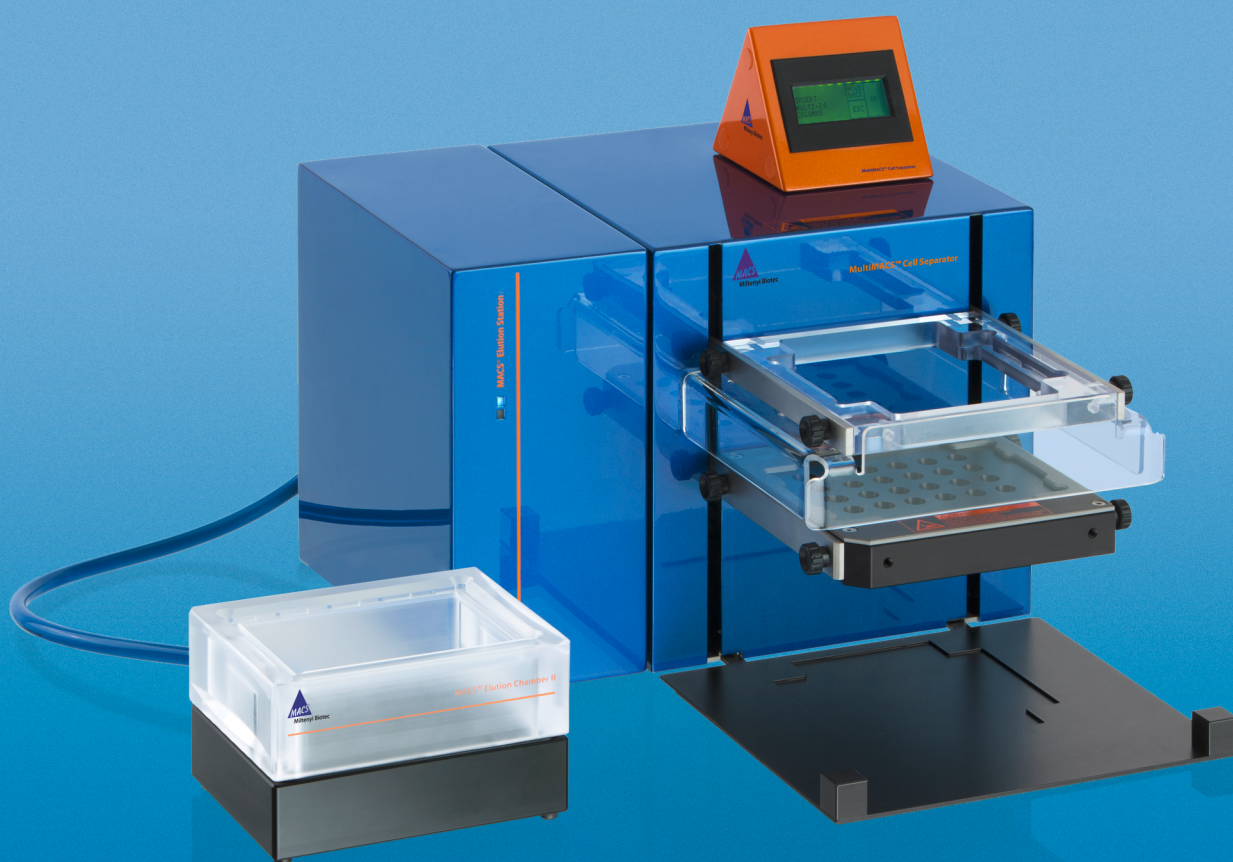




Miltenyi Biotec

MultiMACS™ Cell24 Separator Plus

User manual



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MultiMACS™ Cell24 Separator Plus

User manual

Original instructions

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Read the chapter **Important safety information** and all other information in this user manual before using the instrument



Before using the MultiMACS Cell24 Separator Plus, read the chapter **Important safety information** and all other information contained in this user manual, including any safety and operating instructions. Pay special attention to all warnings displayed on the instrument. Failure to read and follow these guidelines could lead to improper or incorrect usage and result in damage to the instrument. Improper usage could also cause severe personal injury, death, unpredictable results, instrument malfunction, and premature wear to components shortening the lifetime of the instrument. Such actions may void your warranty. Keep the user manual and any other safety and operating instructions provided with the instrument in a safe place accessible to all users for future reference.

If you have a serious concern regarding the safe use of your instrument, contact your authorized Miltenyi Biotec service provider or call Miltenyi Biotec Technical Support.

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WARNING The MultiMACS Cell24 Separator Plus is designed for safe use when installed correctly, operated by professional laboratory personnel, operated in accordance with general safety practices and the instructions in this user manual.

Warnings and precautions

The guidelines in this section explain the potential risk associated with operating this instrument and provide important supplemental safety information to minimize the risks. Follow the instructions carefully to protect yourself, others, and the equipment from potential hazards and create a safe work environment. Use this instrument only as specified by the manufacturer to avoid damage of equipment and injury to personnel.

Always follow local working area safety instructions and laboratory policies as well as standards for health, safety, and prevention of accidents. Contact the local authorities governing electrical power supply, building constructions, maintenance, or safety for more information about the safe installation and operation of the instrument.

Hazard levels

Signal words are used to identify safety and property damage messages. The following signal words are used throughout this user manual.

WARNING or **WARNING!** indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

CAUTION or **CAUTION!** indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Symbols



SAFETY WARNING: THE DOCUMENTATION MUST BE CONSULTED IN ALL CASES WHERE THIS SAFETY SYMBOL IS USED ON THE INSTRUMENT.



RISK OF ELECTRIC SHOCK.



STRONG MAGNETIC FIELD.



PERSONS CARRYING PACEMAKERS OR ELECTRONIC MEDICAL IMPLANTS MUST MAINTAIN DISTANCE.



RISK OF CRUSHING AND SHEARING OF BODILY PARTS.



BIOHAZARD. RISK OF CONTAMINATION IF POTENTIALLY DANGEROUS BIOLOGICAL MATERIAL IS USED.



ON (POWER SUPPLY).



OFF (POWER SUPPLY).



PROTECTIVE CONDUCTOR TERMINAL. SYMBOL IS ATTACHED ON THE INSIDE OF THE INSTRUMENT. INFORMATION FOR SERVICE PERSONNEL.



DIRECT CURRENT.



FUSE.



WEEE (WASTE OF ELECTRICAL AND ELECTRONIC EQUIPMENT).



READ THE USER MANUAL BEFORE USING THE INSTRUMENT.



READ THE USER MANUAL BEFORE USING THE INSTRUMENT.



MANUFACTURER.



ORDER NUMBER.



TYPE NUMBER.



SERIAL NUMBER.



EUROPEAN CONFORMITY MARKING.



NRTL CERTIFICATION MARK: PRODUCT MEETS CONSENSUS-BASED STANDARDS OF SAFETY, REQUIRED BY THE OCCUPATIONAL SAFETY/HEALTH ADMINISTRATION (OSHA), DETERMINED BY THE NATIONALLY RECOGNIZED TESTING LABORATORIES (NRTL) TÜV SÜD.



UNITED KINGDOM CONFORMITY ASSESSED MARKING.

Safety labels

Notice the hazard points and safety symbols of the instrument.

- Keep safety labels and safety markings clean and legible.
- Inspect the safety labels and safety markings regularly and replace them if they are not legible or identifiable from a safe viewing distance.
- Contact Miltenyi Biotec for replacement labels.

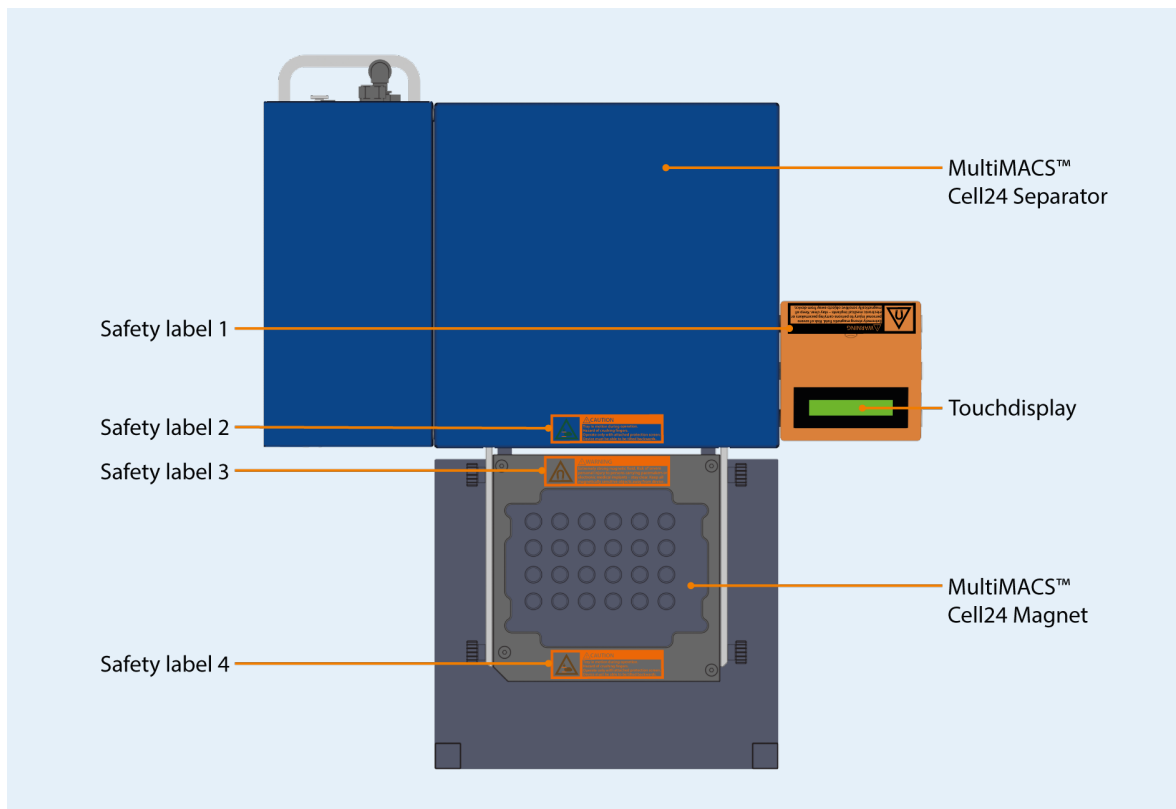


Figure 1: The hazard points and the position of the safety symbols of the MultiMACS Cell24 Separator Plus.

Safety label 1 and 3



WARNING! Extremely strong magnetic field. Risk of severe personal injury to persons carrying pacemakers or electronic medical implants – stay clear. Keep all magnetically sensitive objects away from device.

Safety label 2 and 4



CAUTION! Tray in motion during operation. Hazard of crushing fingers. Operate only with attached protection screen. Device must be able to be tilted backwards.

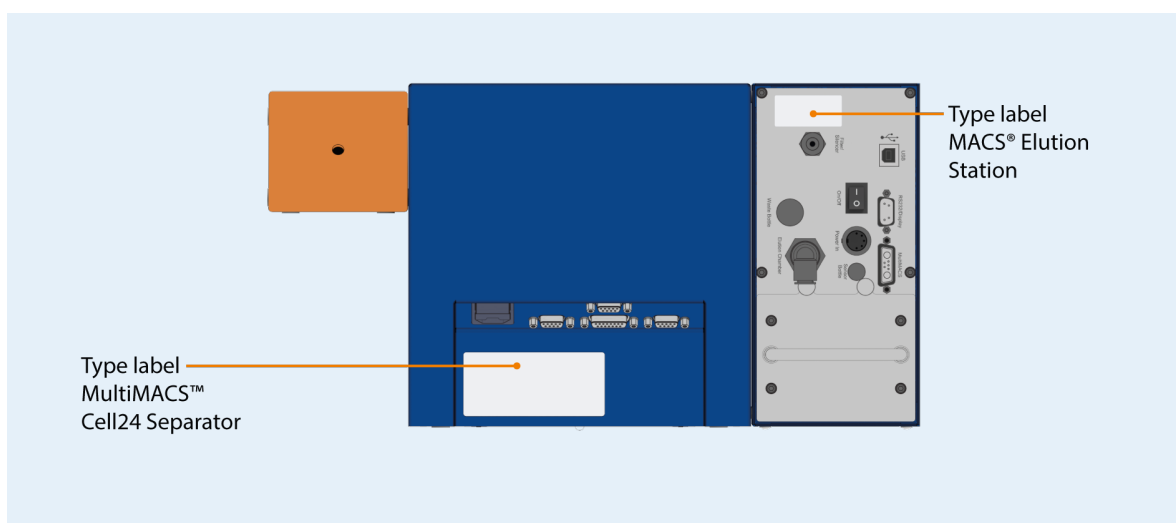
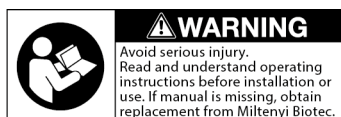


Figure 2: Type labels of the MultiMACS Cell24 Separator Plus.

The following safety label is attached to the type label of the MultiMACS Cell24 Separator.



WARNING! Avoid serious injury. Read and understand operating instructions before installation or use. If manual is missing, obtain replacement from Miltenyi Biotec.



General safety instructions

If the instrument is not working properly and/or the displayed instructions or messages advise you to contact technical support, safe operation of the instrument is not longer possible. Immediately switch off and unplug the instrument from the power outlet and contact an authorized Miltenyi Biotec service provider or Miltenyi Biotec Technical Support.



Electricity and fire hazards

Potential risks arising from electrical devices include electric shock, short, and overheating. Electric shock may lead to severe personal injury or death. An electric short and overheating may lead to the spread of fire. Electronic equipment might emit sparks, which could ignite combustible vapors or material resulting in explosion or fire. Do not use the instrument in areas classified as hazardous locations; for example, in oxygen-laden environments.

The housing of the instrument is designed to reduce the risks of electric shock, electric short, and spread of fire. **Do not remove or penetrate any cover.** Only authorized personnel must remove the other covers of the instrument. Never push an foreign object through an opening into the instrument. Do not use the instrument if

- it has been opened or disassembled,
- it has been dropped or damaged,
- it has damaged or broken parts,
- it has a damaged power cable,
- an object has been entered through the ventilation slots,
- an object has been dropped into the instrument.

If flames or smoke appear, immediately switch off the power supply, unplug the instrument from the electrical outlet, and contact an authorized Miltenyi Biotec service provider or Miltenyi Biotec Technical Support.

The instrument is intended for indoor use only. **If fluids enter the instrument, it may lead to electric shorts, electric shock, or fire.** Take special care while handling liquids. Do not allow liquids to enter the interior of the instrument. Protect the instrument against accidental spillages and splashes. Clean up spillages immediately. Do not operate the instrument if liquids have spilled into the instrument. Do not use the instrument in a wet and damp location. Avoid areas with high humidity or condensation. Moving the instrument from a cold environment – such as a cold room at 5 °C – to room temperature may cause condensation inside the instrument. In such cases, wait for the instrument to dehumidify before operating it. Unplug the instrument from the electrical outlet before cleaning. Do not use liquid or aerosol cleaning agents; always use a damp cloth.

Ensure adequate air circulation in the room when the instrument is operated. In the absence of adequate circulation, ambient air may not cool the instrument to acceptable operating temperatures. Allow sufficient air circulation around the instrument – at least 15 cm on all sides – during operation to ensure adequate cooling. Do not place the instrument near radiators, heat registers, stoves, or other equipment (including amplifiers) that generate heat. Protect the instrument from direct sunlight. Do not cover the slots and openings of the

instrument as these are provided for ventilation and protect the instrument from overheating. Do not place the instrument in a built-in rack or similar confined spaces unless the space has been specifically designed to provide proper ventilation. Follow the mounting instructions for the instrument.

Ensure that the main switch as well as the plug of the power cable are easily accessible and located as close to the operator of the instrument as possible. If it is necessary to disconnect the power supply, unplug the cable from the power outlet.

The instrument is equipped with a three-wire electrical grounding-type plug that has a third pin for grounding. This plug fits into a grounded power outlet only. This is a safety feature. Do not try to insert the plug into a non-grounded power outlet. If you cannot insert the plug into the outlet, contact your local electrician to replace the outlet. The instrument should only be operated from a power source that meets the specifications mentioned on the product's electrical ratings label. If you have questions about the type of power source to use, contact your authorized Miltenyi Biotec service provider or local power company. Do not use extension cords or power strips. Do not overload an electrical outlet.

Only peripheral devices that comply to UL 60950 are allowed to be connected to the RS232 connector labeled COM. In addition, only connect original MultiMACS Cell24 Separator Plus equipment to the connectors labeled module 1 and module 2, and connect only the MultiMACS Cell24 Separator Plus display to the connector labeled display. Only use connector cables less than 3 m in length.



Strong magnetic field

The MultiMACS Cell24 Separator Plus is equipped with an extremely powerful magnet, the MultiMACS Cell24 Magnet. Moreover, the MultiMACS Display also contains powerful magnets.



There is a risk of severe personal injury for persons carrying pacemakers, brain shunts, or electronic medical implants.

Keep any magnetic information carriers (such as credit cards, magnetic tapes and floppy disks), any electronic equipment (such as hearing aids, pacemakers, cerebral shunt, measuring and control instruments, computers, and watches), and magnetizable tools and objects at a distance of at least 20 cm from the magnet cover and at least 30 cm from the MultiMACS Display. These items may be affected or damaged by the magnetic field.



Mechanical hazards

Keep fingers etc. away from all moving parts of the MultiMACS Cell24 Separator Plus to avoid crushing and shearing injuries or damage to the instrument.

If an object has been accidentally placed under the down-moving magnet, the physical resistance of the object causes the instrument to tilt backwards, similar to a hydraulic jack. Do not place objects on the MultiMACS Cell24 Separator Plus. Leave a space of at least 20 cm distance above and behind the MultiMACS Cell24 Separator Plus to ensure that the instrument is able to tilt backwards, thus avoiding potential crushing and shearing injuries and minimizing instrument damage.

Do not circumvent any safety device or measurement. Keep the proper respective Protective Screen attached to the MultiMACS Cell24 Separator Plus when operating it manually.

For usage in a liquid-handling robot, removal of the Protective Screen may be necessary. When using the MultiMACS Cell24 Separator Plus integrated into a compatible automated liquid-handling system, assure that the combined system, i.e., MultiMACS Cell24 Separator Plus, MultiMACS Cell24 Magnet, and liquid-handling robot, meets all requirements of safety and function before starting automated processes. Thereby, particularly take the protection of the operator into account.



Chemical and biological hazards

Depending on the biological material used, contamination or infection may lead to severe personal injury or death. All clinical samples must be considered potentially infectious. **If biohazardous material is or has been used, the operator must choose and wear personal safety equipment** as indicated in the warnings and precautions for the particular substance. The above safety precaution also accounts for any hazardous chemical, including toxic or corrosive chemicals, acidic, or radioactive substances, that may be present in the sample. Wear protective gloves and clothing, as well as safety glasses to prevent contact of the substance with skin and eyes. Also protect mouth and nose as aerosols might leak from the system. Defective or inadequate safety equipment is hazardous. The instrument must be operated in a safety hood if hazardous or unknown materials are being processed. If hazardous material has been used or spilled, care must be taken to thoroughly decontaminate the instrument. It is strictly prohibited to continue to handle contaminated accessories or parts of the instrument.

Columns, plates, tubes and any other consumables that were in contact with biohazardous material must be decontaminated before disposal. Liquid waste must be autoclaved or decontaminated using a disinfectant that is appropriate for the specific pathogen, e.g., 10% bleach, isopropyl alcohol, or 70% ethanol. All liquid and solid waste must be considered biohazardous and, therefore, must be handled taking universal laboratory precautions. Waste disposal must be in accordance with any local regulations.



Servicing, transport and disposal

Unless otherwise specifically noted in this user manual or other Miltenyi Biotec documentation, **do not service the instrument yourself**. Servicing and repair must be performed by qualified service personnel. Improper or incorrect servicing or repair of the instrument can cause hazards to users, lead to unpredictable results, cause instrument malfunctions or damage, as well as premature wear and tear and reduced life of the instrument. It may also void your warranty.

When replacement or spare parts are required, ensure that the service provider uses only genuine Miltenyi Biotec parts, or third-party parts specified and recommended by Miltenyi Biotec. Using unauthorized parts can cause malfunctions of the instrument and impair results. Miltenyi Biotec does not honor any warranty or accept any responsibility for instrument failure or damages resulting from the use of inappropriate parts. After completing any service or repair work, ensure that your authorized Miltenyi Biotec service provider performs all safety checks as required by the repair procedure to ensure that the instrument is operating correctly.

Only use options and upgrades recommended by Miltenyi Biotec. Inquire with your local Miltenyi Biotec representative about Miltenyi Biotec's extensive instrument service and support arrangements, or refer to **www.miltenyibiotec.com/support**.

The instrument should be transported with care in packaging specified by Miltenyi Biotec. Internal damage can occur if the instrument is subjected to excessive vibration or is dropped. If the instrument needs to be shipped back to the manufacturer for service, decontaminate the instrument to remove any hazardous material prior to shipment. If you have questions regarding proper decontamination or shipment, contact Miltenyi Biotec Technical Support for assistance.



Waste of Electrical and Electronic Equipment (WEEE) customer information

Please dispose of your end-of-life Miltenyi Biotec products in accordance with the applicable WEEE and hazardous waste disposal legislation, which may differ by country or region.

Electrical and electronic equipment may contain hazardous substances which may have a serious detrimental effect on the environment and/or human health. That is why all equipment must be specifically collected and treated by designated waste facility centres and by qualified WEEE compliance schemes. By ensuring that you dispose of your unwanted electrical and electronic equipment according to the applicable WEEE and hazardous waste disposal legislation, you are helping to preserve our natural resources and protect human health.

Miltenyi Biotec is committed to protecting the environment. Miltenyi Biotec offers product end-of-life return programs in many countries, and partners with licensed WEEE compliance schemes throughout the world. Miltenyi Biotec lets you recycle your end-of-life Miltenyi Biotec equipment free of charge. The terms and availability of this offer vary by geography because of differences in regulatory requirements. Please note that depending on the type and use of your equipment, additional requirements may apply.

For more information, or if you wish to dispose of your end-of-life Miltenyi Biotec equipment, please contact your local Miltenyi Biotec representative or Miltenyi Biotec Technical Support.

FR	ES	DE	EN
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⚠ WARNING Der MultiMACS Cell24 Separator Plus ist für einen sicheren Betrieb ausgelegt, wenn das Gerät richtig installiert, von professionellem Laborpersonal bedient und entsprechend der Sicherheitsrichtlinien und Anweisungen in diesem Benutzerhandbuch eingesetzt wird.

Warn- und Sicherheitshinweise

Die Sicherheitsrichtlinien in diesem Kapitel erläutern die Gefahren, die sich aus dem Betrieb dieses Gerätes ergeben können und enthalten wichtige zusätzliche Informationen wie diese Risiken zu minimieren sind. Befolgen Sie diese Sicherheitshinweise sorgfältig um sich, andere und das Gerät vor möglichen Gefahren zu schützen und ein sicheres Arbeitsumfeld zu schaffen. Um Sach- und Personenschäden zu vermeiden, benutzen Sie das Gerät ausschließlich nach Angaben des Herstellers.

Örtliche Arbeitsschutzbestimmungen, Laborrichtlinien, Sicherheitsnormen und Unfallverhütungsvorschriften müssen jederzeit beachtet und eingehalten werden. Wenden Sie sich für weitere Informationen zur Stromversorgung, Gebäudeinstallationen, Wartung und Sicherheit für die Installation dieses Gerätes an die örtlichen Behörden und Ihren Stromversorger.

Gefahrenstufen

Gefahrensymbole werden verwendet, um auf Sicherheits- und Sachschadenhinweise aufmerksam zu machen. Folgende Gefahrensymbole werden in diesem Benutzerhandbuch benutzt.

⚠ WARNING oder **WARNING!** bezeichnet eine Gefahrensituation, die, falls sie nicht vermieden wird, zum Tode oder schwerwiegenden Verletzungen führen kann.

⚠ CAUTION oder **CAUTION!** bezeichnet eine Gefahrensituation, die, falls sie nicht vermieden wird, zu leichteren oder mittelschweren Verletzungen führen kann. Es kann auch verwendet werden, um vor unsicherem Gebrauch zu warnen.

Symbole



SICHERHEITSWARNUNG: BEACHTEN SIE DIE DOKUMENTATION IMMER WENN DIESES WARNSYMBOL AM GERÄT VERWENDET WIRD.



GEFAHR EINES STROMSCHLAGS.



STARKES MAGNETFELD.



PERSONEN MIT HERZSCHRITTMACHER ODER ELEKTRONISCHEN MEDIZINISCHEN IMPLANTATEN MÜSSEN ABSTAND HALTEN.



QUETSCH- UND SCHERGEFAHR.



BIOLOGISCHE GEFÄHRDUNG. RISIKO DER KONTAMINATION, WENN MIT MÖGLICHERWEISE GEFÄHRlichen BIOLOGISCHEN SUBSTANZEN GEARBEITET WIRD.



AN (STROMVERSORGUNG).



AUS (STROMVERSORGUNG).



SCHUTZLEITERANSCHLUSS. DIESES SYMBOL IST INNERHALB DES GERÄTS ANGEBRACHT UND STELLT EINEN HINWEIS FÜR DAS SERVICEPERSONAL DAR.



GLEICHSTROM.



SICHERUNG.



WEEE (ENTSORGUNG VON ELEKTRO- UND ELEKTRONIK-ALTGERÄTEN).



LESEN SIE DAS BENUTZERHANDBUCH VOR VERWENDUNG DES GERÄTES.



LESEN SIE DAS BENUTZERHANDBUCH VOR VERWENDUNG DES GERÄTES.



HERSTELLER.



BESTELLNUMMER.



MODELLNUMMER.



SERIENNUMMER.



EUROPÄISCHE KONFORMITÄTSKENNZEICHNUNG.



NRTL-PRÜFZEICHEN: DAS PRODUKT ENTSPRICHT DEN IM KONSENSVERFAHREN ERARBEITETEN SICHERHEITSANFORDERUNGEN, WELCHE VON DER OCCUPATIONAL SAFETY/HEALTH ADMINISTRATION (OSHA), GEFORDERT UND VON DER STAATLICH ANERKANNTEN PRÜFSTELLE (NATIONALLY RECOGNIZED TESTING LABORATORIES (NRTL)) TÜV SÜD GPRÜFT WURDEN.



BRITISCHE PRODUKTKENNZEICHNUNG.

Sicherheitskennzeichnungen

Beachten Sie die Gefahrenhinweise und Sicherheitssymbole des Gerätes.

- Halten Sie die Warnaufkleber und Sicherheitskennzeichnungen sauber und lesbar.
- Überprüfen Sie die Warnaufkleber und Sicherheitskennzeichnungen regelmäßig und ersetzen Sie diese, wenn sie nicht mehr lesbar oder aus sicherer Entfernung nicht zu erkennen sind.
- Kontaktieren Sie Miltenyi Biotec, um Ersatzaufkleber zu erhalten.

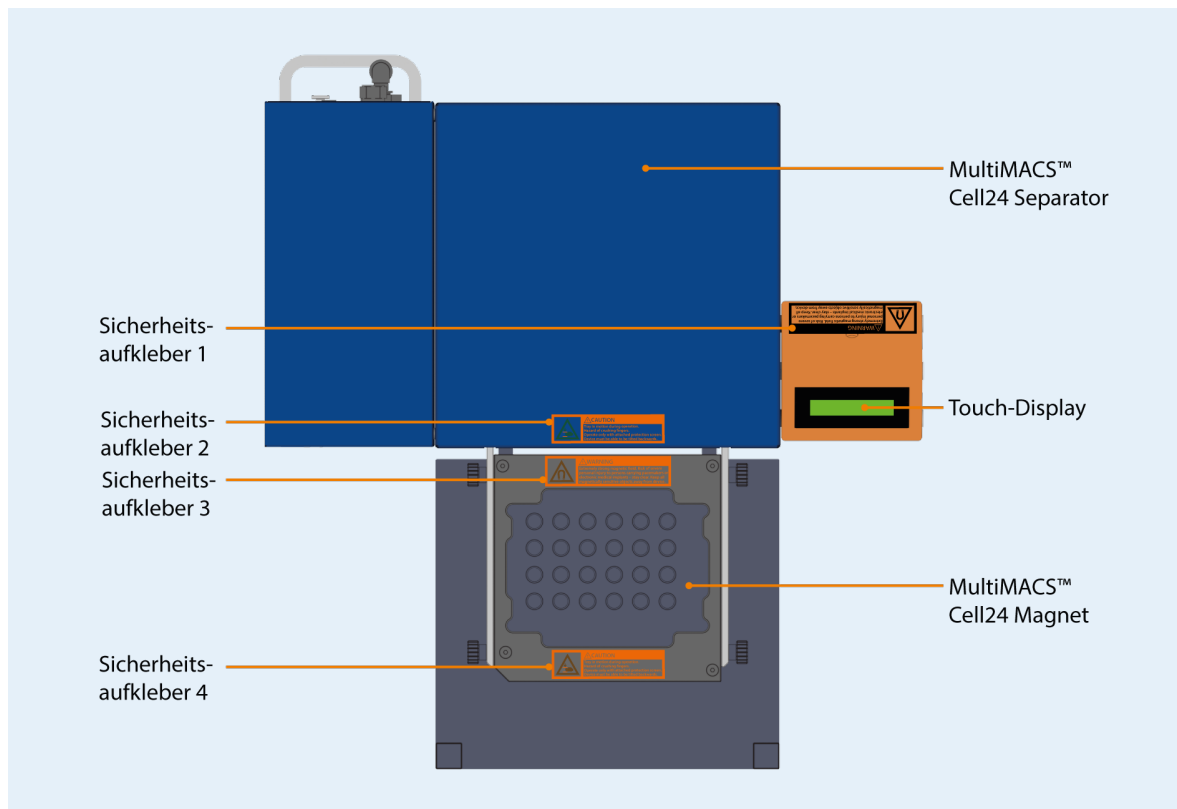


Figure 1: Warnhinweise und Position der Sicherheitssymbole auf dem MultiMACS Cell24 Separator Plus.

Sicherheitsaufkleber 1 und 3



WARNUNG! Extrem starkes Magnetfeld. Gefahr schwerer Verletzungen für Personen mit Herzschrittmacher oder elektronischen medizinischen Implantaten. Abstand halten. Alle magnetisch empfindlichen Gegenstände vom Gerät fernhalten.

Sicherheitsaufkleber 2 und 4



Vorsicht! Halter bewegt sich während des Betriebs. Quetschgefahr für die Finger. Nur mit angebrachter Schutzblende betreiben. Gerät muss nach hinten gekippt werden können.

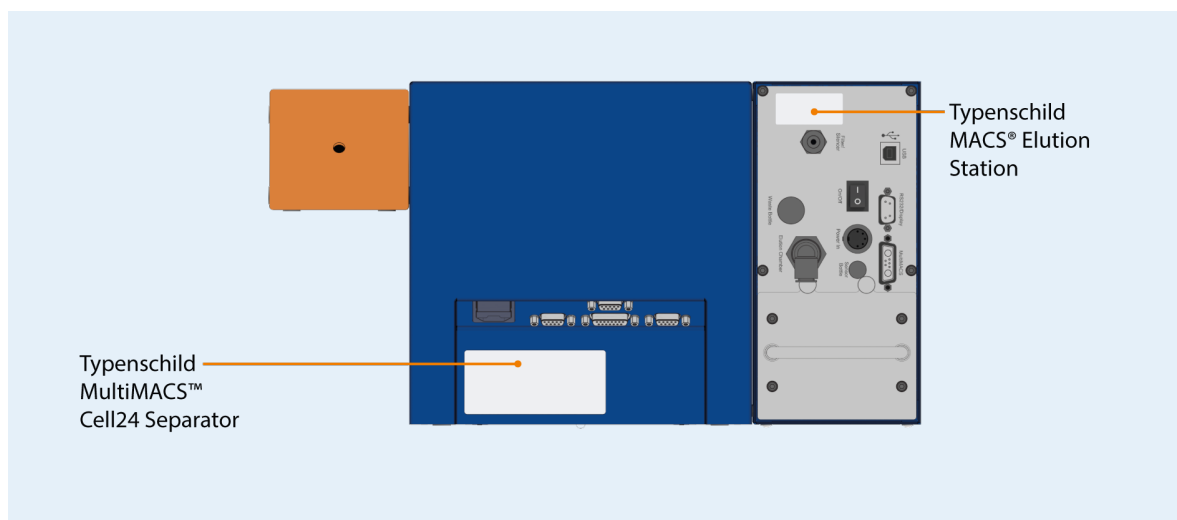


Figure 2: Typenschilder des MultiMACS Cell24 Separator Plus.

Der nachfolgende Sicherheitsaufkleber ist auf dem Typenschild des MultiMACS Cell24 Separators befestigt.



WARNUNG! Vermeiden Sie schwere Verletzungen. Vor der Installation oder Inbetriebnahme ist die Bedienungsanleitung zu lesen. Wenn die Anleitung fehlt, fordern Sie Ersatz bei Miltenyi Biotec an.



Allgemeine Sicherheitshinweise

Falls Ihr Gerät nicht einwandfrei funktioniert und/oder Anzeigen auf dem Display Sie dazu auffordern den technischen Kundendienst zu kontaktieren, ist die Betriebssicherheit des Gerätes nicht länger gewährleistet. Schalten Sie das Gerät sofort aus, ziehen Sie den Netzstecker und kontaktieren Sie einen autorisierten Miltenyi Biotec Servicedienstleister oder den Miltenyi Biotec Technical Support.



Elektrische Gefährdung und Brandgefahr

Elektrische Geräte bergen das Risiko eines Stromschlags, Kurzschlusses und der Überhitzung. Ein Stromschlag kann zu schweren Verletzungen und bis zum Tod führen. Ein elektrischer Kurzschluss sowie Überhitzung kann eine Brandursache darstellen. Elektrische Geräte können Funken schlagen, welche leichtentflammbare Dämpfe oder Materialien entzünden und somit zu Feuer und Explosionen führen können. Benutzen Sie das Gerät nicht in ausgewiesenen Gefahrenzonen, z.B. in sauerstoffangereicherten Umgebungen.

Das Gehäuse des Gerätes dient dazu das Risiko eines elektrischen Stromschlags, Kurzschlusses und Feuers zu reduzieren. Mit Ausnahme der vorderen Abdeckungen, **entfernen oder durchdringen Sie keine Abdeckungen**. Jegliche andere Abdeckung darf nur von autorisiertem Personal entfernt werden. Führen Sie nie einen Fremdkörper durch eine Öffnung in das Gerät ein. Benutzen Sie das Gerät nicht, wenn:

- es offen oder zerlegt ist,
- es fallengelassen wurde oder beschädigt ist,
- Teile beschädigt oder defekt sind,
- die Netzanschlussleitung beschädigt ist,
- ein Gegenstand in die Belüftungsschlitze eingedrungen ist,
- ein Fremdkörper in das Gerät gefallen ist.

Wenn Flammen oder Rauch auftreten, schalten Sie das Gerät unverzüglich aus, ziehen Sie den Netzstecker und kontaktieren Sie einen autorisierten Miltenyi Biotec Servicedienstleister oder den Miltenyi Biotec Technical Support.

Das Gerät ist ausschließlich für den Betrieb in Innenräumen ausgelegt. **Sollten Flüssigkeiten in das Gerät gelangen, kann es zu Kurzschluss, Stromschlag oder Feuer kommen.** Seien Sie vorsichtig im Umgang mit Flüssigkeiten. Verhindern Sie, dass Flüssigkeit in das Innere des Gerätes gelangt. Schützen Sie das Gerät vor verschütteten oder verspritzten Flüssigkeiten.

Beseitigen Sie ausgetretene oder verschüttete Flüssigkeit sofort. Benutzen Sie das Gerät nicht, sollte Flüssigkeit in das Innere des Gerätes gelangt sein. Setzen Sie das Gerät nicht in einer nassen oder feuchten Umgebung ein. Vermeiden Sie Arbeitsbereiche mit hoher Luftfeuchtigkeit oder Kondensation. Das Überführen des Gerätes von einer kalten Umgebung, z.B. aus einem Kühlraum bei 5 °C, in einen Raum mit Raumtemperatur, kann zu Kondensation im Inneren des Gerätes führen. Warten Sie in solchen Fällen mit der Benutzung des Gerätes, bis dieses getrocknet ist. Ziehen Sie den Netzstecker vor der Reinigung des Gerätes. Verwenden Sie keine Flüssig- oder Sprühreinigungsmittel, sondern nur ein feuchtes Tuch.

Ermöglichen Sie im Betrieb eine ausreichende Luftzirkulation. Die das Gerät umgebende Luft reicht nicht aus, das Gerät bei unzureichender Belüftung auf einer sicheren Betriebstemperatur zu halten. Ermöglichen Sie im Betrieb eine ausreichende Luftzirkulation – einen Abstand von mindestens 15 cm in allen Richtungen um das Gerät – um eine ausreichende Kühlung zu gewährleisten. Das Gerät darf nicht in der Nähe von Radiatoren, Heißlüftern, Öfen, oder anderen Wärme erzeugenden Geräten aufgestellt werden (Verstärker eingeschlossen). Schützen Sie das Gerät vor direkter Sonneneinstrahlung. Öffnungen und Schlitze am Gerät sind zur Belüftung gedacht und sollten niemals bedeckt oder blockiert werden, da sie das Gerät vor Überhitzung schützen und einen sicheren Betrieb ermöglichen. Versuchen Sie nicht, das Gerät in eine Einbaukonstruktion zu integrieren oder auf begrenztem Raum unterzubringen, es sei denn, es wurde eine spezielle Vorrichtung entwickelt und für ausreichend Belüftung gesorgt. Befolgen Sie die Montageanleitung für den Aufbau des Gerätes.

Stellen Sie sicher, dass der Hauptstromschalter ebenso wie der Netzstecker für das Stromkabel leicht zugänglich sind und sich in möglichst unmittelbarer Nähe zum Bediener des Gerätes befinden. Sollte es erforderlich sein die Stromzufuhr zu unterbrechen, ziehen Sie den Netzstecker aus der Steckdose.

Das Gerät ist mit einem Schutzkontaktstecker und einer dreiadrigen Anschlussleitung ausgestattet. Dieser Stecker passt nur in eine Steckdose mit Schutzkontakt. Das ist eine Sicherheitsvorrichtung. Versuchen Sie nicht, den Stecker in eine Steckdose ohne Schutzkontakt einzuführen. Wenn Sie den Stecker nicht in die Steckdose einführen können, bitten Sie einen ortsansässigen Elektriker diese zu ersetzen. Das Gerät sollte nur von einer Stromquelle aus betrieben werden, die den elektrischen Angaben auf dem Typschild entspricht. Sollten Sie Fragen zur Art der Stromversorgung haben, wenden Sie sich an einen autorisierten Miltenyi Biotec Servicedienstleister oder Ihren lokalen Stromversorger. Benutzen Sie keine Verlängerungskabel oder Steckdosenleiste. Überlasten Sie eine Steckdose nicht.

An die mit COM beschriftete RS-232-Buchse dürfen nur Peripheriegeräte angeschlossen werden, die UL 60950 erfüllen. An die mit External module 1 und module 2 beschrifteten Buchsen dürfen nur original MultiMACS Cell24 Separator Plus Geräte angeschlossen werden. Das MultiMACS Cell24 Separator Plus Display darf nur an die mit display gekennzeichnete Buchse angeschlossen werden. Es dürfen nur Anschlusskabel mit einer Länge von max. 3 Metern verwendet werden.



Starkes Magnetfeld

Der MultiMACS Cell24 Separator Plus enthält einen extrem starken Magneten, den MultiMACS Cell24 Magnet. Weiterhin enthält das MultiMACS Display sehr starke Magneten.



Es besteht die Gefahr von schweren Verletzungen für Personen mit Herzschrittmacher, Cerebralshunts oder elektronischen medizinischen Implantaten.

Halten Sie mit magnetischen Datenträgern (z.B. Kreditkarten, Magnetbänder, Speichermedien), elektronischen Geräten (z.B. Hörgeräte, Herzschrittmacher, Cerebralshunts, Mess- und Steuergeräte, PCs, Uhren), sowie mit ferromagnetischen Werkzeugen und Gegenständen mindestens 20 cm Abstand zur Magnetabdeckung und mindestens 30 cm Abstand zum MultiMACS Display, da diese durch die Magnetfelder gestört und geschädigt werden können.



Mechanische Gefahren

Halten Sie die Finger fern von allen beweglichen Teilen des MultiMACS Cell24 Separator Plus, um Quetschungen und Scherverletzungen oder Schäden am Gerät zu vermeiden.

Wird ein Gegenstand versehentlich unter den sich nach unten bewegenden Magneten platziert, so wird das Gerät durch den physikalischen Widerstand nach hinten gekippt, ähnlich einer hydraulischen Hebevorrichtung. Stellen Sie keine Gegenstände auf den MultiMACS Cell24 Separator Plus. Belassen Sie einen Abstand von

mindestens 20 cm über und hinter dem MultiMACS Cell24 Separator Plus, damit das Gerät nach hinten kippen kann, um eventuelle Quetsch- und Scherverletzungen zu vermeiden sowie Schäden am Gerät zu minimieren.

Schutzeinrichtungen oder -maßnahmen dürfen nicht umgangen werden. Bei manueller Bedienung muss der Schutzschirm (Protective Screen) am Gerät befestigt sein.

Wollen Sie das Gerät in einem Pipettierroboter einsetzen, könnte es erforderlich sein, den Schutzschirm zu entfernen. Für den Fall, dass der MultiMACS Cell24 Separator Plus integriert in ein entsprechend kompatibles, automatisches Pipettiersystem eingesetzt werden soll, muss vor Inbetriebnahme sichergestellt werden, dass dieses System, also ein MultiMACS Cell24 Separator Plus, MultiMACS Cell24 Magnet, kombiniert mit einem Pipettierroboter, allen Sicherheits- und Funktionsanforderungen entspricht. Der Schutz der Bediener der Anlage ist besonders zu beachten.



Chemische und biologische Gefahren

Abhängig von dem benutzten biologischen Material kann eine Kontamination oder Infektion zu schweren Verletzungen oder Tod führen. Klinische Proben müssen als potentiell infektiös angesehen werden. **Wird oder wurde mit biologischen Gefahrstoffen gearbeitet, muss der Bediener des Gerätes entsprechend den für die verwendeten Substanzen geltenden Warnhinweisen und Schutzbestimmungen eine persönliche Schutzausrüstung tragen.** Der oben genannte Sicherheitshinweis gilt auch für etwaige gefährliche Chemikalien, einschließlich toxischer oder korrosiver Chemikalien, ätzender oder radioaktiver Substanzen, die in der Probe vorhanden sein können. Tragen Sie Schutzhandschuhe, Schutzkleidung und Schutzbrille, um Berührung der Gefahrstoffe mit Haut und Augen zu vermeiden. Auch die Atemwege müssen geschützt werden, da Aerosole aus dem System entweichen könnten. Mangelhafte oder unzureichende Schutzausrüstung ist gefährlich. Werden Gefahrstoffe oder unbekannte Substanzen eingesetzt, muss das Gerät unter einem Abzug oder einer Sicherheitswerkbank benutzt werden. Falls Gefahrstoffe verwendet wurden oder ausgetreten sind, muss auf eine sorgfältige Dekontamination des Gerätes geachtet werden. Es ist strengstens verboten, kontaminierte Geräteteile oder Zubehöerteile weiter zu verwenden.

Säulen, Platten, Röhrchen und alle weiteren Verbrauchsmaterialien, die in Kontakt mit biologischen Gefahrstoffen gelangt sind, müssen vor dem Entsorgen dekontaminiert werden. Flüssigabfall muss autoklaviert oder unter Verwendung eines für das jeweilige spezifische Pathogen geeigneten Desinfektionsmittels dekontaminiert werden, z.B. 10% Bleichmittel, Isopropylalkohol, oder 70% Ethanol. Alle flüssigen und festen Abfälle müssen als Gefahrstoffe angesehen werden. Die Handhabung der Abfälle muss daher unter Beachtung der allgemein geltenden Laborsicherheitsbestimmungen erfolgen. Die Entsorgung der Verbrauchsmaterialien muss gemäß den örtlichen Bestimmungen erfolgen.



Wartung, Transport und Geräteentsorgung

Versuchen Sie nicht das Gerät selbst zu warten oder zu reparieren, es sei denn, es ist in diesem Benutzerhandbuch oder anderen technischen Unterlagen von Miltenyi Biotec ausdrücklich vermerkt. Wartung und Reparaturen müssen durch geschulte Fachkräfte ausgeführt werden. Falsche oder unsachgemäße Wartung oder Reparatur an Ihrem Gerät kann zur Gefährdung des Anwenders, unvorhersehbaren Resultaten, Fehlfunktionen, Geräteschäden, vorzeitigem Verschleiß und verringerter Lebensdauer führen. Es kann auch den Verlust Ihrer Garantieansprüche zur Folge haben.

Wenn ein Austausch oder Ersatzteile benötigt werden, stellen Sie sicher, dass Ihr Servicedienstleister nur Originalteile von Miltenyi Biotec oder Teile von Drittanbietern verwendet, die von Miltenyi Biotec spezifiziert und empfohlen werden. Die Verwendung unautorisierter Ersatzteile kann Fehlfunktionen des Gerätes

verursachen und die Ergebnisse beeinträchtigen. Miltenyi Biotec akzeptiert keinerlei Garantieansprüche und haftet nicht für Fehlfunktionen oder Schäden am Gerät, die auf Verwendung ungeeigneter Verschleiß- oder Ersatzteile zurückzuführen sind.

Stellen Sie sicher, dass nach jeder erfolgten Wartungs- oder Reparaturleistung ein autorisierter Miltenyi Biotec Servicedienstleister alle notwendigen Sicherheitsprüfungen, welche die durchgeführten Reparaturmaßnahmen verlangen, durchführt, um sicherzustellen, dass das Gerät sich in vorschriftsmäßigem Zustand befindet.

Nutzen Sie nur von Miltenyi Biotec empfohlenes Zusatzgerät und Upgrades zu Ihrem Gerät. Fragen Sie Ihren örtlichen Miltenyi Biotec Vertriebsmitarbeiter nach Miltenyi Biotecs weit reichenden Vereinbarungen zum Geräteservice und Technical Support oder besuchen Sie unsere Website **www.miltenyibiotec.com/support**.

Das Gerät sollte vorsichtig gehandhabt und nur in der von Miltenyi Biotec bereitgestellten Verpackung transportiert werden. Im Gerät können innere Schäden auftreten, falls es großer Erschütterung ausgesetzt oder fallengelassen wird. Sollte wegen Reparatur- oder Wartungsleistungen ein Rücktransport zum Hersteller notwendig sein, dekontaminieren Sie das Gerät vor dem Versand, um jegliche Gefahrenstoffe zu entfernen. Wenn Sie Fragen zur vorschriftsmäßigen Dekontaminierung oder zum Versand des Gerätes haben, wenden Sie sich zur Unterstützung bitte direkt an unseren Miltenyi Biotec Technical Support.



Kundeninformation zur Entsorgung von Elektro- und Elektronik-Altgeräten (Waste of Electrical and Electronic Equipment, WEEE)

Bitte entsorgen Sie Ihre Altgeräte von Miltenyi Biotec unter Einhaltung der jeweils geltenden Vorschriften für die Erfassung und Behandlung von Elektro- und Elektronik-Altgeräten und die Entsorgung von Gefahrstoffen. Diese können von Land zu Land sowie regional variieren.

Elektrische und elektronische Geräte können Gefahrstoffe enthalten, welche die Umwelt erheblich belasten und/oder die Gesundheit gefährden. Deshalb müssen Altgeräte speziell gesammelt und durch ausgewiesene Entsorgungsbetriebe im Rahmen der hierfür vorgesehenen Entsorgungssysteme fachgerecht behandelt werden. Indem Sie sicherstellen, dass Ihr Altgerät gemäß den geltenden Vorschriften zur Behandlung von Elektro- und Elektronik-Altgeräten sowie von Gefahrstoffen entsorgt wird, tragen Sie dazu bei, unsere natürlichen Ressourcen zu schonen und die menschliche Gesundheit zu schützen.

Miltenyi Biotec setzt sich für den Schutz der Umwelt ein. Miltenyi Biotec bietet in zahlreichen Ländern eigene Rücknahmeprogramme für Altgeräte an und arbeitet weltweit mit lizenzierten Partnern zusammen, die an bestehende Recycling- und Entsorgungssysteme angeschlossen sind. Miltenyi Biotec ermöglicht Ihnen ein kostenloses Recycling Ihres Altgerätes. Die Bedingungen und die Verfügbarkeit dieses Angebots unterscheiden sich geographisch aufgrund unterschiedlicher regulatorischer Anforderungen. Bitte beachten Sie, dass je nach Art und Nutzung Ihres Gerätes zusätzliche Anforderungen gelten können.

Für weitere Informationen oder wenn Sie Ihr Miltenyi Biotec-Altgerät entsorgen möchten, wenden Sie sich bitte an Ihren lokalen Miltenyi Biotec-Vertreter oder den Miltenyi Biotec Technical Support.

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El MultiMACS Cell24 Separator Plus está diseñado para un uso seguro si se instala correctamente, y se maneja por personal de laboratorio profesional de acuerdo con las prácticas generales de seguridad y las instrucciones de este manual de usuario.

Advertencias y precauciones

Las directrices en esta sección explican los riesgos potenciales asociados con el manejo de este instrumento y proporcionan una importante información complementaria para minimizar los riesgos. Siga las instrucciones atentamente para protegerse a sí mismo, a otros y al equipamiento, de riesgos potenciales y crear un ambiente de trabajo seguro. Use este instrumento solo como especificado por el fabricante para evitar daños en el equipo y lesiones en el personal.

Siga siempre las instrucciones de seguridad y política de laboratorio del área de trabajo local, así como los estándares de salud, seguridad y prevención de accidentes. Póngase en contacto con la autoridad local a cargo de la fuente de energía eléctrica, construcciones, mantenimiento o seguridad para más información sobre la instalación segura y manejo del instrumento.

Niveles de riesgo

Se usan señales para identificar mensajes de seguridad y de daño de la propiedad. Las siguientes señales se usan a través de este manual de usuario.



o **WARNING!** indica una situación potencialmente peligrosa, la cual, si no se evita, puede resultar en muerte o daños graves.



o **CAUTION!** indica una situación potencialmente peligrosa, la cual, si no se evita, puede resultar en un daño menor o moderado. También puede ser usado para alertar contra prácticas peligrosas.

Símbolos



ADVERTENCIA DE SEGURIDAD: SE DEBE CONSULTAR LA DOCUMENTACIÓN EN TODOS LOS CASOS EN QUE SE UTILICE ESTE SÍMBOLO DE SEGURIDAD EN EL INSTRUMENTO.



RIESGO DE SHOCK ELÉCTRICO.



CAMPO MAGNÉTICO INTENSO.



PERSONAS CON MARCAPASOS O IMPLANTES MÉDICOS ELECTRÓNICOS DEBEN MANTENERSE ALEJADAS.



RIESGO DE QUE SE APLASTE O CORTE ALGUNA PARTE DEL CUERPO.



RIESGO BIOLÓGICO. RIESGO DE CONTAMINACIÓN SI SE USA MATERIAL BIOLÓGICO POTENCIALMENTE PELIGROSO.



ENCENDIDO (FUENTE DE ENERGÍA).



APAGADO (FUENTE DE ENERGÍA).



BLOQUES DE CONEXIÓN PARA CONDUCTORES DE PROTECCIÓN. EL SÍMBOLO ESTÁ PEGADO EN EL INTERIOR DEL INSTRUMENTO. ESTA INFORMACIÓN ES PARA EL PERSONAL DE SERVICIO.



CORRIENTE CONTINUA.



FUSIBLE.



RAEE (RESIDUOS DE APARATOS ELÉCTRICOS Y ELECTRÓNICOS).



LEA EL MANUAL DE USUARIO ANTES DE USAR EL INSTRUMENTO.



LEA EL MANUAL DE USUARIO ANTES DE USAR EL INSTRUMENTO.



FABRICANTE.



NÚMERO DE PEDIDO.



NÚMERO DEL MODELO.



NÚMERO DE SERIE.



MARCADO DE CONFORMIDAD EUROPEA.



MARCA DE CERTIFICACIÓN NRTL: EL PRODUCTO CUMPLE LOS ESTÁNDARES DE SEGURIDAD CONSENSUADOS, REQUERIDOS POR LA ADMINISTRACIÓN DE SEGURIDAD Y SALUD OCUPACIONAL (OSHA), DETERMINADOS POR EL LABORATORIO DE ENSAYO RECONOCIDO NACIONALMENTE (NATIONALLY RECOGNIZED TESTING LABORATORIES (NRTL)) TÜV SÜD.



CONFORMIDAD EVALUADA DEL REINO UNIDO.

Etiqueta de seguridad

Observe los puntos de peligro y los símbolos de seguridad del instrumento.

- Mantenga las etiquetas y marcas de seguridad en un estado limpio y legible.
- Inspeccione las etiquetas y marcas de seguridad con regularidad, y reemplácelas si no son legibles o identificables desde una distancia de visualización segura.
- Póngase en contacto con Miltenyi Biotec si necesita etiquetas de recambio.

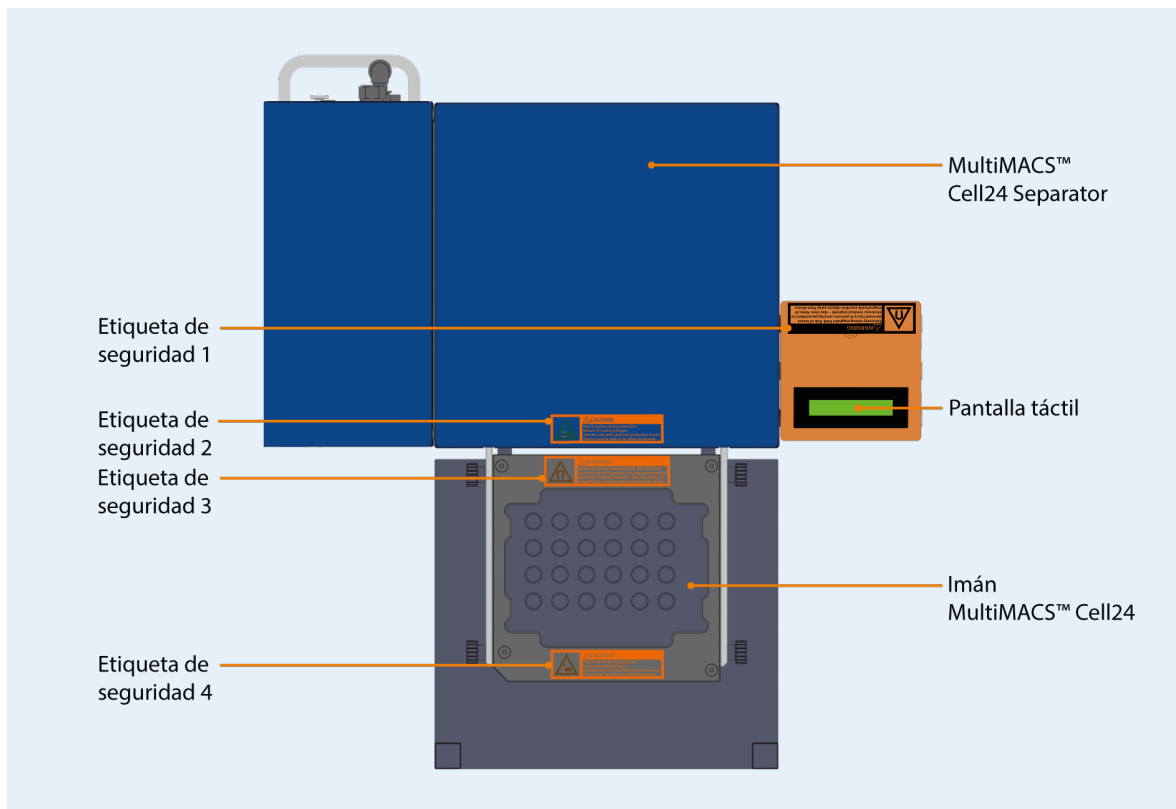


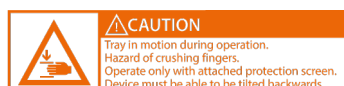
Figure 1: Los puntos de peligro y la posición de los símbolos de seguridad del MultiMACS Cell24 Separator Plus.

Etiqueta de seguridad 1 y 3



ADVERTENCIA! Campo magnético extremadamente fuerte. Riesgo de lesiones personales graves para las personas que llevan marcapasos o implantes médicos electrónicos: manténgase alejado. Mantenga lejos del dispositivo todos los objetos magnéticamente sensibles.

Etiqueta de seguridad 2 y 4



ATENCIÓN! Soporte en movimiento durante el funcionamiento. Peligro de aplastarse los dedos. Manejar solo con la pantalla de protección suministrada. El dispositivo debe poder inclinarse hacia atrás.

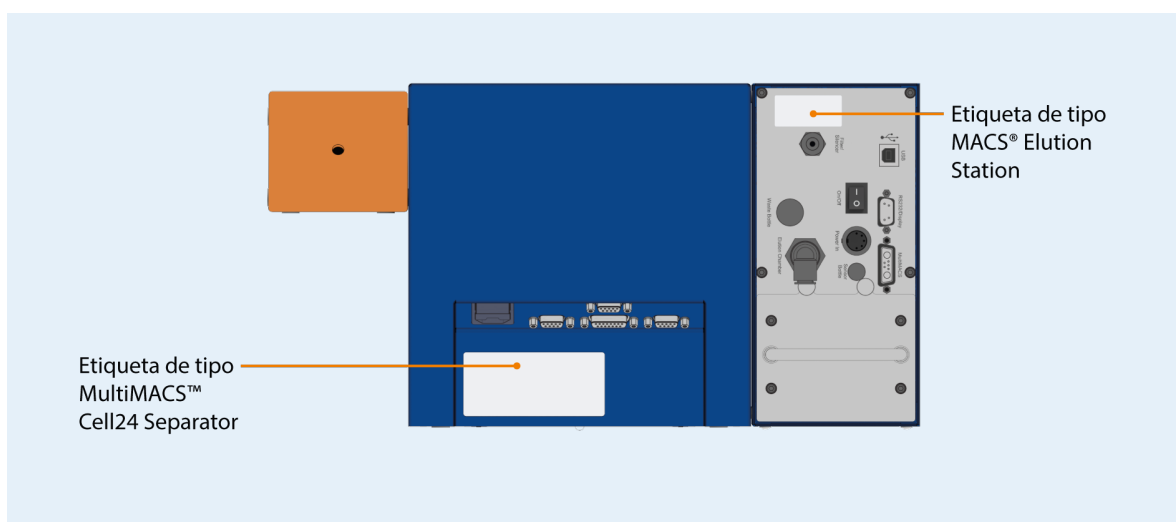
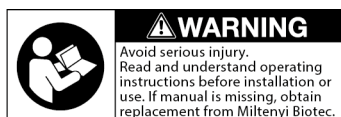


Figure 2: Etiquetas de tipo del MultiMACS Cell24 Separator Plus.

La siguiente etiqueta de seguridad se encuentra pegada a la etiqueta de tipo del MultiMACS Cell24 Separator.



ADVERTENCIA! Evita las lesiones graves. Lea y comprenda las instrucciones de funcionamiento antes de la instalación o el uso. Si falta el manual, solicite su sustitución a Miltenyi Biotec.



Instrucciones generales de seguridad

Si el instrumento no funciona correctamente y/o las instrucciones o mensajes mostrados le aconsejan contactar con el servicio técnico, no es posible utilizar el instrumento de una manera segura. Apague y desenchufe inmediatamente el instrumento de la toma de corriente, y póngase en contacto con un proveedor de servicio técnico autorizado de Miltenyi Biotec o el Miltenyi Biotec Technical Support.



Incendios y riesgos eléctricos

Los riesgos potenciales causados por aparatos eléctricos incluyen shock eléctrico, cortocircuito y sobrecalentamiento. Un shock eléctrico puede llevar a graves daños corporales o incluso la muerte. Un cortocircuito eléctrico o sobrecalentamiento puede ser causa de incendio. El equipo electrónico puede emitir chispas, las cuales podrían encender vapores o material combustible resultando en explosión o incendio. No use el instrumento en áreas designadas como peligrosas; por ejemplo, en medios cargados de oxígeno.

La caja protectora del instrumento está diseñada para reducir el riesgo de shock eléctrico, cortocircuito eléctrico y propagación de fuego. Excepto por el acceso frontal cubre, **no quite o penetre ninguna tapa o cubierta**. Solo el personal autorizado debe quitar las otras tapas del instrumento. Nunca introduzca un objeto extraño a través de una apertura en el instrumento. No use el instrumento si

- está abierto o desensamblado,
- se ha caído o ha sido dañado,
- tiene partes dañadas o rotas,
- tiene un cable de energía dañado,
- un objeto ha entrado a través de las ranuras de ventilación,
- un objeto extraño se ha caído dentro del instrumento.

Si aparecen llamas o humo, inmediatamente apague la fuente de energía, desenchufe el instrumento de la toma de corriente, y póngase en contacto con un proveedor de servicio técnico autorizado de Miltenyi Biotec o el Miltenyi Biotec Technical Support.

El instrumento está destinado solo para el uso en un lugar cubierto. **Si algún líquido entra en el instrumento, puede ocasionar cortocircuitos eléctricos, shock eléctrico o incendio.** No permita que fluidos penetren el interior del instrumento. Proteja el instrumento contra derrames y salpicaduras accidentales. Limpie inmediatamente los derrames. No utilice el instrumento si se han derramado líquidos en el instrumento. No utilice el instrumento en un lugar mojado o húmedo. Evite áreas con alta humedad o vapor. Transportar el instrumento de un medio frío – como una habitación fría a 5 °C – a temperatura ambiente, puede causar una condensación dentro del instrumento. En esos casos, espere a que el instrumento se deshumidifique antes de utilizarlo. Desenchufe el instrumento de la toma de corriente antes de limpiarlo. No utilice agentes limpiadores líquidos o aerosoles; use siempre un paño húmedo.

Asegúrese de que hay suficiente ventilación en el lugar donde se utilice el instrumento. En la ausencia de una circulación adecuada, el aire del ambiente puede no enfriar el instrumento a temperaturas de funcionamiento adecuadas. Permita una suficiente circulación del aire alrededor del instrumento – al menos 15 cm en todos los

lados – durante el manejo para asegurar un enfriamiento adecuado. No coloque el instrumento cerca de radiadores, registros de calor, estufas, u otro equipamiento (incluyendo amplificadores) que genere calor. Proteja el instrumento de la luz directa del sol. No cubra las ranuras y aperturas del instrumento ya que están destinadas a la ventilación y protección contra el sobrecalentamiento del instrumento. No coloque el instrumento en un estante empotrado o espacios similarmente confinados a menos que el espacio haya sido específicamente designado para proveer una ventilación adecuada. Siga las instrucciones de montaje del instrumento.

Asegúrese de que el enchufe principal así como el conector para el cable de energía están fácilmente accesibles y colocados tan cerca del operador del instrumento como sea posible. Si es necesario desconectar la fuente de energía, desconecte el cable de la toma de corriente.

El instrumento está equipado con un enchufe eléctrico con tres cables para la toma de tierra, que tiene una tercera clavija para la toma. Este enchufe no encaja en una toma de corriente con conexión a tierra. Este es un procedimiento de seguridad. No intente insertar el enchufe en una toma de corriente que no sea de tierra. Si no puede insertar el enchufe en la toma, póngase en contacto con su electricista local para reemplazar la toma.

El instrumento debería ser utilizado desde una fuente de energía que cumple las especificaciones mencionadas en la etiqueta de potencia eléctrica del producto. Si tiene preguntas sobre el tipo de fuente de energía que usar, póngase en contacto con su proveedor de servicios autorizado de Miltenyi Biotec o una compañía de energía local. No use alargadores o enchufes múltiples. No sobrecargue una toma de corriente.

Solamente los dispositivos periféricos que cumplen con la UL 60950 pueden ser conectados con el conector RS232 rotulado con COM. Adicionalmente deben conectarse exclusivamente equipos originales de MultiMACS Cell24 Separator Plus con los conectores rotulados con module 1 y module 2, y la pantalla MultiMACS Cell24 Separator Plus al conector con la etiqueta display. Utilice exclusivamente cables de conexión con un largo menor a 3 m.



Campo magnético intenso

El MultiMACS Cell24 Separator Plus está equipado con un imán extremadamente potente, el imán MultiMACS Cell24. Además, la pantalla MultiMACS también contiene potentes imanes.



Existe un riesgo de lesiones graves para las personas portadoras de marcapasos, shunts o implantes médicos electrónicos.

Mantenga todos los soportes magnéticos de información (tales como tarjetas de crédito, cintas magnéticas y medios de almacenamiento), cualquier equipo electrónico (como audífonos, marcapasos, shunts, instrumentos de medición y control, ordenadores y relojes), así como herramientas magnetizables y otros objetos a una distancia de al menos 20 cm de la cubierta del imán y por lo menos a 30 cm de la pantalla MultiMACS. El campo magnético puede alterar o dañar dichos objetos.



Riesgos mecánicos

Mantenga los dedos y otras partes del cuerpo alejados de las partes móviles del MultiMACS Cell24 Separator Plus para evitar que sufran aplastamientos y/o cortaduras, o que el instrumento sufra daños.

Si algún objeto ha sido colocado por accidente bajo el imán descendente, la resistencia física del mismo provoca que el instrumento se incline para atrás, de modo similar a un gato hidráulico. No coloque ningún objeto encima del MultiMACS Cell24 Separator Plus. Deje un espacio de 20 cm por encima y detrás el MultiMACS Cell24 Separator Plus para permitir que el instrumento pueda inclinarse hacia atrás, evitando así

posibles lesiones por aplastamiento y cizallamiento y minimizando daños al instrumento.

No omita ninguna de las medidas ni equipos de seguridad. Mantenga la correspondiente pantalla de seguridad colocada junto al separador MultiMACS mientras lo esté manejando manualmente.

Para usarlo en combinación con un robot para el manejo de líquidos puede ser necesario retirar la pantalla de seguridad. Cuando se use el separador MultiMACS integrado en un sistema automático compatible con el manejo de líquidos, asegúrese de que el sistema combinado, por ejemplo, MultiMACS Cell24 Separator Plus, imán MultiMACS Cell24 y el robot para el manejo de líquidos cumplen todos los requisitos de seguridad y funcionamiento antes de iniciar procesos automatizados. Tenga especial consideración con la seguridad del operario.



Riesgos químicos y biológicos

Dependiendo del material biológico utilizado, una contaminación o infección puede llevar a graves daños personales o muerte. Todas las muestras clínicas deben ser consideradas potencialmente infecciosas. **Si se ha usado material de riesgo biológico, el operador debe elegir y llevar puesto equipamiento personal de seguridad** como indicado en las advertencias y precauciones para la sustancia particular. La precaución de seguridad anterior también es válida para cualquier químico de riesgo, incluyendo químicos tóxicos o corrosivos, ácidos, o sustancias radioactivas que pueden estar presentes en la muestra. Lleve guantes, ropa y gafas de seguridad para prevenir el contacto de la sustancia con la piel y ojos. También proteja la boca y la nariz pues los aerosoles podrían salir del sistema. Un equipamiento de seguridad defectuoso o inadecuado es peligroso. El instrumento debe ser utilizado con una cubierta de seguridad si están siendo procesados materiales peligrosos o desconocidos. Si se ha utilizado o derramado material peligroso, debe tenerse cuidado en descontaminar a fondo el instrumento. Está estrictamente prohibido continuar utilizando accesorios o piezas del instrumento contaminadas.

Columnas, placas, tubos y otros consumibles que han estado en contacto con material de riesgo biológico deben ser descontaminados antes de su eliminación. Los residuos líquidos deberán ser autoclavados o descontaminados usando un desinfectante industrial apropiado para el patógeno específico, por ejemplo, hipoclorito de sodio al 10%, alcohol isopropílico o etanol al 70%. Todos los residuos líquidos o sólidos deben ser considerados peligrosos de acuerdo con las precauciones universales de laboratorio. El desecho de residuos debe hacerse de acuerdo con las regulaciones locales.



Servicio, transporte y eliminación seguros

A menos que de otro modo señalado en este manual de usuario o en otra documentación de Miltenyi Biotec, **no repare o revise el instrumento usted mismo.** Las revisiones y reparaciones deben ser llevadas a cabo por personal de servicio cualificado. Una reparación o revisión inadecuada o incorrecta del instrumento puede causar riesgos a los usuarios, llevar a resultados impredecibles, causar el mal funcionamiento o daño del instrumento, así como un prematuro desgaste y vida útil reducida del instrumento. También puede invalidar su garantía.

Cuando sean requeridas piezas de repuesto, asegúrese de que el proveedor de servicios usa solo piezas originales de Miltenyi Biotec, o piezas de terceros especificadas y recomendadas por Miltenyi Biotec. El uso de piezas no autorizadas puede causar un mal funcionamiento del instrumento y resultados dañados. Miltenyi Biotec no se hace responsable de ninguna garantía o de un error o daño del instrumento resultante del uso de piezas inadecuadas. Al finalizar cualquier servicio o reparación, asegúrese de que su proveedor de servicios autorizado de Miltenyi Biotec lleva a cabo todas las comprobaciones de seguridad como requerido por el procedimiento de reparación, para asegurarse de que el instrumento esté funcionando correctamente.

Utilice solo opciones y actualizaciones recomendadas por Miltenyi Biotec. Consulte con su representante local de Miltenyi Biotec sobre el amplio servicio del instrumento, o diríjase a www.miltenyibiotec.com/support.

El instrumento debe ser transportado cuidadosamente en embalaje especificado por Miltenyi Biotec. Si el instrumento está sujeto a una vibración excesiva o caída, pueden ocurrir daños internos. Si el instrumento necesita ser enviado de vuelta al fabricante para su servicio, descontamine el instrumento para eliminar cualquier material peligroso antes del transporte. Si tiene preguntas respecto a una correcta descontaminación o transporte, póngase en contacto con el Miltenyi Biotec Technical Support.



Información sobre la Directiva de Residuos de Aparatos Eléctricos y Electrónicos (RAEE)

Por favor, al final de la vida útil de su equipo de Miltenyi Biotec disponga del mismo de acuerdo a la ley RAEE aplicable, la cual puede ser diferente según el país o región.

Los equipos eléctricos y electrónicos pueden contener sustancias peligrosas que pueden tener graves efectos perjudiciales sobre el medio ambiente y/o la salud humana. Por este motivo, todos los equipos deben ser específicamente recogidos y tratados por los centros de residuos designados y según planes de cumplimiento de la RAEE cualificada. Al asegurarse de que se está deshaciendo de su equipo eléctrico y electrónico no deseado de acuerdo con la legislación y la RAEE aplicable de disposición de residuos peligrosos, estará ayudando a preservar nuestros recursos naturales y a proteger la salud humana.

Miltenyi Biotec está comprometido con la protección del medio ambiente. Miltenyi Biotec ofrece programas para la devolución de productos al final de su vida útil en muchos países, y a socios con esquemas de cumplimiento de licencias RAEE en todo el mundo. Miltenyi Biotec le ofrece reciclar su equipo de Miltenyi Biotec en el final de su vida útil de forma gratuita. Los términos y la disponibilidad de esta oferta pueden variar según la región geográfica, debido a las diferencias en los requisitos reglamentarios. Tenga en cuenta que, dependiendo del tipo y uso del equipo, pueden aplicarse requisitos adicionales.

Para más información, o si desea eliminar su equipo de Miltenyi Biotec en el final de su vida útil, por favor póngase en contacto con su representante local de Miltenyi Biotec o con el Miltenyi Biotec Technical Support.

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Le MultiMACS Cell24 Separator Plus est conçu pour une utilisation sûre, si il est correctement installé et manié par des personnel de laboratoire professionnel, conformément aux mesures de sécurité générales et aux consignes libellées dans ce manuel.

Avertissements et precautions

Les directives dans ce chapitre décrivent les risques potentiels associés au maniement de cet appareil et fournissent d'importantes informations de sécurité supplémentaires pour réduire les risques. Suivez soigneusement les instructions, afin de vous protéger vous-même, des tiers et le dispositif d'éventuels dangers et de créer un environnement de travail sûr. Utilisez cet appareil uniquement en respectant les instructions du fabricant afin d'éviter une détérioration du dispositif et des blessures du personnel.

Suivez toujours les consignes de sécurité du champ d'opération et les bonnes pratiques de laboratoire ainsi que les normes pour la santé, la sécurité et la prévention d'accidents. Contactez les autorités locales gérant l'alimentation en courant électrique, la construction de bâtiments, la maintenance ou la sécurité pour plus d'informations sur l'installation et l'utilisation sûre de l'appareil.

Niveaux de danger

Des mots clé sont utilisés pour identifier des messages sur des détériorations matériels et de sécurité. Les mots clé suivants sont utilisés dans ce manuel.



ou **WARNING!** indique une situation potentiellement dangereuse, pouvant entraîner la mort ou des blessures graves, si elle n'est pas évitée.



ou **CAUTION!** indique une situation potentiellement dangereuse pouvant causer des blessures mineures ou modérées, si elle n'est pas évitée. Il peut également servir d'alerte contre une utilisation risquée.

Symboles



AVERTISSEMENT DE SÉCURITÉ : LA DOCUMENTATION DOIT ÊTRE CONSULTÉE DANS TOUS LES CAS OÙ CE SYMBOLE DE SÉCURITÉ EST UTILISÉ SUR L'INSTRUMENT.



RISQUE D'UN CHOC ÉLECTRIQUE.



CHAMP MAGNÉTIQUE PUISSANT.



LES PERSONNES QUI PORTENT UN STIMULATEUR CARDIAQUE OU UN IMPLANT MEDICAL ÉLECTRONIQUE DOIVENT MAINTENIR UNE DISTANCE DE SÉCURITÉ.



RISQUE D'ÉCRASEMENT ET DE CISAILLEMENT DES MEMBRES CORPORELS.



DANGER BIOLOGIQUE. RISQUE DE CONTAMINATION, SI DES MATIÈRES BIOLOGIQUES POTENTIELLEMENT DANGEREUSES SONT UTILISÉES.



ON (ALIMENTATION ÉLECTRIQUE).



OFF (ALIMENTATION ÉLECTRIQUE).



BORNE POUR CONDUCTEUR DE PROTECTION. CE SYMBOLE EST FIXÉ À L'INTÉRIEUR DE L'APPAREIL. CETTE INFORMATION EST DESTINÉE AU PERSONNEL DE SERVICE.



COURANT CONTINU.



FUSIBLE.



DEEE (DÉCHETS D'ÉQUIPEMENTS ÉLECTRIQUES ET ÉLECTRONIQUES).



LISEZ LE GUIDE DE L'UTILISATEUR AVANT D'UTILISER L'INSTRUMENT.



LISEZ LE GUIDE DE L'UTILISATEUR AVANT D'UTILISER L'INSTRUMENT.



FABRICANT.



NUMÉRO DE COMMANDE.



NUMÉRO DE MODÈLE.



NUMÉRO DE SÉRIE.



MARQUAGE DE CONFORMITÉ EUROPÉENNE.



MARQUE DE CERTIFICATION NRTL : LE PRODUIT RÉPOND AUX NORMES DE SÉCURITÉ CONSENSUELLES IMPOSÉES PAR L'OCCUPATIONAL SAFETY/HEALTH ADMINISTRATION (OSHA) ET DÉTERMINÉES PAR LE LABORATOIRE D'ESSAIS RECONNU AU NIVEAU NATIONAL (NATIONALLY RECOGNIZED TESTING LABORATORIES (NRTL)) TÜV SÜD.



MARQUAGE DE PRODUIT DU ROYAUME-UNI.

Étiquette de sécurité

Repérez les points dangereux et les symboles de sécurité de l'instrument.

- Maintenez les étiquettes et les marquages de sécurité propres et lisibles.
- Contrôlez régulièrement les étiquettes et marquages de sécurité et remplacez ceux qui ne sont pas lisibles ou identifiables à une distance sûre.
- Contactez Miltenyi Biotec pour obtenir des étiquettes de rechange.

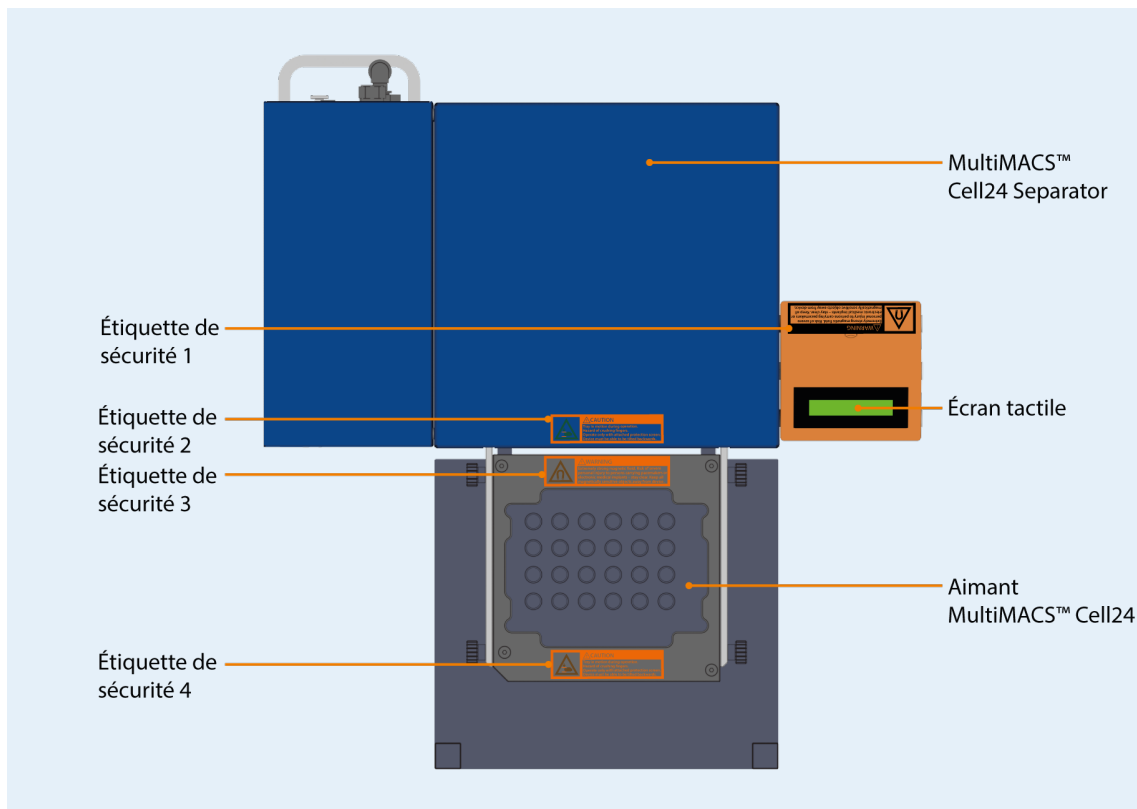


Figure 1: Points dangereux et emplacement des symboles de sécurité du MultiMACS Cell24 Separator Plus.

Étiquette de sécurité 1 et 3



AVERTISSEMENT! Champ magnétique extrêmement puissant. Les personnes portant un stimulateur cardiaque ou un implant médical électronique courent un risque de blessure grave. Elles doivent rester à distance. Maintenir tous les objets sensibles aux champs magnétiques à distance du dispositif.

Étiquette de sécurité 2 et 4



ATTENTION! Plateau en mouvement pendant le fonctionnement. Risque d'écrasement des doigts. À n'utiliser qu'avec un l'écran de protection en place. Le dispositif doit pouvoir être incliné vers l'arrière.

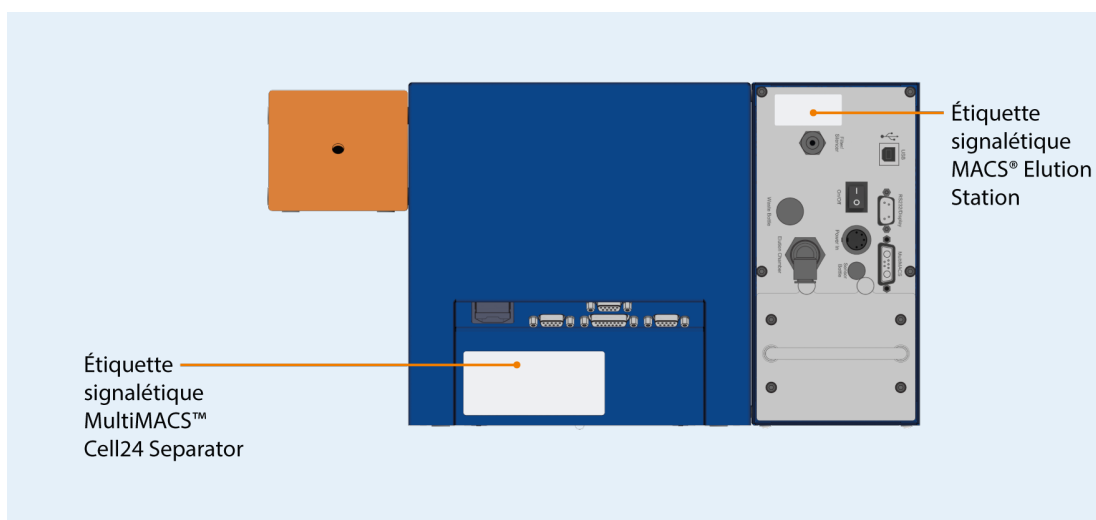
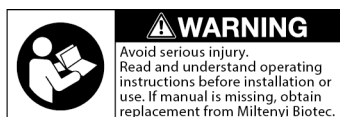


Figure 2: Étiquettes signalétiques du MultiMACS Cell24 Separator Plus.

L'étiquette de sécurité est fixée à l'étiquette signalétique du MultiMACS Cell24 Separator.



AVERTISSEMENT! Évitez les blessures graves. Lisez et comprenez les instructions d'utilisation avant d'installer ou d'utiliser l'appareil. Si le manuel est manquant, demandez à Miltenyi Biotec de le remplacer.



Consignes de sécurité générales

Si l'appareil ne fonctionne pas correctement et/ou les instructions ou messages affichés vous avisent de contacter le support technique, l'utilisation sûre de l'appareil n'est plus longtemps garantie. Éteignez immédiatement l'appareil et débranchez-le de la prise électrique, puis contactez un prestataire de services Miltenyi Biotec agréé ou l'équipe de support technique de Miltenyi Biotec.



Dangers électriques et incendie

Les risques potentiels résultant d'appareils électriques sont le choc électrique, le court circuit et la surchauffe. Un choc électrique peut entraîner de graves blessures corporelles ou même la mort. Un court circuit ou une surchauffe peuvent provoquer un incendie. Des équipements électriques peuvent émettre des étincelles, pouvant enflammer des vapeurs ou matières combustibles, ce qui pourrait engendrer une explosion ou un incendie. N'utilisez pas cet appareil dans des endroits jugés dangereux; par exemple, dans un environnement riche en oxygène.

Le boîtier de l'appareil est conçu de façon à réduire les risques de choc électrique, de court circuit et de propagation du feu. Sauf pour l'accès frontal couvrant, **n'enlevez aucun couvercle et n'y pénétrez pas**. Seul un personnel autorisé a le droit d'enlever les autres couvercles. N'introduisez jamais un corps étrangers à travers d'une fente à l'intérieur de l'appareil. N'utilisez jamais l'appareil lorsqu'

- il est ouvert ou démonté,
- il est tombé ou qu'il a été endommagé,
- il a des pièces endommagées ou abîmées,
- il a des câbles électriques endommagés,
- un objet y est entré par les fentes de ventilation,
- un corps étranger a pénétré dans l'appareil.

Si des flammes ou la fumée apparaissent, coupez immédiatement l'alimentation électrique, débranchez l'appareil de la prise électrique, puis contactez un prestataire de services Miltenyi Biotec agréé ou l'équipe de support technique de Miltenyi Biotec.

L'appareil est uniquement destiné à une utilisation intérieure. **Si des fluides pénètrent à l'intérieur de l'appareil, ceci peut entraîner des courts circuits, des chocs électriques ou des incendies.** Faites extrêmement attention lorsque vous utilisez des liquides. Veillez à ce qu'aucun fluide ne pénètre à l'intérieur de l'appareil. Protégez l'appareil contre des déversements et éclabousses accidentels. Nettoyez immédiatement tout déversement. Ne pas utiliser l'appareil, si des liquides ont coulés dans l'appareil. Ne pas utiliser l'appareil dans des endroits humides et brumeux. Évitez des endroits ayant une forte humidité ou condensation. Le déplacement de l'appareil d'un environnement froid – comme une chambre froide à 5 °C – à un endroit à température ambiante peut causer une condensation à l'intérieur de l'appareil. Dans ces cas-là, attendez que l'appareil soit sec, avant de l'utiliser. Débranchez l'appareil de la prise électrique avant de le nettoyer. Ne pas utiliser des détergents liquides ou aérosols; utilisez toujours un tissu humide.

Assurez une circulation adéquate de l'air dans la pièce où l'appareil est utilisé. Si une telle circulation adéquate n'est pas assurée, l'air ambiant ne peut pas refroidir l'appareil à des températures de fonctionnement acceptable. Veillez à ce que l'air puisse bien circuler au tour de l'appareil pendant son fonctionnement – au moins 15 cm des deux côtés – pour garantir un refroidissement adéquat. Évitez de placer l'appareil près de radiateurs, d'accumulateurs de chaleur, de poêles ou d'autres dispositifs (y compris des amplificateurs) générant de la chaleur. Ne pas exposer l'appareil au soleil. Ne couvrez pas les fentes et les lumières de l'appareil, car elles servent de ventilation et évitent une surchauffe de l'appareil. Ne placez pas l'appareil dans un rack encastré ou des espaces confinés similaires, à moins que cet espace ait spécialement été conçu, pour fournir une ventilation convenable. Suivez les instructions de montage de cet appareil.

Assurez que l'interrupteur général ainsi que le connecteur pour le câble électrique soient facilement accessibles et qu'ils se trouvent le plus proche possible de l'opérateur de l'appareil. S'il est nécessaire de couper l'alimentation électrique, débranchez le câble de la prise électrique.

L'appareil est équipé d'une prise électrique à trois fils et mise à la terre avec une troisième broche de connecteur pour la mise à la terre. Cette prise ne s'emboîte que dans une prise de courant mise à la terre, ceci pour des raisons de sécurité. N'essayez pas d'introduire la prise dans une prise femelle de courant non mise à la terre. Si vous ne parvenez pas à introduire la prise dans une prise femelle, contactez votre électricien local pour remplacer la prise femelle. L'appareil doit uniquement être utilisé à partir d'une source d'énergie qui remplit les spécifications mentionnées sur l'étiquette de puissance électrique du produit. Si vous avez des questions sur le type de source de courant à utiliser, contactez votre prestataire de services Miltenyi Biotec agréé ou votre entreprise locale de production et de distribution d'énergie. N'utilisez aucune rallonge électrique ou multiprise. Ne surchargez pas une prise électrique. Seuls les appareils périphériques conformes à la norme UL 60950 peuvent être branchés au connecteur RS232 étiqueté COM. De plus, seuls des appareils MultiMACS Cell24 Separator Plus originaux doivent être raccordés aux connecteurs étiquetés module 1 et module 2, ainsi que l'écran MultiMACS Cell24 Separator Plus au connecteur étiqueté display. Utilisé exclusivement des câbles de connexion d'une longueur de moins de 3 m.



Champ magnétique puissant

Le MultiMACS Cell24 Separator Plus est équipé d'un aimant extrêmement puissant, le MultiMACS Cell24 Magnet. De même, le MultiMACS Display est équipé d'aimants puissants.



Il ya un risque d'accident pour Les personnes qui portent un stimulateur cardiaque, une dérivation cérébrale ou un implant medical électronique.

Veillez à laisser un espace d'au moins 20 cm entre le cache de l'aimant et d'au moins 30 cm entre le MultiMACS Display et les supports d'information magnétiques (cartes de crédit, bandes magnétiques et supports de données) ainsi que l'équipement électronique (appareils auditifs, pacemakers, shunt cérébral, dispositifs de mesure et de contrôle, ordinateurs et montres). Ces éléments peuvent être affectés ou endommagés par le champ magnétique.



Dangers mécaniques

N'approchez pas vos doigts, etc. de toutes les pièces mobiles du MultiMACS Cell24 Separator Plus afin d'éviter toute blessure ainsi que toute détérioration de l'appareil due à l'écrasement et au cisaillement.

Si un objet a été placé par inadvertance sous l'aimant se déplaçant en bas, la résistance physique de l'objet peut faire basculer l'appareil vers l'arrière, de la même façon qu'un vérin hydraulique. Ne placez pas d'objets sur le MultiMACS Cell24 Separator Plus. Laissez un espace libre d'au moins 20 cm au-dessus et derrière le

MultiMACS Cell24 Separator Plus afin de permettre à l'instrument de basculer vers l'arrière, évitant ainsi les blessures potentielles par écrasement et par cisaillement et minimisant les dommages à l'instrument.

Ne bloquez pas les dispositifs de sécurité ou les mesures de sécurité. Laissez l'écran de protection approprié fixé au MultiMACS Cell24 Separator Plus pendant l'utilisation manuelle.

En cas d'utilisation dans un robot de manipulation de liquides, il est nécessaire de retirer l'écran de protection. Pour utiliser le séparateur MultiMACS intégré dans un système automatisé de manipulation de liquides compatible, veillez à ce que le système combiné, c'est-à-dire le MultiMACS Cell24 Separator Plus, l'aimant MultiMACS Cell24 et le robot de manipulation de liquides, réponde à toutes les exigences de sécurité et d'utilisation avant de commencer les processus automatisés. Veillez tout particulièrement à garantir la sécurité de l'opérateur.



Dangers chimiques et biologiques

Selon la matière biologique utilisée, une contamination et infection peut entraîner des blessures corporelles graves ou même la mort. Tout prélèvement clinique doit être considéré comme potentiellement contagieux. **Si des matières biologiquement dangereuses sont ou ont été utilisées, l'opérateur doit choisir et porter un équipement et des vêtements de protection**, tel indiqué dans les avertissements et mesures de sécurité pour la substance respective. La mesure de sécurité mentionnée ci-dessus s'applique également pour toute substance chimique dangereuse, y compris toxique ou corrosive, acide ou radioactive, pouvant être présente dans le prélèvement. Portez des gants et des vêtements de protection, ainsi que des lunettes protectrices, pour que la substance n'entre pas en contact avec le visage et les yeux. Protéger aussi la bouche et le nez des aérosols qui pourraient provenir du système. Un équipement de protection défectueux ou inadéquate est dangereux. L'appareil doit être utilisé dans une hotte de sécurité, si des matières dangereuses ou inconnues sont traitées. Si des matières dangereuses ont été utilisées ou renversées, l'appareil doit soigneusement et complètement être décontaminé. Il est strictement interdit de continuer l'utilisation d'accessoires ou de pièces de l'appareil contaminées.

Des colonne, des tubes et tout autre consommable qui étaient en contact avec des matières biologiquement dangereuses doivent être décontaminés avant d'être jetés. Les déchets liquides doivent être traités à l'autoclave ou décontaminés à l'aide d'un désinfectant adapté à l'agent pathogène spécifique, par ex. 10% eau de Javal, alcool isopropylique ou 70% d'éthanol. Tout liquide et déchet solide doivent être considérés comme dangereux et pour cela être traités selon les précautions universelles de laboratoire. L'enlèvement de déchets doit être conforme aux réglementations locales.



Maintenance, transport et élimination

N'entretenez pas vous-même l'appareil, à moins que ceci ait été spécifiquement mentionné dans ce manuel ou d'autres documentations de Miltenyi Biotec. La maintenance et les réparations doivent être effectuées par un personnel de maintenance qualifié. Une maintenance ou réparation impropre ou incorrecte de l'appareil peut causer des dangers pour l'utilisateur, amener des résultats imprévisibles, causer un dysfonctionnement ou une détérioration de l'appareil, ainsi qu'une usure prématurée et une réduction de la longévité de l'appareil. Ceci peut également faire expirer votre garantie.

Si des pièces de rechange sont nécessaires, assurez-vous que le prestataire de services utilise uniquement des pièces authentiques de Miltenyi Biotec, ou des pièces de tiers spécifiées et recommandées par Miltenyi Biotec. L'utilisation de pièces non autorisées peut entraîner un dysfonctionnement de l'appareil et impacter les résultats. Miltenyi Biotec n'accorde aucune garantie ou ne prend aucune responsabilité pour des défauts de l'appareil ou des détériorations résultant de l'utilisation de pièces inappropriées. Après l'achèvement de tout

travail de maintenance et de réparation, assurez-vous que votre prestataire de services Miltenyi Biotec agréé entreprenne tous les contrôles de sécurité, comme le demande la procédure de réparation pour garantir un fonctionnement normal de l'appareil.

Utilisez uniquement des options et extensions recommandées par Miltenyi Biotec. Renseignez-vous auprès de votre représentant local Miltenyi Biotec sur les arrangements extensives de support et de maintenance de l'appareil, ou bien référez vous à www.miltenyibiotec.com/support.

L'appareil doit être transporté avec soin dans des emballages spécifiés par Miltenyi Biotec. Une détérioration intérieure peut se produire, si l'appareil fait l'objet de vibrations excessives ou d'une chute. Si l'appareil doit être expédié de retour au fabricant pour la maintenance, décontaminez l'appareil pour éliminer toute matière dangereuse avant le chargement. Pour toute question concernant une décontamination ou un chargement correct, veuillez contacter le support technique de Miltenyi Biotec. Si vous souhaitez éliminer votre appareil, veuillez contacter le support technique de Miltenyi Biotec qui vous aidera.



Déchets d'Équipements Electriques et Electroniques (DEEE) – Information Client

Pensez à recycler vos produits Miltenyi Biotec en fin de vie en conformité avec la directive DEEE en vigueur dans votre pays.

Les équipements électriques et électroniques peuvent contenir des substances dangereuses, qui peuvent avoir un effet néfaste sur l'environnement et / ou la santé humaine. C'est pourquoi tous les équipements doivent être spécifiquement collectés et traités par les centres désignés et ce en conformité avec la « Réglementation DEEE ». En vous assurant que vous éliminez vos équipements électriques et électroniques en accord avec la législation en vigueur, vous contribuez à préserver nos ressources naturelles et à protéger la santé humaine.

La protection de l'environnement est au coeur de nos préoccupations. Ainsi, nous finançons de nombreux programmes de collecte et de recyclage des équipements électriques que nous mettons sur le marché, en reversant une partie du prix de vente de nos produits à des éco-organismes agréés à travers le monde. Miltenyi Biotec vous permet de recycler gratuitement vos équipements Miltenyi Biotec en fin de vie. Les conditions et la disponibilité de cette offre varient selon les pays et les différentes exigences réglementaires. Selon le type et l'utilisation de votre équipement, des exigences supplémentaires peuvent s'appliquer.

Pour plus d'informations, ou si vous souhaitez recycler votre équipement Miltenyi Biotec en fin de vie, contactez votre interlocuteur Miltenyi Biotec ou notre support technique.

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The MultiMACS Cell24 Separator Plus is a semiautomated magnetic cell separator that enables magnetic cell isolations based on MACS MicroBeads and MACS Columns. It is the first step to automated cell separation and allows for parallel multisample magnetic cell isolations using MACS Technology. The instrument contains a permanent 24-well magnet that induces a high-gradient magnetic field within columns. The field is strong enough to retain cells labeled with MACS MicroBeads in the columns. After transfer of columns to the MACS Elution Chamber of the MACS Elution Station, magnetically labeled cells can be eluted from columns via a small vacuum impulse.

The instrument is designed for isolation of virtually any cell type from any source, giving reliable and standardized results. It is compatible with many downstream applications such as molecular and functional assays, chimerism analysis, and flow cytometry. Positive or untouched isolations can be performed using MACS Cell Separation Reagents, including StraightFrom MicroBeads. Thereby, cells can be isolated from multiple sources: dissociated tissues, single cell-suspensions, peripheral blood mononuclear cells (PBMCs), or directly from blood products including whole blood, buffy coat, LRSC, and Leukopak®. Separations can be performed with the Multi-24 Column Block for simultaneous isolation of up to 24 samples or by splitting one large volume sample. Alternatively, up to 12 LS, LD, or Whole Blood Columns can be used in combination with the MultiMACS Single-Column Adapter. Deep well plates and 5 mL tubes can be used for sample collection.

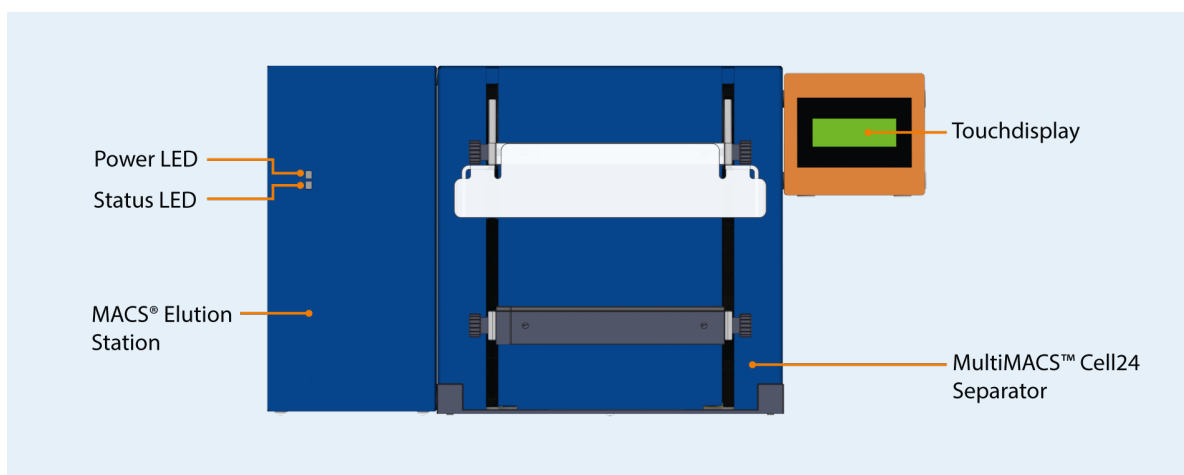


Figure 1.1: Front view of the MultiMACS Cell24 Separator Plus with MACS Elution Station (left) and MultiMACS Cell24 Separator (right).

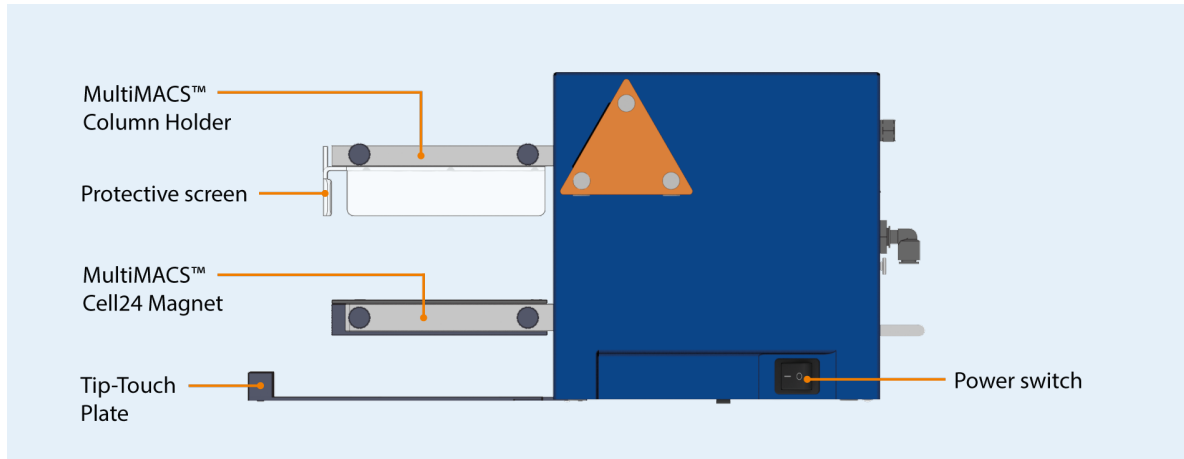


Figure 1.2: Side view of the MultiMACS Cell24 Separator Plus.

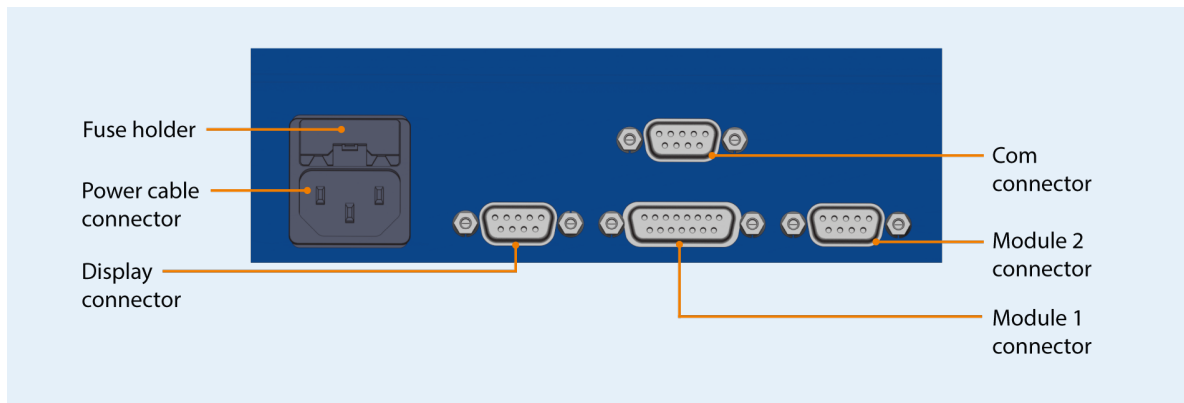


Figure 1.3: Connectors on the rear side of the MultiMACS Cell24 Separator.

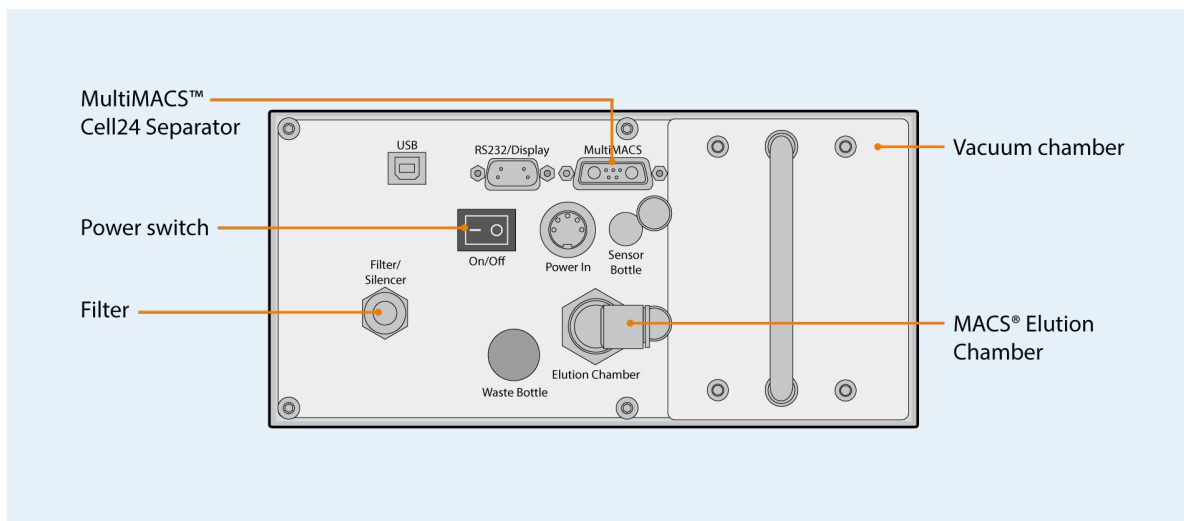


Figure 1.4: Rear side of the MACS Elution Station with connectors (left) and vacuum chamber (right).

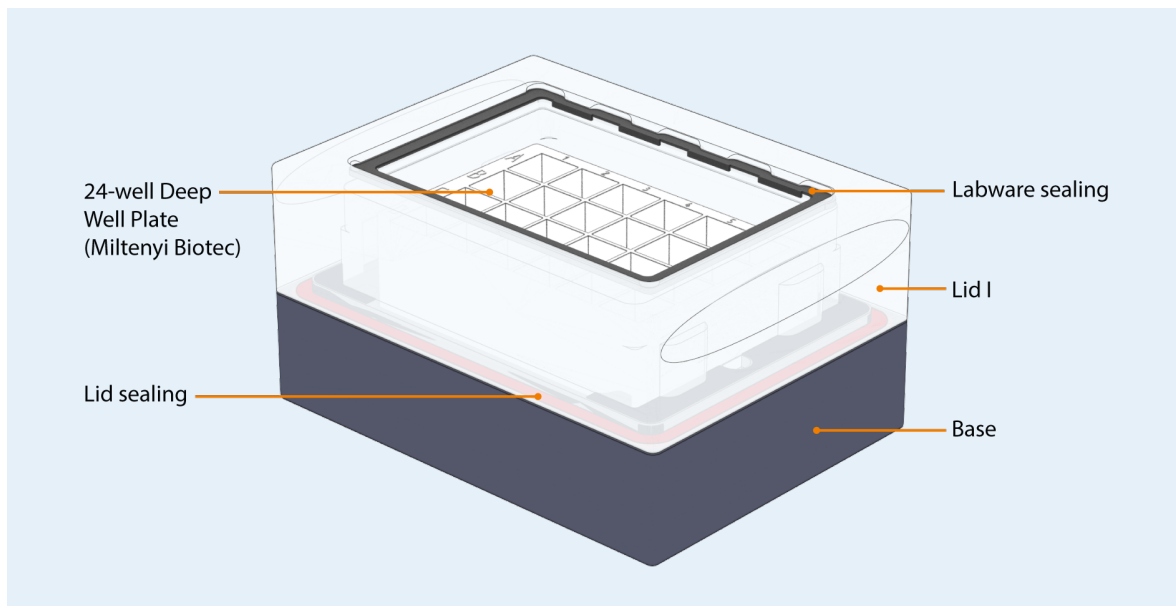


Figure 1.5: MACS Elution Chamber, including a 24-well Deep Well Plate and lid I.

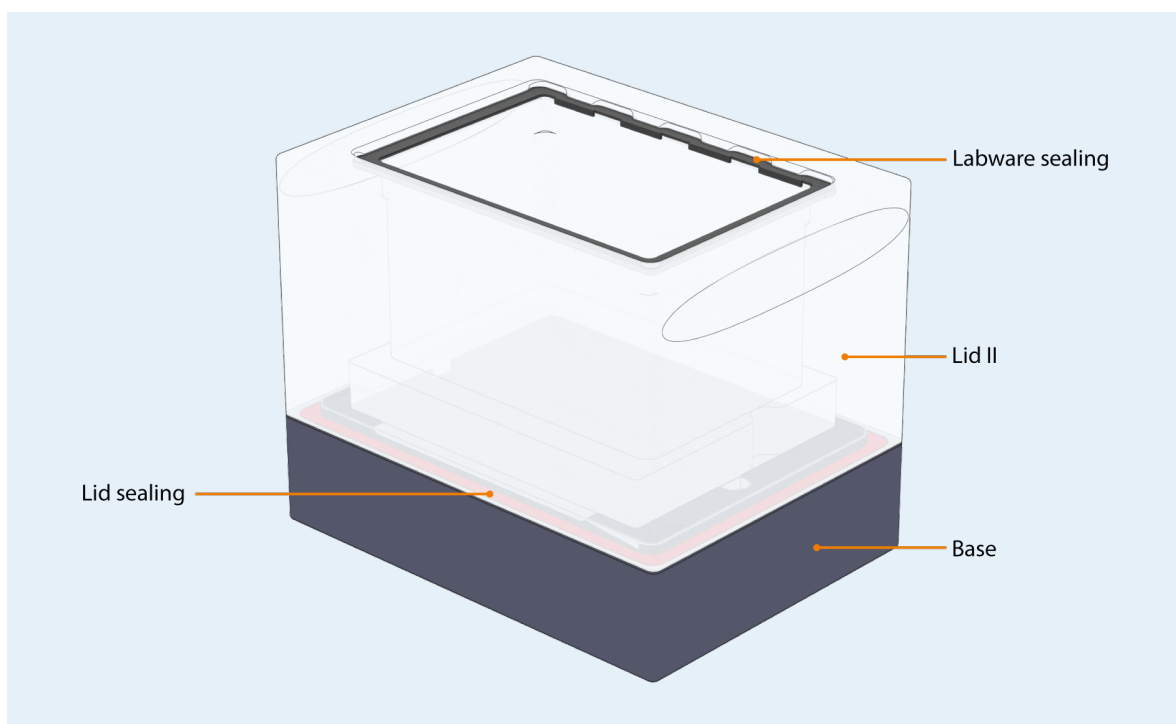


Figure 1.6: MACS Elution Chamber with lid II.

2

Installation

⚠ WARNING Read the instructions in the chapter **Important safety information** and ensure that your site is properly prepared before continuing with installation and assembly. Incorrect installation can lead to spread of fire, explosion, the risk of electric shocks, the risk of crushing and shearing of bodily parts, or biohazards.

2.1 Components

2.1.1 Components included in the delivery

The following components are included in the delivery of the MultiMACS Cell24 Separator Plus (#130-098-637).

Component
MultiMACS Cell24 Separator
MACS Elution Station
MACS Elution Chamber (including lid I for elution into standard deep well plates and lid II for elution into 5 mL tubes)
Tubing (connection of MACS Elution Chamber and MACS Elution Station)
Tip-Touch Plate
MultiMACS 12× Single-Column Adapter LS (for up to 12 LS, LD, or Whole Blood Columns)
MultiMACS 5 mL Tube Rack (for elution into 5 mL tubes)
Column Blank Holder
Column Blanks, 12 pieces
24-well Deep Well Plate, 2 pieces
Multi-24 Column Block
Air filter
Country-specific power cable
Null modem cable
High power CAN cable
User manual
Declaration of Conformity

Table 2.1: Components included in the delivery.

2.1.2 Accessories

Product	Order no.
MultiMACS 5 mL Tube Rack, 1 piece	130-095-331
MultiMACS 12× Single-Column Adapter LS, 1 piece	130-108-816

Table 2.2: MultiMACS Cell24 Separator Plus accessories.

2.1.3 Consumables

Product	Order no.
Multi-24 Column Block, 1 piece	130-095-692
Multi-24 Column Blocks, 8 pieces	130-095-691
LS Columns, 25 pieces	130-042-401
LD Columns, 25 pieces	130-042-901
Whole Blood Column Kit, 1 piece	130-093-545
24-well Deep Well Plates, 2x2 pieces	130-110-500
Single-well Deep Well Plates, 4 pieces	130-114-966
2-well Deep Well Plates, 4 pieces	130-120-010
3-well Deep Well Plates, 4 pieces	130-120-009
4-well Deep Well Plates, 4 pieces	130-120-008
Deep Well Plate Lids, 8 pieces	130-120-007

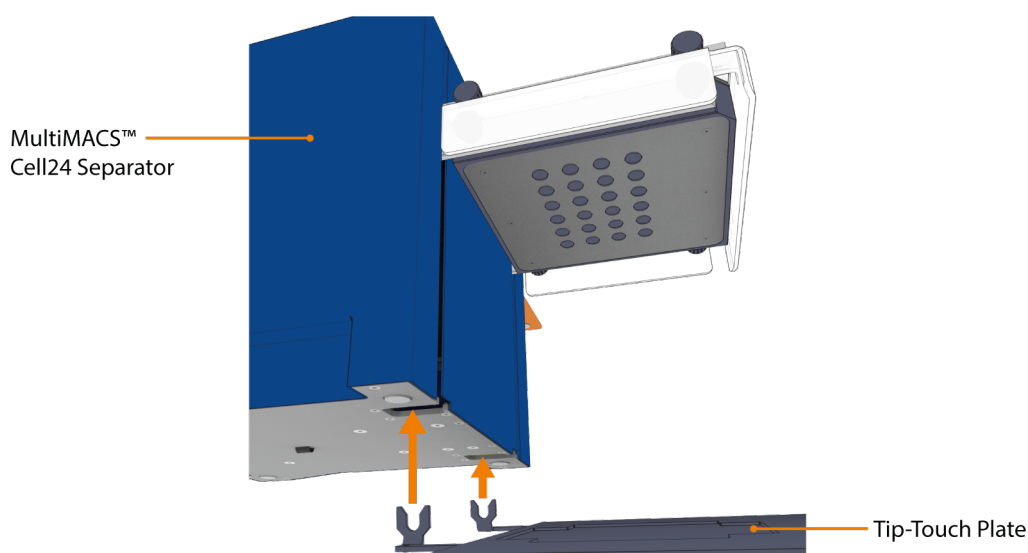
Table 2.3: MultiMACS Cell24 Separator Plus consumables.

Use deep well plates that comply to ANSI/SBS standards (length 127.76 mm ± 0.5 mm, width 85.48 mm ± 0.5 mm). As height of the deep well plates a value of 44.0 mm is set by default. The height value can be changed manually.

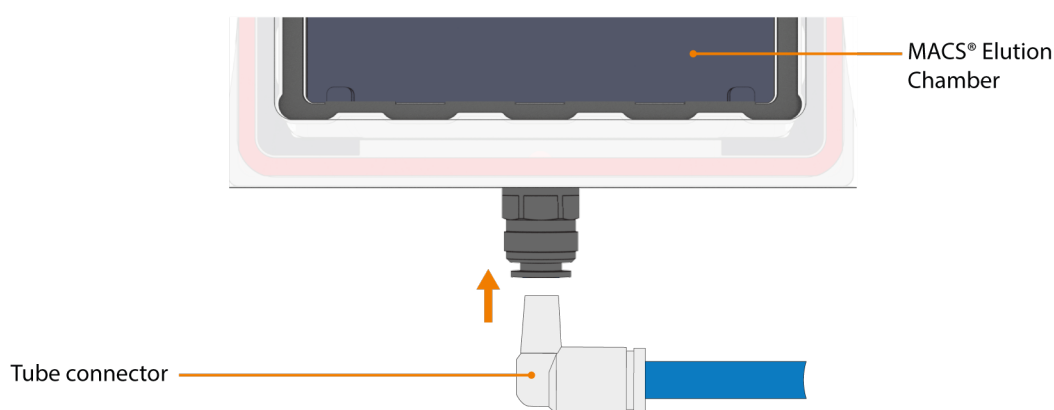
2.2 Assembly for benchtop use

Leave a space of at least 20 cm distance above the MultiMACS Cell24 Separator Plus to ensure that the instrument is able to tilt backwards, thus minimizing damage. If an object has been accidentally placed under the down-moving MultiMACS Cell24 Magnet, the physical resistance of the object causes the instrument to tilt backwards similar to a hydraulic jack.

- 1 Unpack all components.
- 2 Place the MultiMACS Cell24 Separator on a clean, stable, and flat laboratory bench. For sterile conditions, place the instrument in a laminar flow cabinet.
- 3 Lift the front side of the instrument and attach the Tip-Touch Plate.



- 4 Connect the touchdisplay to the instrument. Connect the cable to the socket labeled **DISPLAY** on the rear panel of the MultiMACS Cell24 Separator and fasten the plug with the screws. Attach the magnetic display at a convenient place.
- 5 Place the MACS Elution Station next to the MultiMACS Cell24 Separator.
- 6 Connect the MACS Elution Station to the MultiMACS Cell24 Separator with the high power CAN cable. Connect the cable to the socket labeled **MULTIMACS** on the rear side of the MACS Elution Station. Connect the other side to the socket labeled **MODULE 1** on the rear side of the MultiMACS Cell24 Separator. Fasten the plugs with the screws.
- 7 Connect the MACS Elution Chamber and the MACS Elution Station with the delivered tubing. The socket on the rear panel of the MACS Elution Station is labeled **ELUTION CHAMBER**. Push the grey tube connector (with tube) firmly into the connector of the MACS Elution Chamber.



- 8 Remove the blue caps from the filter. Screw the side with the imprint **INLET** into the connector labeled **FILTER/SILENCER** on the rear side of the MACS Elution Station.

The filter can be only screwed in to half the length of the screw thread.

- 9 Connect the power cable to the outlet on the rear side of the MultiMACS Cell24 Separator and plug it into an appropriate power socket.
- 10 Attach the magnetic Column Blank Holder to the MultiMACS Cell24 Separator Plus.

The MultiMACS Cell24 Separator Plus can be integrated into liquid-handling systems for automated use. For further information, refer to the Miltenyi Biotec Technical Support or visit **www.miltenyibiotec.com** for our instrument portfolio.

3

Operating the instrument



Read the instructions in the chapter **Important safety information**.



Depending on the biological material used, contamination or infection may lead to severe personal injury or death. If biohazardous material is or has been used, the operator must choose and wear personal safety equipment as indicated in the warnings and precautions for the particular substance. The instrument must be operated in a safety hood if hazardous or unknown materials are processed.



The MultiMACS Cell24 Separator Plus is equipped with a protective screen to prevent injuries to fingers that can otherwise become trapped between the MultiMACS Cell24 Magnet and the MultiMACS Column Holder. Do not remove the protective screen if the MultiMACS Cell24 Separator Plus is operated manually in a semiautomated mode. Remove the protective screen only if used in liquid-handling platforms as it can interfere with gripping plates. In case the protective screen is tilted while moving upwards, a photo-electric sensor detects the tilted position and the movement is stopped. An error message will appear on the screen.

Before starting automated processes with the MultiMACS Cell24 Separator Plus, which has been integrated into a compatible automated liquid-handling system, assure that the combined system, i.e., MultiMACS Cell24 Separator Plus and liquid-handling robot, meets all requirements of safety and function. This is of paramount importance with regard to protection of the operator.

The MultiMACS Cell24 Magnet is motor-driven. Keep away from all moving parts! Do not reach for plates, columns, or any item between the Tip-Touch Plate and the magnet! Do not place any bodily parts between the magnet and the MultiMACS Column Holder while the magnet is moving!

3.1 Switching on and off

- 1 Switch on the instrument with the power switch on the right side of the MultiMACS Cell24 Separator. The **Start** menu is shown after a few seconds.

The MultiMACS Cell24 Separator supplies power to the MACS Elution Station. The power switch of the MACS Elution Station has no function when the instrument is connected to the MultiMACS Cell24 Separator.

3.2 Stopping a moving magnet

If the MultiMACS Cell24 Magnet is moving, the following screen is shown.



- 1 In case of malfunction, tap anywhere on the display to stop the MultiMACS Cell24 Magnet. The following screen is shown.



- 2 Tap **OK** to continue, tap **MOVE BACK** to move the MultiMACS Cell24 Magnet to the last position, or tap **ESC** to abort the process.

3.3

Menu

The following chart shows the software menu structure of the MultiMACS Cell24 Separator Plus.

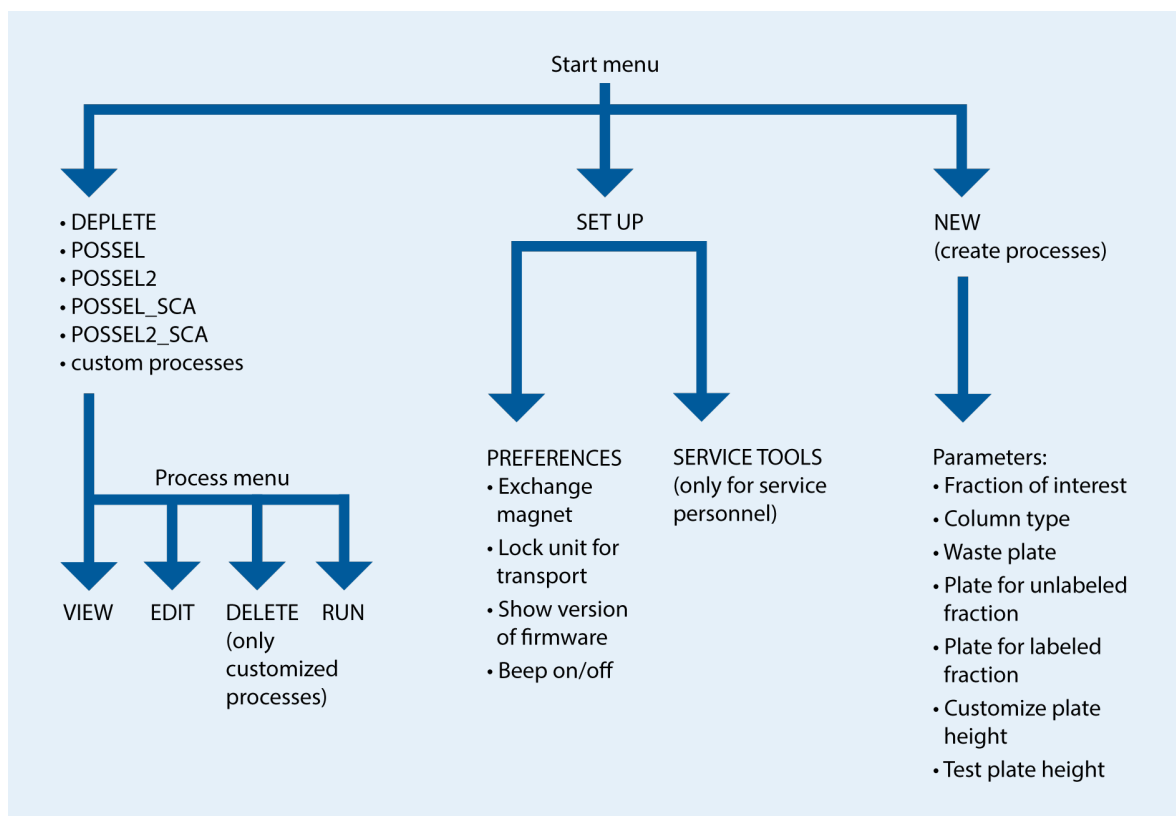


Figure 3.1: The software menu structure.

3.3.1

Start menu

In the **Start** menu the following three options are available.

- Select a separation process (pre-defined process or custom process).
- Go to **NEW** and create a customized process.
- Go to **SET UP**.

DEplete	NEW	^
POSSEL	SET UP	v

Figure 3.2: Start menu of the MultiMACS Cell24 Separator Plus.

3.3.2 Process menu

The **Process** menu opens after selection of a process. Use the **Process** menu to

- view
- edit
- delete
- run a process.

The pre-defined processes (DEplete, POSSEL, POSSEL2, POSSEL_SCA, and POSSEL2_SCA) can be edited and saved as customized processes. It is not possible to overwrite or delete pre-defined processes.

DEplete		←	▶
VIEW	EDIT	ESC	

Figure 3.3: Process menu of the MultiMACS Cell24 Separator Plus.

3.3.3 Set up

Go to **SET UP > PREFERENCES** for the set up options. **SERVICE TOOLS** is only available for service personnel.

The following set up options are available:

- Exchange the MultiMACS Cell24 Magnet.
- Lock the MultiMACS Cell24 Magnet for transport.
- Show the firmware version.
- Turn on or off the sound.

PREFERENCES	←
SERVICE TOOLS	ESC

Figure 3.4: Set up screen of the MultiMACS Cell24 Separator Plus.

3.3.4 New process

Go to **NEW** to create a custom process. The menu leads through the parameter adjustment of all process steps. Refer to **Creating a process on page 67**.

3.4 Buttons and symbols

Use the following buttons to navigate through the menu.



Scroll up

Scroll up the list. The scroll function is only visible if there are more items to select, which are not shown.



Scroll down

Scroll down the list. The scroll function is only visible if there are more items to select, which are not shown.



Back

Go to the last screen without execution of the indicated step. The MultiMACS Cell24 Magnet will not move during this step.



Run

Start a process.

MOVE BACK

Go to the last screen without execution of the indicated step. **CAUTION!** If the previous step had magnet movement, the MultiMACS Cell24 Magnet will move during this step.

OK

Perform the indicated step and go to the next screen.

ESC

Return to the **Start** menu without execution of the indicated step. **CAUTION!** If **ESC** is tapped during a process, the magnet might move and instructions will be given to remove any plates and columns.

YES

Confirm a change.

NO

Abort a change.

DEL

Delete a customized process.

RETRY

Retry moving the MultiMACS Cell24 Magnet when the movement of the magnet has been stopped due to a blockage. Tap this button after the blocking object has been removed.

TEST

Test the plate height.

SKIP

Skip the vacuum elution step.

3.5 Instructions for use

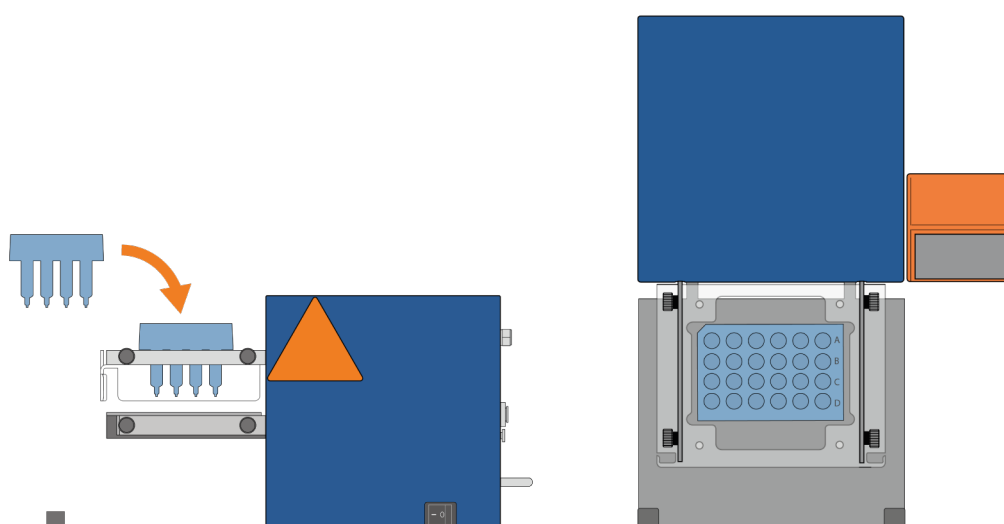
The following illustrations show how to use the columns, deep well plates, and samples with the instrument.

3.5.1 Placing columns into the MultiMACS Column Holder

⚠ CAUTION Do not place columns into the MultiMACS Cell24 Separator Plus until the prompt screen **INSERT COLUMNS** appears to ensure that there are no moving parts when placing the columns. This will prevent injuries to fingers that can otherwise become trapped between the MultiMACS Cell24 Magnet and the MultiMACS Column Holder.

The MultiMACS Cell24 Magnet moves up and down together or independent from the MultiMACS Column Holder. This allows for insertion of the columns into the magnetic field as well as for removal of the columns.

- 1 The MultiMACS Cell24 Magnet moves into the start position.
- 2 When the instrument prompts you to do so, insert or remove the Multi-24 Column Block or the MultiMACS Single-Column Adapter.

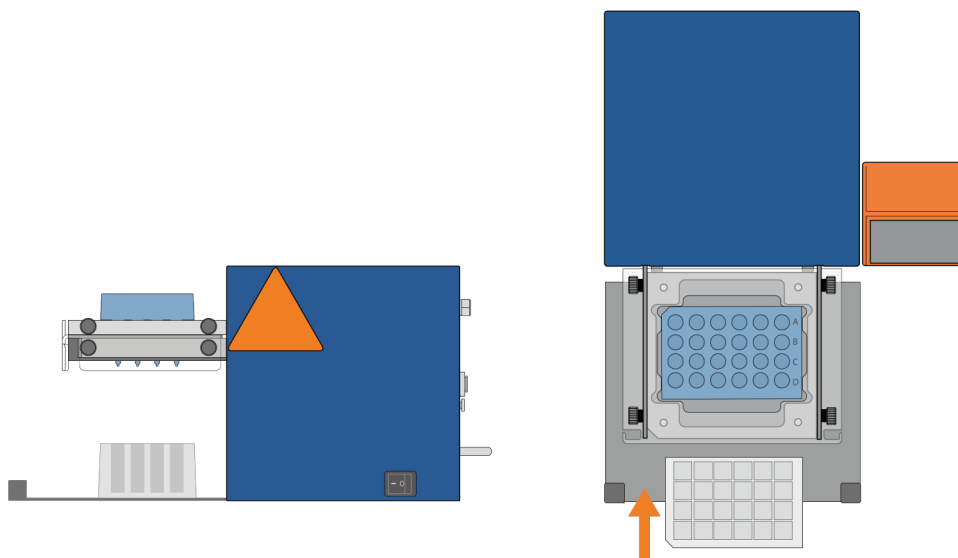


The Multi-24 Column Block and the MultiMACS Single-Column Adapter can be only inserted in one direction.

3.5.2 Placing plates

- 1 The MultiMACS Cell24 Magnet and the MultiMACS Column Holder move up.
- 2 The instrument prompts you to insert, change, or remove deep well plates.

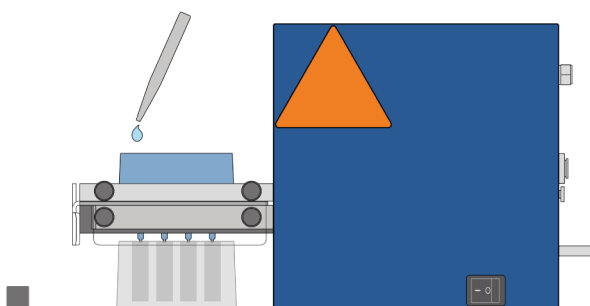
- 3 Place the deep well plates under the columns on the Tip-Touch Plate.



- 4 Make sure that the Multi-24 Column Block or the MultiMACS Single-Column Adapter and the deep well plates are aligned for correct assignment of the samples.

3.5.3 Collecting the unlabeled fraction

- 1 For application of samples and buffer, the MultiMACS Cell24 Magnet and the MultiMACS Column Holder move down.
- 2 Apply buffer or sample depending on the process step.



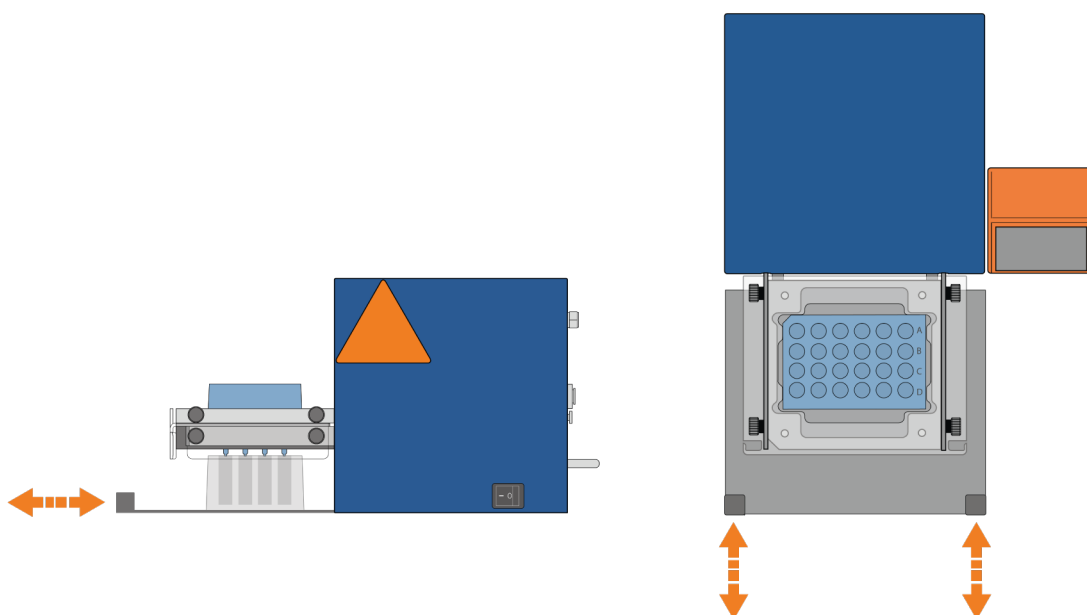
Equilibrate columns just before the separation. Do not store equilibrated columns.

3.5.4 Tip-Touch

The Tip-Touch Plate is used for the removal of residual drops from the column tips. The plate can be moved back and forth to deposit the last drop into the wells. This ensures reproducible recoveries and avoids cross-contamination. The column tips must protrude 1 mm into the well.

- 1 MultiMACS Column Holder and MultiMACS Cell24 Magnet remain down for the Tip-Touch process.

- When the instrument prompts you to perform a Tip-Touch, move the Tip-Touch Plate firmly back and forth once. Droplets from the column tips fall into the plate.

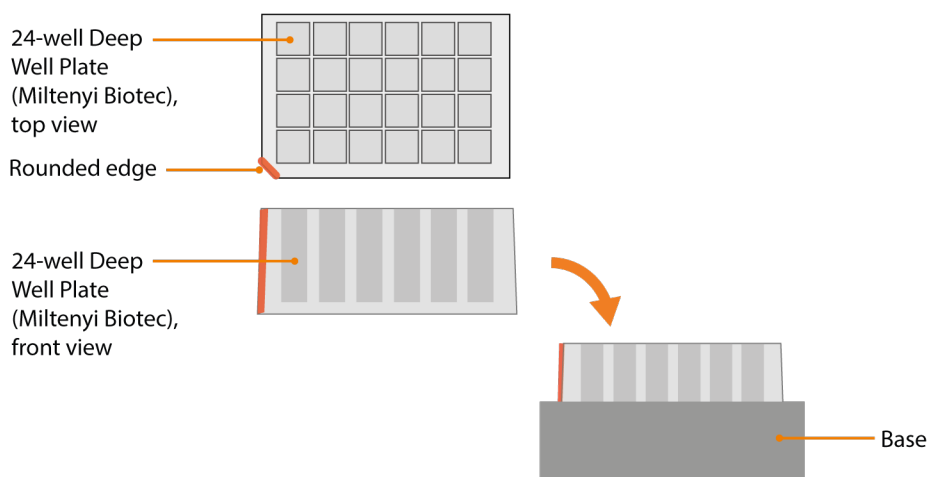


Tip-Touch can be ignored if single-well deep well plates are used.

3.5.5 Collecting the labeled fraction

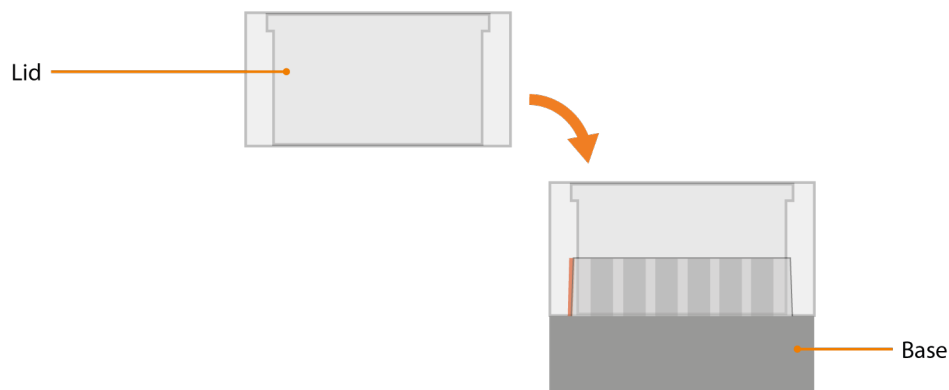
The MACS Elution Station enables the elution of the magnetically labeled cells from MACS Columns when performing a positive selection. It generates a gentle vacuum impulse to elute the cells from the columns.

- Insert a deep well plate or a MultiMACS 5mL Tube Rack into the base of the MACS Elution Chamber.



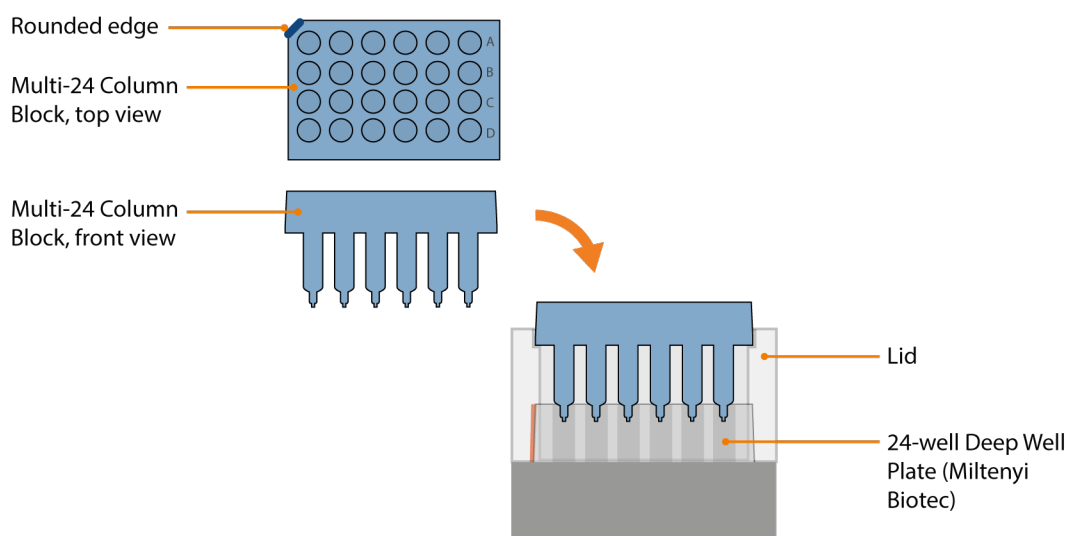
- 2 Place the lid on top of the MACS Elution Chamber. Use lid I for elution into 24-well deep well plates and lid II for the elution into 5 mL tubes.

The lid of the MACS Elution Chamber can be only inserted in one direction.



- 3 Position the Multi-24 Column Block or the MultiMACS Single-Column Adapter on the lid of the MACS Elution Chamber. Make sure that the Multi-24 Column Block or the single columns are aligned with the deep well plate for correct assignment of the samples.

The Multi-24 Column Block and the MultiMACS Single-Column Adapter can be only inserted in one direction.



- 4 When using the MultiMACS Single-Column Adapter close unused positions with the respective number of Column Blanks. All 12 positions of the MultiMACS Single-Column Adapter need to be closed to ensure sufficient vacuum.
- 5 Apply the elution impulse.

3.6 Running a process

- 1 Go to the **Process** menu of the process you want to run.
- 2 Tap the **Run** button to start the process. The MultiMACS Cell24 Magnet will move to the start position.
- 3 Follow the instructions on the screen.

3.7 Viewing process parameters

- 1 Go to the **Process** menu of the desired process.
- 2 Tap **VIEW**. The selected parameters are shown in the lower left of the screen. Scroll down for further process parameters.
- 3 Tap the **Back** button to return to the **Process** menu.

4

Setting up an experiment

4.1 Process selection

Select an appropriate cell isolation process depending on the desired target cell fractions, isolation strategy, and column type. The last cell isolation process performed on the MultiMACS Cell24 Separator Plus is shown on the upper left of the screen.

The MultiMACS Cell24 Separator Plus has five pre-defined processes:

- **DEplete** for the collection of unlabeled cells (negative fraction)
- **POSSEL** and **POSSEL_SCA** for the collection of labeled cells (positive fraction)
- **POSSEL2** and **POSSEL2_SCA** for the collection of labeled and unlabeled cells (positive and negative fraction)

Use **POSSEL** and **POSSEL_2** for separations with the Multi-24 Column Block and **POSSEL_SCA** and **POSSEL2_SCA** for separations with MACS Columns in the MultiMACS Single-Column Adapter. **DEplete** can be used with both, either Multi-24 Column Block or MACS Columns in the MultiMACS Single-Column Adapter. The process selection chart in **Figure 4.1** helps you to find a suitable program.

When using the processes **POSSEL** and **POSSEL_SCA**, the equilibration buffer and the unlabeled cells are collected in the same container. Select **DEplete**, **POSSEL2**, or **POSSEL2_SCA** if you want to use the unlabeled cells for downstream applications.

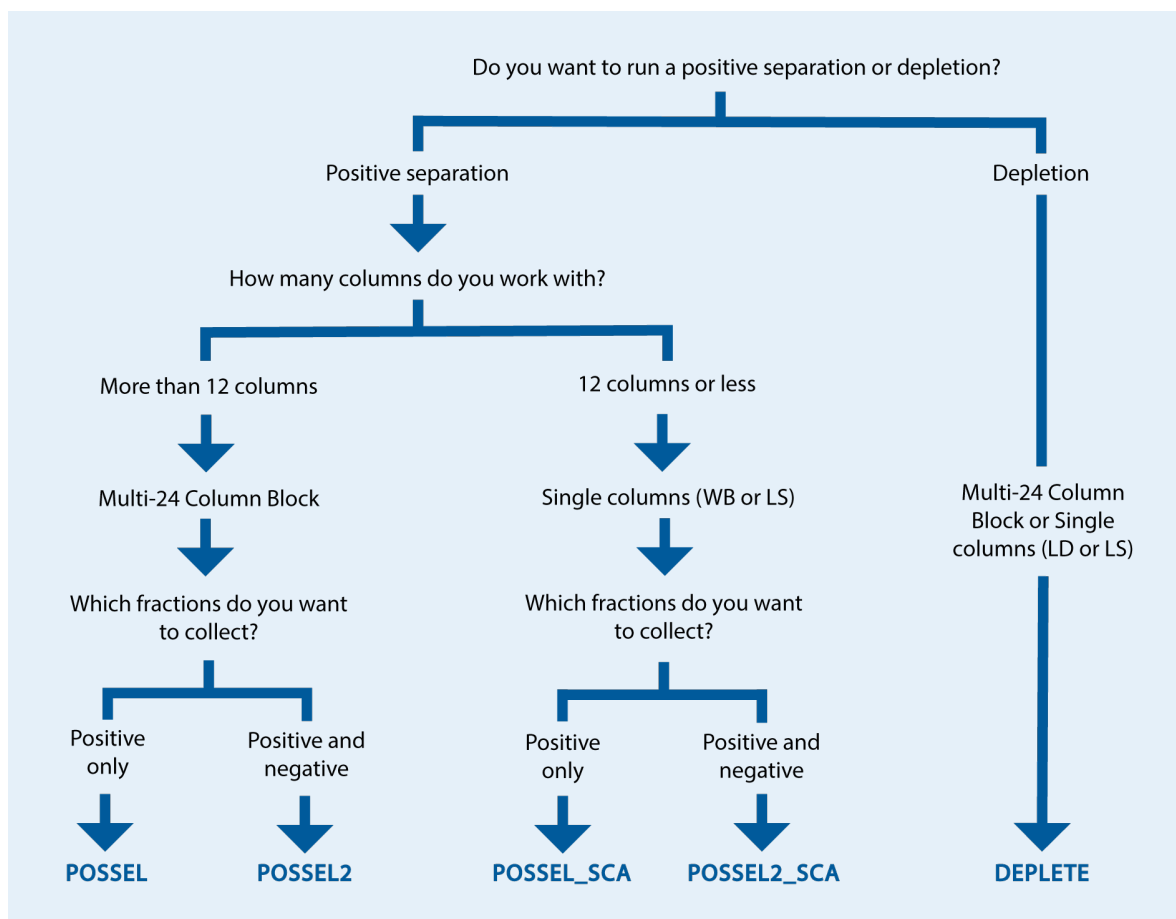


Figure 4.1: Process selection chart.

4.2 Columns

The MultiMACS Cell24 Separator Plus can be used with:

- the Multi-24 Column Block
- LS Columns
- LD Columns
- Whole Blood Columns.

Use the MultiMACS Single-Column Adapter to process up to 12 samples or whole blood and to insert LS, LD, or Whole Blood Columns into the MultiMACS Cell24 Separator Plus. For more than 12 samples, use the Multi-24 Column Block (refer to **Figure 4.1**).

The capacity of MACS Columns including LD, LS, and Whole Blood Columns differs from the capacity of manual use (refer to **Table 4.1**) when used with the MultiMACS Cell24 Separator Plus.

Column type	Capacity of labeled cells	Capacity of total cells
Multi-24 Column Block	1×10^8	1×10^9
LS Column	1×10^8	1×10^9
LD Column	1×10^8	5×10^8
Whole Blood Column	up to 10 mL whole blood	

Table 4.1: Capacity per column when used with the MultiMACS Cell24 Separator Plus.

4.3 Target cell fraction and waste container

To collect target cells deep well plates or 5 mL tubes can be used. The default target cell container in the pre-defined processes is a deep well plate with a height of 44.0 mm. **Table 4.2** shows the number of deep well plates required for each pre-defined process.

If you want to use deep well plates with other heights or 5 mL tubes, create a custom process or edit a process and save it separately (refer to **Creating a process on page 67**). For the collection of labeled cells in 5 mL tubes, use MACS Elution Chamber lid II and the MultiMACS 5 mL Tube Rack.

Process	Number of deep well plates required	Fraction
DEplete	2	Equilibration buffer Unlabeled fraction
POSSEL, POSSEL_SCA	2	Equilibration buffer and unlabeled fraction Labeled fraction
POSSEL2, POSSEL2_SCA	3	Equilibration buffer Unlabeled fraction Labeled fraction

Table 4.2: Number of deep well plates required for pre-defined processes.

For waste collection use deep well plates. The default setting for the deep well plate height is 44.0 mm. To use plates with other heights create a custom process or edit a process and save it separately (refer to **Creating a process on page 67**).

Program	Labeled cells	Unlabeled cells	Waste
DEplete	—	Deep well plate, height 44.0 mm; other heights and 5 mL tubes in custom programs	
POSSEL	Deep well plate or 5 mL tubes	—	Deep Well Plate height 44.0 mm; other heights and 5 mL tubes in custom programs
POSSEL_SCA	Deep well plate or 5 mL tubes	—	
POSSEL_2	Deep well plate or 5 mL tubes	Deep well plate, height 44.0 mm; other heights and 5 mL tubes in custom programs	
POSSEL2_SCA	Deep well plate or 5 mL tubes	Deep well plate, height 44.0 mm; other heights and 5 mL tubes in custom programs	

Table 4.3: Possible target cell fraction and waste container for the pre-defined processes.

4.4 Buffer volumes

Apply the following buffer volumes according to the column type and workflow.

Column type	Equilibration	Wash	Elution
Multi-24 Column Block	1×2 mL	3×1 mL	1×1 mL
LS Column	1×3 mL	2×2 mL	1×4 mL
LD Column	1×2 mL	2×1 mL	1×3 mL
Whole Blood Column	1×3 mL	2×2 mL	1×4 mL

Table 4.4: Buffer volumes required for different column types.

4.5 Large sample volumes

When exceeding a sample volume of 5 mL, load the sample in two steps onto the column. Two 44.0 mm deep well plates are required for the collection of equilibration buffer, flow through, and wash. Alternatively, use a 88.0 mm deep well plate.

- 1 Apply the first 5 mL of the sample and let it run through.
- 2 Tap **MOVE BACK**.
- 3 Exchange the deep well plate after movement of the MultiMACS Cell24 Magnet.
- 4 Tap **OK** to proceed with sample loading.

Make sure that the column reservoir is empty before applying new buffer or samples.

4.6 Magnetic labeling

For details regarding magnetic labeling, follow the instructions in the MACS Cell Separation Reagent data sheet.

5

Pre-defined processes

⚠ CAUTION Do not place columns into the MultiMACS Cell24 Separator Plus until the prompt screen **INSERT COLUMNS** appears to ensure that there are no moving parts when placing the columns. This will prevent injuries to fingers that can otherwise become trapped between the MultiMACS Cell24 Magnet and the MultiMACS Column Holder.

The following five processes are pre-defined on the MultiMACS Cell24 Separator Plus. The programs are suitable for collection of the unlabeled fraction in 24-well deep well plates. For the collection in 5 mL tubes, create a customized process (refer to **Creating a process on page 67**).

For equilibration, wash, and elution, use the buffer volumes as indicated in **Table 4.4**.

5.1 DEplete

- 1 Select **DEplete** in the **Start** menu. The **Process** menu opens. Tap the **Run** button.
- 2 **INSERT COLUMNS:** Insert the Multi-24 Column Block into the MultiMACS Column Holder. If you use single columns, place the MultiMACS Single-Column Adapter onto the MultiMACS Column Holder and insert the columns. Tap **OK**.

Ensure that all columns are well fitted into the MultiMACS Single-Column Adapter after movement of the MultiMACS Cell24 Magnet.

- 3 **INSERT WASTE PLATE:** Insert a deep well plate onto the Tip-Touch Plate. Tap **OK**.
- 4 **APPLY EQUILIBRATION BUFFER:** Apply degassed equilibration buffer onto each column and let the buffer run through. Tap **OK**.
- 5 **TIP-TOUCH COLUMNS IN PLATE:** Move the Tip-Touch Plate firmly back and forth once. Tap **OK**.
- 6 **INSERT PLATE TO COLLECT UNLABELED FRACTION:** Remove the waste plate and insert a new deep well plate onto the Tip-Touch Plate. Tap **OK**.
- 7 **APPLY SAMPLE AND WASH:** Apply the suspension of magnetically labeled cells onto each column and let it run through.
- 8 Apply degassed wash buffer onto each column and let it run through. Ensure that the column reservoir is empty before applying new wash buffer. Tap **OK**.
- 9 **TIP-TOUCH COLUMNS IN PLATE:** Move the Tip-Touch Plate firmly back and forth once. Tap **OK**. The combined flow-through from the cell suspension and the washes represent the unlabeled target cell fraction.
- 10 **REMOVE PLATE WITH UNLABELED FRACTION:** Remove the deep well plate and tap **OK**.

- 11 **REMOVE COLUMNS, PRESS OK TO END PROCESS:** Remove the columns containing the labeled cells. Tap **OK**.
- 12 Proceed to downstream applications with the unlabeled cells from the flow through fraction.

5.2 POSSEL

- 1 Select **POSSEL** in the **Start** menu. The **Process** menu opens. Tap the **Run** button.
- 2 **INSERT COLUMNS:** Insert the Multi-24 Column Block into the MultiMACS Column Holder. Tap **OK**.
- 3 **INSERT WASTE PLATE:** Insert a deep well plate onto the Tip-Touch Plate. Tap **OK**.

The MACS Elution Station will generate a vacuum. The status LED blinks green or red during this process. When the vacuum has been established, the status LED lights up constantly green.

- 4 **APPLY EQUILIB. BUFFER, SAMPLE AND WASH:** Apply degassed equilibration buffer onto each column. Let the buffer run through.
- 5 Apply the suspension of magnetically labeled cells onto each column and let it run through.
- 6 Apply degassed wash buffer onto each column and let it run through. Ensure that the column reservoir is empty before applying new wash buffer. Tap **OK**.
- 7 **TIP-TOUCH COLUMNS IN PLATE:** Move the Tip-Touch Plate firmly back and forth once. Tap **OK**.
- 8 **REMOVE PLATE. PLACE COLUMNS AND NEW PLATE IN ELUTION STATION:** Remove the deep well plate from the Tip-Touch Plate. Insert a new deep well plate into the base of the MACS Elution Chamber to collect the positive fraction from the columns.

The deep well plate can be inserted in two directions. To ensure the correct assignment of the samples, note the orientation of the deep well plate to the columns.

- 9 Place lid I on the base of the MACS Elution Chamber.
- 10 Remove the Multi-24 Column Block from the MultiMACS Column Holder and place it on lid I.
- 11 Tap **OK** to apply the elution impulse.
- 12 **APPLY ELUTION BUFFER:** Apply elution buffer onto each column to elute the labeled cells.
- 13 Let the elution buffer run through completely. Tap **OK**.
- 14 Tap the Multi-24 Column Block to the MACS Elution Chamber to collect drops from the column tips and ensure complete recovery of the positive fraction.
- 15 **REMOVE PLATE AND COLUMNS. TOUCH OK TO END PROCESS:** Remove the Multi-24 Column Block and the lid of the MACS Elution Chamber.
- 16 Tap **OK** and proceed to downstream applications with the labeled target cells in the deep well plate.

5.3 POSSEL_2

- 1 Select **POSSEL2** in the **Start** menu. The **Process** menu opens. Tap the **Run** button.
- 2 **INSERT COLUMNS:** Insert the Multi-24 Column Block into the MultiMACS Column Holder. Tap **OK**.
- 3 **INSERT WASTE PLATE:** Insert a deep well plate onto the Tip-Touch Plate. Tap **OK**.
- 4 **APPLY EQUILIBRATION BUFFER:** Apply degassed equilibration buffer onto each column and let the buffer run through. Tap **OK**.
- 5 **TIP-TOUCH COLUMNS IN PLATE:** Move the Tip-Touch Plate firmly back and forth once. Tap **OK**.
- 6 **INSERT PLATE TO COLLECT UNLABELED FRACTION:** Remove the waste plate and insert a new deep well plate onto the Tip-Touch Plate. Tap **OK**.

The MACS Elution Station will generate a vacuum. The status LED blinks green or red during this process. When the vacuum has been established, the status LED lights up constantly green.

- 7 APPLY SAMPLE AND WASH:** Apply the suspension of magnetically labeled cells onto each column and let it run through.
- 8** Apply degassed wash buffer onto each column and let run through. Ensure that the column reservoir is empty before applying new wash buffer. Tap **OK**.
- 9 TIP-TOUCH COLUMNS IN PLATE:** Move the Tip-Touch Plate firmly back and forth once. Tap **OK**. The combined flow-through from the cell suspension and the washes represent the unlabeled target cell fraction.
- 10 REMOVE PLATE. PLACE COLUMNS AND PLATE IN ELUTION STATION:** Remove the deep well plate from the Tip-Touch Plate. Insert a new deep well plate into the base of the MACS Elution Chamber to collect the positive fraction from the columns.

The deep well plate can be inserted in two directions. To ensure the correct assignment of the samples, note the orientation of the deep well plate to the columns.

- 11** Place lid I on the base of the MACS Elution Chamber.
- 12** Remove the Multi-24 Column Block from the Column Holder and place it on lid I.
- 13** Tap **OK** to apply the elution impulse.
- 14 APPLY ELUTION BUFFER:** Apply elution buffer onto each column to elute the labeled cells.
- 15** Let the elution buffer run through completely. Tap **OK**.
- 16** Tap the Multi-24 Column Block to the MACS Elution Chamber to collect drops from the column tips and ensure complete recovery of the positive fraction.
- 17 REMOVE PLATE AND COLUMNS. TOUCH OK TO END PROCESS:** Remove the Multi-24 Column Block and the lid of the MACS Elution Chamber.
- 18** Tap **OK** and proceed to downstream applications with the labeled target cells in the deep well plate.

5.4 POSSEL_SCA

- 1** Select **POSSEL_SCA** in the **Start** menu. The **Process** menu opens. Tap the **Run** button.
- 2 INSERT COLUMNS:** Place the MultiMACS Single-Column Adapter onto the MultiMACS Column Holder and insert the columns. Tap **OK**.

Ensure that all columns are well fitted into the MultiMACS Single-Column Adapter after movement of the MultiMACS Cell24 Magnet.

- 3 INSERT WASTE PLATE:** Insert a deep well plate onto the Tip-Touch Plate. Tap **OK**.

The MACS Elution Station will generate a vacuum. The status LED blinks green or red during this process. When the vacuum has been established, the status LED lights up constantly green.

- 4 APPLY EQUILIB. BUFFER, SAMPLE AND WASH:** Apply degassed equilibration buffer onto each column. Let the buffer run through.
- 5** Apply the suspension of magnetically labeled cells onto each column and let it run through.

When exceeding a volume of 5 mL, load the sample in two steps onto the column. Tap **MOVE BACK** after applying the first 5 mL. Exchange the deep well plate after movement of the magnet. Tap **OK** to proceed with sample loading. Alternatively, a 88 mm deep well plate can be used.

- 6 Apply degassed wash buffer onto each column and let it run through. Ensure that the column reservoir is empty before applying new wash buffer. Tap **OK**.
- 7 **TIP-TOUCH COLUMNS IN PLATE:** Move the Tip-Touch Plate firmly back and forth once. Tap **OK**.
- 8 **REMOVE PLATE. PLACE COLUMNS AND NEW PLATE IN ELUTION STATION:** Remove the deep well plate from the Tip-Touch Plate. Insert a new deep well plate into the base of the MACS Elution Chamber to collect the positive fraction from the columns.

The deep well plate can be inserted in two directions. To ensure the correct assignment of the samples, note the orientation of the deep well plate to the columns.

- 9 Place lid I on the base of the MACS Elution Chamber.
- 10 Remove the MultiMACS Single-Column Adapter with the MACS Columns from the Column Holder and place it on lid I. Close empty cavities with Column Blanks. Tap **OK**.
- 11 **APPLY ELUTION BUFFER:** Apply elution buffer onto each column to elute the labeled cells. Proceed to the next step immediately.
- 12 Tap **OK** to apply the elution impulse.
- 13 Tap the MultiMACS Single-Column Adapter with the MACS Columns to the MACS Elution Chamber to collect drops from the column tips and ensure complete recovery of the positive fraction.
- 14 **REMOVE PLATE AND COLUMNS. TOUCH OK TO END PROCESS:** Remove the MultiMACS Single-Column Adapter with the MACS Columns and the lid of the MACS Elution Chamber.
- 15 Tap **OK** and proceed to downstream applications with the labeled target cells in the deep well plate.

5.5 POSSEL2_SCA

- 1 Select **POSSEL2_SCA** in the **Start** menu. The **Process** menu opens. Tap the **Run** button.
- 2 **INSERT COLUMNS:** Place the MultiMACS Single-Column Adapter onto the MultiMACS Column Holder and insert the columns. Tap **OK**.

Ensure that all columns are well fitted into the MultiMACS Single-Column Adapter after movement of the MultiMACS Cell24 Magnet.

- 3 **INSERT WASTE PLATE:** Insert a deep well plate onto the Tip-Touch Plate. Tap **OK**.
- 4 **APPLY EQUILIBRATION BUFFER:** Apply degassed equilibration buffer onto each column and let the buffer run through.
- 5 **TIP-TOUCH COLUMNS IN PLATE:** Move the Tip-Touch Plate firmly back and forth once. Tap **OK**.
- 6 **INSERT PLATE FOR UNLABELED FRACTION:** Remove the waste plate and insert a new deep well plate onto the Tip-Touch Plate. Tap **OK**.

The MACS Elution Station will generate a vacuum. The Status LED blinks green or red during this process. When the vacuum has been established, the status LED lights up constantly green.

- 7 APPLY SAMPLE AND WASH:** Apply the suspension of magnetically labeled cells onto each column and let it run through.

When exceeding a volume of 5 mL, load the sample in two steps onto the column. Tap **MOVE BACK** after applying the first 5 mL. Exchange the deep well plate after movement of the magnet. Tap **OK** to proceed with sample loading. Alternatively, a 88 mm deep well plate can be used.

- 8** Apply wash buffer onto each column and let the buffer run through. Ensure that the column reservoir is empty before applying new wash buffer. Tap **OK**.
- 9 TIP-TOUCH COLUMNS IN PLATE:** Move the Tip-Touch Plate firmly back and forth once. Tap **OK**. The combined flow-through from the cell suspension and the washes represent the unlabeled target cell fraction.
- 10 REMOVE PLATE. PLACE COLUMNS AND NEW PLATE IN ELUTION STATION:** Remove the deep well plate from the Tip-Touch Plate. Insert a new deep well plate into the base of the MACS Elution Chamber to collect the positive fraction from the columns.

The deep well plate can be inserted in two directions. To ensure the correct assignment of the samples, note the orientation of the deep well plate to the columns.

- 11** Place lid I on the base of the MACS Elution Chamber.
- 12** Remove the MultiMACS Single-Column Adapter with the MACS Columns from the Column Holder and place it on lid I. Close empty cavities with Column Blanks. Tap **OK**.
- 13 APPLY ELUTION BUFFER:** Apply elution buffer onto each column to elute the labeled cells. Proceed to the next step immediately.
- 14** Tap **OK** to apply the elution impulse.
- 15** Tap the MultiMACS Single-Column Adapter with the MACS Columns to the MACS Elution Chamber to collect drops from the column tips and ensure complete recovery of the positive fraction.
- 16 REMOVE PLATE AND COLUMNS. TOUCH OK TO END PROCESS:** Remove the MultiMACS Single-Column Adapter with the MACS Columns and the lid of the MACS Elution Chamber.
- 17** Tap **OK** and proceed to downstream applications with the labeled target cells in the deep well plate.

6

Custom processes

Custom processes can be defined, for example when plates with other than the default settings are used. Refer to **Target cell fraction and waste container on page 59**.

Up to 10 custom processes can be saved to the process list. If exceeding this process number when creating a new process, an obsolete process has to be replaced.

6.1 Creating a process

- 1 Go to the **Start** menu and tap **NEW**.
- 2 Wait for a few seconds or tap **OK**.

ENTER THE NAME FOR YOUR CUSTOMIZED PROCESS	←	OK
	ESC	

- 3 Enter a name for the new process. Up to 13 characters can be used. The letters are arranged in triplets. Tap one, two, or three times to select a letter. Tap ... for further letters, symbols, and numerals. Tap **DEL** to delete letters.

ENTER NAME:		←	OK
A_			
ABC	DEF	GHI	...
			DEL

- 4 Tap **OK** to confirm the entered name.

If the process name already exists, the instrument prompts you to enter an alternative name.

- 5 Tap **COLLECT POS. FRACTION**, **COLLECT NEG. FRACTION** or **COLLECT BOTH FRACTIONS** to select the target fraction. Scroll down for all options.

SEL. FRACTION OF INTEREST:	←	^
COLLECT POS. FRACTION	ESC	v

- 6 Select a column type. Tap **SINGLE COLUMN ADAPTER (SCA)** for the use of up to 12 MACS Columns or **MULTI-24 COLUMN (MUC)** for up to 24 cell separations. Scroll down for all options.

SELECT COLUMN TYPE:	←	^
SINGLE COLUMN ADAPTER (SCA)	ESC	v

- 7 Select a waste plate. The waste will be collected in a deep well plate. The default height of the waste plate is 44.0 mm. Tap **DWB (44.0 mm)** to select the default height.

SELECT WASTE PLATE:	←	^
DWB (44.0MM)	ESC	✓

- 8 Option: Scroll down and tap **ENTER HEIGHT** to enter a different plate height in the next screen.

SELECT WASTE PLATE:	←	^
ENTER HEIGHT	ESC	✓

- 9 To adjust the plate height tap **+0.5 MM** or **+5 MM** to increase and **-0.5 MM** or **-5 MM** to decrease the value. The minimum plate height is 8.0 mm, the maximum plate height is 90.0 mm.

- 10 Tap **OK** to confirm the value or tap **TEST** to test the plate height.

30.0 MM	+0.5 MM	+5 MM	←	OK
	-0.5 MM	-5 MM	ESC	TEST

When creating a custom process, ensure that column tips are inserted about 1 mm deep into the wells. It is highly recommended to test the plate height before proceeding to cell separation. For details, refer to chapter **Testing plate height and distance for plate removal on page 70**.

- 11 Select a container for the unlabeled fraction. This parameter is only available when the target fraction is the negative fraction or the negative and the positive fraction (both). The unlabeled fraction can be collected in deep well plates or in 5 mL tubes. The default height of the deep well plate is 44.0 mm. Tap **DWB (44.0 mm)**, **5 ML FLOW TUBE**, or **ENTER HEIGHT** to enter a different height for the deep well plate. Scroll down for all options.

SELECT PLATE: UNLABL. FRAC.	←	^
DWB (44.0MM)	ESC	✓

- 12 Select a container for the labeled fraction. This parameter is only available when the positive fraction or the negative and the positive fraction have been selected as target fraction. The labeled fraction can be collected in deep well plates or in 5 mL tubes. Tap **DWB (44.0 mm)** or **5 ML FLOW TUBE**. Scroll down for all options.

SELECT PLATE: LABELED FRAC.	←	^
DWB (44.0MM)	ESC	✓

- 13 Tap **SAVE** to store the process.

SAVE PROCESS TO LIST?	←	SAVE
	ESC	

- 14 Tap **YES** to start the process or **NO** to go to the **Start** menu.

DO YOU WANT TO START THIS PROCESS NOW?		YES
ESC	NO	

6.2 Replacing a process

If 10 custom processes have already been saved in the process list, an obsolete process has to be replaced.

- 1 When trying to save a new process the following screen is shown. Select a process you want to delete and tap the process name.

REPLACE PROCESS:	←	^
MY_OWN_PROC:	ESC	↓

- 2 Tap **YES** to confirm the replacement. Alternatively, tap **NO** or the **Back** button to go back.

DO YOU WANT TO REPLACE THIS PROCESS: MY_OWN_PROC	←	YES
	ESC	NO

- 3 After saving the new process to the process list, tap **YES** to start the process or tap **NO** or **ESC** to return to the **Start** menu.

6.3 Editing a process

The pre-defined processes **DEPLETE**, **POSSEL**, **POSSEL2**, **POSSEL_SCA**, and **POSSEL2_SCA** must be saved as a new process after changing the process parameters. Edited parameters of custom processes can be saved in the existing process or as a new process while keeping the original process in the list.

6.3.1 Saving as new process

- 1 Go to the **Process** menu of the process you want to edit and tap **EDIT**.

MY_OWN_PROC			←	▶
VIEW	EDIT	DEL	ESC	

- 2 Tap **SAVE A NEW PROCESS** to save the changed process parameters as a new process while keeping the original process in the list.

SAVE A NEW PROCESS	←
JUST EDIT THE PARAMETERS	ESC

- 3 Wait for a few seconds or tap **OK**.

ENTER THE NAME FOR YOUR CUSTOMIZED PROCESS	←	OK
	ESC	

- 4 Enter the name for the process and set the parameters for the new process. Follow the steps 4-12 of chapter **Creating a process on page 67**.

- 5 Tap **SAVE PROCESS TO LIST** or **MORE CHANGES** to return to the edit function.

SAVE PROCESS TO LIST	←
MORE CHANGES	ESC

- 6 After the process has been saved, tap **YES** to start the process or tap **NO** or **ESC** to return to the **Start** menu.

6.3.2 Changing parameters

- 1 Go to the **Process** menu of the process you want to edit and tap **EDIT**.

MY_OWN_PROC			←	▶
VIEW	EDIT	DEL	ESC	

- 2 Tap **JUST EDIT THE PARAMETERS** and change the desired process parameter.

SAVE A NEW PROCESS	←
JUST EDIT THE PARAMETERS	ESC

- 3 Tap **SAVE PROCESS TO LIST** or **MORE CHANGES** to return to the edit function.

SAVE PROCESS TO LIST	←
MORE CHANGES	ESC

- 4 After the process has been saved, tap **YES** to start the process or tap **NO** or **ESC** to return to the **Start** menu.

6.4 Deleting a process

- 1 Go to the **Process** menu of the process that you want to delete and tap **DEL**.

MY_OWN_PROC			←	▶
VIEW	EDIT	DEL	ESC	

- 2 Tap **YES** to confirm the deletion of the process or tap **NO** to return to the **Process** menu.

DO YOU WANT TO DELETE	←	YES
MY_OWN_PROC	ESC	NO

6.5 Testing plate height and distance for plate removal

Plate heights and distance for plate removal can be tested before saving.

- 1 Enter the plate height and tap **TEST**.

30.0 MM	+0.5 MM	+5 MM	←	OK
	-0.5 MM	-5 MM	ESC	TEST

- 2 Insert the Multi-24 Colum Block or the MultiMACS Single-Column Adapter. Tap **OK**. The MultiMACS Cell24 Magnet moves up to the next position.

INSERT COLUMNS	MOVE BACK	OK
	ESC	

- 3 Place the plate to be tested. Tap **OK** and the MultiMACS Cell24 Magnet will move down to the next position.

INSERT PLATE; HEIGHT 30.0MM	MOVE BACK	OK
	ESC	

- 4 Check whether the height is acceptable by moving the Tip-Touch Plate back and forth. The column tips must be inserted slightly in the well (1 mm). Tap **OK** and the MultiMACS Cell24 Magnet moves up.

CHECK PLATE HEIGHT	MOVE BACK	OK
	ESC	

- 5 Remove the plate. Tap **OK**.

REMOVE PLATE	MOVE BACK	OK
	ESC	

- 6 The MultiMACS Cell24 Magnet moves down and the first screen is shown again.

30.0 MM	+0.5 MM	+5 MM	←	OK
	-0.5 MM	-5 MM	ESC	TEST

- 7 Tap **OK** if the height was acceptable. Otherwise edit the plate height and repeat the test.

7

Maintenance

⚠ WARNING Read the chapter **Important safety information**. Do not service the equipment yourself. Service shall be carried out only by trained experts authorized by Miltenyi Biotec. An improperly serviced instrument may lead to severe personal injury or death by exposure to mechanical hazards, hazardous optical radiation, and the risk of electric shock. Unplug the power cable before cleaning the instrument. Do not allow fluids or objects to enter the interior of the instrument. Always wear protective gloves and eyewear to protect against potential biohazard exposure. Dispose of contaminated tissues and swabs according to their biological security level.

The MultiMACS Cell24 Magnet is motor-driven. Keep away from all moving parts! Do not reach for plates, columns, or any item between the Tip-Touch Plate and the magnet! Do not place any bodily parts between the magnet and the MultiMACS Column Holder while the magnet is moving!

7.1 Cleaning the instrument

⚠ CAUTION The MultiMACS Cell24 Separator, the MultiMACS Cell24 Magnet, and the MACS Elution Station, including the MACS Elution Chamber base and lids, must not be submerged in water or cleaned in a dish washer, ultrasonic cleaner, autoclave, or similar appliances.

- Use a wash solution containing detergent, such as 1% SDS solution and/or 70% ethanol for disinfection and cleaning.
- Clean up spillages immediately.
- If the instrument moves accidentally during Tip-Touch, clean the instrument feet with alcohol.

NOTICE Heat can cause damage to the MultiMACS Cell24 Magnet. Make sure that the MultiMACS Cell24 Magnet is not exposed to temperatures above 80 °C during cleaning. Do not use a dishwasher or autoclave for cleaning or disinfection of the MultiMACS Cell24 Magnet.

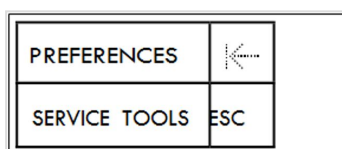
7.2 Rotating the MultiMACS Cell24 Magnet and MultiMACS Column Holder

⚠ WARNING The MultiMACS Cell24 Separator Plus is equipped with an extremely powerful magnet, the MultiMACS Cell24 Magnet. Keep this magnet at a distance of at least 20 cm from any magnetic information carriers, such as credit cards, magnetic tapes, and storage media, and from any electronic equipment, such as hearing aids, pacemakers, brain shunts, measuring and control instruments, computers, and watches. These items may be affected or damaged by the extremely powerful magnetic field. The force of attraction between two magnets or between a magnet and magnetically attractable material increases strongly the closer they get. Thus, keep any magnetic material – including any other MultiMACS Cell24 Magnet and Display – at a safe distance. Keep away from all moving parts!

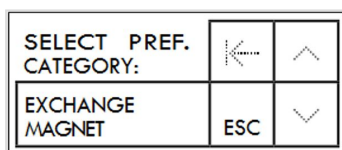
The MultiMACS Cell24 Magnet and MultiMACS Column Holder are mounted in landscape orientation by default. If necessary, change the orientation into portrait. The following process can also be used to remove the MultiMACS Cell24 Magnet for cleaning.

To prepare rotation of the MultiMACS Cell24 Magnet and MultiMACS Column Holder do the following.

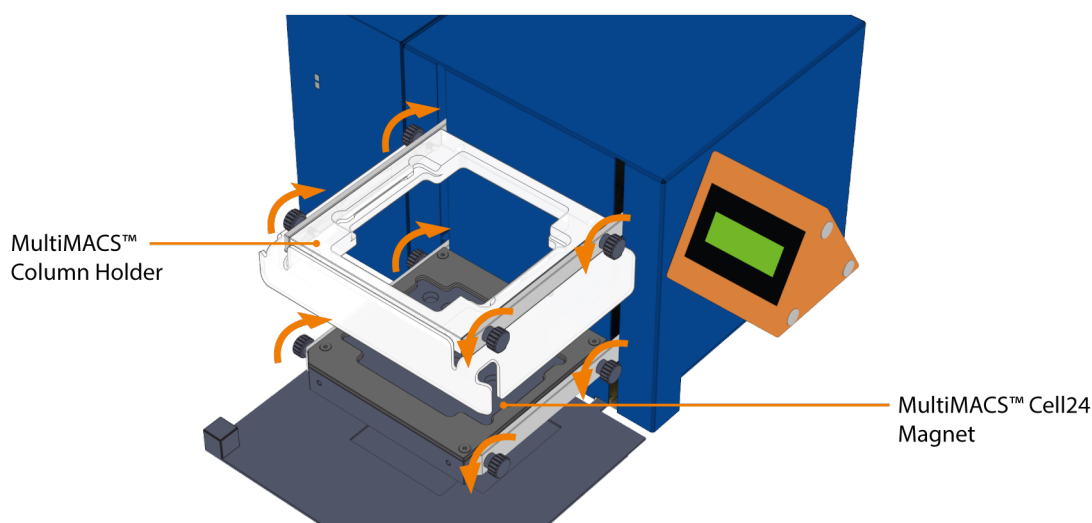
- 1 Tap **SET UP** in the **Start** menu.



- 2 Tap **PREFERENCES**.



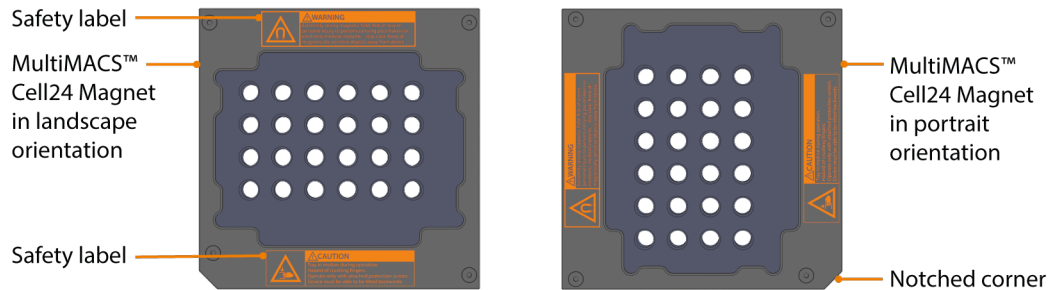
- 3 Tap **EXCHANGE MAGNET**. The MultiMACS Cell24 Magnet will move to the middle exchange position while the MultiMACS Column Holder is locked in the top position.
- 4 Wait until **READY FOR MAGNET EXCHANGE. SWITCH DEVICE OFF.** is shown.
- 5 Switch off and unplug the instrument.
- 6 Unscrew all four knurled screws of the MultiMACS Cell24 Magnet and the MultiMACS Column Holder.



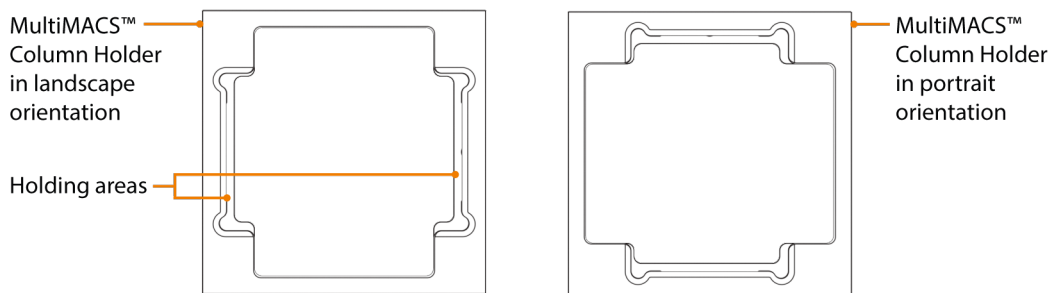
- 7 Remove the MultiMACS Cell24 Magnet and the MultiMACS Column Holder.

- 8 Turn the MultiMACS Cell24 Magnet counterclockwise by 90° to change the orientation from landscape to portrait. The notched corner must be oriented to the front right. Turn the MultiMACS Cell24 Magnet clockwise by 90° to change the orientation from portrait to landscape. The notched corner must be oriented to the front left.

Make sure that the safety labels on the MultiMACS Cell24 Magnet are always visible.



- 9 Rotate the MultiMACS Column Holder the same way as the MultiMACS Cell24 Magnet. Note the orientation of the holding areas for the Multi-24 Column Block or MultiMACS Single-Column Adapter.



- 10 Reinstall both components. Align the holes in the metal brackets with the screw threads in the MultiMACS Cell24 Magnet and the MultiMACS Column Holder (refer to **Figure 7.1**).
- 11 Fasten the knurled screws.
- 12 Plug in the power cable.

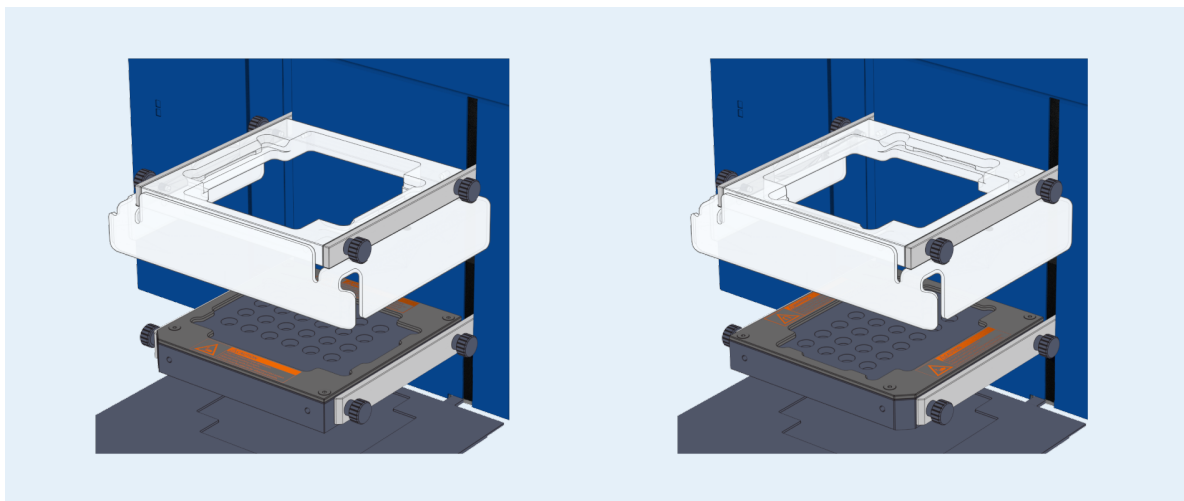


Figure 7.1: MultiMACS Cell24 Separator Plus with installed MultiMACS Cell24 Magnet and MultiMACS Column Holder in landscape orientation (left) and portrait orientation (right).

7.3

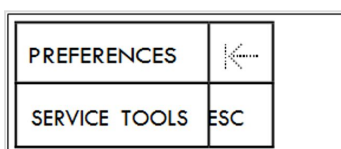
CAUTION

- 1 Switch off and unplug the instrument.
- 2 Detach the fuse holder with a sharp tool, for example a screwdriver. The fuse holder is located on the rear side of the MultiMACS Cell24 Separator above the power cable connector (refer to **Figure 1.3**).
- 3 Remove the defect fuse and insert a new fuse with the type and rating 5×20 mm, T3.15AH/250 V.
- 4 Reinsert the fuse holder.

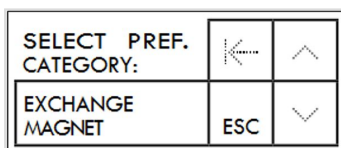
7.4

Before contacting Miltenyi Biotec Technical Support, determine the version of the firmware on the MultiMACS Cell24 Separator Plus.

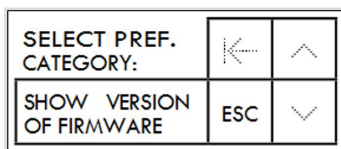
- 1** Tap **SET UP** in the **Start** menu.



- 2** Tap **PREFERENCES**.



- 3** Scroll down to **SHOW VERSION OF FIRMWARE.**



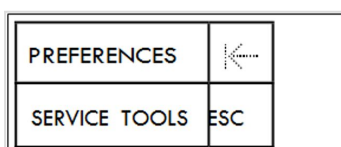
- 4** Tap this button and the current version of the firmware is shown in the next screen.

7.5

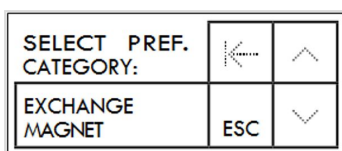
CAUTION

Contact Miltenyi Biotec before shipping. The MultiMACS Cell24 Separator Plus has to be locked before shipping.

- 1** Tap **SET UP** in the **Start** menu.

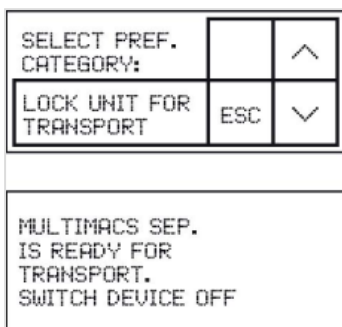


- 2 Tap **PREFERENCES**.

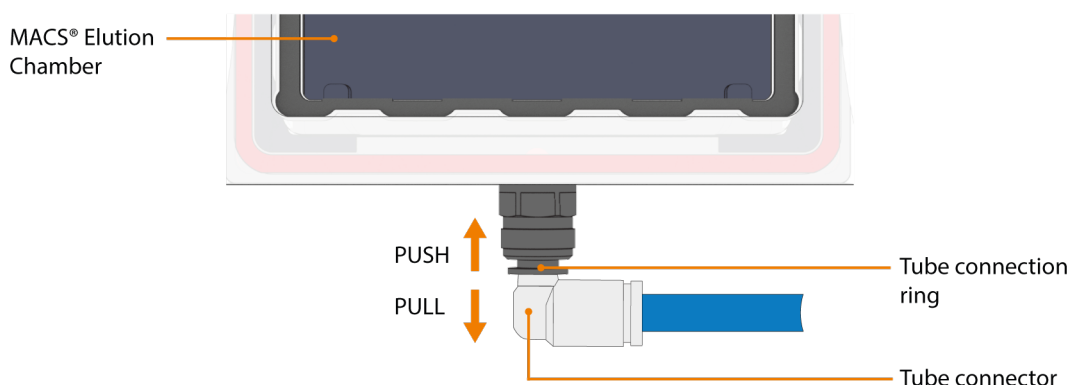


- 3 Scroll down to **LOCK UNIT FOR TRANSPORT**.

- 4 Tap **LOCK UNIT FOR TRANSPORT**. The MultiMACS Cell24 Magnet and MultiMACS Column Holder will move to the lock position.



- 5 When **MULTIMACS SEP. IS READY FOR TRANSPORT. SWITCH DEVICE OFF** is shown, switch off the instrument.
- 6 Detach the Tip-Touch Plate.
- 7 Disconnect the MACS Elution Chamber. Push the tube connection ring towards the MACS Elution Chamber and simultaneously pull out the tube connector.



- 8 The MultiMACS Cell24 Separator Plus is now ready for shipping.

8

Troubleshooting

8.1 Cross contamination by drops at the column tips

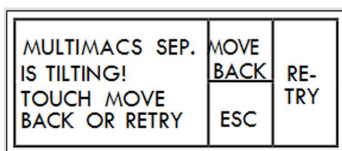
Always perform a Tip-Touch before removing the columns from the MultiMACS Column Holder. The columns must move slightly by the contact.

- 1 Ensure that all drops at the column tips have been removed after the Tip-Touch. If drops are still present, tap **MOVE BACK** and repeat the Tip-Touch.
- 2 Tap **OK**.

Clean the feet of the MultiMACS Cell24 Separator Plus if the instrument moves during Tip-Touch. Refer to [Cleaning the instrument on page 73](#).

8.2 Collision detection

If a tilting of the MultiMACS Cell24 Separator Plus is registered while the MultiMACS Cell24 Magnet is moving, the movement stops and the following screen is shown.



- 1 If no blocking objects are visible, tap **RETRY**.
- 2 If a blocking object is visible, tap **MOVE BACK** to set back the MultiMACS Cell24 Magnet to its former position.
- 3 Take out any objects causing the stop of the movement.
- 4 Tap **OK** to restart the move.

8.3 Vacuum failure

During generation of the vacuum, the status LED of the MACS Elution Station blinks green or red. When the vacuum is established, the LED stops blinking and lights up constantly green.

A constant red status LED of the MACS Elution Station indicates a failure of function. Contact Miltenyi Biotec Technical Support if red blinking of the LED persists or the LED lights up constantly red.

8.4 Failed elution of labeled cells

In very rare cases the elution buffer does not run through the columns of the Multi-24 Column Block after the vacuum impulse has been applied. If so,

- plug the column air-tight, for example with a glove covered thumb, to create a minimal overpressure that re-engages elution buffer flow through
- ensure that the plug is sterilized, if sterile conditions are required.

8.5 Poor elution recovery

If the elution recovery is poor, ensure that:

- base and lid of the MACS Elution Chamber are assembled correctly without tilting
- the lid of the MACS Elution Chamber and labware sealing are dust free, intact, and positioned correctly.

If the problem persists or if a sealing has to be changed, please contact Miltenyi Biotec Technical Support.

8.6 Error codes

All errors are coded. If an error is shown, refer to the following table for explanations.

Error message	Description and solution
STEPPING LOSS ERROR –101 INITIALIZING SYSTEM	Motor out of sequence. Tap OK for intermediate reinitialization of the system.
WRONG MAG POS ERROR –102 INITIALIZING SYSTEM	Incorrect positioning of the MultiMACS Cell24 Magnet. Tap OK for intermediate reinitialization of the system.
WRONG COL POS ERROR –106 INITIALIZING SYSTEM	The MultiMACS Column Holder is locked in wrong position. Tap OK for intermediate reinitialization of the system. The MultiMACS Column Holder will be repositioned.
POSITION FAILED ERROR –111 INITIALIZING SYSTEM	Incorrect positioning of the MultiMACS Cell24 Magnet. Make sure that the instrument is not exposed to direct sunlight. Tap OK for intermediate reinitialization of the system.
CANNOT PICKUP ERROR –117 INITIALIZING SYSTEM	Locking of MultiMACS Column Holder did not work. Tap OK for intermediate reinitialization of the system.
WRONG SIGNAL ERROR –118 CALL TECHNICAL SERVICE	Electronic hardware problem. Contact Miltenyi Biotec Technical Support.
LOCK FAILURE ERROR –123 CALL TECHNICAL SERVICE	Electronic or mechanical hardware problem. Contact Miltenyi Biotec Technical Support.
ELUTION STATION NOT DETECTED ERROR –401	The MACS Elution Station is not detected by the MultiMACS Cell24 Separator. Ensure that the cable of the MultiMACS Cell24 Separator is connected correctly to the MACS Elution Station.

Table 8.1: Error codes of the MultiMACS Cell24 Separator Plus.

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Technical data and specifications

The MultiMACS Cell24 Separator Plus is labeled as a protection class I device and must be plugged into a grounded power outlet.

Supply voltage fluctuations up to $\pm 10\%$ of the nominal voltage. Transient overvoltages present on the mains supply: category II. The instrument is suitable for pollution degree 2 environments. The MultiMACS Cell24 Separator Plus is not specified for use in a cold room.

The MultiMACS Cell24 Separator Plus has been investigated in accordance with the standards UL 61010-1 and CAN/CSA C22.2 No. 61010.1.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications of the instrument, unless expressly approved by Miltenyi Biotec, may void your authority to operate the instrument pursuant to FCC 47 CFR.

For other safety considerations, refer to the product label or visit www.miltenyibiotec.com.

Design and specifications are subject to change without notice.

9.1 Technical data

Technical data	Specification
Model	MultiMACS Cell24 Separator
Size (w x d x h)	230 mm x 435 mm x 230 mm (9.1" x 17.1" x 9.1")
Weight	11 kg
Input voltage	100–240 V~, 50/60 Hz
Electric current	3.5 A max.
Power consumption	500 W
Fuses	2x T3.15AH/250 V, 5x20 mm
RS232-Interface (labeled "com")	Pin 1, 4, 6, 7, 8, 9: NC Pin 2: RXD Pin 3: TXD Pin 5: GND
RS232-Interface (labeled "display")	Pin 1, 6, 7: NC Pin 2: RXD Pin 3: TXD Pin 4: PGM_MODE Pin 5: GND Pin 8: RTS Pin 9: 5 V
CAN with high-power-contacts (labeled "module 1")	Pin 3, 4, 5: NC Pin A1: 24 V Pin A2: GND Pin 1: CAN_L Pin 2: CAN_H
Standard-CAN (labeled "module 2")	Pin 1, 4, 5, 8: NC Pin 2: CAN_L Pin 3, 6: GND Pin 7: CAN_H Pin 9: 24 V
Supply voltage (labeled "power")	Pin 1: mains voltage Pin 2: mains voltage Pin 3: protection conductor
DC-Output	Module 1 24 V $\overline{\text{---}}$ / 8 A Module 2 24 V $\overline{\text{---}}$ / 0.315 A RS232 5 V / 0.75 A
Working temperature	15–30 °C
Humidity	0–85% relative humidity, non-condensing
Altitude	max. 2,000 m
Emission sound pressure level at workstation	< 70 dB(A)

Table 9.1: Technical data of the MultiMACS Cell24 Separator.

Technical data	Specification
Model	MACS Elution Station
Size (w x d x h)	114 mm x 265 mm x 233 mm (4.5" x 10.4" x 9.2")
Weight	4.6 kg
Input voltage	24 V ---
Electric current	0.875 A
Power consumption	21 W
RS232-Interface (labeled "RS232/Display")	Pin 1, 4, 6, 7, 8: NC Pin 2: RXD Pin 3: TXD Pin 5: 5 V Pin 9: GND
CAN with high-power-contacts (labeled "MultiMACS")	Pin 4, 5: NC Pin A1: 24 V Pin A2: GND Pin 1: CAN_L Pin 2: CAN_H Pin 3: GND
Display-Interface (labeled "RS232/Display")	Pin 1, 4, 6, 7, 8: NC Pin 2: RXD Pin 3: TXD Pin 5: GND Pin 9: 5 V
USB-Interface (labeled "USB")	Pin 1: 5 V Pin 2: D- Pin 3: D+ Pin 4: GND
Level-Detection (labeled "sensor Bottle")	Inner Contact: LIQUID-DETECT-SIGNAL Outer Contact: GND
Power supply (labeled "Power In")	Pin 1,2,4: GND Pin 3, 5: 24 V
DC-Output	RS232 5 V / 0.4 A
Working temperature	15–30 °C
Humidity	0–85% relative humidity, non-condensing
Altitude	max. 2,000 m
Emission sound pressure level at workstation	< 70 dB(A)

Table 9.2: Technical data of the MACS Elution Station.

9.2 EC/EU Declaration of Conformity

9.2.1 MultiMACS Cell24 Separator

This declaration of conformity is issued under the sole responsibility of the manufacturer:

Miltenyi Biotec B.V. & Co. KG
Friedrich-Ebert-Straße 68
51429 Bergisch Gladbach
Germany

This declaration relates exclusively to the machinery in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user.

The declaration of conformity refers to the product identified as follows:

Description: Laboratory equipment
Model: MultiMACS Cell24 Separator

The machinery complies with all essential requirements of the following directives:

2006/42/EC Machinery
2011/65/EU Restriction of the use of certain hazardous substances in electrical & electronic equipment
2014/30/EU Electromagnetic compatibility

The machinery is in conformity with the following harmonized standards:

EN 61010-1:2010
EN 61326-1:2013

Person authorized to compile the relevant technical documentation:

Dr. Bernd Schröder
Global Head Regulatory Affairs
Miltenyi Biotec B.V. & Co. KG
Friedrich-Ebert-Straße 68
51429 Bergisch Gladbach
Germany

9.2.2 MACS Elution Station

This declaration of conformity is issued under the sole responsibility of the manufacturer:

Miltenyi Biotec B.V. & Co. KG
Friedrich-Ebert-Straße 68
51429 Bergisch Gladbach
Germany

This declaration relates exclusively to the machinery in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user.

The declaration of conformity refers to the product identified as follows:

Description: Laboratory equipment
Model: MACS Elution Station

The machinery complies with all essential requirements of the following directives:

2006/42/EC Machinery
2011/65/EU Restriction of the use of certain hazardous substances in electrical & electronic equipment
2014/30/EU Electromagnetic compatibility

The machinery is in conformity with the following harmonized standards:

EN 61010-1:2010
EN 61326-1:2013

Person authorized to compile the relevant technical documentation:

Dr. Bernd Schröder
Global Head Regulatory Affairs
Miltenyi Biotec B.V. & Co. KG
Friedrich-Ebert-Straße 68
51429 Bergisch Gladbach
Germany

9.3 UK Declaration of Conformity

9.3.1 MultiMACS Cell24 Separator

This declaration of conformity is issued under the sole responsibility of the manufacturer:

Miltenyi Biotec B.V. & Co. KG
Friedrich-Ebert-Straße 68
51429 Bergisch Gladbach
Germany

This declaration relates exclusively to the machinery in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user.

The declaration of conformity refers to the product identified as follows:

Description: Laboratory equipment
Model: MultiMACS Cell24 Separator

The machinery complies with all essential requirements of the following legislations:

Supply of machinery (Safety) regulations 2008
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
Electromagnetic Compatibility Regulations 2016

The machinery is in conformity with the following UK designated standards:

EN 61010-1:2010
EN 61326-1:2013

Person authorized to compile the relevant technical documentation:

Dr. Bernd Schröder
Global Head Regulatory Affairs
Miltenyi Biotec B.V. & Co. KG
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9.3.2 MACS Elution Station

This declaration of conformity is issued under the sole responsibility of the manufacturer:

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Friedrich-Ebert-Straße 68
51429 Bergisch Gladbach
Germany

This declaration relates exclusively to the machinery in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user.

The declaration of conformity refers to the product identified as follows:

Description: Laboratory equipment
Model: MACS Elution Station

The machinery complies with all essential requirements of the following legislations:

Supply of machinery (Safety) regulations 2008
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
Electromagnetic Compatibility Regulations 2016

The machinery is in conformity with the following UK designated standards:

EN 61010-1:2010
EN 61326-1:2013

Person authorized to compile the relevant technical documentation:

Dr. Bernd Schröder
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Friedrich-Ebert-Straße 68
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Technical support

For technical support, contact your local Miltenyi Biotec representative or Miltenyi Biotec Technical Support at Miltenyi Biotec headquarters:

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Friedrich-Ebert-Straße 68
51429 Bergisch Gladbach
Germany
Phone: +49 2204 8306 3803
Email: technicalsupport@miltenyi.com

Visit **www.miltenyibiotec.com** for local Miltenyi Biotec Technical Support contact information.

11

Legal notes

11.1 Limited warranty

Except as stated in a specific warranty statement which may accompany this product or as otherwise agreed in writing by an authorized representative of Miltenyi Biotec, Miltenyi Biotec's warranty to you, the original purchaser and end user ("you" or "your"), with respect to the product accompanied by this limited warranty shall be subject to the following provisions and the general terms and conditions of sale of the company within the Miltenyi Biotec group which supplied the product in effect at the date of purchase. Those terms and conditions of sale may vary by country and region. Nothing in this document should be construed as constituting an additional warranty.

Miltenyi Biotec warrants that this product will operate or perform substantially in conformance with Miltenyi Biotec's published specifications and be free from material defects in material and workmanship, when subjected to normal, proper, and intended usage by properly trained personnel, for the period of time set forth in the product documentation or package inserts accompanying the product (the "Warranty Period").

Miltenyi Biotec agrees, during the Warranty Period, to repair or replace, at Miltenyi Biotec's option, the defective product so as to cause the same to operate in substantial conformance with said published specifications; provided that you shall (a) promptly notify Miltenyi Biotec in writing upon the discovery of any nonconformity or defect, which notice shall include the product model and serial number (if applicable) and details of the warranty claim; and (b) return the nonconforming or defective product to Miltenyi Biotec, freight prepaid, only after receipt of a Return Material Authorization ("RMA") from Miltenyi Biotec, which may include biohazard decontamination procedures and other product-specific handling instructions, if applicable.

Miltenyi Biotec shall have no obligation to make repairs, replacements, or corrections to the product or any component thereof required, in whole or in part, as the result of (i) normal wear and tear, (ii) improper handling, installation, operation, storage, service, maintenance, or repair, (iii) failure to follow the instructions, cautions, warnings, and notes set forth in the product documentation provided with the product or provided by Miltenyi Biotec from time to time, (iv) abnormal use, misuse, neglect, abuse, mishandling, misapplication, modification, or alteration of the product, (v) use of the product in a manner for which it was not designed, (vi) causes external to the product such as, but not limited to, power failure or electrical power surges, (vii) use of the product in combination with equipment, accessories, consumables, or software not supplied or approved by Miltenyi Biotec, or (viii) accident, disaster, or acts of God. ANY INSTALLATION, MAINTENANCE, REPAIR, SERVICE, OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCT PERFORMED BY ANY PERSON OR ENTITY OTHER THAN MILTENYI BIOTEC AUTHORIZED PERSONNEL WITHOUT MILTENYI BIOTEC'S PRIOR WRITTEN APPROVAL, OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY MILTENYI BIOTEC, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCT.

Miltenyi Biotec's warranty does not cover products sold AS IS or WITH ALL FAULTS, or which had its serial number defaced, altered, or removed, or any consumables or parts identified as being supplied by a third party.

Miltenyi Biotec must be informed promptly if a claim is made under this limited warranty. If a material or manufacturing defect occurs within the Warranty Period, Miltenyi Biotec will take the appropriate steps, at Miltenyi Biotec's option, to make repairs, replacements, or corrections to the product or any component thereof as may be required to restore the full usability of your product. If Miltenyi Biotec determines that a product for which you have requested warranty services is not covered by the warranty hereunder, you shall pay or reimburse Miltenyi Biotec for all costs of investigating and responding to such request at Miltenyi Biotec's then prevailing time and materials rates. If Miltenyi Biotec provides repair services or replacement parts that are not covered by this warranty, you shall pay Miltenyi Biotec therefor at Miltenyi Biotec's then prevailing time and materials rates.

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