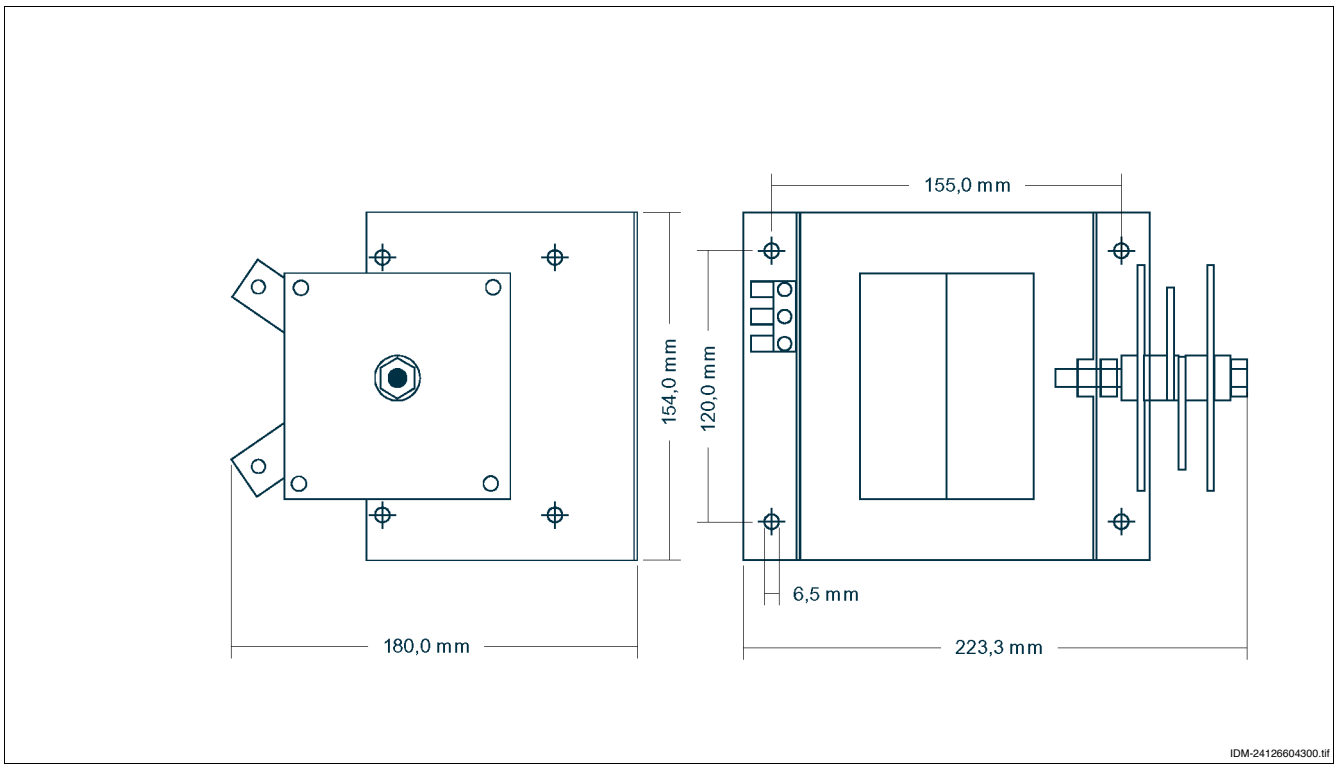
Two versions: RBP24M20-0 (for mains with 230V)
RBP24M20-0-110 (for mains with 110V)

It is made up of a transformer, a single-phase rectifier bridge, a control and diagnostic board and protection elements.

Electrical characteristics

Input voltage 220-230-240 V @ 50Hz (for model RBP24M20-0)
Input voltage 100-110-120 V @ 50Hz (for model RBP24M20-0-110)
Absorption at maximum charge .....750 VA
Output voltage at max. charge and rated input voltage..... 24 Vdc
Output voltage at rated input voltage.....20-21 A
Final charge time.....3 hours and 30'.
Final charge limit.....2,5 V/el in standard mode.
Max. charge time .....14 hours
Max. voltage Block.....2,85 Volt/el.

Mechanical characteristics



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Connections
The battery charger is equipped with a power cord that has a plug with two single polar red and black wires for DC output.

The control board has a 6-way connector for connection to the diagnostic relays.
The movable connector is MOLEX brand of the MINI-FIT-JR family with female contacts.

Voltage changer
The power cord terminates on a terminal board where three rated voltage possibilities are indicated: factory connections are for a 230V plug, for the RBP24M20-0 model, and for a 110V plug for the RBP24M20-0-110 model.

Turning on
– Before connecting the battery make sure it is a 24V rated battery
– Before connecting to the mains make sure that the voltage level matches the settings on the voltage changer on the terminal board.
– Connect the red and black wires to the battery.

Pay attention to the polarity red = positive, black = negative

At this point the yellow led turns on (BATTERY CONNECTED).
– Connect the mains, wait a few moments until the red led turns on (SUPPLY): the battery charger is working.

FUNCTIONAL DESCRIPTION (SOFTWARE SWE01B)

Note: the response time of the board is rather slow (a few seconds), to avoid false interventions due to interferences. Keep in mind during inspection.

Limit calibration
The trimmer for fine calibration of the voltage limit is to vary (approximately +-0,1V/el) the voltage limit values including charge end and max. voltage. The board is furnished calibrated to 30.0V.

Cycle description
The beginning of the cycle occurs when the mains is connected. It is assumed that the battery is permanently connected. All the leds turn on for 4 seconds ensuring that none of them are broken and that the board is efficient. After 5 sec. The red “SUPPLY” led turns on and the “initial charge” phase starts in which the board continuously controls battery voltage. When the limit is reached (typically 2,5V/el), the “final charge time” is counted and the “BATTERY CHARGED” led blinks. At the end of this time the “BATTERY CHARGED” led turns on and the battery charger turns off because charging has terminated. During a normal cycle, the “Fail” relay is never activated.

Equalization
If the equalization activation bridge is present (BRIDGE 3), once charging has terminated an equalization cycle starts characterised by the battery charger turning on for 2 minutes every 12 minutes for a maximum of 72 times.
If power is disconnected during this time the cycle is interrupted and a new charge cycle starts when power is restored.

Dimming
For the first 30 minutes from turning on, even if the battery voltage rises over the final charge limit, the board does not move to final charge in order to permit partially sulphated batteries to stabilise.

Charge phase indication
The “BATTERY CHARGED” led indicates the charge phase:
– Off = initial charge in progress.
– Blinking = final charge in progress.
– On = charge correctly terminated.

If the charge terminates due to anomaly, the led remains off even if the final charge phase was reached.

Charge diagnosis
If an anomaly is detected the battery charger turns off and the “BATTERY CHARGED” led does not turn on at the end of the cycle. The “SUPPLY/DIAGNO” led blinks to indicate which anomaly was detected, and the “Fail” relay is activated for remote signalling. This condition continues until the mains power is disconnected: the next time the mains power is connected the board cancels all the alarms.

Foreseen anomalies are:
1) Max. charge time passed (14 hours from charge start).
2) Excessive battery voltage during charging. (>2,85 V/el)
3) Battery voltage too low or too high at start. (<1,4 V/el, >3,0 V/el)

Diagnostic system by blinking "SUPPLY/DIAGNO" led

If the battery charger stops before the end of charging for any reason it is signalled by a number of blinks (continuously repeated with a pause between one group and the next) that lets the operator know the reason for the block.

The set anomaly codes are the following:

Diagnosis led on: normal conditions, indicates mains power present.

Diagnosis led off: mains power absent, new cycle ready to start.

2 blinks: battery voltage too high (both when turned on and during the charging phase).

The limit is set to 2,85 V/el.

3 blinks: battery voltage too low when turned on. Comment as above.

The limit is set to 1,4 V/el.

4 blinks: maximum charging time expired without the battery voltage rising (14 hours).

"Test" Mode

"TEST" mode can be selected to perform an accelerated test cycle - 1 normal hour becomes 1 second – and reflects the true voltage limit set. This mode is activated creating a transition (opening or closing) of BRIDGE 1 ("TST") during the time when all the leds are on (the first two seconds after turning on). In reality, the TEST mode is performed with the same sequence as the normal mode, with the same limits.

No mains power

As soon as mains power is disconnected, the board opens all the relays and the "SUPPLY" and "BATERY CHARGED" leds turn off. It remains in standby in power savings mode (<10mA) waiting for a new charging cycle that will start the next time mains power is connected. The "BATTERY CONNECTED" led that is directly connected to the battery stays on.

"Fail" Relay

Normally idle, it is enticed only if charging terminates anomaly. It is release as soon as the mains power is disconnected.

"Mains" Relay

Enticed while mains power is present, release when disconnected.

CONTROL BOARD CONNECTION DESCRIPTIONS

Connector J1 (BAT) - Battery (already connected in the factory).

1 - Negative
2 - Positive

Connector J2 (MAINS) - Mains (already connected in the factory).
1,2 - Charge relay contact (phase). Input on pin1, output on pin2.
3 - Neutral

Connector J3 (AUX) - Signal relay

1	com.	Fail
2	nc	Fail
3	no	Mains
4	no	Fail
5	nc	Mains
6	com.	Mains

PROTECTIONS

– Battery fuse in 10.3 x 38 fuse box on the electric system main terminal board.
– Mains fuse on the control board in protected fuse box:
in glass 5x20 fast 6.3A for model 220V.
in glass 5x20 fast 10A for model 110V
– Self-resetting thermostat inserted in the transformer winding.

TROUBLE SHOOTING

Breakdown	Diagnoses	Possibile cause
Battery charger off with only battery connected..	No led on.	Battery broken or battery fuse interrupted.
Battery charger off with battery connected, mains connected and main switch in position **1**..	Yellow led on, red led off.	No mains power, power cord damaged, mains fuse interrupted, intervention of the transformer overload protection.
Battery charger connected to the mains, main switch in position **1**, but charging does not start.	Battery charge state indicator on machine display does not blink.	No mains, connection cord damaged, mains fuse interrupted, battery voltage under the 16.8 V minimum (see “Charging a fully uncharged battery” page 32).
End charge voltage too high.	Green led off (after blinking) at the end of charging, red led blinks twice.	Mains voltage out of range or primary plug of the transformer incorrect.
End charge voltage too low.	Green led off (after blinking) at the end of charging, red led blinks three times.	Mains voltage out of range or primary plug of the transformer incorrect.
Maximum time.	Green led off (after blinking) at the end of charging, red led blinks four times.	Battery broken or mains voltage too low.