Bauplanmappe
Ord.No. 4700

VARIO® HELICOPTER Uli Streich

01/09

Rumpfbausatz
für Bell 47G III

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www.VARIO-Helicopter.de • info@VARIO-Helicopter.de • www.VARIO-Helicopter.biz

Sehr geehrter Kunde,

der von Ihnen erworbene Bausatz enthält entsprechende Teile zur Erstellung eines funktionsfähigen Flugmodells.
Auf Zusammenbau, Einstellungen und Inbetriebnahme haben wir keinen Einfluß und weisen daher noch ausdrücklich darauf hin, daß Ihre individuelle Vorgehensweise einzig und allein auf Ihrem Kenntnisstand und Beurteilungsvermögen beruht.
Die Bauplanmappe dient dabei als entsprechende Orientierung, jedoch nicht als maßgeblicher Weg: Unterschiedliche Vorgehensweisen können zum Ziel führen.
Prüfen Sie vor jedem Bauabschnitt sorgfältig Ihr Vorhaben und entscheiden Sie eigenverantwortlich über Ihren persönlichen Weg.

Dear customer,

The kit you have purchased contains the components required to build a model aircraft which is capable of flying.
We have no influence over the methods you use to assemble, set up and operate the model, and for this reason we are obliged expressly to point out to you that the methods you use rely solely on your own knowledge, experience and analytical ability.
The Plan Folder is designed to help you in this undertaking, but it does not represent a unique way of proceeding:
There are more ways than one to reach a particular destination.
Before you start each stage of construction, check carefully what you intend to do, and accept the responsibility to decide on your own personal method.

Spettabile cliente,

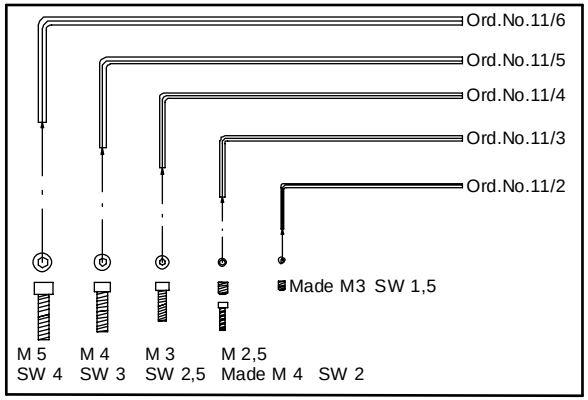
la scatola di montaggio da voi acquistata contiene le parti necessarie per la costruzione di un modello funzionante, in grado di volare.
Per quanto riguarda i metodi per il montaggio, la messa a punto e la messa in funzione noi non abbiamo nessuna influenza e vogliamo sottolineare esplicitamente che il vostro modo d'agire dipende soltanto dal vostro livello di conoscenza e dalla vostra capacità di valutazione. Le istruzioni di montaggio servono solo per un migliore orientamento e non rappresentano l'unico modo di procedere:
diversi sono i modi di procedere che possono dare l'effetto desiderato.
Prima di realizzare ogni fase di lavoro verificate attentamente il vostro progetto e scegliete in maniera responsabile il vostro obiettivo.

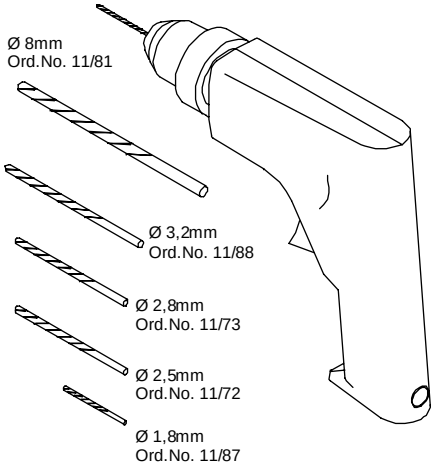
Cher Client,

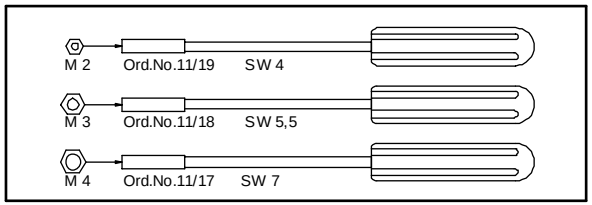
La boîte de construction que vous avez acquise comprend tous les composants nécessaires pour la réalisation d'un modèle d'hélicoptère fonctionnel.
Nous n'avons pas d'influence sur la manière dont vous assemblez, ajustez, et mettez en service ces composants. Nous vous informons donc expressément que votre façon de procéder dépend uniquement et exclusivement de vos connaissances, compétences et jugements. Le cahier de plans sert de guide d'orientation, mais ne trace pas un chemin exclusif:
Différentes méthodes d'opération peuvent mener au même résultat. Vérifiez avant chaque stade de construction le but à atteindre et choisissez le chemin qui vous semble le plus approprié.

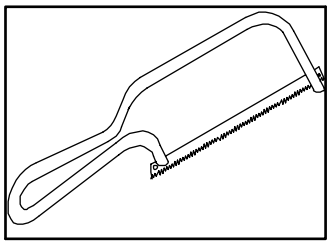
Geachte klant,

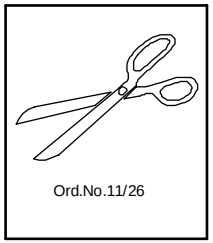
De door uw gekochte bouwdoos bevat alle onderdelen om een functionerend vliegmodel te maken.
Op het bouwen, afstellen en het in gebruik nemen van uw model hebben wij geen invloed, en wij wijzen er nadrukkelijk op, dat uw individuele zienswijze alleen op uw kennis en beoordelingsvermogen berust.
De bouwtekening dient daarbij alleen als een oriëntering, echter niet als een dwingend advies.
Verschillende bouwconstructies kunnen tot hetzelfde doel leiden.
Test elke bouwfase zorgvuldig, en beslis over uw eigen verantwoordelijkheid m.b.t. het in gebruik nehmen van uw model.

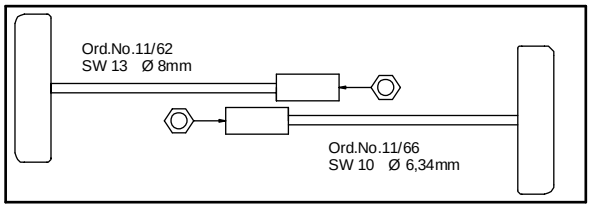


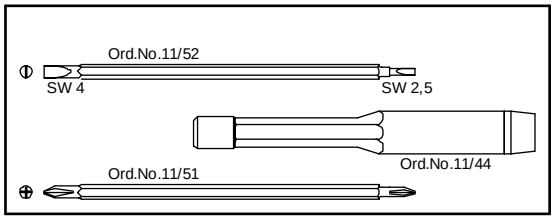


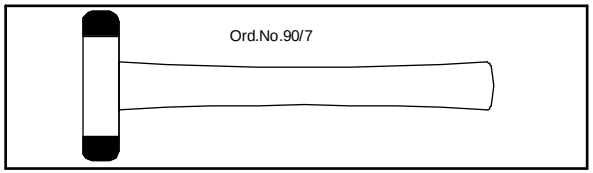


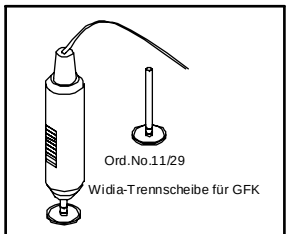


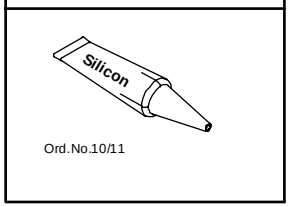


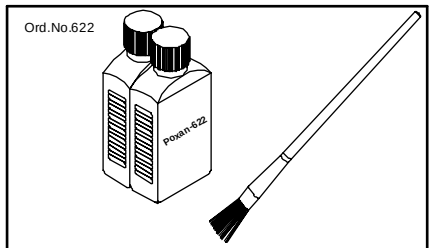


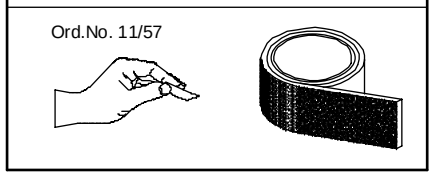


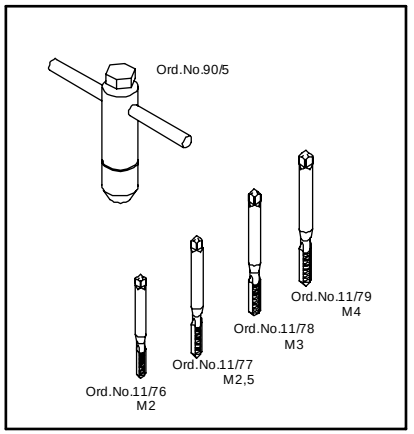












Sollte es bei einer vormontierten Baugruppe Beanstandungen geben, darf die Baugruppe nicht zerlegt , sondern muß - im Originallieferzustand - zurückgegeben werden. Nach Zerlegen kann eine Beanstandung nicht mehr nachvollzogen bzw. anerkannt werden. Mit dem Auseinandernehmen der Teile erlischt jeglicher Garantieanspruch.

If you are dissatisfied with any factory-built assembly it is essential that you return the whole assembly, in its original state as supplied, rather than dismantle it. Once you have dismantled the assembly we are unable to acknowledge or meet any claim or complaint. If you dismantled any assembly you render your guarantee invalid.

En cas de constat d'anomalies sur un ensemble prémonté, ne pas démonter celui-ci, mais le retourner dans son état d'origine de livraison. Après démontage, nous ne pouvons plus constater les raison du problème ni le prendre en compte. Le démontage de ces ensembles exclut toute prestation de garantie.

Qualora un gruppo di montaggio già prefabbricato dovesse dar luogo a reclami, esso in nessun caso deve essere smontato, bensì va restituito nel suo stato originale. Una volta smontato il gruppo, risulta impossibile, ovviamente, comprendere e riconoscere il causale del reclamo. Pertanto ogni e qualsia garanzia cessa con lo smontaggio.

En caso de reclamación de un componente premontado, no se puede devolver el componente desmontado sino sólo en su estado original en el momento de la entrega. Después de desmontar el componente no es posible reproducir o aceptar la reclamación.Con el desmontaje de las piezas prescribe el derecho de garantía.

Zouden er bij een voorgemonteerd bouwdeel sprake zijn van klachten en/of bezwaren, dan mag dit bouwdeel in geen geval uit elkaar worden gehaald, echter moet in de orginele afgeleverde toestand worden geretourneerd. Indien dit bouwdeel toch uit elkaar gehaald wordt, kan een bezwaar niet meer in behandeling worden genomen, cq. erkent worden. Met het uit elkaar halen vervalt elke aanspraak op garantie.

Skulle der være reklamation, på en formonteret byggegruppe, må denne ikke skilles ad, men skal returneres i originaltilstanden. Efter afmontering af en defekt byggegruppe, kan reclamationen ikke tages til følge. Ved aftermontering af delene forsvinder al form for garanti.

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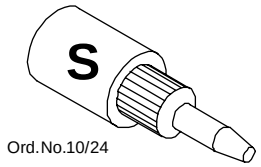
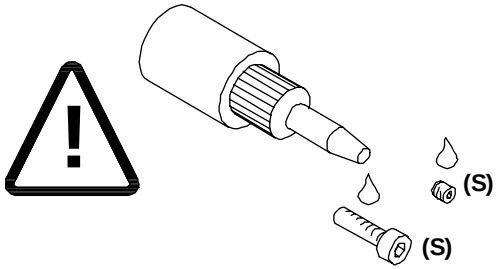
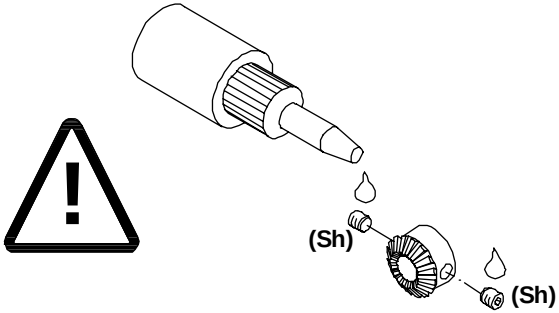


Ord.No.10/24

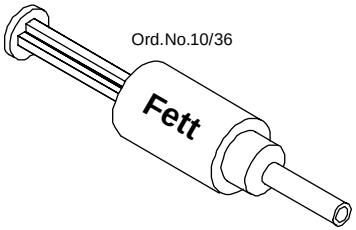


Schraubensicherung mittelfest

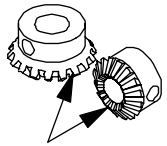
Ord.No.10/23

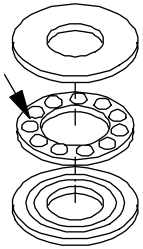


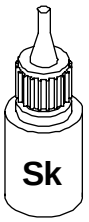
Schraubensicherung hochfest



Ord.No.10/36



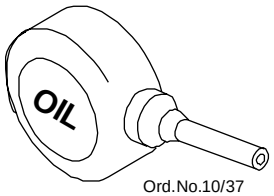




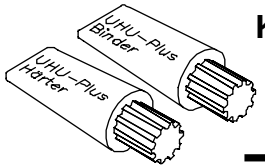
Oberfläche
muß angerauht sein!
Surface has to be rough!

Sekundenkleber / Cyano glue

dünnflüssig / low viscosity
Ord.No.10/127
dickflüssig / high viscosity
Ord.No.10/125



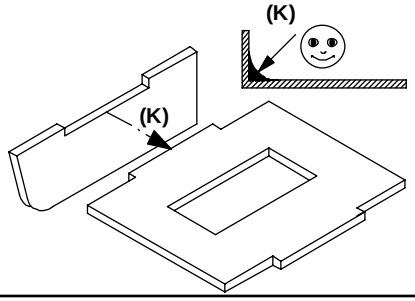
Ord.No.10/37



Ord.No.10/27
Ord.No.10/34

K

Oberfläche
muß angerauht sein!
Surface has to be rough!

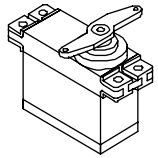


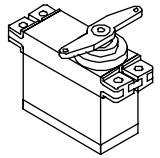
mit "Ord.No." versehene Teile sind **NICHT** im Bausatz enthalten!

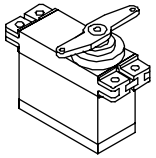
Parts whose Ord.No. is stated in full, e.g. (Ord.No. 47/11) are not included in the kit.

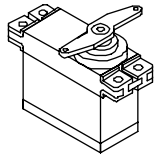
Ord.No. 3916
Ord.No. 3922
Ord.No. 5155

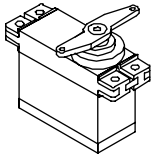
5-6 Servos

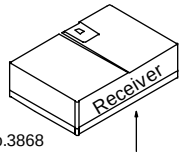






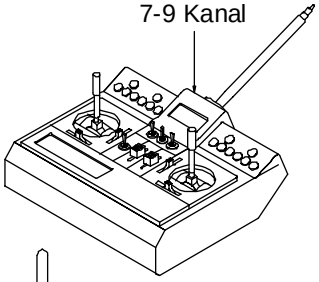


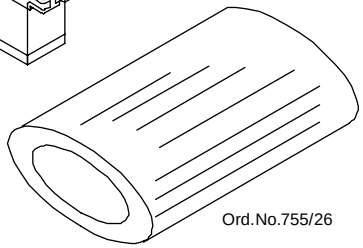




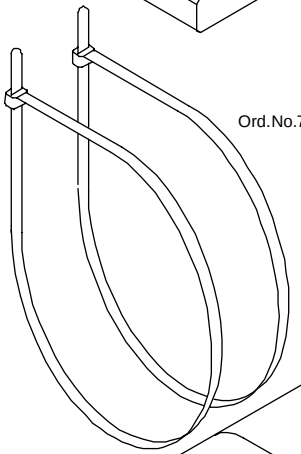
Ord.No.3868

7-9 Kanal

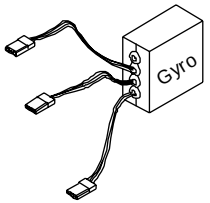




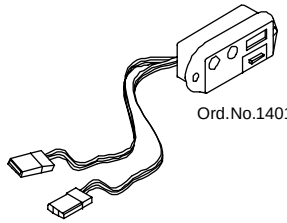
Ord.No.755/26



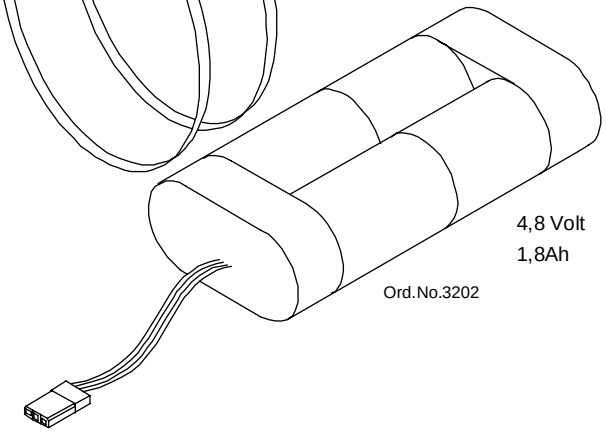
Ord.No.742/40



Ord.No. 1201

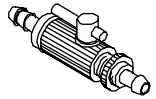


Ord.No.1401



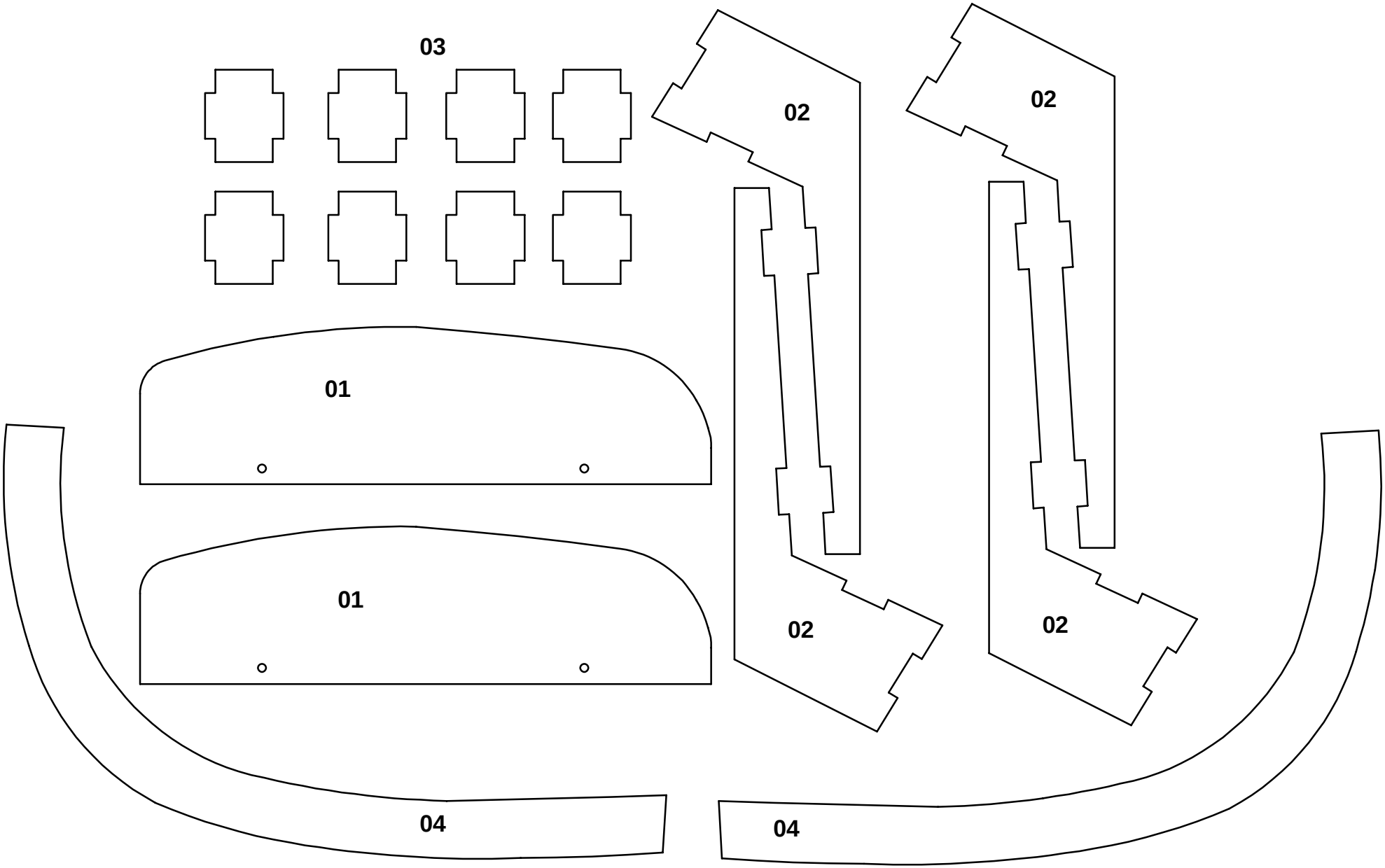
4,8 Volt
1,8Ah

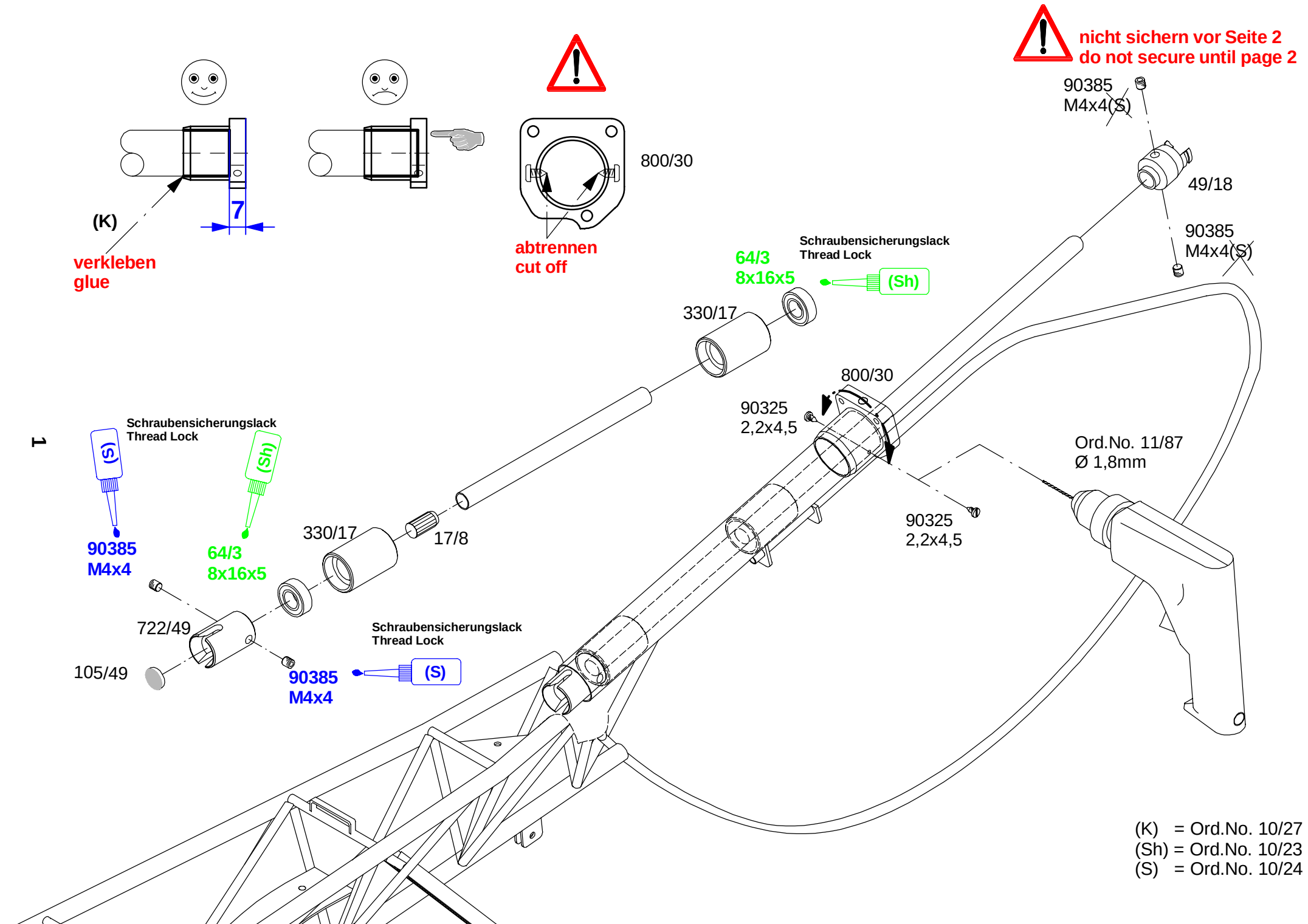
Ord.No.3202



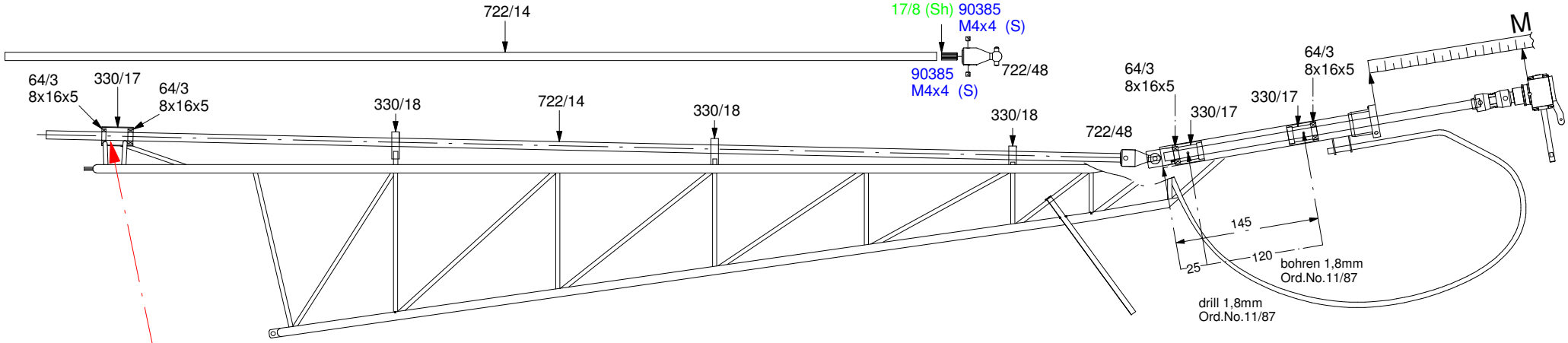
Ord.No.10/66

Spantensatz Bell 47
Best.Nr. 470/3





(K) = Ord.No. 10/27
(Sh) = Ord.No. 10/23
(S) = Ord.No. 10/24



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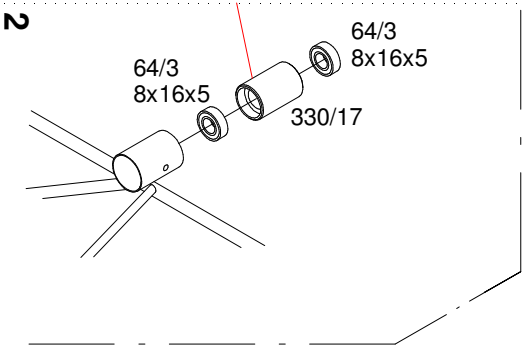
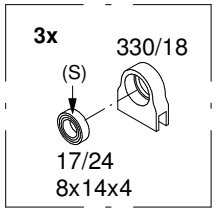
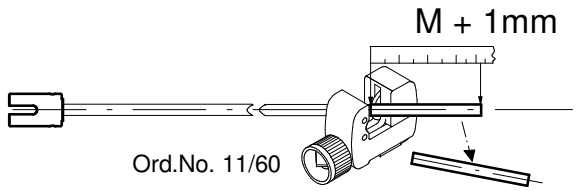
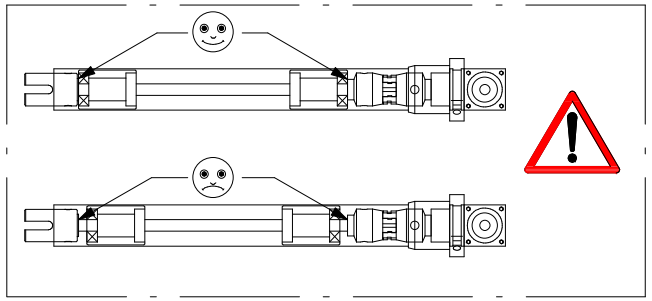
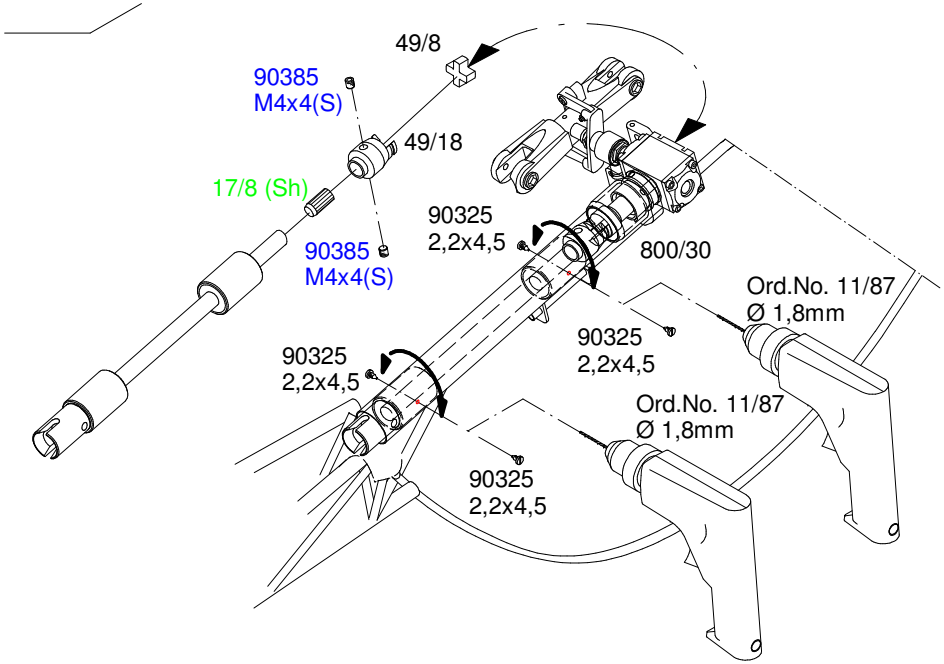
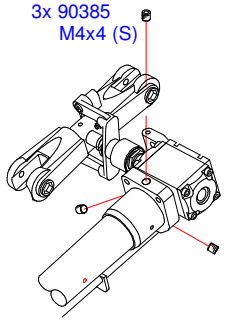




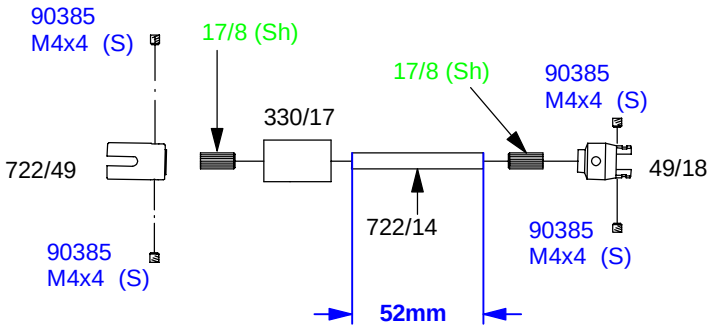


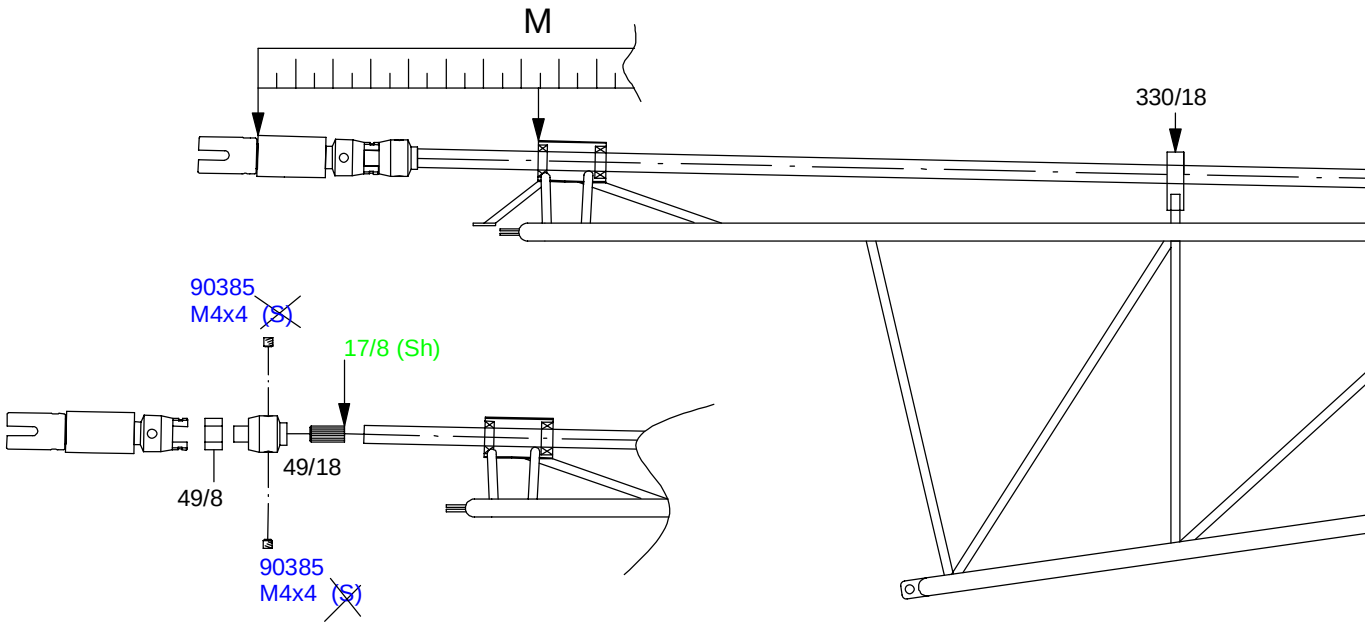


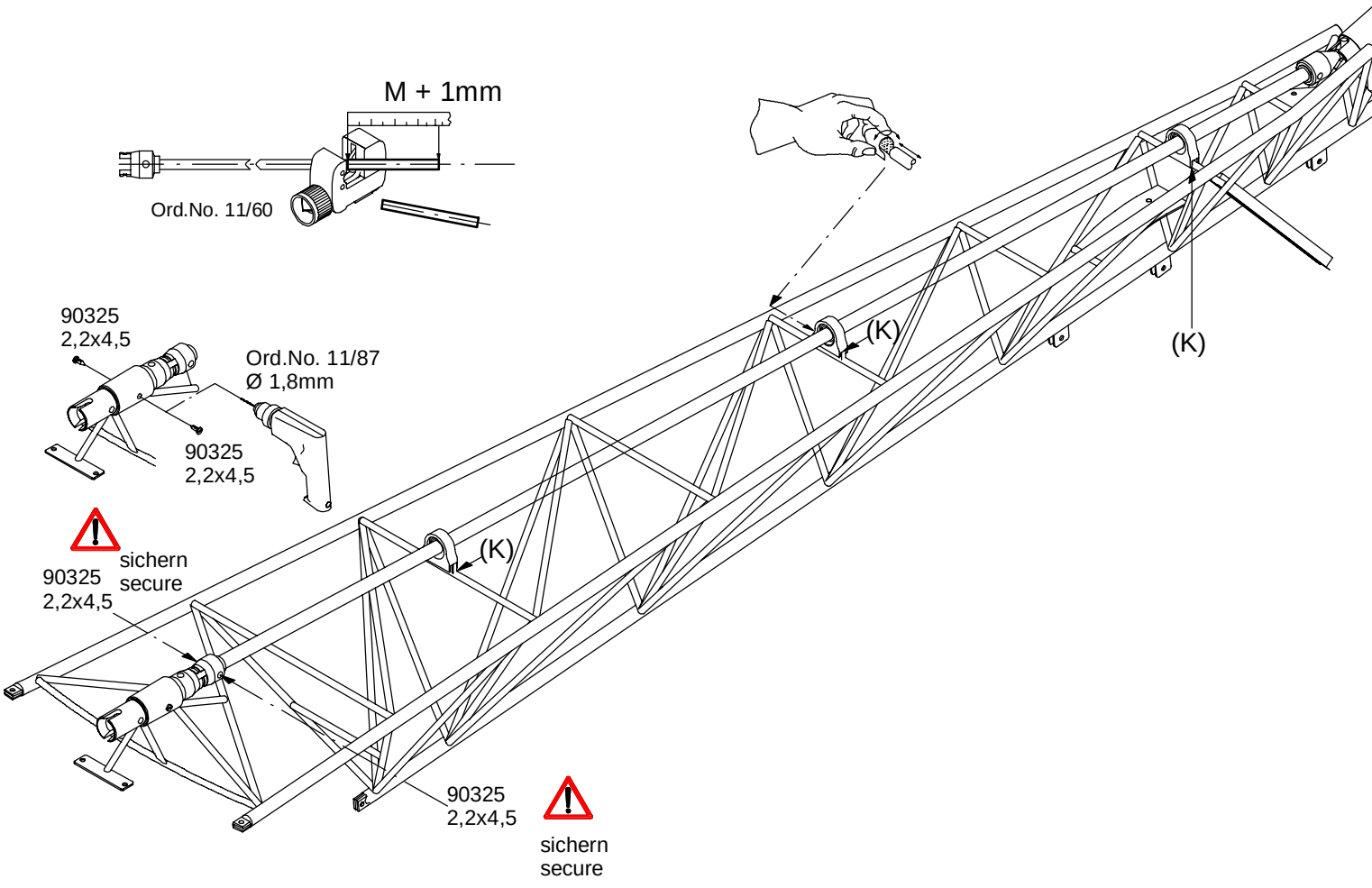


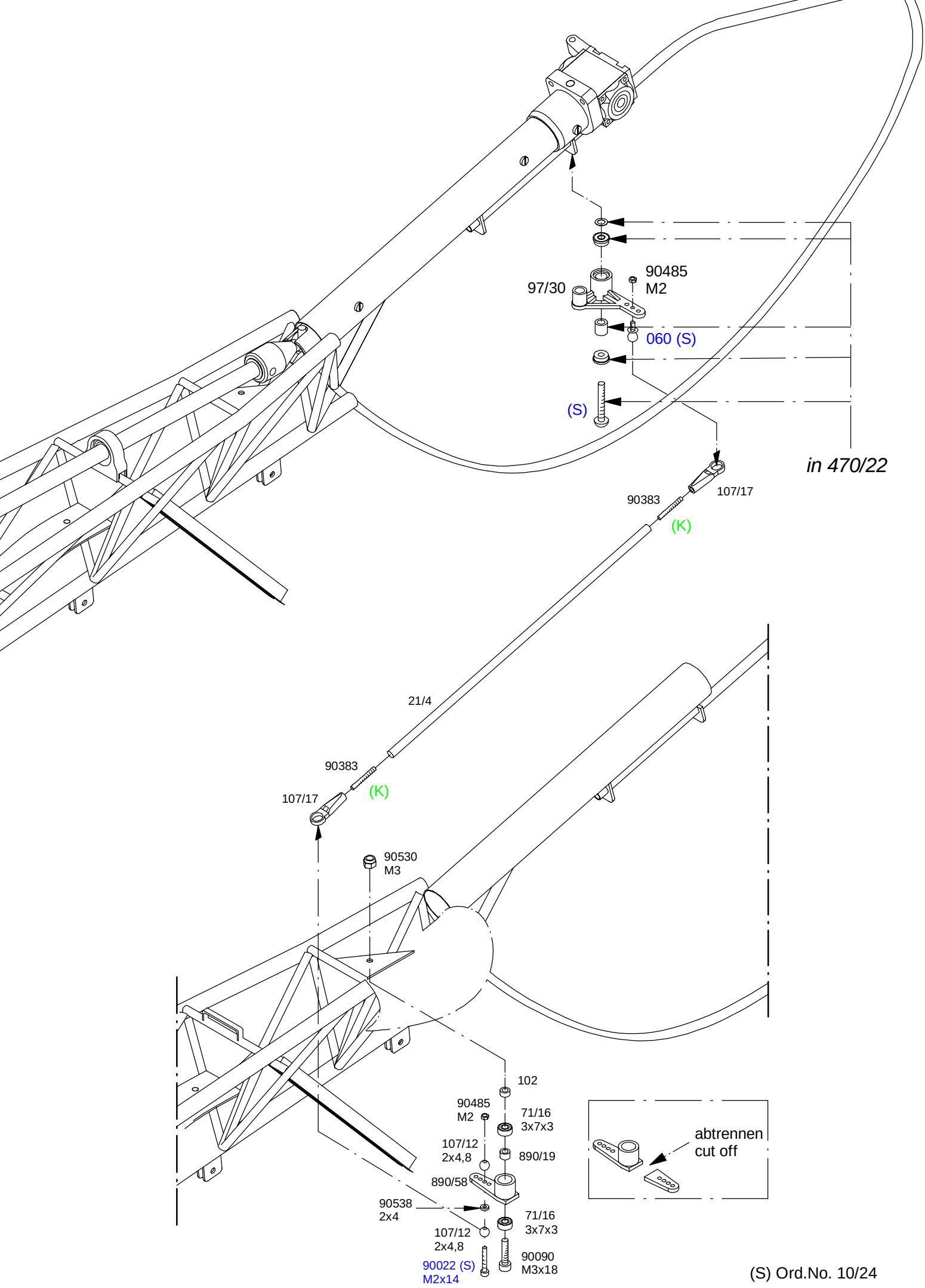


(S) Ord.No. 10/24
(Sh) Ord.No. 10/23

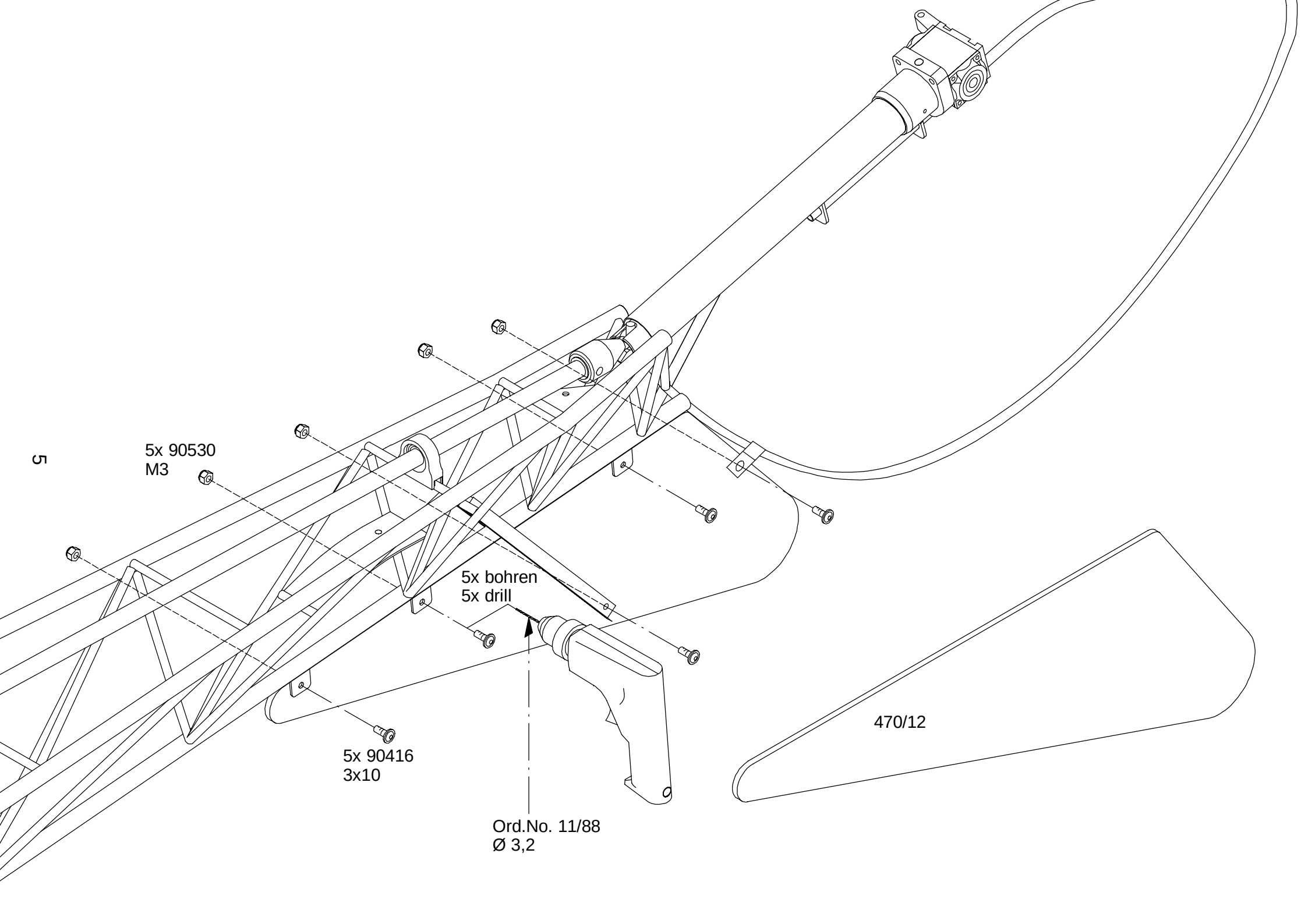

90385
M4x4 (S)
17/8 (Sh)
330/17
17/8 (Sh)
90385
M4x4 (S)
722/49
49/18
722/14
90385
M4x4 (S)
90385
M4x4 (S)
52mm

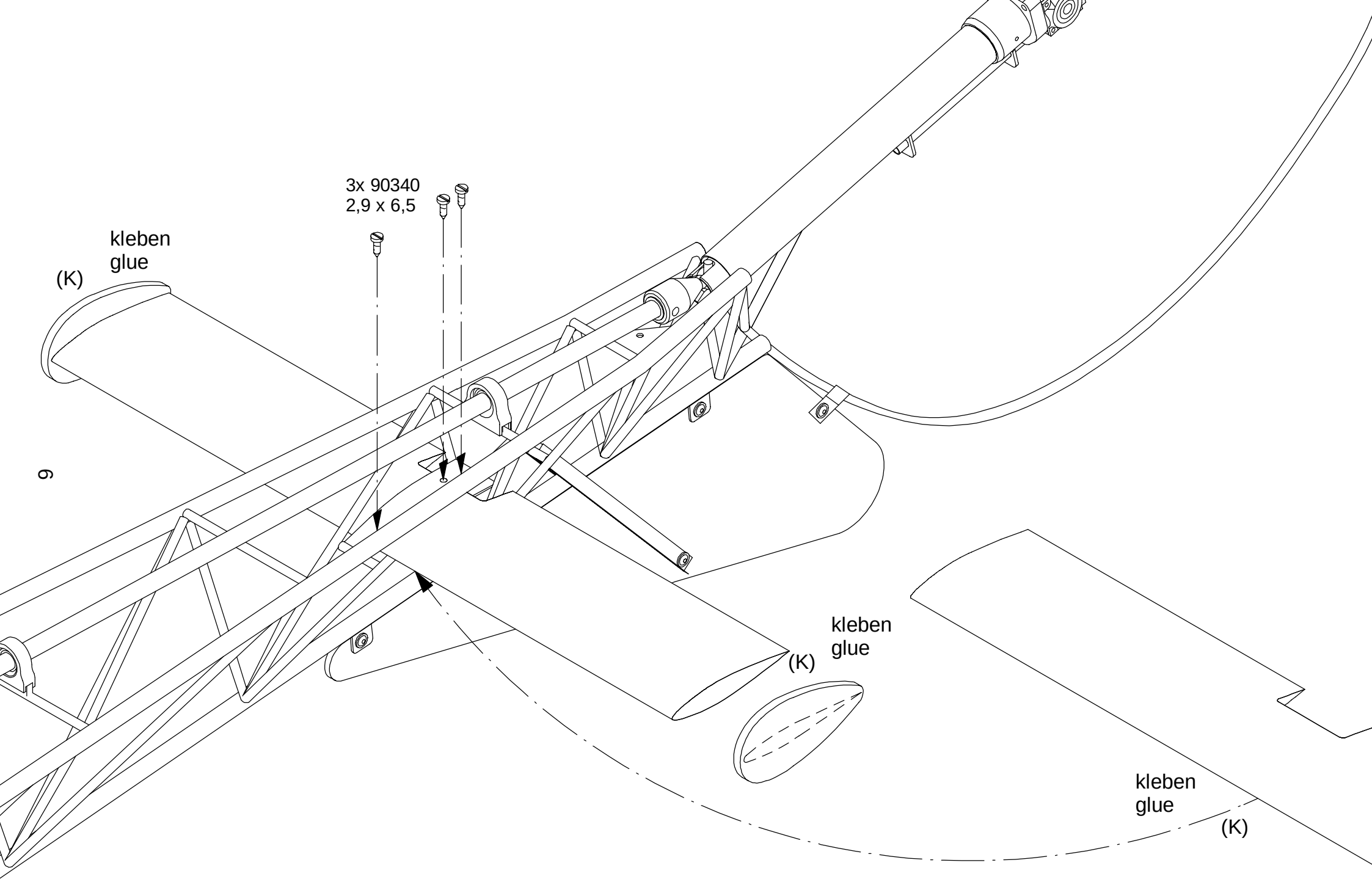

M
330/18
90385
M4x4 (S)
17/8 (Sh)
49/18
49/8
90385
M4x4 (S)


M + 1mm
Ord.No. 11/60
90325
2,2x4,5
Ord.No. 11/87
Ø 1,8mm
90325
2,2x4,5
sichern
secure
90325
2,2x4,5
(K)
(K)
(K)
90325
2,2x4,5
sichern
secure

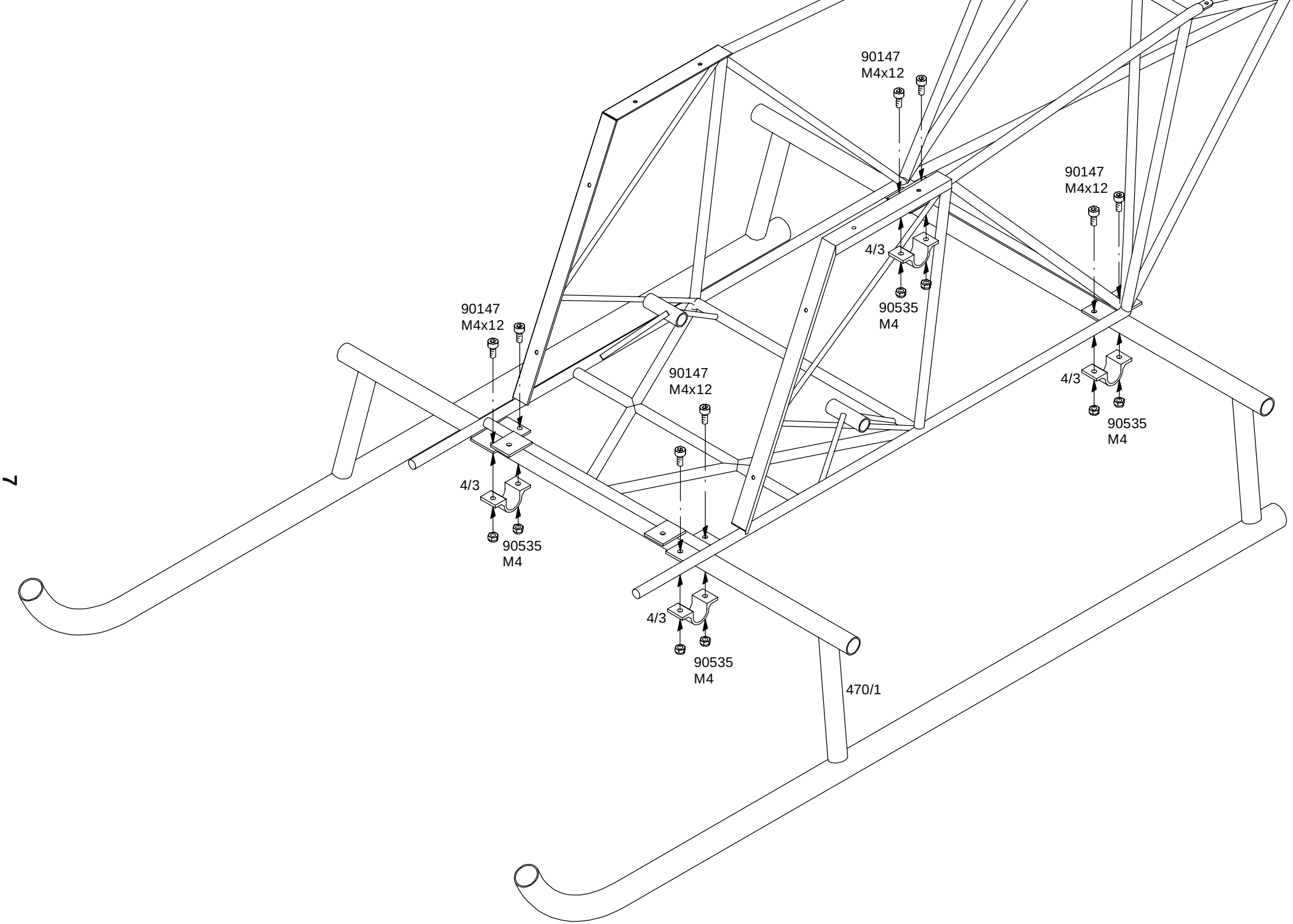


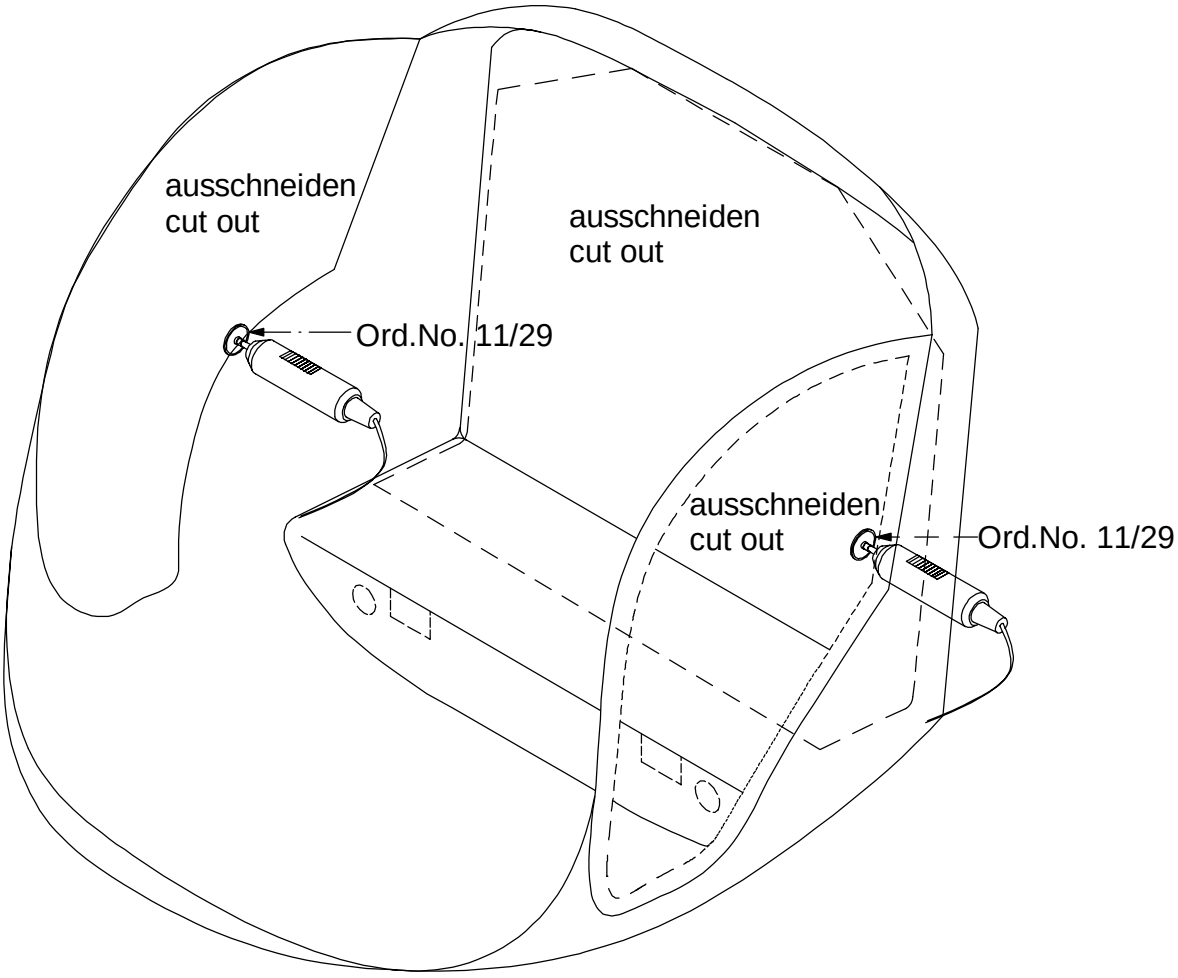
(S) Ord.No. 10/24
(K) Ord.No. 10/27

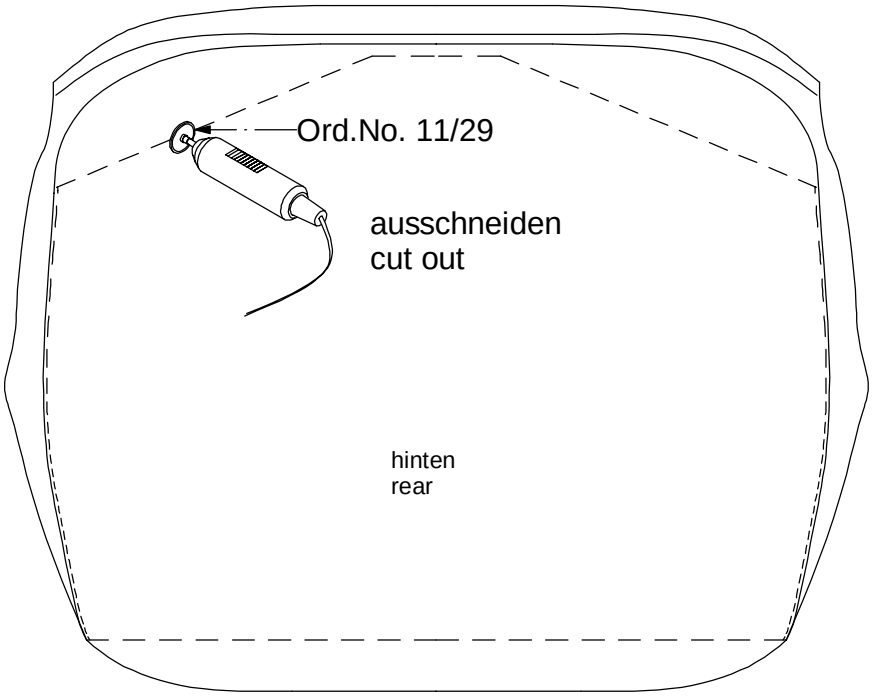

5
5x 90530
M3
5x bohren
5x drill
5x 90416
3x10
Ord.No. 11/88
Ø 3,2
470/12

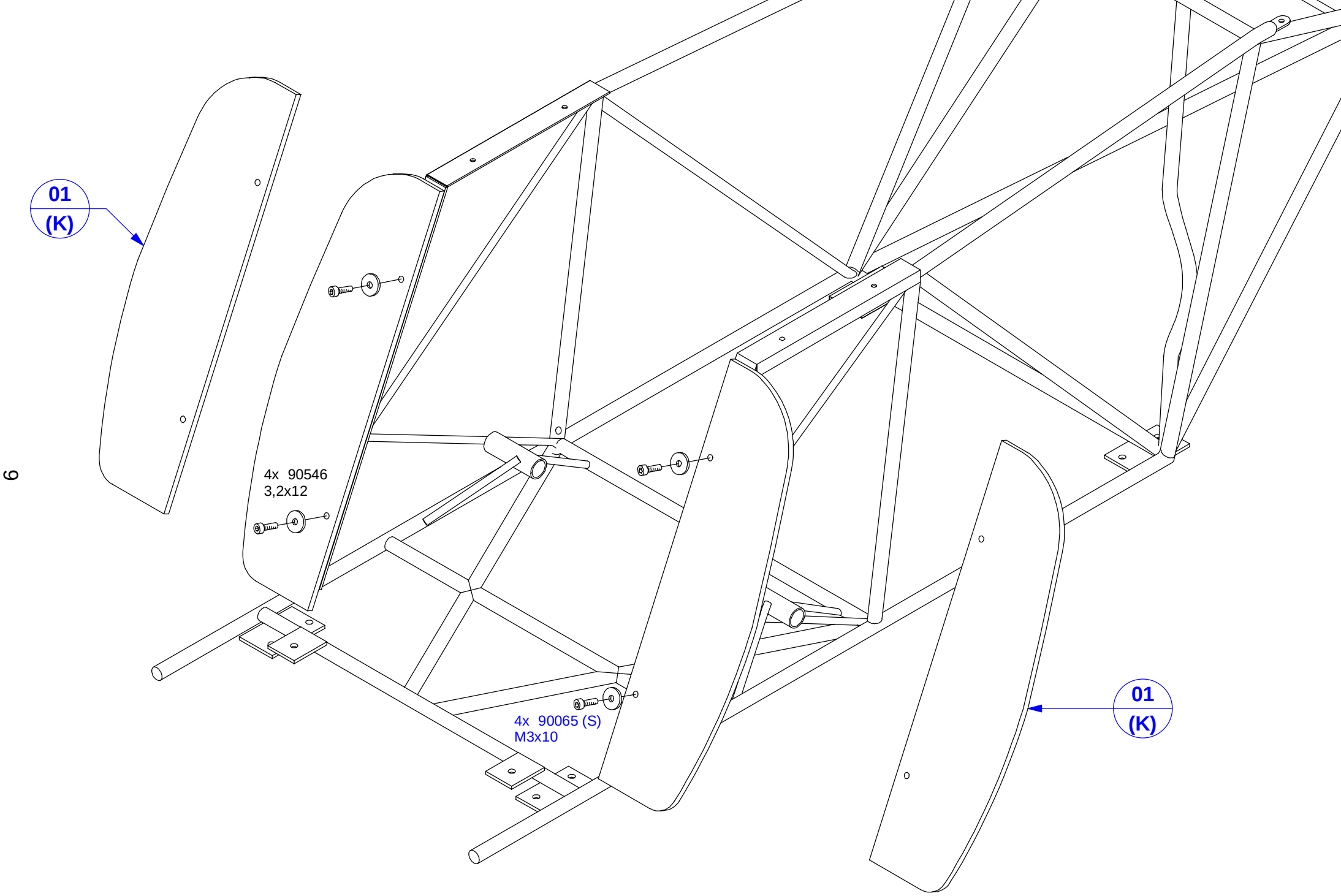


(K) = Ord.No. 10/27

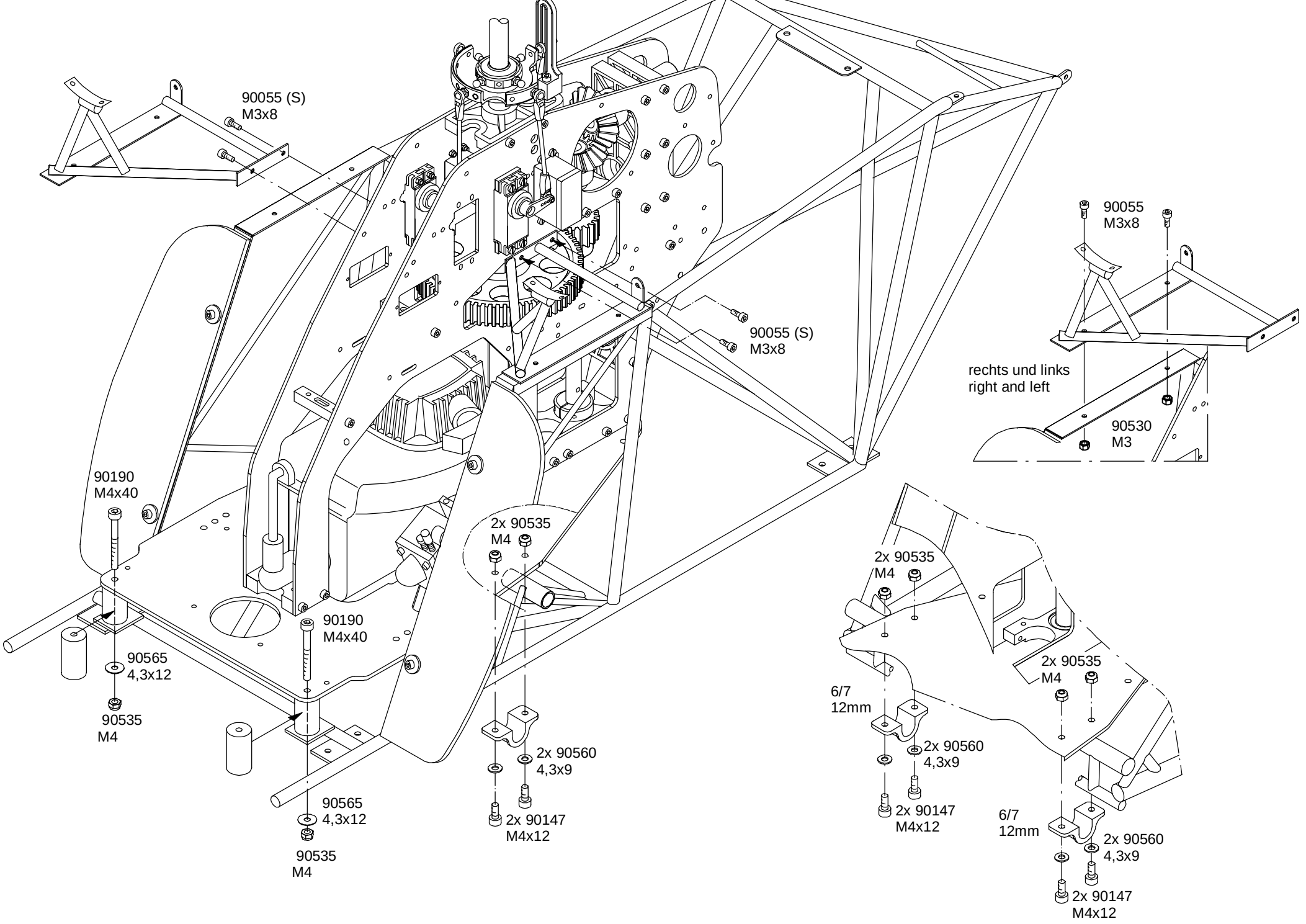

90147
M4x12
90147
M4x12
90147
M4x12
90147
M4x12
4/3
90535
M4
4/3
90535
M4
4/3
90535
M4
4/3
90535
M4
470/1

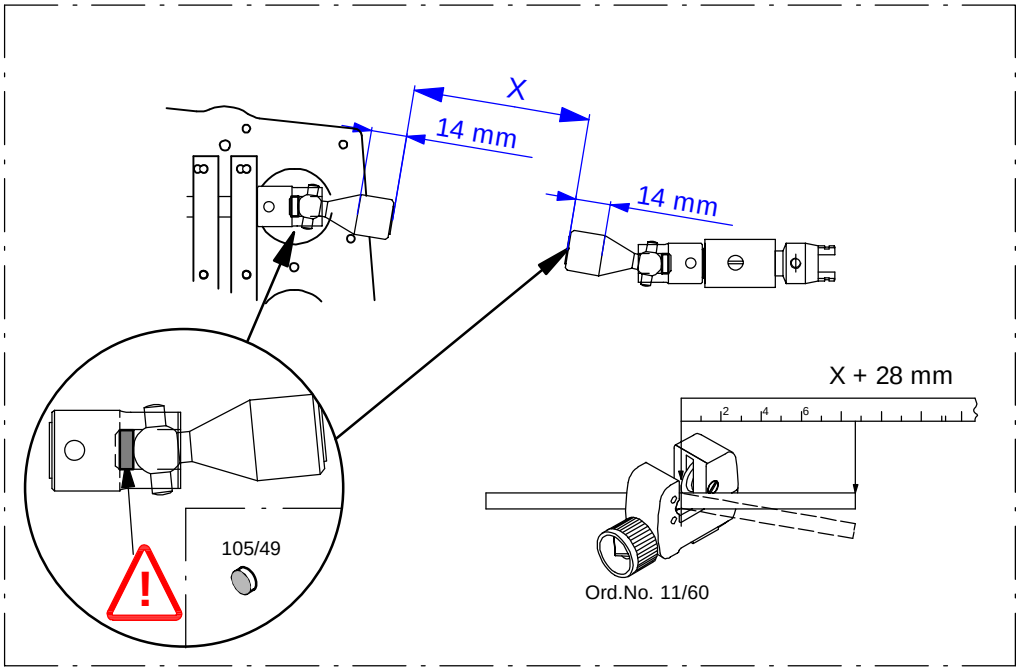

ausschneiden
cut out
ausschneiden
cut out
Ord.No. 11/29
ausschneiden
cut out
Ord.No. 11/29

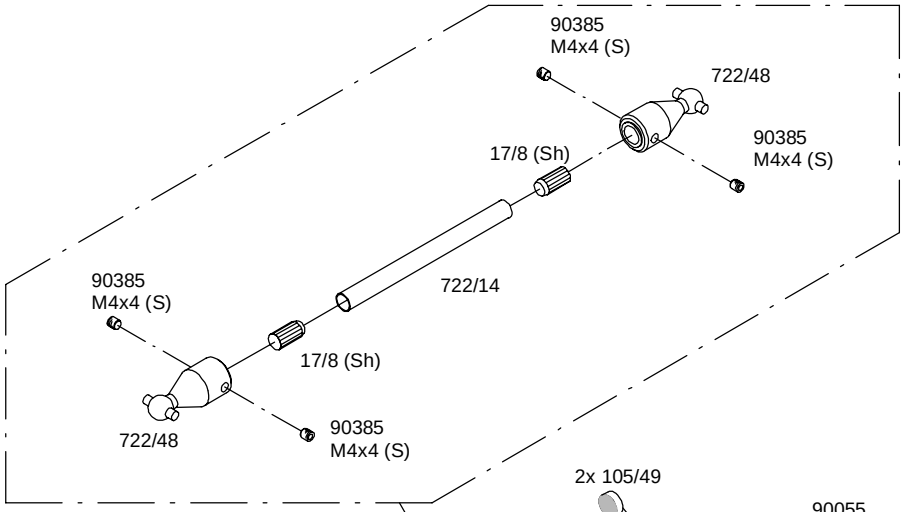

Ord.No. 11/29
ausschneiden
cut out
hinten
rear

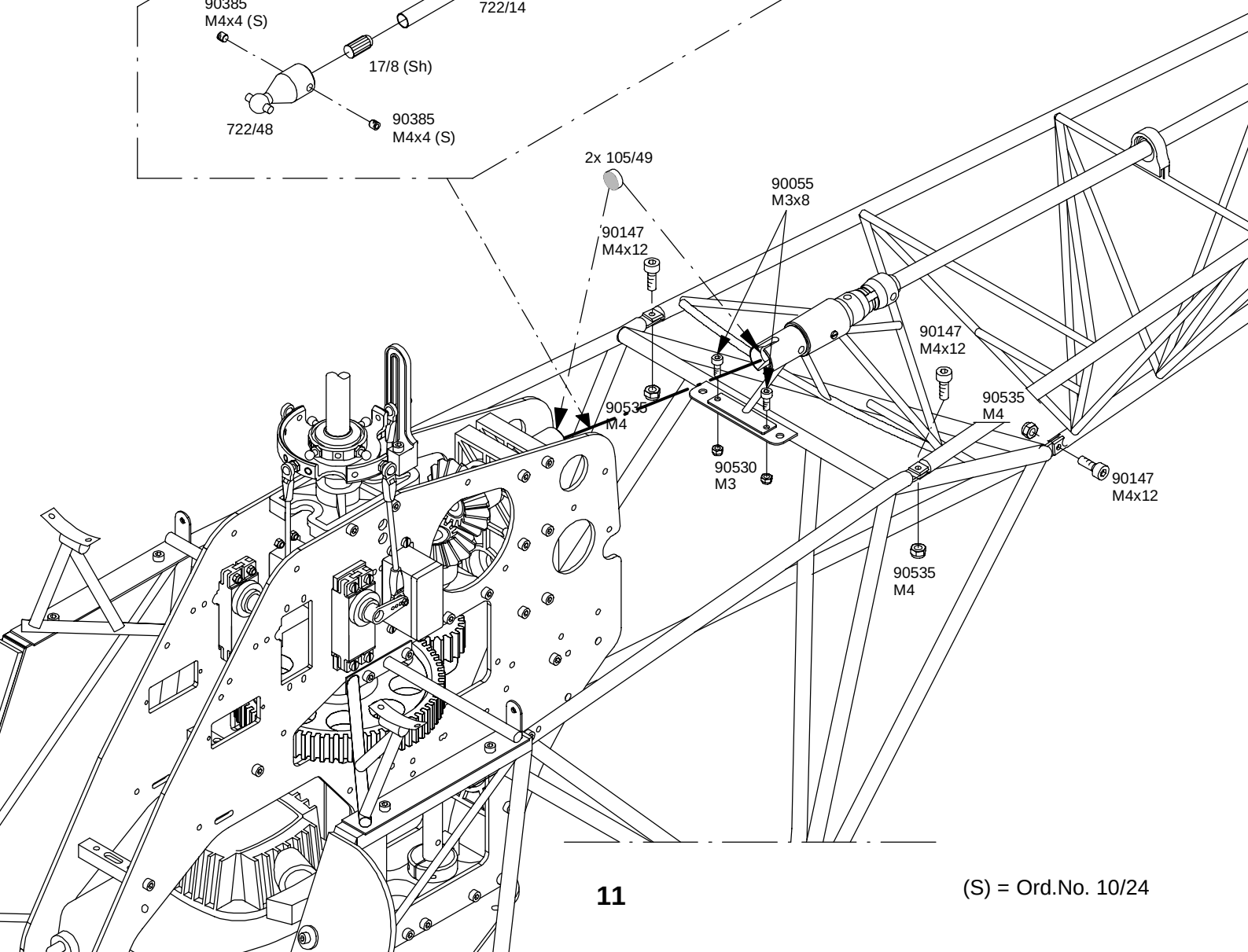


(S) Ord.No. 10/24

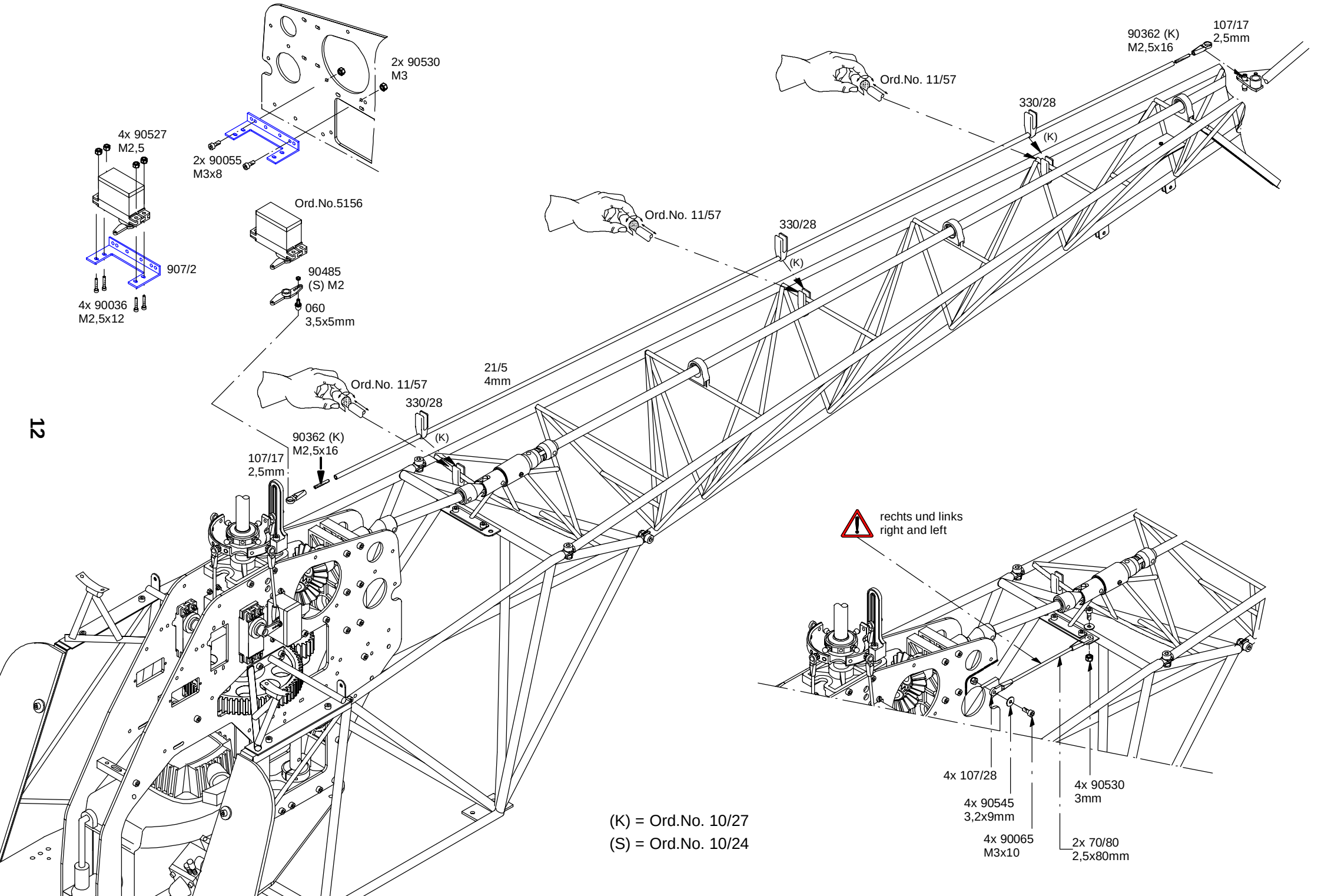

90055 (S)
M3x8
90055 (S)
M3x8
90055
M3x8
rechts und links
right and left
90530
M3
90190
M4x40
90190
M4x40
2x 90535
M4
2x 90535
M4
2x 90535
M4
90565
4,3x12
90535
M4
90565
4,3x12
90535
M4
2x 90560
4,3x9
2x 90147
M4x12
6/7
12mm
2x 90560
4,3x9
2x 90147
M4x12
6/7
12mm
2x 90560
4,3x9
2x 90147
M4x12


X
14 mm
14 mm
X + 28 mm
105/49
Ord.No. 11/60


90385
M4x4 (S)
722/48
90385
M4x4 (S)
17/8 (Sh)
722/14
90385
M4x4 (S)
17/8 (Sh)
722/48
90385
M4x4 (S)

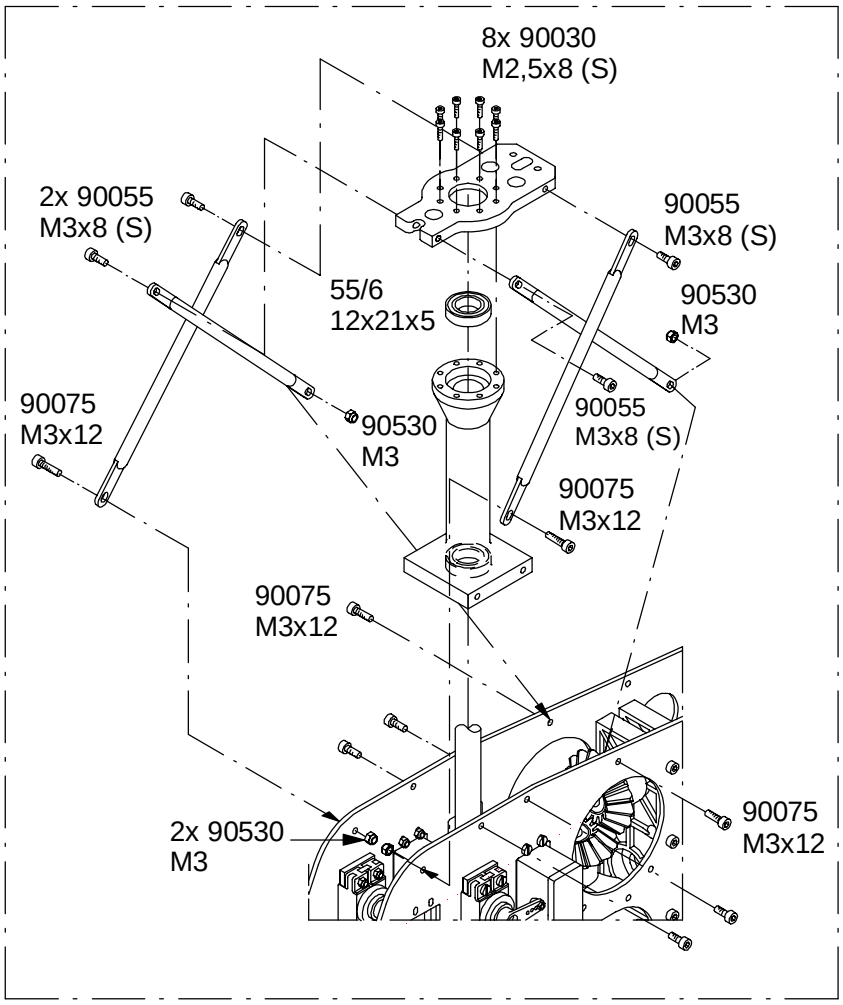

2x 105/49
90055
M3x8
90147
M4x12
90147
M4x12
90535
M4
90535
M4
90530
M3
90147
M4x12
90535
M4

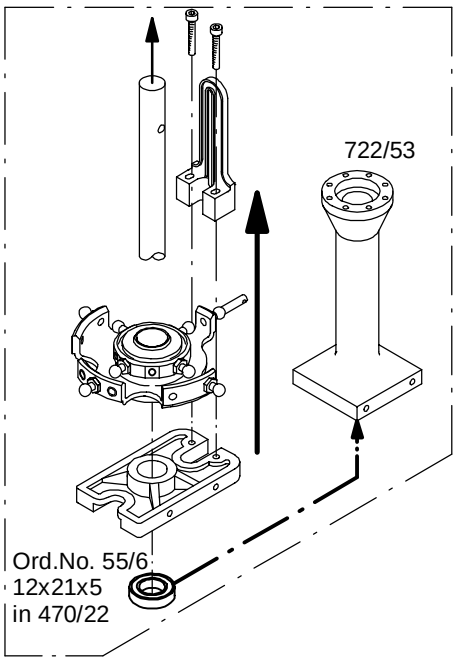
(S) = Ord.No. 10/24

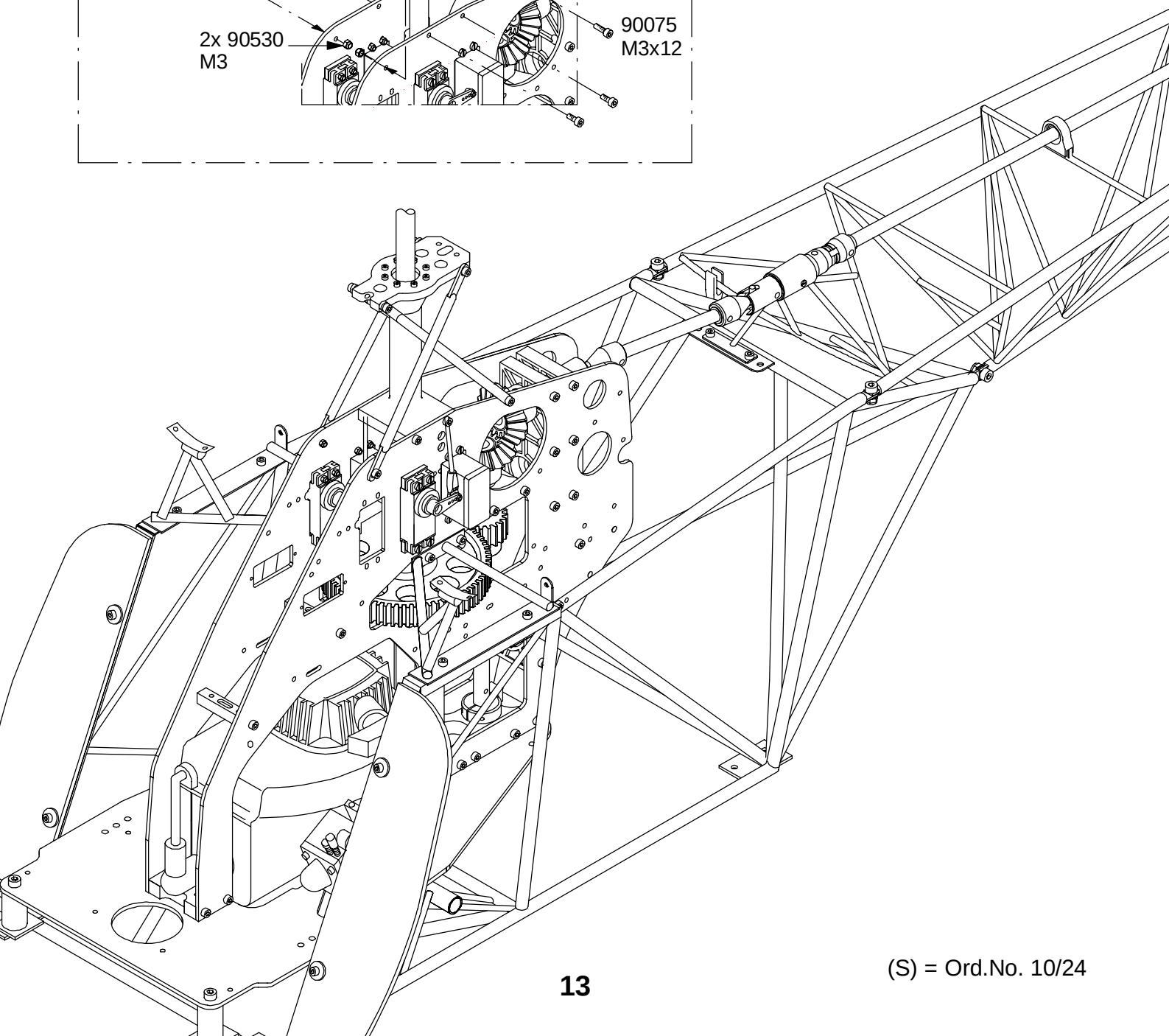


(K) = Ord.No. 10/27

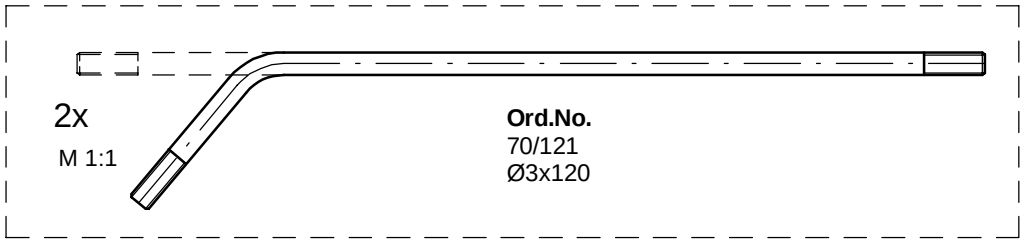
(S) = Ord.No. 10/24

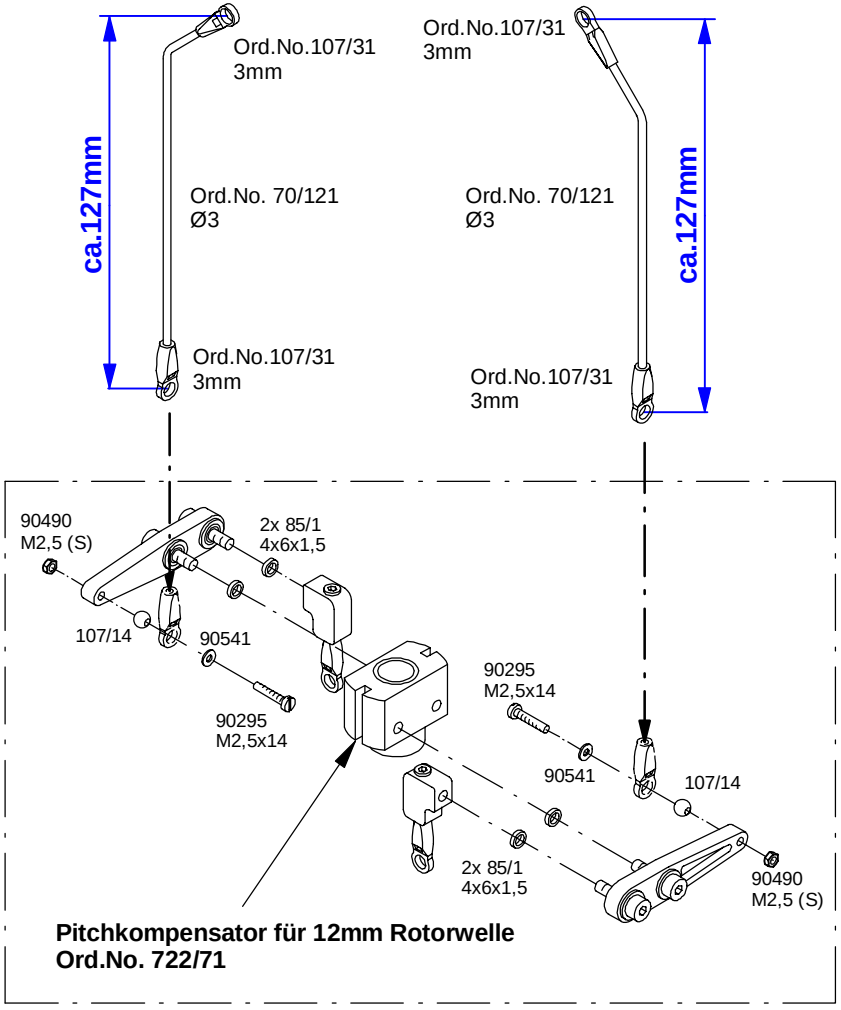

8x 90030
M2,5x8 (S)
2x 90055
M3x8 (S)
90055
M3x8 (S)
55/6
12x21x5
90530
M3
90075
M3x12
90530
M3
90055
M3x8 (S)
90075
M3x12
90075
M3x12
2x 90530
M3
90075
M3x12

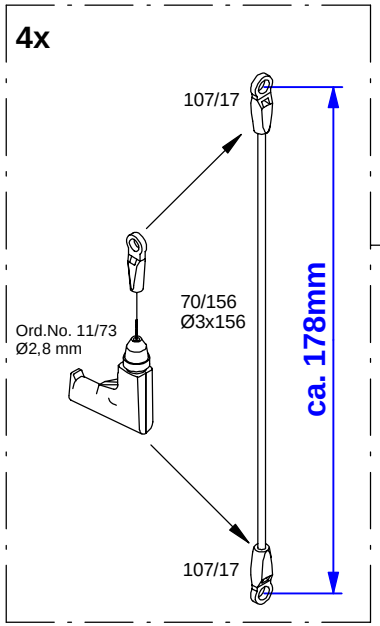

722/53
Ord.No. 55/6
12x21x5
in 470/22

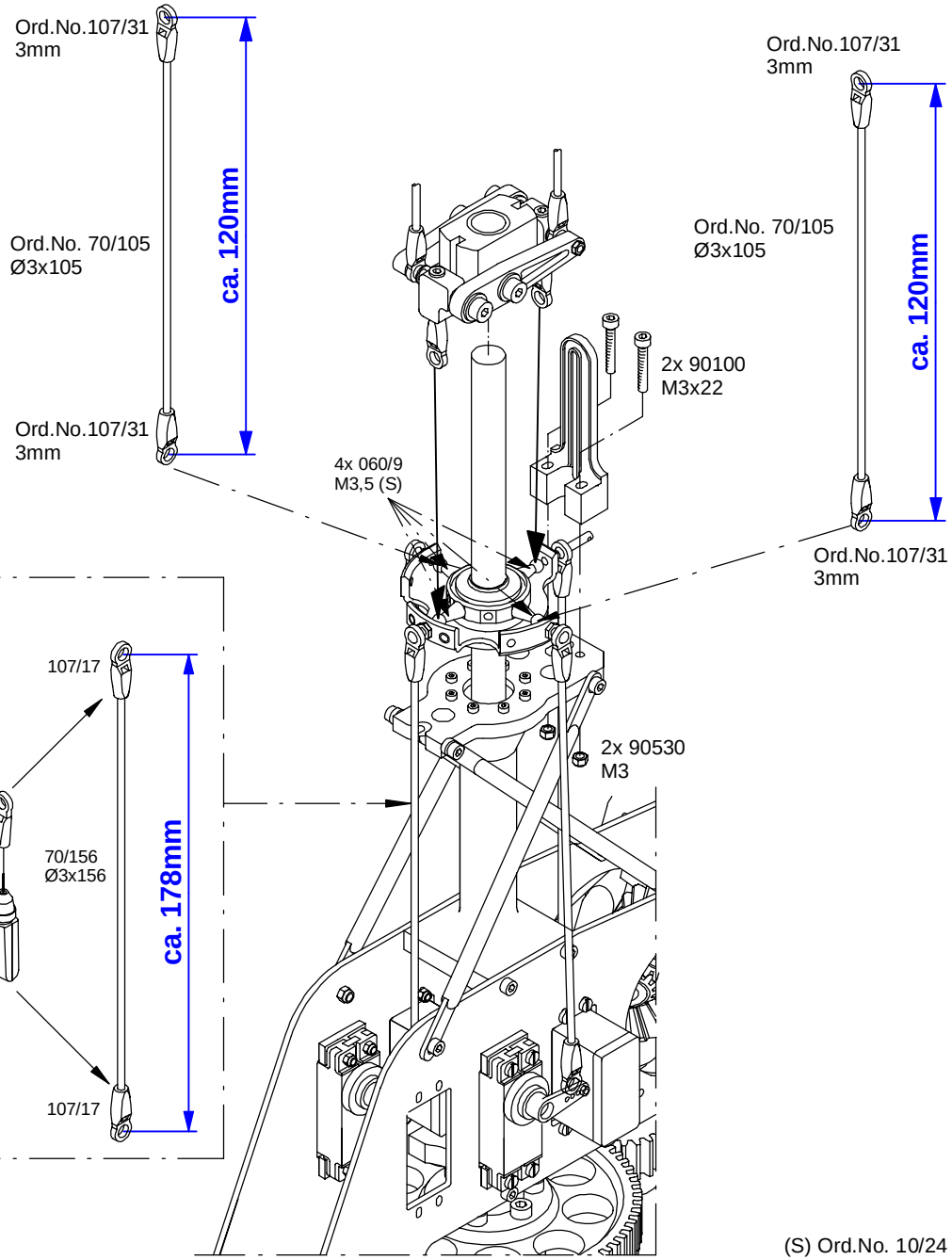


(S) = Ord.No. 10/24

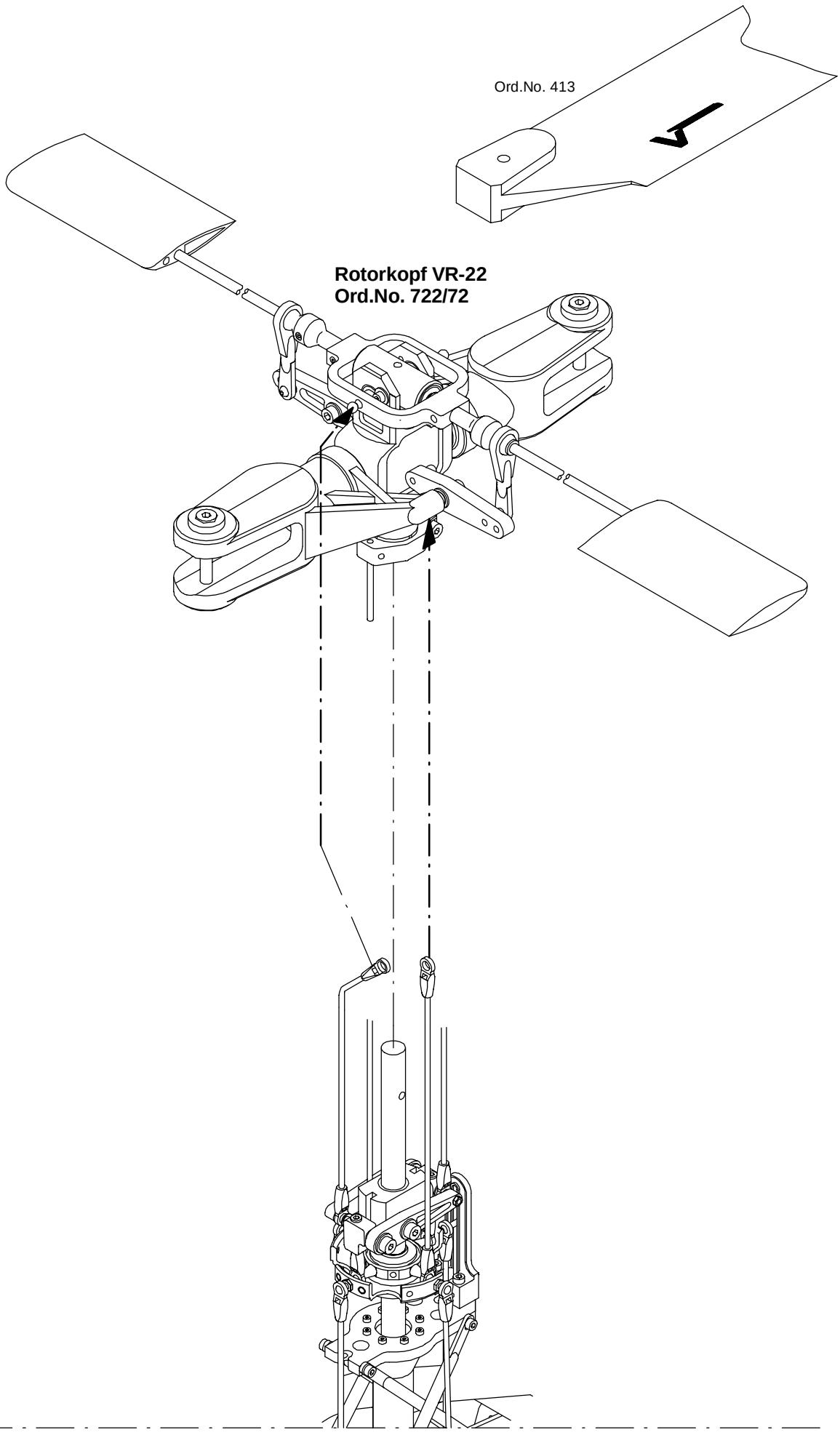

2x
M 1:1
Ord.No.
70/121
Ø3x120

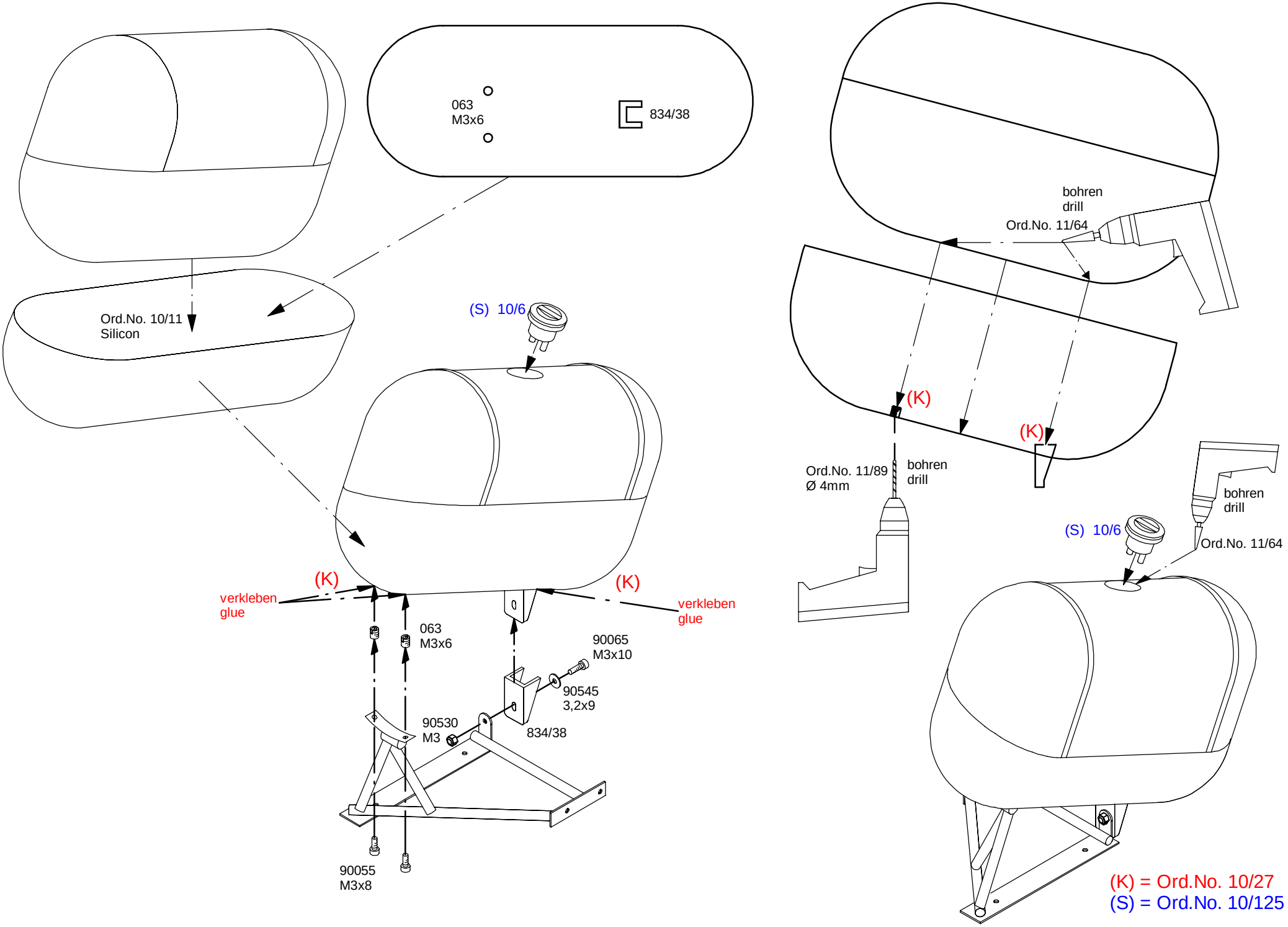

Ord.No.107/31
3mm
ca.127mm
Ord.No. 70/121
Ø3
Ord.No.107/31
3mm
Ord.No.107/31
3mm
ca.127mm
Ord.No. 70/121
Ø3
Ord.No.107/31
3mm
90490
M2,5 (S)
2x 85/1
4x6x1,5
107/14
90541
90295
M2,5x14
90295
M2,5x14
90541
107/14
2x 85/1
4x6x1,5
90490
M2,5 (S)
Pitchkompensator für 12mm Rotorwelle
Ord.No. 722/71

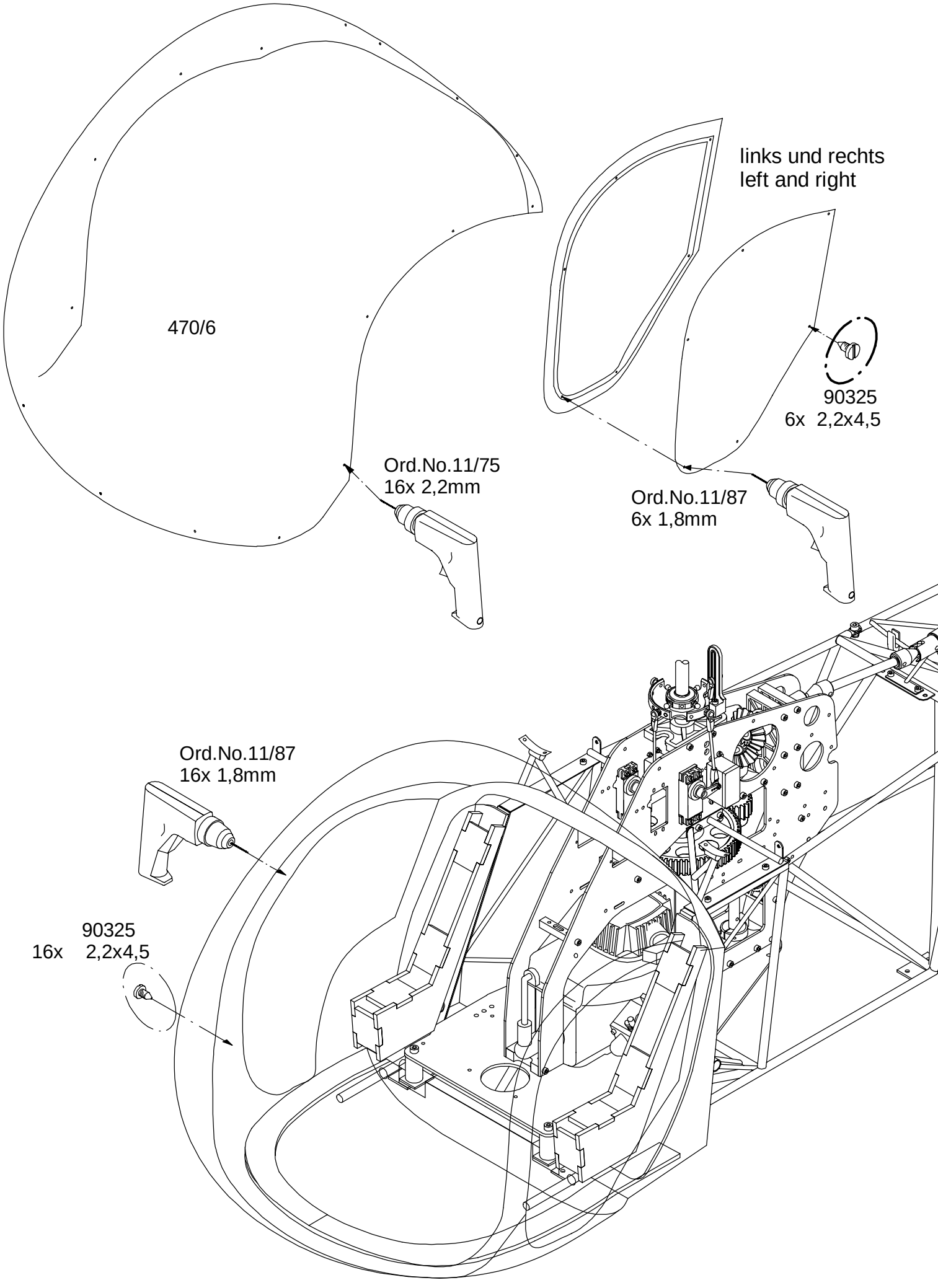

4x
107/17
ca. 178mm
70/156
Ø3x156
Ord.No. 11/73
Ø2,8 mm
107/17

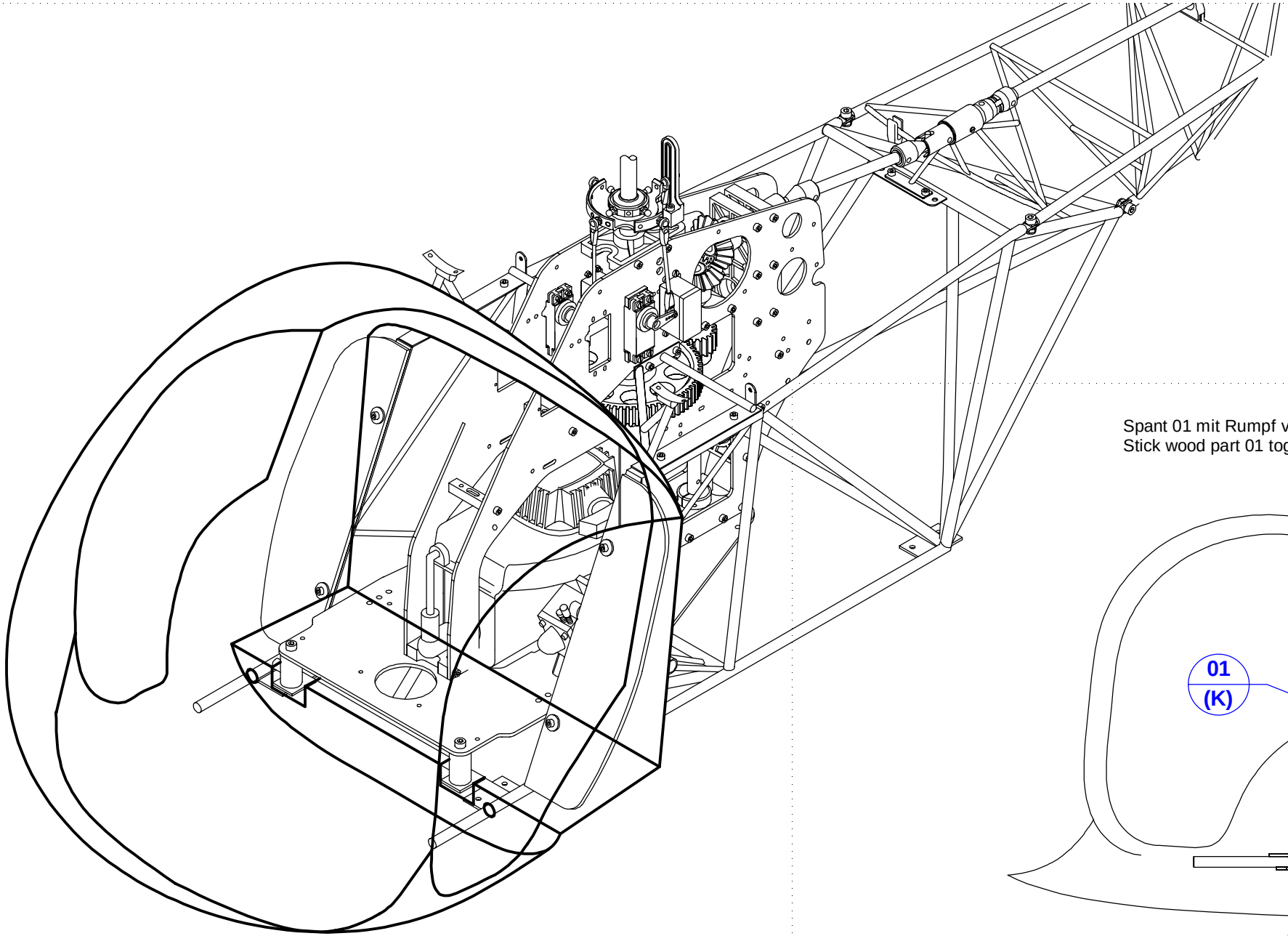

Ord.No.107/31
3mm
ca. 120mm
Ord.No. 70/105
Ø3x105
Ord.No.107/31
3mm
2x 90100
M3x22
4x 060/9
M3,5 (S)
Ord.No.107/31
3mm
ca. 120mm
Ord.No. 70/105
Ø3x105
Ord.No.107/31
3mm
2x 90530
M3

(S) Ord.No. 10/24

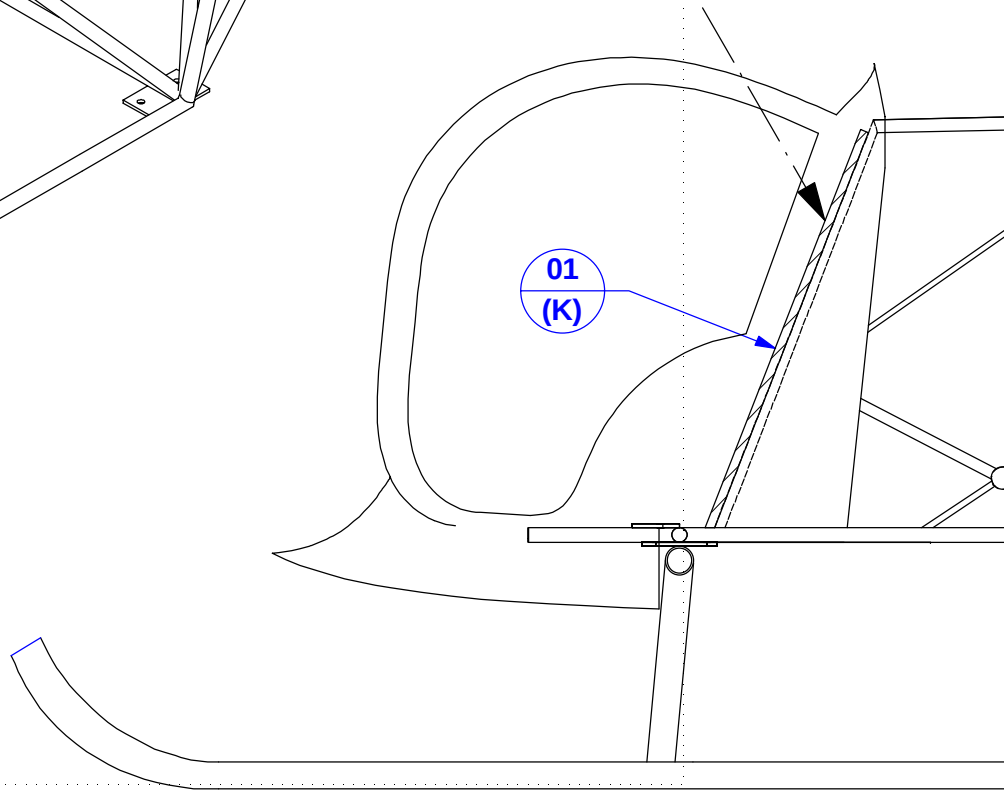

Ord.No. 413
Rotorkopf VR-22
Ord.No. 722/72


063
M3x6
834/38
Ord.No. 10/11
Silicon
(S) 10/6
(K)
verkleben
glue
(K)
verkleben
glue
063
M3x6
90065
M3x10
90545
3,2x9
90530
M3
834/38
90055
M3x8
bohren
drill
Ord.No. 11/64
(K)
(K)
Ord.No. 11/89
Ø 4mm
bohren
drill
bohren
drill
(S) 10/6
Ord.No. 11/64
(K) = Ord.No. 10/27
(S) = Ord.No. 10/125

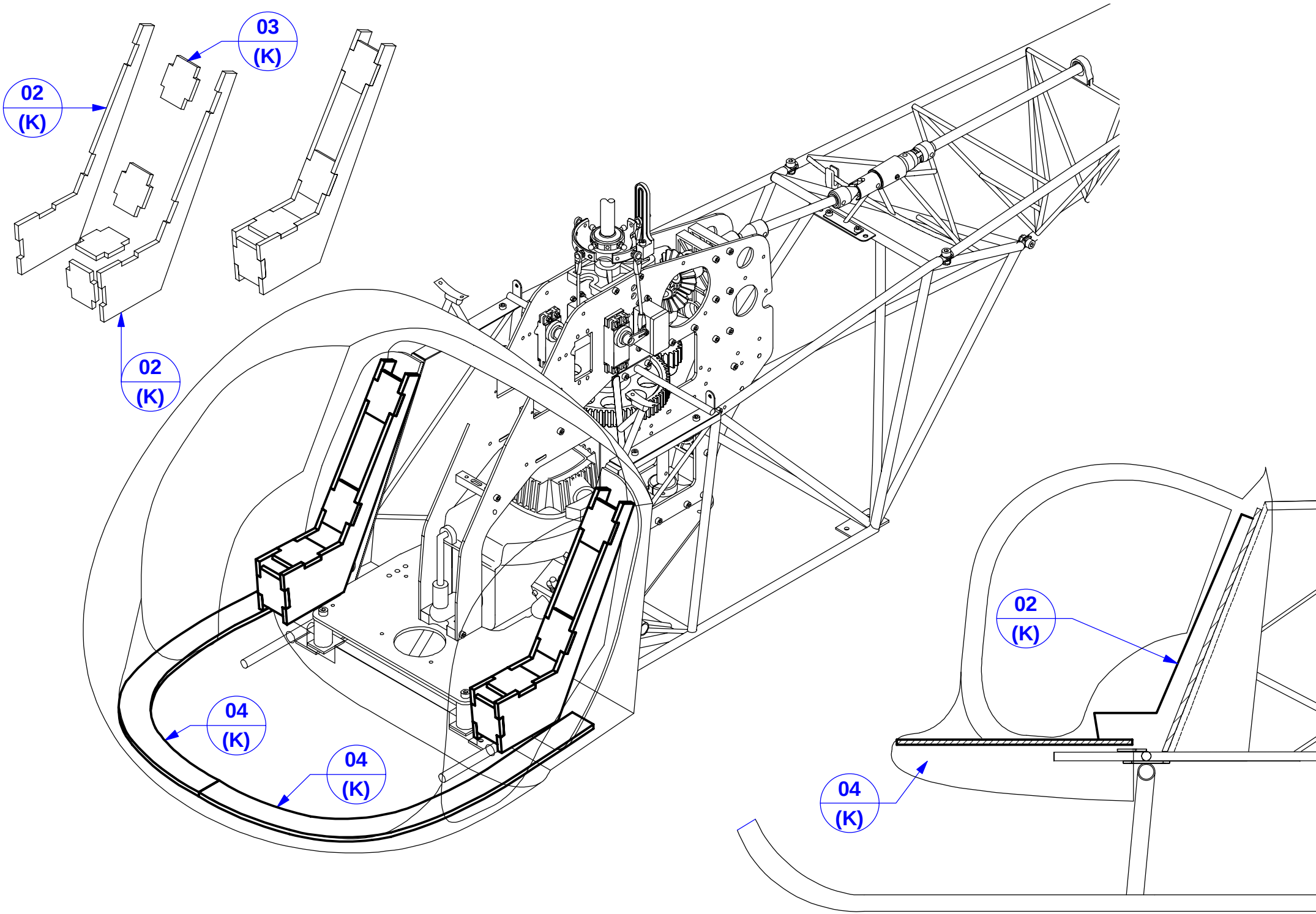

links und rechts
left and right
470/6
90325
6x 2,2x4,5
Ord.No.11/75
16x 2,2mm
Ord.No.11/87
6x 1,8mm
Ord.No.11/87
16x 1,8mm
90325
16x 2,2x4,5



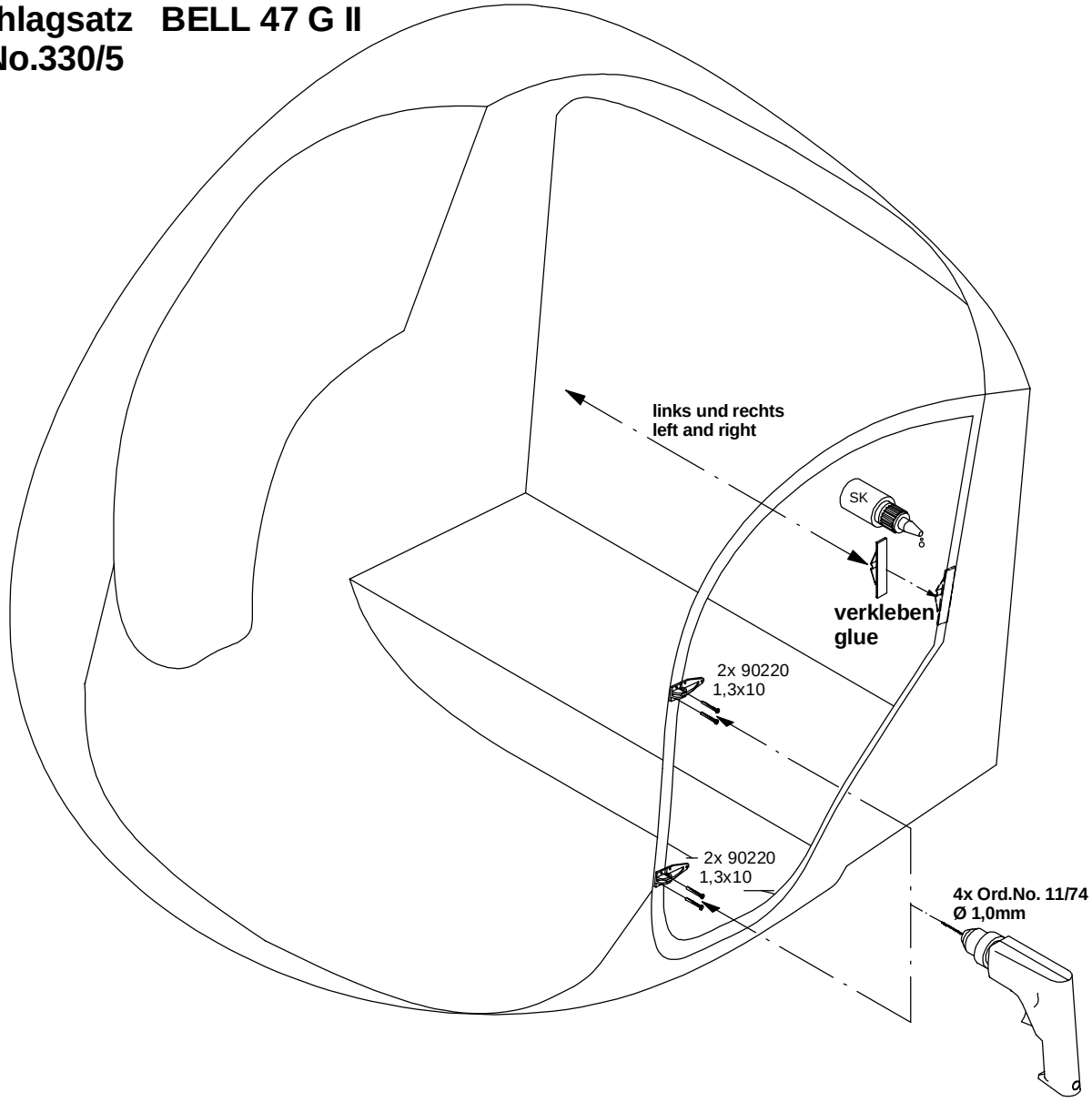
Spant 01 mit Rumpf verkleben.
Stick wood part 01 together with the fuselage.

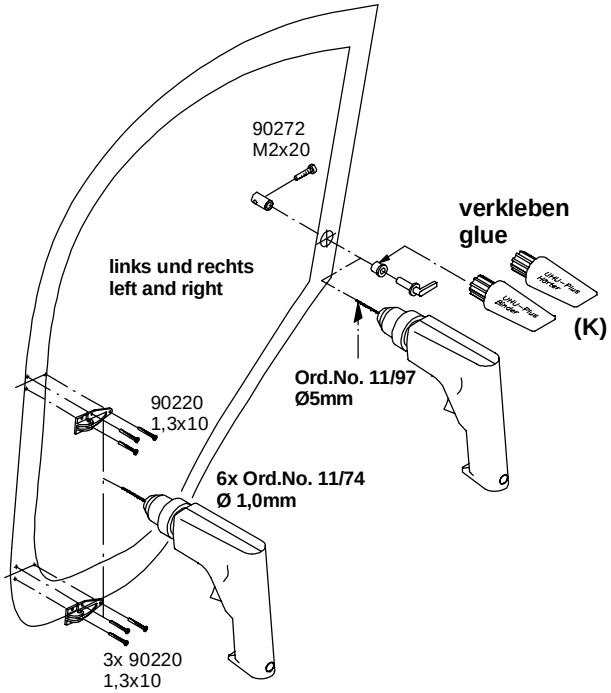


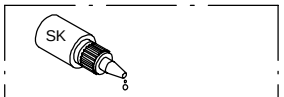
(K) = Ord.No.10/27


03
(K)
02
(K)
02
(K)
04
(K)
04
(K)
02
(K)
04
(K)

Beschlagsatz BELL 47 G II
Ord.No.330/5







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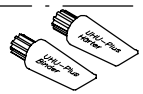

(K) = Ord.No.10/27

Inbetriebnahme • Operating • Mise en service • Come far funzionare • Ingebruikname

Inbetriebnahme eines Modellhubschraubers

Auch wenn Sie schon „alles“ über Modellhubschrauber wissen sollten Sie folgenden Text lesen :

Prüfen Sie vor der Inbetriebnahme
- Steuerrichtungen (auch Gasfunktion!), Ausschlaggrößen
- Wirkrichtung des Kreisels und senderseitig programmierte Mischfunktionen
- Pitchweg (linearer Verlauf -2/-3° bis +9/+10°) ab Rotorkreis Ø 2000 mm 0° bis +10°
- Servowege können reduziert werden, aber nicht unterhalb des 60%-Wertes (dann mechanische Veränderung vornehmen) und nur weitgehend symmetrisch
- Pitch min. / Pitch max. und gesamter Roll- und Nickanschlag gleichzeitig in alle Richtungen, dabei Rotorkopf drehen und prüfen, ob es im Extremausschlag zu einem mechanischen Anlaufen der Komponenten des Rotorkopfes kommt und der Führungsstift des Pitchkompensators nicht auf die Taumelscheibe schlägt
- Bei Rotorköpfen mit Taumelscheibenmitnehmer vor jedem (!) Start Funktion und sicheren Sitz des Kugelgelenkes prüfen
- Autorotationsschalter muß zugeordnet und leicht erreichbar sein!
  bei AR: Gasposition auf „Aus“ und alle Steuerrichtungen und Ausschlaggrößen wie im Normalflug, Heckrotor auf 0 Grad = Festwert

- Verwenden Sie den Heckrotorkreisel vorerst nicht im „heading-lock Modus“
- entgegen manchem Hinweis der Kreiselhersteller benötigen größere Hubschrauber aufgrund ihrer Massenträgheit doch die Unterstützung durch die senderseitige Heckrotormischfunktionen im Normalmodus
- Heckrotorposition bei Pitch min 0° - bei Pitch max. haben die im Blatthalter zusammengeklappten HR-Blätter an den Blattspitzen ca. 50 - 60 mm Abstand

- Stellen Sie den Motor zweifelsfrei „fett“ ein und setzen Sie die Gaskurve sehr niedrig an: die Gaskurve wird dann in kleinen Schritten angehoben und der Motor vorsichtig „magerer“ gestellt bis das entsprechende Drehzahlniveau erreicht ist; d.h. von „unten herantasten“!!!
- Die ersten Tankfüllungen sollten nur in Bodennähe bis Höhe ca. 1 m geflogen werden, bis sicher ist, daß keine Fehler vorhanden sind und alles einwandfrei funktioniert:

- Achten Sie dabei kritisch (!) auf ungewöhnliche Geräusche und Vibrationen und gehen Sie jedem Zweifel nach!
- Lassen Sie sich nicht durch umstehende Personen zu unnötiger Eile antreiben

- Vermeiden Sie Schwebeflüge außerhalb des Bodeneffektes (ca. 1 m beim Modell, bzw. halber Rotorkreisdurchmesser als Schwebeflughöhe): sie benötigen sehr hohe Leistung und führen zur vollständigen Abhängigkeit vom Triebwerk: Modellhubschrauber haben im Gegensatz zu den meisten Großhubschraubern nur <u>einen (!)</u> Motor

<u>Für die ersten Rundflüge:</u> Im Bodeneffekt auf mittlere Geschwindigkeit beschleunigen und erst dann den Steigflug einleiten (nur so ist es möglich, jederzeit bei Ausfall der Antriebsleistung sicher zu landen), stets zügig Vorwärtsfahrt halten und für den Anflug immer gleichmäßigen Sinkflug (ca. 45°) gegen den Wind zum Landeplatz durchführen und erst im Bodeneffekt zum Stillstand kommen.
→ Auch wenn eigentlich alles funktioniert, kann es im Sinkflug trotzdem - und gerade beim Hochtouren der Systemdrehzahl (Gasvorwahl zu hoch !) - zum Aufschwingen des Hubschraubers kommen. Für diesen Fall gibt es nur zwei Lösungen: sofort das Pitch auf Schwebeflugposition bringen und weiteren Sinkflug nur über die Nickfunktion ausführen (d.h. mit geringer Sinkrate Kreise zum Abbau der Höhe fliegen) oder sofort Autorotation einleiten.

→ *Sofort* bedeutet innerhalb der ersten Sekunde.
→ Trainieren Sie vorab gedanklich, was Sie in besonderen Situationen tun müssen.
→ Sollte in Ihrem Modell wiederholt ein gleicher technischer Defekt auftreten so wird der erneute Austausch der Komponente nicht die Lösung sein solange sich an den Betriebsbedingungen nichts ändert.

→ Eine Bitte noch zum Abschluß:
Schätzen Sie Ihre fliegerischen Fähigkeiten realistisch ein. Dazu paßt folgender Vergleich: Wer nicht schwimmen kann und trotzdem ins tiefe Wasser geht, wird voraussichtlich ertrinken.

Operating a model helicopter for the first time

Even if you already know „all there is to know" about model helicopters please read the following notes carefully:

Before operating the model check the following points:
- The direction of servo rotation (including the throttle function) and travels.
- The direction of effect of the gyro, and the transmitter mixer functions you have programmed.
- Collective pitch travel (linear travel -2/-3° to +9/+10°); rotor diameter 2000 mm Ø plus: 0° to +10°
- It is permissible to reduce servo travels, but not below 60% (in this case adjust the mechanical linkage); travels should be primarily symmetrical.
- Apply collective pitch min. / collective pitch max. and full roll and pitch-axis commands simultaneously in all directions; rotate the rotor head at the same time, and check that at the extremes of travel no part of the rotor head is obstructed, and the collective pitch compensator guide pin does not foul the swashplate.
- Check the safe connection of the ball link of the swashplate driver before each flight, if the rotor head is using one.
- The auto-rotation switch must be assigned, and within easy reach!
- When auto-rotation is selected: throttle position to off, all directions of control and travels as in normal flight, tail rotor to 0° = fixed value.

- Do not set the tail rotor gyro to work in „heading-lock mode" initially.
- Contrary to the information supplied by many gyro manufacturers, the greater inertia of larger helicopters means that they do need the support of tail rotor mixer functions in normal mode.
- Tail rotor position 0° at collective pitch min.; at collective pitch max. the tail rotor blade tips should be about 50 - 60 mm apart when the blades are folded together in the blade holders.

- Set the motor distinctly „rich", and set the throttle curve very low: the throttle curve should then be raised gradually in small increments, and the motor cautiously „leaned out" until the correct rotor speed level is reached; i.e. work „upwards" towards the correct speed!
- The first few tankfuls should be flown with the model close to the ground, i.e. no more than about 1 m altitude, until you are confident that there are no defects or errors, and that everything is working faultlessly:

- Use your ears critically (!), listening for unusual sounds and vibration, and seek out the problem if you are in any doubt at all!
- Don't listen to anyone standing close by if they try to hurry you into flying the model.

- Avoid hovering outside ground effect (hover altitude with a model: approx. 1 m, or half the rotor disc diameter):
- Hovering requires very high power, and you are completely dependent on the motor: in contrast to most full-size helicopters, model helicopters have only one (!) power plant.

- If your rotor head features a swashplate driver, check that the ball-link is secured properly and functioning correctly before every (!) flight.

For the first few circuits: starting from ground effect, accelerate to a moderate speed in level flight, and only then initiate a climb (this is the only way to ensure that you can land safely at any time if the motor fails); always keep the model flying at a brisk forward speed; on the landing approach always descend towards the landing area at a steady angle (around 45°) directly into wind, and don't bring the model to a halt until it is in ground effect again.

→ Even if everything is actually working properly, you may still find that the helicopter balloons up on the descent - especially if the system rotational speed is allowed to rise (idle-up set too high !). If this happens, there are two solutions available to you: immediately move collective pitch to the hover position, and resume the descent using the pitch-axis function only (i.e. reduce height by flying circles at a low rate of descent); the alternative is to carry out an auto-rotation landing immediately.

→ *Immediately* means within the first second.

→ Before flying you should deliberately practise mentally what you need to do in particular situations.

→ If one particular technical fault keeps recurring in your model, replacing the component concerned will not solve the problem unless you change some other aspect of the operating conditions.

→ And one final request:
Please be realistic when assessing your piloting skills. Keep this comparison in mind: if you can't swim and you dive into deep water, the chances are that you will drown.

Mise en service d'un hélicoptère modèle réduit

Même si vous savez "tout" en ce qui concerne les modèles d'hélicoptères, vous devriez lire le texte suivant:

A vérifiez avant la mise en service :

- Sens des commandes et débattements. Y compris fonction des gaz.
- Sens de réaction du gyroscope et des fonctions de mixage programmables depuis l'émetteur.
- Course de Pas (courbe linéaire de -2/-3° jusqu'à +9/+10°), et à partir d'un diamètre de rotor de 2000 mm, de 0° à +10°.
- Les courses de servo peuvent être réduites, mais pas en dessous d'une valeur de 60%. Procédez dans ce cas à un ajustage mécanique. Préférez les débattements symétriques.
- Actionnez le pas mini / maxi et les butées de roulis et de tangage au maximum dans toutes les directions. Tournez la tête de rotor et vérifiez qu'il n'y ait pas de problème mécanique avec les composants de la tête de rotor et que la tige de guidage de la bague de serrage ne heurte pas le plateau cyclique.
- Dans le cas de têtes de rotor avec entraîneur de plateau cyclique, vérifier la bonne tenue de la chape avant chaque démarrage.
- L'interrupteur d'autorotation doit être attribué et accessible!
  En autorotation: moteur au ralenti et toutes les commandes et débattements comme en vol normal, rotor d'anticouple sur une valeur fixe de 0°
- Utilisez le gyroscope d'abord en mode normal et non pas pas en "verrouillage de cap".
- Contrairement à certains conseils des fabricants de gyroscopes, des hélicoptères de grande taille nécessitent malgré tout un mixage Pas / anticouple pour compenser la dérive.
- Position du rotor d'anticouple; au Pas mini = 0°; au Pas maxi, les pales repliées dans les porte-pales, affichent une distance de 50 – 60 mm en bout des pales.

- En cas de doute, réglez le mélange du moteur plutôt "gras" et programmez une courbe de gaz relativement plate: cette courbe sera augmenté par petits pas et les réglages du moteur ajusté

doucement dans le sens “pauvre” jusqu’à ce que le régime souhaité soit obtenu; on s’approche donc à petit pas depuis le bas!
- Pendant les premiers réservoirs, il est conseillé d’évoluer à une hauteur maximale de 1 mètre, jusqu’à ce qu’on soit sûr qu’il n’y ait plus d’erreur et que tout fonctionne parfaitement bien.

- Surveillez de façon critique tout bruit ou vibration suspectes et cherchez la raison de chacun de vos doutes.
- Ne vous laissez pas stresser par des personnes de votre entourage.

- Evitez les vols stationnaires en dehors de l’effet de sol (env. 1 m en fonction du modèle, sinon prenez la moitié du diamètre rotor comme hauteur de vol): ils nécessitent une très grande puissance et vous mettent en dépendance totale du moteur: les modèles d’hélicoptères, contrairement aux exemples grandeur dans la plupart des cas, n’ont qu’un seul moteur!

Pour les premiers vols: Accélérez dans l’effet de sol à une vitesse moyenne et ne commencez le vols ascensionnel qu’à ce moment précis (c’est le seul moyen d’atterrir sans difficulté dans le cas d’une défaillance moteur). Gardez toujours une vitesse de translation correcte et efforcez-vous de réaliser l’approche dans une descente homogène (env. 45°), face au vent, et avec un arrêt dans l’effet de sol.
→ Même si tout va bien, il se peut que dans la descente, et notamment lorsque le rotor prend des tours (régime moteur trop élevé), vous provoquiez une oscillation de l’hélicoptère. Dans ce cas, il n’existe que deux solutions: remettre immédiatement le pas en position vol stationnaire et continuer la descente en se servant uniquement de la fonction du tangage (réaliser une descente en cercles avec une pente très faible) ou passer en mode autorotation.
→ *Immédiatement* veut dire en moins d’une seconde.
→ Réfléchissez à ce genre de scénario avant d’entamer le vol.
→ Si vous rencontrez une même défaillance technique à plusieurs reprises, le remplacement d’un composant n’est donc pas forcément la bonne solution, tant que les conditions d’exploitation ne changent pas.

→ Un conseil pour la fin:
Ne surestimez pas vos qualités de pilote. Prenez l’exemple suivant : Celui qui ne sait pas nager et qui s’aventure malgré tout dans des eaux profondes, risque fortement de se noyer.

Come far funzionare un elimodello per la prima volta

Anche se pensate di sapere già “tutto” sugli elimodelli leggete attentamente le seguenti istruzioni:

Prima di mettere in moto il modello controllate:
- la direzione della rotazione del servo e del carburatore (anche il funzionamento dell’ acceleratore!) e le relative lunghezze di corsa
- la direzione d’azione del giroscopio e le funzioni miscelatore programmate dal trasmettitore
- il movimento passo da –2/-3° a +9/+10°. Non superare i 10° per rotori inferiori a diametro 2000 mm
- i movimenti del servo possono essere ridotti, ma solo in modo simmetrico e non al di sotto del 60% (in questo caso regolate i collegamenti meccanici)
- sistemate il passo min./ il passo max. e tutte le posizione nick e roll contemporaneamente in tutte le direzioni, ruotate nello stesso momento la testa rotore e verificare che nelle lunghezze di corsa estreme nessuna parte della testa rotore sia ostruita, e che il perno di comando del compensatore di passo non tocchi il piatto oscillante
- nelle teste rotore con trascinatore piatto oscillante controllate prima (!) di ogni decollo che gli uniball siano fissati bene
- per quanto riguarda le teste rotore con trascinatore del piatto oscillante controllate prima (!) di ogni decollo che lo snodo sferico sia fissato bene

- sul trasmettitore l'interruttore dell'autorotazione deve essere posizionato bene e deve essere facilmente raggiungibile!
- In caso di autorotazione: l'acceleratore deve essere in posizione "off" (spento), tutte le direzioni di comando e lunghezze di corsa come nel volo normale, rotore di coda su 0 gradi = valore fisso
- all'inizio non utilizzate il giroscopio rotore di coda nel "heading-lock mode"
- contrariamente ad alcuni suggerimenti dei produttori di giroscopi gli elicotteri grandi, a causa della loro inerzia, necessitano il sostegno delle funzioni miscelatore rotore di coda programmate dalla trasmittente nel modo normale
- posizione rotore di coda 0° con passo min. - con passo max. le estremità delle pale testa rotore devono essere distanti circa 50-60 mm quando le pale sono piegate nel portapale
- regolate il motore "grasso" e mettete la curva gas molto bassa: la curva gas aumenterà un po' alla volta e il motore diventerà pian piano "magro" finché non viene raggiunto il livello di numero di giri corrispondente; ciò significa "avvicinarsi lentamente " alla velocità corretta!!!
- i primi voli devono avvenire volando in prossimità del suolo, a un'altezza di circa 1 m, finché si è sicuri che non esistono difetti e che tutto funziona perfettamente:
- fate attenzione inoltre, con orecchio critico(!) a rumori insoliti e a vibrazioni e verificate ogni dubbio!
- non fatevi mettere fretta dalle persone che vi circondano, non ascoltate gli incompetenti e fidatevi solo di un "elicotterista" esperto.

- evitate figure acrobatiche in prossimità del suolo (oltre il metro o la metà del diametro rotore): gli hovering necessitano di una prestazione più elevata e della massima sicurezza di funzionamento del motore: gli elimodelli rispetto alla maggior parte degli elicotteri veri hanno solo un(!) motore

Per il primo volo: nell'effetto suolo accelerare a una velocità media e solo dopo iniziare la salita (in questo modo è possibile atterrare sempre in modo sicuro nel caso di un guasto al motore), tenere sempre costantemente la marcia avanti e per l'atterraggio effettuare sempre un volo in discesa costante (ca. 45°) controvento fino al terreno d'atterraggio e arrestarsi solo nell'effetto suolo.
→ nella discesa, anche se in realtà tutto funziona, nel caso di eccessivo aumento di rotazione del motore (selezione gas troppo elevata!) l'elicottero cambia la sua traiettoria di discesa. In questo caso ci sono due soluzioni: portare il passo in posizione di equilibrio e effettuare la discesa solo con la funzione nick (ciò significa ridurre l'altezza volando in cerchio a bassa quota di discesa) oppure iniziare l'autorotazione.
→ *subito* significa entro il primo secondo
→ esercitatevi mentalmente prima di volare, su come dovete comportarvi in particolari situazioni
→ se nel vostro modello si dovesse presentare ripetutamente uno stesso difetto tecnico, la sostituzione del componente non sarebbe la soluzione: occorre verificare il funzionamento di tutto il meccanismo.

→ ancora una cortesia prima di concludere:
valutate in modo realistico le vostre capacità di volo. E ricordatevi questo paragone: chi non sa nuotare e ciononostante va nell'acqua alta, con ogni probabilità morirà annegato.

Ingebruikname van een modelhelicopter.

Ook wanneer U "alles" over modelhelicopters weet moet U de volgende tekst lezen:

Controleer voor het in gebruik nemen;
- De stuurrichtingen (ook de gasfunctie), en de grootte van de uitslagen.
- Werkrichting van de gyro en van de in de zender geprogrammeerde mixfuncties.
- Pitchweg (lineair verloop –2/-3° tot +9/+10°) vanaf rotordiameter Ø 2000mm 0° tot + 10°
- Servoweg kan verminderd worden, maar niet meer dan 60% van de eigenlijke waarde, (in geval van grotere waarden dan alleen mechanisch dit instellen) en zoveel mogelijk symetrisch Pitch min. / Pitch max. en zowel de rol- en nickuitslag tegelijkertijd in alle richtingen bewegen,

daarbij de rotorkop draaien en controleren of bij de maximum uitslagen er geen mechanisch vastlopen van de rotorkopkomponenten ontstaat en de geleidingsstift van de pitchcompensator niet op de tuimelschijf kan slaan.
- Bij rotorkoppen met een tuimelschijfmeenemer voor elke ! startprocedure de kogellinks op de juiste montagepositie controleren.
- De autorotatieschakelaar moet aangesloten en gemakkelijk te bedienen zijn! (instelling bij autorotatie; motor op positie „uit“ en alle stuurrichtingen en uitslagen zoals bij normaal vliegen,) staartrotor op 0 graden = vaste waarde.

- Gebruik de gyro voor de staartrotor vooralsnog niet in de “heading-lock modus”.
- In tegenstelling tot wat menige gyro-fabrikanten voorschrijven, hebben grotere helicopters op grond van hun massa-traagheid een instelling op de zender van staartrotormixing in de normaalmode nodig.
- Staartrotorpositie bij pitch min 0° - bij pitch max. hebben de in de bladhouder samengeklapte staartrotor-bladen een afstand tussen de bladeinden van ca 50 – 60 mm

- Stelt U de motor in het begin “vet” af , en stel de gaskurve laag in: de gaskurve wordt dan in kleine stappen omhoog gebracht en de motor wordt dan voorzichtig “mager” ingesteld totdat het juiste toerentalniveau bereikt is; d.w.z. van onderaan opbouwen!

- De eerste tankvulling moet alleen op een hoogte van ca 1 mtr gevlogen worden, totdat het zeker is, dat er geen problemen zijn en alles storingsvrij functioneert:

- Let U daarbij kritisch (!) op ongewone geluiden en vibraties en in voorkomend geval dit eerst verhelpen!
- Laat U niet door omstanders “opjutten“.

- Vermijd zweefvlucht behalve bij het z.g. bodem-effect (ca 1 mtr bij model, d.w.z. halve rotordiameter als zweefvluchthoogte): Het kost n.l. veel vermogen en U bent afhankelijk van de motor: Modelhelicopters hebben in tegenstelling tot de meeste “echte” helicopters maar de beschikking over <u>een !</u> motor.

<u>Voor de eerste rondvluchten:</u> In bodemeffect tot gemiddelde snelheid opvoeren om pas dan omhoog te gaan (alleen zo is het mogelijk wanneer de motor uitvalt altijd veilig te landen) ; hou steeds een voorwaarstvlucht aan en voor de landing altijd een gelijkmatige daalvlucht (ca 45 °) tegen de wind in tot de landingsplek, om dan eerst in het z.g. bodemeffect tot stilstand te komen.
→ Ook wanneer alles eigenlijk goed functioneert, kan het toch voorkomen dat in daalvlucht het toerental te hoog oploopt (Idle up te hoog !) wat enorme trillingen aan de helicopter kan veroorzaken. In dat geval zijn er maar twee oplossingen: direct de pitch naar zweefvluchtpostitie brengen, en verdere daalvlucht alleen via de nickfunctie uitvoeren. (d.w.z. met geringe daalsnelheid bochten vliegen om zo de hoogte te verminderen) of direct een autorotatie uitvoeren.
→ *Direct* betekent binnen de eerste seconde.
→ Traint U zich vooraf in gedachten, wat U in zo’n bijzondere situatie moet doen.
→ Wanneer in uw model steeds weer dezelfde storing / technisch defect optreedt ook na venieuwing van de onderdelen is het duidelijk dat dit niet de oplossing van het probleem is, zolang er niets aan de instellingen van de helicopter wordt veranderd.

Een opmerking nog ter afsluiting:
Schat uw vliegervaring realistisch in: daartoe past de volgende vergelijking: wie niet zwemmen kan en toch in het diepe water springt, zal zeker verdrinken!