

OPERATING INSTRUCTIONS

UNIVERSAL DRIVE UA 500



1. General information

The universal drive UA 500 is approved for the safe rotation of heavy loads (explicitly not persons) of up to 500 kg. One typical application is the drive of a larger mirror ball or other objects. An integrated lamella torque clutch protects the gear from overload and makes it possible to accelerate and decelerate large masses without jolts. The drive is controlled manually or by a suitable DMX Motor-Controller. The extremely robust design and the high-quality components of the device guarantee a very high safety and longevity.

2. Preparation / Assembly / Commissioning

Before each use, the motor shall be checked for possible damages. Special attention shall be paid to the tight fit of the upper and lower eyebolt. The firm screwing of the two halves of the housing is also important. These are secured by means of a bolt, which is located under the guarantee label. A damage of the security seal can indicate an inadmissible opening or loosening of the halves of the housing.

For fastening the drive on a load rod in theaters or on other structural components and on the load to be driven, there are two eyebolts at both ends of the drive. For this purpose, you can use permitted slings such as round slings, shackles or chain links which can be screwed. A chain link which can be screwed (NG 12) with a nominal load capacity or WLL (Working Load Limit) of 750 kg with regard to a working coefficient of 10 is part of the scope of supply of the UA 500. Smaller fastening elements can also be used in compliance with the dimensioning regulations according to DGUV directive 17.

See also dimensioning according to DIN 56950-1 "Entertainment Technology – Machinery Installations – Part 1: Safety requirements and testing". The drive itself is designed for a breaking load of more than 15 t and has demonstrably the 10-fold safety required according to DGUV directive 17.

Please avoid greater asymmetrical load distributions! Otherwise too high lateral and tensile forces can occur at the fastening elements!

The motor is only designed for a vertical load. After fastening and securing the drive, the connection to the Motor-Controller is established. In order to avoid a danger due to uncontrolled movements, the connection to the power supply may only be established thereafter. Please observe that objects with large dimensions or surfaces have considerable air resistances and already trigger the torque clutch of the UA 500 at low rotation speeds.

The kinetics of a large object can also cause very long acceleration and deceleration phases. In case of doubt please contact us. We will be pleased to advise you with regard to your planned application.



3. Safety instructions

Please observe the instructions for the permitted installation position and load limits of the UA 500. For the protection of the gear unit and due to reasons of the safety at work (prevention of the risk of crushing), a torque clutch with a nominal torque of 1.3 Nm is integrated, which allows a soft acceleration and deceleration of corresponding heavy loads. The UA 500 has different safety features, which are reviewed prior to delivery. In order to ensure a high operating safety, the halves of the housing are sealed and must never be opened. Both eyebolts M 16 are secured with a specific locking agent because of safety reasons and may neither be loosened nor replaced by other components. We are not liable for damages resulting from non-observance. Therefore, we reject any liability in this respect.

The drive automatically restarts as soon as the operating voltage returns after a mains power failure. Please consider possible resulting risks.

The device may only be used for driving decorating elements and objects on stages and for similar tasks. It is not permitted to turn or move persons with the UA 500. Only qualified persons may attach and start the drive (event or stage technicians or similar specialists).

It must be ensured that the attachment points and slings also correspond to the high requirements of the DGUV directive 17! In addition, we refer to the regulations according to EN ISO 13855 "The positioning of protective equipment with regard to the approach speed of parts of the human body" and EN ISO 13857 "Safety distances to prevent danger zones being reached by upper and lower limbs" and DIN EN 349 "Minimum distances to avoid crushing parts of the human body"

Due to the high intrinsic safety of the drive, a second protection of the drive itself is not necessary. However, it is particularly important to pay attention to an absolutely safe fastening of the drive at the bearing elements. For the suspension of a mirror ball, particular attention must be paid to a safe fastening of its axis.

Possible existing additional safety fastenings of the mirror ball or other objects can be connected with the lower eyebolt. In order to limit the dynamic load of the drive and the attachment point at the mirror ball, the drop height must be restricted by a corresponding calculation of the safety wire to less than 20 cm. The use of a safety wire with a fall brake of the type "Major Saveking" is recommended.

The universal drive UA 500 is a product designed for the application on stages, which is designed corresponding to the state-of-the-art in a way that risks can be largely excluded. Nevertheless, drives and drive controls, which do not explicitly fulfill safety functions, are, according to the general technical view, not permitted for applications which may endanger persons due to the drive function. Unexpected or non-braked movements can never be completely excluded without additional safety devices. Therefore, persons must never stay in the danger zone of the drives, unless additional adequate protective equipment excludes any danger to persons. This applies both for the regular operation of the machine as for all maintenance and commissioning works. In order to avoid personal injuries and damages to property, adequate precautions shall be taken, if necessary.

The turning range of the driven element must not be entered by persons and / or must be outside the hand area.

The commissioning, operation and maintenance may only be performed by trained event technicians. These specialists must know and be familiar with the content of all technical documentations of this product. Due to their technical training, knowledges and experiences, these specialists must be able to recognize and avoid dangers.

The specialists must know the common standards, provisions and accident prevention regulations, which must be complied with during installation, operation and maintenance of the product. Damaged drives may neither be installed nor commissioned in order to prevent personal injuries and damages to property. Changes and modifications of the drives are not permitted and will result in the voiding of all warranties and liabilities. Please observe that the drive may only be operated in dry rooms (IP 40).

4. Inspection intervals

In order to guarantee a permanently high operating safety, a brief inspection shall be performed **prior to each application** (see point 2).

The complete drive is a safety relevant component and must, thus, be annually inspected by a correspondingly trained expert according to the safety-at-work directive (German directive: BetrSichV 2002) and DGUV directive 17.

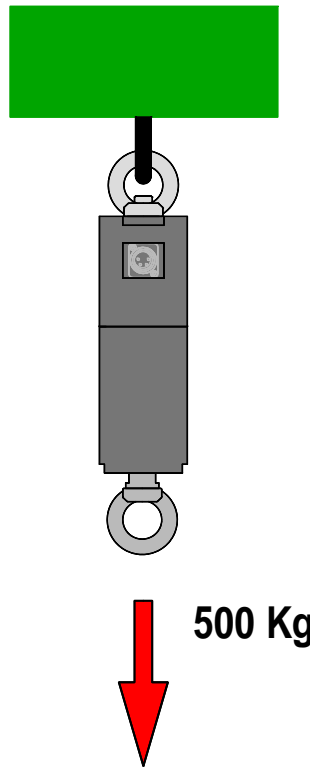
This inspection must include the following points:

1. Check for possible damages of the housing
2. Check the eyebolts for damages and tight fit
3. Check the secure connection between upper and lower part. In this process, particular attention must be paid to possible damages of the security seal.
4. Check the slings (shackle / chain link and the like)
5. Check the cables, power supply units and plug-in connectors.

An inspection by an expert (e.g. TÜV) is required every 4 years. This inspection may be carried out by the locally competent TÜV organization.

For the documentation of these cyclic inspections, an inspection book is attached to every motor. Please consider that you put lives at risk with a defective drive. The costs of an inspection are low compared to this danger! Please send the drive to the company ARNOLD Lichttechnik for a more thorough inspection, if there are visible damages that suggest a limitation of the operating safety (e.g. after a crash of the drive).

5. Permitted installation position



The universal drive UA 500 is exclusively approved for the hanging / vertical operating mode displayed in the graphics. Off-center loads or the standing operation are not permitted.

6. Direction of rotation



The UA 500 is driven by a direct current gear motor and can, thus, be easily controlled in its direction of rotation and its speed. The two offered control units provide this function via DMX or manually by means of a switch. The “clockwise rotation” of the drive is shown below.

Clockwise rotation of the drive

7. Technical data

Load capacity:	up to 500 kg hanging (only axially)
Rotation speed:	0.3 – 3.0 rpm
Torque:	max. 1.3 Nm
Drive:	precision planetary gear motor
Operating voltage:	12 V DC / 200 mA
Housing:	hard aluminum, black anodized
Plug connection:	XLR jack 4- pin male
Cable length:	2 m (scope of supply)
Total weight:	3.2 kg
Protection class:	IP 40 (dry rooms)
Security:	requirements of the DGUV directive 17
Certification:	conformity checked according to Machinery Directive 2006/42/EC by TÜV SÜD

8. Scope of supply / order numbers:

Universal drive type UA 500, load capacity 500 kg	559-050
Transport case for UA 500	503-151
Connection cable motor towards controller XLR 4-pin / 2m	503-155
Quick connecting link NG 12 WLL 750 kg	503-154
Motor-Controller (optional)	
Original operating instructions and inspection book UA 500	



Transport case



Chain quick connector NG 12

For the operation of the UA 500 the following are (optionally) required:

Motor-Controller MCU 910 mini (manual)

536-050

(speed adjustable via potentiometer, direction of rotation manually switchable incl. wall wart)



or

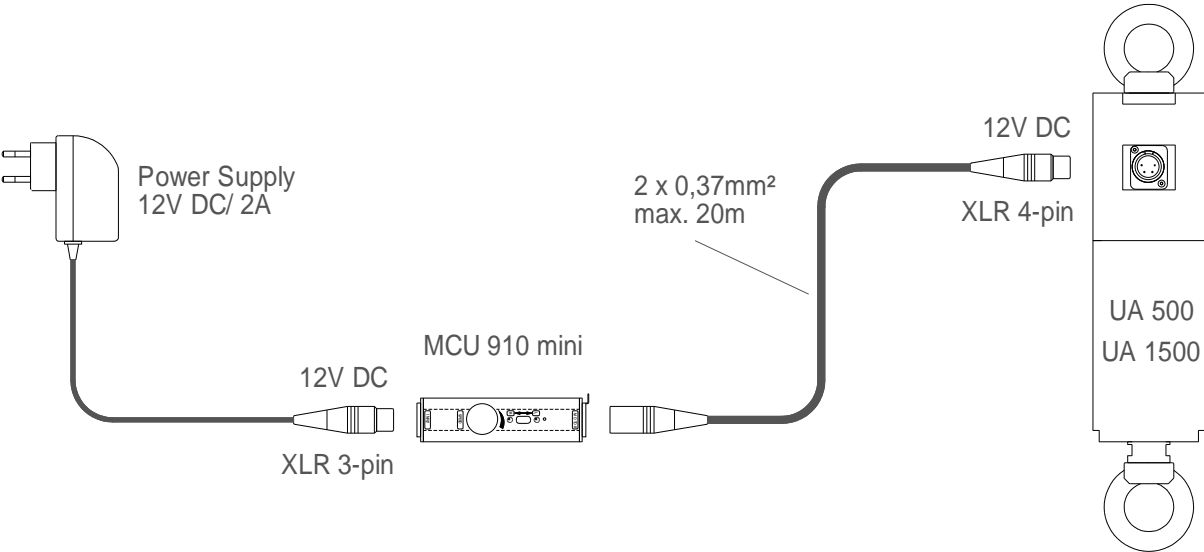
Motor-Controller MCU 400 D (DMX + manual)

515-060

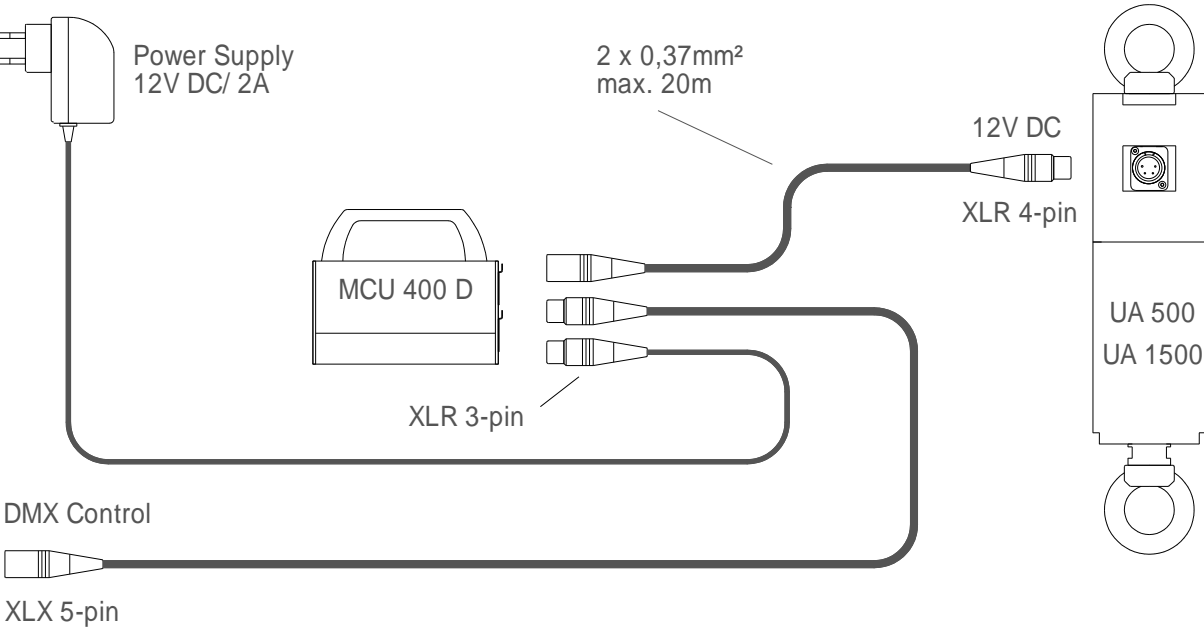
(direction of rotation and speed controllable manual and via DMX)



9. Wiring examples

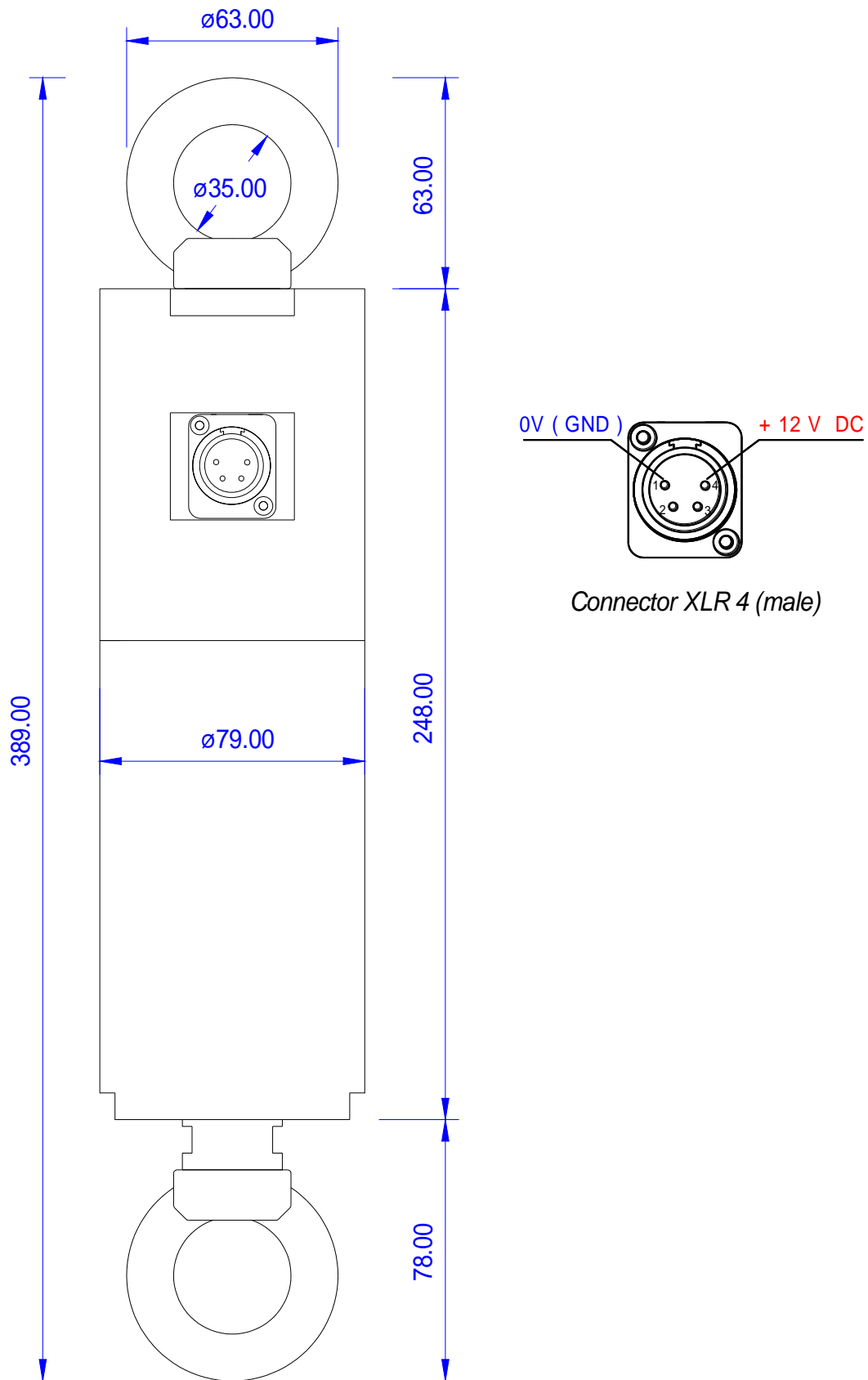


Motor control with Motor-Controller MCU 910 mini (manual control)



Motor control with Motor-Controller MCU 400 D (DMX + manual)

10. Dimensions





Mirror ball, diameter 2m with UA 500 (example)

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We reserve the right to make alterations for the purpose of technical development.

Der Hersteller, le fabricant, the manufacturer

ARNOLD Lichttechnik
Andreas Arnold
Karl-Marx-Straße 19
D-04654 Frohburg

erklärt in alleiniger Verantwortung, dass der Universalantrieb der Typenreihe:
déclare sous sa seule responsabilité, que le lecteur universel de la série:
declare under his sole responsibility, that the Universaldrive of the series:

UA 500 (Ident-No. 559-050)

auf das sich diese Erklärung bezieht, mit der/den folgenden Normen oder normativen Dokumenten
übereinstimmt (falls zutreffend):

auquel se rapporte la présente déclaration, est conforme aux normes ou aux documents normatifs
suivants (si applicable):

referred to by this declaration is in conformity with the following standards or normative documents
(if appropriate):

Richtlinie 2006/42/EG
DGUV 17
DIN EN 61140:2016-11
DIN EN IEC 55015:2020-07

Richtlinie 2011/65/EU (RoHS)

Maschinenrichtlinie
Unfallverhütungsvorschrift
Schutz gegen elektrischen Schlag
Grenzwerte und Messverfahren für
Funkstörungen
Verwendung gefährlicher Stoffe

Frohburg, 20.12.2021



Geschäftsführer / PDG / CEO
(Andreas Arnold)



KONFORMITÄTSPRÜFBESCHEINIGUNG

Bescheinigungs-Nr.:	CA 400
Zertifizierstelle:	TÜV SÜD Industrie Service GmbH Gottlieb-Daimler-Str. 7 70794 Filderstadt - Deutschland
Bescheinigungsinhaber:	Arnold Lichttechnik Karl-Marx-Straße 19 04654 Frohburg – Deutschland
Hersteller:	Arnold Lichttechnik Karl-Marx-Straße 19 04654 Frohburg – Deutschland
Produkt:	Universalantriebe zur Drehung von Lasten im Anwendungsbereich der DGUV Vorschrift 17 „Veranstaltungs- und Produktionsstätten für szenische Darstellung“
Typ:	UA 500 und UA 1500
Richtlinie:	2006/42/EG
Prüfgrundlage:	- Richtlinie 2006/42/EG (Mai 2006), Anh. I - DGUV Vorschrift 17 (bisher: BGV C1)
Prüfbericht:	CA 400 vom 28.04.2022
Ergebnis:	Das Produkt entspricht den Anforderungen der Prüfgrundlage, sofern die Anforderungen des Anhangs dieser Konformitätsprüfbescheinigung eingehalten sind.
Ausstellungsdatum:	02.05.2022
Gültig bis:	01.05.2027



 Bernd Gründling
 Zertifizierstelle der Fördertechnik

1 Anwendungsbereich

Die Universalantriebe vom Typ UA 500 und UA 1500 sind transportable Antriebe für die Drehung von Lasten im Anwendungsbereich der DGUV Vorschrift 17 (bisher: BGV C1) – „Veranstaltungs- und Produktionsstätten für szenische Darstellung“.

2 Technische Daten

Universalantrieb	UA 500	UA 1500
Max. Tragfähigkeit (reine axiale Belastung)	500 kg	1500 kg
Gewicht	3,2 kg	5,8 kg
Drehzahl	0.3 – 3.0 U/min	0.2 – 1,6 U/min
Drehmoment	max. 1,3 Nm	max. 3,0 Nm
Umgebungsbedingungen	im Inneren von Räumen (IP40)	
Steuerspannung	12 V DC	
Steuerung	Motorcontroller MCU 910 mini oder MCU 400 D (DMX)	

Tabelle 1: Technische Daten – UA 500 und UA 1500

3 Bedingungen

- 3.1 Die Konformitätsprüfung gilt nur für Universalantriebe UA 500 und UA 1500 nach beiliegender Zeichnung.
- 3.2 Die Universalantriebe müssen mit einer Fabriknummer (Seriennummer) eindeutig und dauerhaft gekennzeichnet sein.
- 3.3 Die Universalantriebe dürfen nur durch Benutzer unter Berücksichtigung der entsprechenden Betriebsanleitung betrieben werden.
- 3.4 Die Universalantriebe dürfen nur in Verbindung mit der Steuerung „Motorcontroller MCU 910 mini“ oder „MCU 400 D (DMX)“ betrieben werden.
- 3.5 Die Universalantriebe sind nicht im Außenbereich bzw. in Bereichen zu verwenden, in denen das Eindringen von Wasser möglich ist.
- 3.6 Für die Befestigung der Universalantriebe und die Befestigung der Lastaufnahmemittel dürfen nur die zum Lieferumfang gehörigen Einrichtungen verwendet werden.
- 3.7 Die Prüf- und Wartungsintervalle der Universalantriebe, wie in der entsprechenden Betriebsanleitung beschrieben, sind einzuhalten und die Durchführung der Maßnahmen ist zu dokumentieren.
- 3.8 Ein Exemplar der Betriebsanleitung muss am Betriebsort in der oder den Amtssprachen der Gemeinschaft des Mitgliedstaats beiliegen, in dem die Maschine in Verkehr gebracht und/oder in Betrieb genommen wird.

Anhang zur Konformitätsprüfbescheinigung Nr. CA 400 vom 02.05.2022



Industrie Service

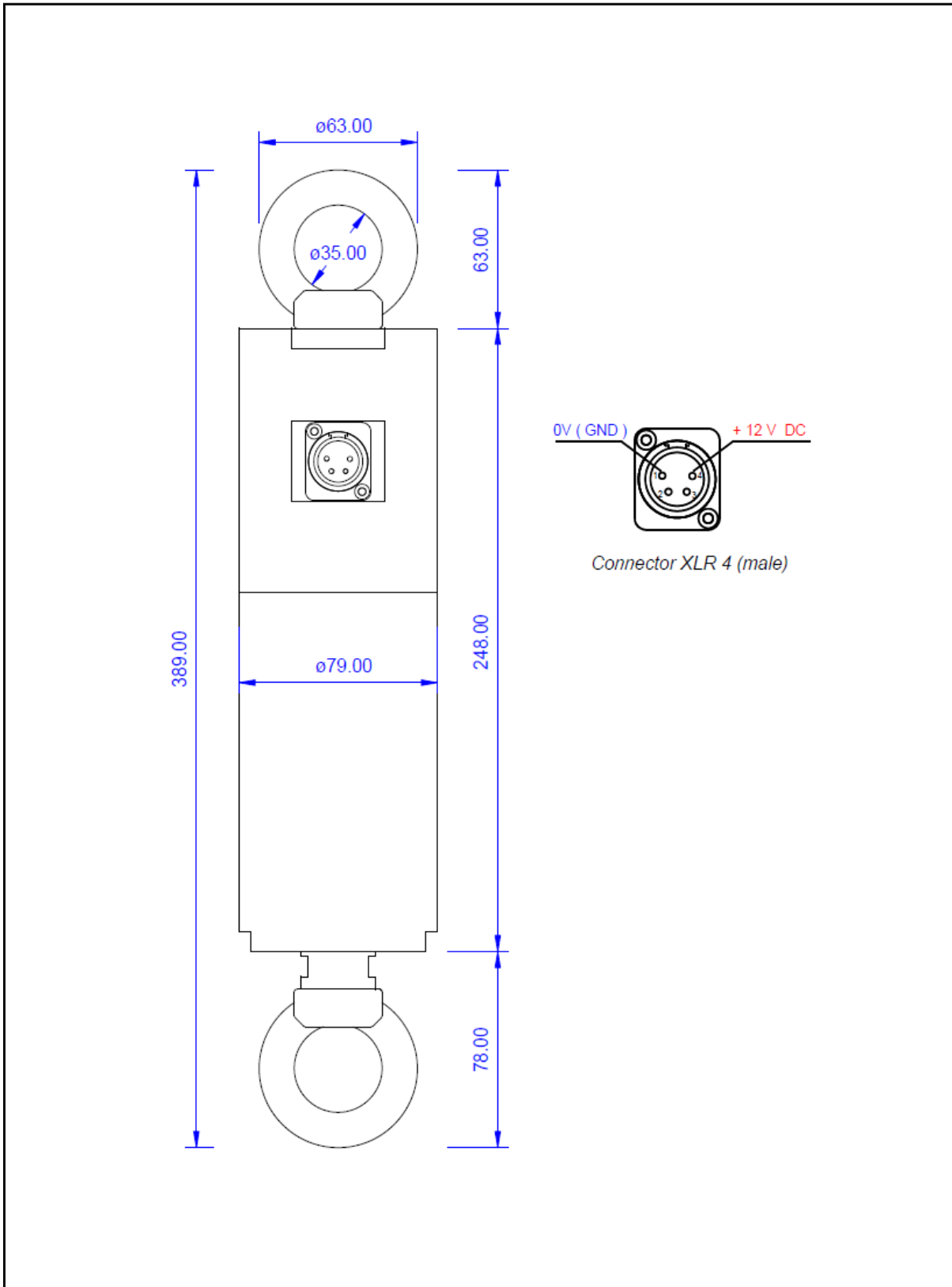
4 Hinweise

- 4.1 Das Produkt muss deutlich mit einem Hinweis auf den Hersteller und der Typenbezeichnung gekennzeichnet sein, um die Übereinstimmung des geprüften Produktes mit der Serienfertigung überprüfen zu können.
- 4.2 Änderungen an den geprüften Baumustern bedürfen der Zustimmung bzw. der Prüfung der TÜV SÜD Industrie Service GmbH, Abt. Fördertechnik.
- 4.3 Vor Ablauf der Gültigkeit des Zertifikates ist eine Überprüfung bei der benannten Stelle zu beantragen.
- 4.4 Den technischen Unterlagen für jede Maschine ist mindestens beizufügen:
 - die Bescheinigung über eine Konformitätsprüfung CA 400 vom 02.05.2022 mit Anhang
 - EG-Konformitätserklärung gemäß 2006/42/EG Anhang II Teil 1 Abschnitt A für die Maschine
 - Betriebsanleitung UA 500, Fassung 12/2021 Rev.19 bzw. Betriebsanleitung UA 1500, Fassung 12/2021 Rev.02
- 4.5 Diese Bescheinigung beruht auf dem Stand der Technik, der durch die zurzeit gültigen harmonisierten Normen dokumentiert wird. Bei Änderungen bzw. Ergänzungen dieser Normen bzw. bei Weiterentwicklung des Standes der Technik kann eine Überarbeitung notwendig werden.
- 4.6 Die Bescheinigung über eine Konformitätsprüfung darf nur zusammen mit dem dazugehörigen Anhang verwendet werden.

Anhang zur Konformitätsprüfbescheinigung
Nr. CA 400 vom 02.05.2022



Industrie Service



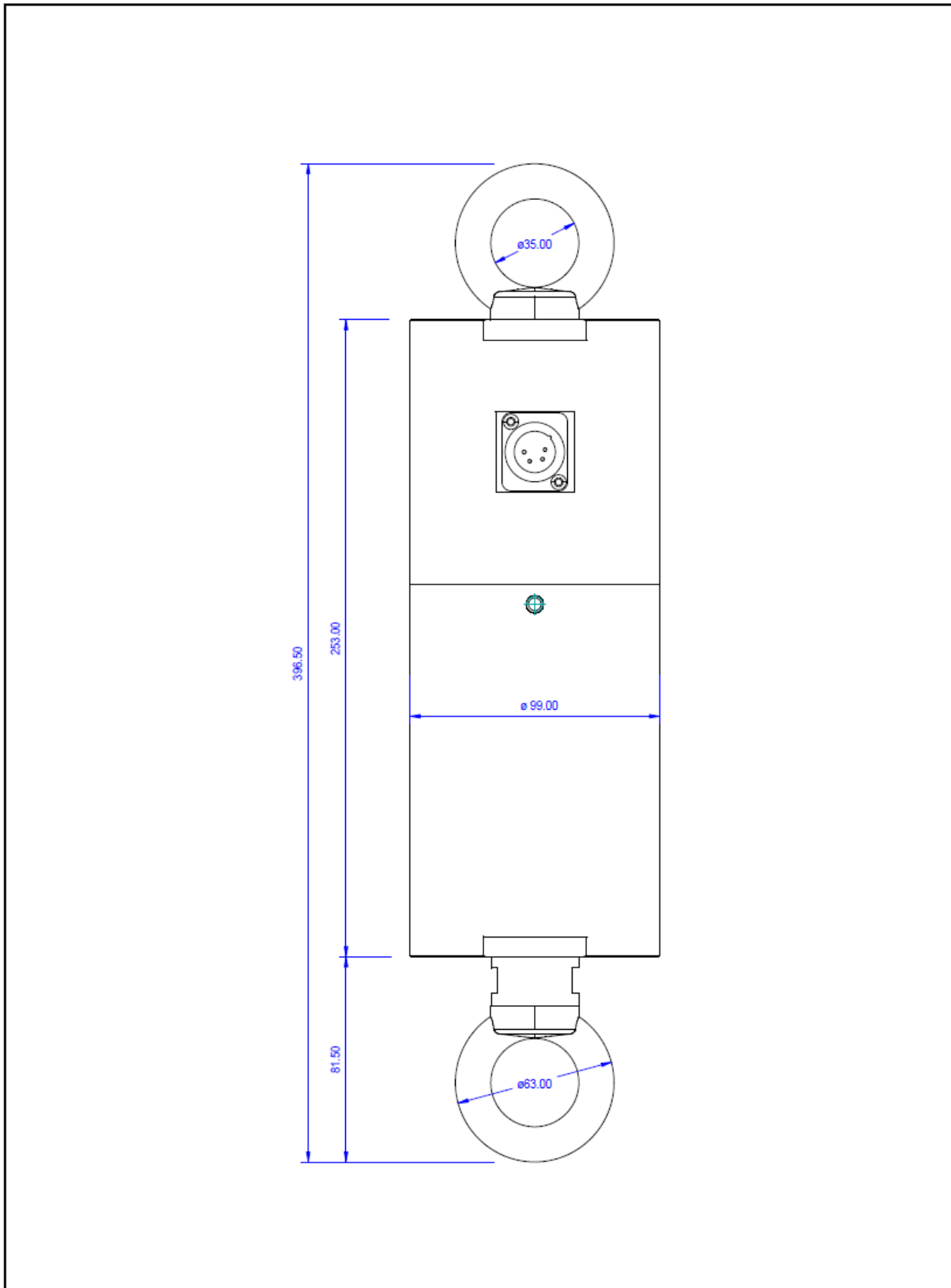
Name / Bauteil		Hauptabmessungen UA 500		Maßstab:	1 : 2	Bauteil Ident-Nr.	559-050-004
Projekt / Produkt	Universalantrieb UA 500	Material	---	 www.arnoldlicht.de			
bearbeitet	A.Arnold Datum 04.03.2014	Oberfläche	schwarz eloxiert				
geändert	A.Arnold Datum 08.01.2015	Datei	...lca\uniantr\ua500_26.skd				

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Anhang zur Konformitätsprüfbescheinigung
Nr. CA 400 vom 02.05.2022



Industrie Service



Name / Bauteil UA 1500 - Hauptabmessungen			Maßstab: 1 : 2	Bauteil Ident-Nr. 610-050-000
Projekt / Produkt	Universalantrieb UA 1500		Material	AlZnMgCu 1.5 F51 AW-7075
bearbeitet	A.Arnold	Datum 09.12.2013	Oberfläche	gestrahlt, schwarz eloxiert
geändert	A.Arnold	Datum 08.01.2015	Datei	...\\cad\\uniantr\\ua1500_1.skd
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