

SK-400 Drive Unit — Maintenance: Drive Coupling Spider Replacement and Gearbox Oil Change

Assembly: SK-400 Drive unit, motor to gearbox assembly
Governing drawing: SK400-GB-012, Rev D (2026-09-08), Sheet 1/1, scale 1:5, format A3
Parts list: SK400-GB-000 Drive unit assembly, Rev D (ERP export 2026-09-10)
Coupling datasheet: Nordkupp AB NK-DS-42, Edition 2025-11
Originator of drawing: Drawn T. Kask / Checked M. Lepp (SolidWorks PDM)
Audience: Maintenance technician
General tolerances: ISO 2768-mK (per drawing Note 7)

1. Scope

Two scheduled field operations on the SK-400 drive unit: **Task A** — replacing the drive coupling spider (NK-42-S98, balloon 4); **Task B** — changing the gearbox oil (ISO VG 220 CLP, 2.4 l). Both require the coupling guard (balloon 8) to be removed and the drive to be shut down and isolated, so they are normally done in the same shutdown window.

Not covered: replacement of the coupling hubs (NK-42-H, balloon 2) or the gearbox oil seal (SK400-GB-140), bearing replacement (6207-2RS), motor removal, or any repair requiring the gearbox housing (SK400-GB-100) to be opened.

Every value and identifier used here is itemised against its source file in the **Source register** (Section 9).

2. Drive unit arrangement and balloon map

A foot-mounted electric motor drives the gearbox through a flexible jaw coupling. The motor is bolted to an adapter flange, the flange to the gearbox housing, and the coupling area is enclosed by a bolted perforated guard. Overall length over the assembly is **606 mm**.

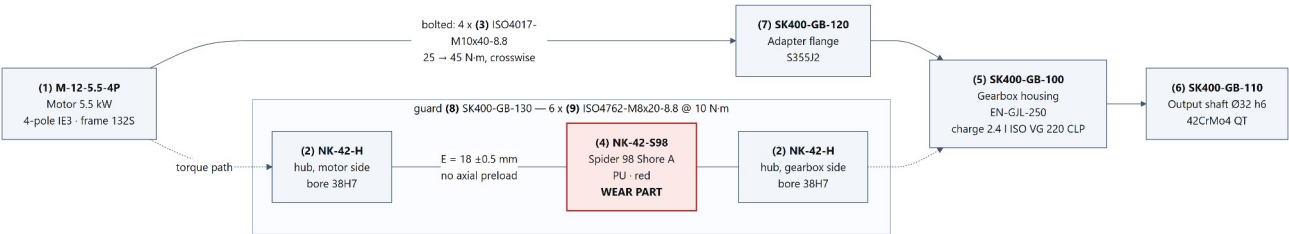


Figure 1 — Drive train arrangement with drawing balloon numbers (SK400-GB-012 Rev D).

The spider (4) is the only wearing element in the torque path. The coupling is fail-safe: when the elastomer fails the hub jaws still interlock and the drive keeps transmitting torque, with heavy backlash and noise. A spider failure is therefore not always obvious from outside the guard, which is why the inspection interval in Section 8 must be kept.

2.1 Parts table keyed to the drawing balloons

Balloon	Item no.	Description	Qty	Material / grade	Supplier	Used in
1	M-12-5.5-4P	Motor M-12, 5.5 kW, 4-pole, IE3, frame 132S	1	—	Motorwerk Tallinn OÜ	Task A (loosened)
2	NK-42-H	Coupling hub Ø42, bore 38H7, keyway	2	EN-GJS-400	Nordkupp AB	Task A (re-used)
3	ISO4017-M10x40-8.8	Hex bolt M10 x 40, 8.8, zinc	4	8.8	Fastco	Task A (re-torqued)
4	NK-42-S98	Spider 98 Shore A, PU	1	PU	Nordkupp AB	Task A — replaced
5	SK400-GB-100	Gearbox housing	1	EN-GJL-250	in-house	Task B

Balloon	Item no.	Description	Qty	Material / grade	Supplier	Used in
6	SK400-GB-110	Output shaft $\varnothing 32$ h6	1	42CrMo4 QT	in-house	reference
7	SK400-GB-120	Adapter flange	1	S355J2	in-house	Task A
8	SK400-GB-130	Coupling guard, perforated	1	S235	in-house	Tasks A and B
9	ISO4762-M8x20-8.8	Socket head cap screw M8 x 20, 8.8, zinc	6	8.8	Fastco	Tasks A and B

Items with no balloon on SK400-GB-012 Rev D. The drawing balloons only the motor-to-gearbox coupling arrangement. The parts below appear in parts list SK400-GB-000 Rev D but not on the drawing, so their location on the gearbox must be identified on the machine.

Item no.	Description	Qty per task	Supplier	Used in
CLP-220	Gear oil, ISO VG 220 CLP	2.4 l	Lubricant supplier	Task B — replaced
SK400-GB-150	Breather plug M16 x 1.5	1	in-house	Task B (removed / refitted)
SK400-GB-160	Drain plug M16 x 1.5, magnetic	1	in-house	Task B (removed / refitted)
ISO7089-10-200HV	Washer 10, 200HV	up to 8	Fastco	Task A, if damaged
SK400-GB-140	Gearbox oil seal 35 x 52 x 7, NBR	1	Sealtek	Task B, only if leaking

Consumables and aids (not specified in the source documents): sealing washers or thread sealant for the M16 x 1.5 plugs, lint-free cloth, degreasing cleaner, drain tray of at least 3 l capacity, labelled waste-oil container.

Tools: calibrated torque wrench covering 10–45 N·m, hexagon socket (Allen) key set, open-ended or socket spanner set for M10 hex bolts and M16 x 1.5 plugs, straight edge and feeler gauges (or dial indicator) for the alignment check, funnel, lock-out padlock and tag.

3. Safety

WARNING — ROTATING MACHINERY, STORED ENERGY AND HOT OIL

A running coupling will amputate fingers and hands. Gearbox oil can be hot enough to cause serious scalding.

- 1. Disconnect and lock out power before any work on the coupling** (Nordkupp NK-DS-42, Section 5). Isolate the motor supply at the local isolator, apply a personal padlock and a danger tag, and verify zero voltage at the motor terminals before starting.
- 2. Secure the driven machine against rotation.** Any load on the output shaft (balloon 6) that can back-drive or free-wheel must be blocked, lowered or restrained before the guard is removed.
- 3. Wait for the drive to come to a complete standstill.** Do not judge standstill by sound.
- 4. Rotating couplings must be enclosed by a fixed guard** (NK-DS-42, Section 5). The guard (balloon 8) must be refitted before restart — this is a mandatory requirement of drawing SK400-GB-012 Rev D, Note 6. Never jog or run the drive with the guard removed.
- 5. Hot oil.** Gearbox oil is at operating temperature immediately after shutdown. Drain warm where practical for complete evacuation, but wear chemical-resistant gloves, eye protection and long sleeves, and control the drain flow. Allow the unit to cool to a safe handling temperature if in doubt.
- 6. Confirm the spider before fitting it.** The coupling is only rated for the fitted spider. Replace with a genuine NK-42-S98 spider only (NK-DS-42, Section 4). The 98 Shore A spider is red (NK-DS-42, Section 1) — a spider of any other colour or hardness is the wrong part.
- 7. Environment.** Collect all drained oil; do not allow oil to enter drains or soil. Dispose of waste oil and oil-contaminated rags through the site's licensed waste route (site-specific, not defined in the source documents).

The coupling is a component, not a machine; the machine builder remains responsible for the risk assessment (NK-DS-42, Section 5). This section does not replace the machine's own lock-out procedure or risk assessment.

4. Tightening torques

All torque figures below are taken directly from the source documents. Use a calibrated torque wrench. Do not substitute values from a general fastener table.

Ref.	Fastener	Size / grade	Torque	Method	Source
Balloon 3	Motor-to-flange hex bolt	ISO4017-M10x40-8.8	25 N·m, then 45 N·m	Two passes, crosswise , thread lightly oiled	SK400-GB-012 Rev D, Note 1
Balloon 9	Coupling guard screw	ISO4762-M8x20-8.8	10 N·m	6 off	SK400-GB-012 Rev D, Note 2
—	Coupling hub set screw	M8	10 N·m	Per hub; only if a hub is disturbed	NK-DS-42, Section 3, step 2
—	Drain plug SK400-GB-160, M16 x 1.5	M16 x 1.5	—	Not specified in any source document	—
—	Breather plug SK400-GB-150, M16 x 1.5	M16 x 1.5	—	Not specified in any source document	—

Important — lubrication condition. The 25/45 N·m figures for the motor bolts apply to a **lightly oiled thread** (drawing Note 1). Tightening a dry or a heavily greased thread to the same torque will not produce the intended clamp load. Wipe the threads clean and apply a light film of oil before assembly.

4.1 Crosswise sequence for the four motor-to-flange bolts (balloon 3)

Tighten in the order 1 → 2 → 3 → 4 at 25 N·m, then repeat the same order at 45 N·m.

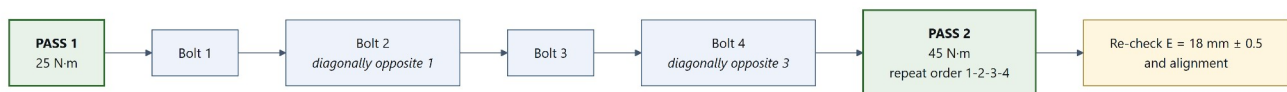


Figure 2 — Crosswise tightening order for the 4 x ISO4017-M10x40-8.8 bolts. Pass 1: 25 N·m. Pass 2: 45 N·m.

4.2 Assembly dimensions and limits to be met after work

Parameter	Value	Source
Distance E between coupling hubs (balloon 2)	18 mm ± 0.5	SK400-GB-012 Rev D, Note 3
Spider axial preload	None — the spider must sit without axial preload	SK400-GB-012 Rev D, Note 3
Permissible radial misalignment after assembly	0.2 mm (governing)	SK400-GB-012 Rev D, Note 4
Permissible angular misalignment after assembly	0.9°	SK400-GB-012 Rev D, Note 4; NK-DS-42, Section 2
Permissible axial misalignment (coupling capability)	+1.4 / -0.7 mm	NK-DS-42, Section 2

Coupling component ratings, for reference only: nominal torque T_{KN} 265 N·m, max torque $T_{K max}$ 530 N·m, max speed 7000 rpm, max bore 45 mm, hub 85 mm O/D x 56 mm long, 0.95 kg per hub, spider service range -30 °C to +90 °C (all NK-DS-42, Section 1).

Note on a source conflict. Drawing SK400-GB-012 Rev D, Note 4 permits **0.2 mm** radial misalignment; Nordkupp datasheet NK-DS-42, Section 2 permits **0.22 mm**. The drawing value is the tighter of the two and is the governing requirement for this assembly. Work to **0.2 mm**.

5. Task A — Replacing the drive coupling spider (NK-42-S98, balloon 4)

Replacement criteria (NK-DS-42, Section 4): replace the spider when torsional backlash exceeds **5 mm** measured at the hub circumference, or when cracks or permanent deformation are visible.

Estimated duration: not defined in the source documents.

5.1 Shutdown and isolation

1. Stop the drive through the normal machine sequence and allow it to come to a complete standstill.
2. Isolate the motor supply, apply a personal padlock and danger tag to the isolator, and verify zero voltage at the motor terminals.
3. Secure the driven machine and any suspended or stored load against rotation and movement.
4. Allow the assembly to cool to a safe handling temperature.

5.2 Gaining access

5. Remove the **6 x ISO4762-M8x20-8.8** socket head cap screws (balloon 9) and lift off the coupling guard **SK400-GB-130** (balloon 8). Keep the screws together; inspect them and any washers (ISO7089-10-200HV) and replace any that are damaged or corroded.
6. Clean the coupling area. Note the condition of the old spider and of the hub jaws before disturbing anything — heavy jaw wear, scoring or blueing indicates a misalignment or overload problem that replacing the spider alone will not cure.

5.3 Removing the worn spider

7. Mark the angular position of the motor (balloon 1) on the adapter flange (balloon 7) so the motor can be returned to the same orientation.
8. Loosen and remove the **4 x ISO4017-M10x40-8.8** hex bolts (balloon 3) securing the motor to the adapter flange. Support the motor before the last bolt is removed — the **M-12-5.5-4P** is a 5.5 kW, frame 132S machine and requires mechanical support or a second technician.
9. Draw the motor axially away from the gearbox, keeping it square, until the motor-side hub (balloon 2) clears the spider. Leave both hubs on their shafts.
10. Remove the worn spider (balloon 4) from between the hub jaws.
11. Inspect both hubs **NK-42-H**: the jaw flanks must be free of cracks, plastic deformation and significant wear steps. Check that both hubs are still tight on their shafts and that the keys are seated. If a hub has moved, re-set it and tighten the hub set screw **M8 to 10 N·m** (NK-DS-42, Section 3). Clean both hub bores and jaw pockets.

5.4 Fitting the new spider

12. Confirm the new part is a genuine **NK-42-S98**, spider 98 Shore A, PU, **red**. Check it is undamaged and free of moulding flash in the jaw pockets.
13. Insert the spider into the gearbox-side hub jaws (NK-DS-42, Section 3, step 3).
14. Push the motor back on axially, guiding the motor-side hub jaws into the spider, until the distance **E between the two hubs is 18 mm ± 0.5** (drawing Note 3; NK-DS-42 Section 1 gives E = 18 mm). Measure E with a feeler gauge or depth gauge through the hub gap.
15. Verify that **the spider sits without axial preload** (drawing Note 3). The spider must be captured but not compressed; it should be possible to feel a trace of axial float rather than a solid axial thrust between the hubs.
16. Fit the **4 x ISO4017-M10x40-8.8** bolts (balloon 3) with the threads wiped clean and **lightly oiled**. Tighten **crosswise in two passes: first pass 25 N·m, second pass 45 N·m** (drawing Note 1, see Figure 2).

5.5 Alignment check

17. Check alignment with a straight edge laid across both hub outer diameters at **four points 90° apart** (NK-DS-42, Section 3, step 4).
18. Confirm the result is within the permissible misalignment after assembly: **radial 0.2 mm, angular 0.9°** (drawing Note 4). If the drive unit is out of limit, do not proceed — correct the mounting of the motor or the adapter flange and re-check. A new spider fitted into a misaligned coupling will fail early.
19. Re-check the hub distance **E = 18 mm ± 0.5** after the bolts are at full torque; final tightening can pull the motor axially.

5.6 Closing up

20. Refit the coupling guard **SK400-GB-130** (balloon 8) with the **6 x ISO4762-M8x20-8.8** screws (balloon 9) tightened to **10 N·m** (drawing Note 2). **The guard must be refitted before restart** (drawing Note 6).

21. Continue to Section 7 (Return to service), or carry out Task B first if the oil change is due in the same shutdown.

6. Task B — Changing the gearbox oil

Oil specification: ISO VG 220 CLP (drawing Note 5), parts list item **CLP-220**. **Fill quantity:** **2.4 l** (drawing Note 5; parts list line 15). **Change interval:** **10 000 operating hours or 2 years**, whichever comes first (drawing Note 5).

The parts list gives the oil only as item CLP-220, "Gear oil ISO VG 220 CLP". No brand, no additive package and no approval list is stated in any source document. Any oil used must meet **ISO VG 220, CLP** as a minimum (approved oil brands not defined in the source documents).

6.1 Preparation

1. Complete the shutdown and isolation steps of Section 5.1 if they have not already been carried out for Task A.
2. Identify the **breather plug SK400-GB-150 (M16 x 1.5)** and the **magnetic drain plug SK400-GB-160 (M16 x 1.5)** on the gearbox housing (balloon 5). Neither plug is balloned on drawing SK400-GB-012 Rev D; locate them on the machine. The drain plug is at the lowest point of the housing (plug positions are not shown on the source drawing).
3. Clean the area around both plugs so that no dirt can enter the housing when they are removed.
4. Position a drain tray of at least 3 l capacity under the drain plug — the nominal charge is 2.4 l and the drained volume plus flush residue will exceed the nominal fill.

6.2 Draining

5. Remove the **breather plug SK400-GB-150** first. This vents the housing and lets the oil drain cleanly rather than gugging.
6. Remove the **magnetic drain plug SK400-GB-160** and allow the oil to drain completely into the tray. Drain the oil warm where it is safe to do so; warm oil carries more of the suspended wear debris out with it.
7. While the gearbox is draining, **inspect the magnetic drain plug**. A light grey film of fine ferrous paste is normal. Report and investigate before refilling if you find:
 - metal flakes, chips or slivers;
 - bright machined-looking particles;
 - a heavy accumulation of paste compared with the previous change;
 - non-ferrous particles (these will not stick to the magnet — check the tray).
8. Inspect the drained oil. Milky or emulsified oil indicates water ingress; a burnt smell or very dark, thickened oil indicates overheating. Either finding is a fault to be reported, not a routine change.
9. Check the gearbox housing (balloon 5), the output shaft area (balloon 6) and the adapter flange joint (balloon 7) for leaks while the housing is empty. A wet output shaft indicates a failing oil seal **SK400-GB-140** (35 x 52 x 7, NBR) — outside the scope of this section; raise a separate work order.
10. Clean the magnetic drain plug thoroughly, including the magnet face, and clean the breather plug. Confirm the breather is not blocked — a blocked breather pressurises the housing and drives oil out past the seal.

6.3 Refilling

11. Refit the **magnetic drain plug SK400-GB-160** with a serviceable sealing washer or thread sealant (sealing method not defined in the source documents). Tighten to (torque not specified in any source document); tighten firmly and check for weeping after the refill.
12. Fill through the breather plug port with **2.4 l of ISO VG 220 CLP** gear oil (item **CLP-220**) using a clean funnel. Measure the quantity into the gearbox — do not fill "until it comes out", as no level plug or sight glass is defined in the source documents (level-check method not defined in the source documents).
13. Allow a few minutes for the oil to settle and distribute before the final quantity check.
14. Refit the **breather plug SK400-GB-150**. Tighten to (torque not specified in any source document). Do not overtighten a plug that must remain vented.
15. Wipe the housing clean so that any subsequent weep is immediately visible.
16. If the guard (balloon 8) was removed, refit it with the 6 x **ISO4762-M8x20-8.8** screws (balloon 9) at **10 N·m** (drawing Note 2). **The guard must be refitted before restart** (drawing Note 6).

17. Transfer the drained oil to a labelled waste-oil container and dispose of it through the site's licensed waste route (site-specific).

7. Return to service

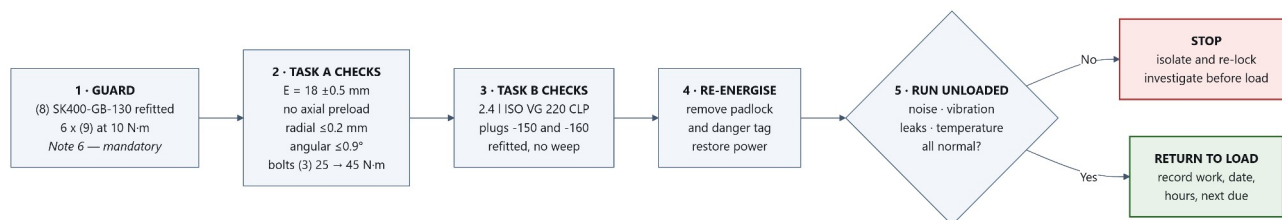


Figure 3 — Return-to-service sequence. Checks 1 to 4 are gates: if any one of them fails, do not proceed and do not restore power. Return to the section referenced in the box (guard: §5.6 / §6.3 step 16; Task A: §5.4 and §5.5; Task B: §6.3), correct the fault and re-check from that point.

Record the work against the drive unit's maintenance history, including the running-hours reading at the time of the change, so that the intervals in Section 8 can be tracked.

8. Maintenance intervals

Item	Action	Interval	Source
Spider NK-42-S98 (balloon 4)	Inspect	Every 4000 operating hours , or at least annually	NK-DS-42, Section 4
Spider NK-42-S98 (balloon 4)	Replace	When torsional backlash at the hub circumference exceeds 5 mm , or when cracks or permanent deformation are visible	NK-DS-42, Section 4
Gearbox oil CLP-220 , ISO VG 220 CLP	Change, 2.4 l	Every 10 000 operating hours or 2 years , whichever comes first	SK400-GB-012 Rev D, Note 5

The spider inspection interval (4000 h) is shorter than the oil-change interval (10 000 h), so plan the inspection as a standalone guard-off check. The guard (balloon 8) must be removed to inspect the coupling and refitted before restart in every case.

9. Source register

Every quantitative value and identifier used in this section, with the input file it came from.

- **[DWG]** — inputs/SK400-GB-012_revD_drive-assembly.pdf — Drawing SK400-GB-012, Rev D (2026-09-08), Kaarlimoisa Metall.
- **[BOM]** — inputs/SK400-BOM-GB-000_revD.csv — Parts list SK400-GB-000 Drive unit assembly, Rev D, ERP export 2026-09-10.
- **[DS]** — inputs/NK-DS-42_jaw-coupling_datasheet.pdf — Nordkupp AB datasheet NK-DS-42, Edition 2025-11.

9.1 Identifiers

Identifier	Meaning	Source
SK400-GB-012, Rev D (2026-09-08)	Governing drawing, Sheet 1/1, A3, scale 1:5	[DWG] title block
SK400-GB-000, Rev D	Drive unit assembly parts list	[BOM] header
NK-DS-42, Edition 2025-11	Coupling datasheet	[DS] header
M-12-5.5-4P	Motor, 5.5 kW, 4-pole, IE3, frame 132S — balloon 1	[DWG] pos 1; [BOM] line 4
NK-42-H	Coupling hub Ø42, bore 38H7, keyway — balloon 2	[DWG] pos 2; [BOM] line 5
ISO4017-M10x40-8.8	Hex bolt M10 x 40, 8.8, zinc — balloon 3	[DWG] pos 3; [BOM] line 14
NK-42-S98	Spider 98 Shore A, PU — balloon 4	[DWG] pos 4; [BOM] line 6
SK400-GB-100	Gearbox housing, EN-GJL-250 — balloon 5	[DWG] pos 5; [BOM] line 1

Identifier	Meaning	Source
SK400-GB-110	Output shaft Ø32 h6, 42CrMo4 QT — balloon 6	[DWG] pos 6; [BOM] line 2
SK400-GB-120	Adapter flange, S355J2 — balloon 7	[DWG] pos 7; [BOM] line 3
SK400-GB-130	Coupling guard, S235 perforated — balloon 8	[DWG] pos 8; [BOM] line 7
ISO4762-M8x20-8.8	Socket head cap screw M8 x 20, 8.8, zinc — balloon 9	[DWG] pos 9; [BOM] line 8
SK400-GB-140	Gearbox oil seal 35 x 52 x 7, NBR (no balloon)	[BOM] line 11
SK400-GB-150	Breather plug M16 x 1.5 (no balloon)	[BOM] line 13
SK400-GB-160	Drain plug M16 x 1.5, magnetic (no balloon)	[BOM] line 16
CLP-220	Gear oil ISO VG 220 CLP (no balloon)	[BOM] line 15
ISO4032-M10-8	Hex nut M10, grade 8 (no balloon; not used in these tasks)	[BOM] line 9
ISO7089-10-200HV	Washer 10, 200HV (no balloon)	[BOM] line 10
6207-2RS	Deep groove ball bearing 35 x 72 x 17 (no balloon; out of scope)	[BOM] line 12
ISO 2768-mK	General tolerances for the assembly	[DWG] Note 7
Nordkupp AB	Supplier, coupling hubs and spider	[BOM] lines 5, 6; [DS] header
Motorwerk Tallinn OÜ	Supplier, motor	[BOM] line 4
Fastco	Supplier, fasteners	[BOM] lines 8, 9, 10, 14
Sealtek	Supplier, oil seal	[BOM] line 11
Kaarlimoisa Metall	Drawing owner / customer	[DWG] title block
T. Kask / M. Lepp	Drawn by / Checked by	[DWG] title block

9.2 Values

Value	Applies to	Source
25 N·m then 45 N·m, crosswise, two passes, lightly oiled thread	Motor-to-flange bolts, balloon 3	[DWG] Note 1
10 N·m	Guard screws, balloon 9	[DWG] Note 2
10 N·m	Coupling hub set screw M8	[DS] §3 step 2
18 mm ± 0.5	Distance between coupling hubs, balloon 2	[DWG] Note 3
18 mm	Distance between hubs E (nominal)	[DS] §1
No axial preload on the spider	Spider, balloon 4	[DWG] Note 3
Radial 0.2 mm; angular 0.9°	Permissible misalignment after assembly (governing)	[DWG] Note 4
Axial +1.4 / -0.7 mm; radial 0.22 mm; angular 0.9°	Coupling permissible misalignment (component capability)	[DS] §2
ISO VG 220 CLP	Gearbox oil grade	[DWG] Note 5; [BOM] line 15
2.4 l	Gearbox oil fill quantity	[DWG] Note 5; [BOM] line 15
10 000 operating hours or 2 years	Oil change interval	[DWG] Note 5
4000 operating hours or annually	Spider inspection interval	[DS] §4
5 mm torsional backlash at hub circumference	Spider replacement criterion	[DS] §4
Cracks or permanent deformation visible	Spider replacement criterion	[DS] §4
Guard must be refitted before restart	Mandatory requirement	[DWG] Note 6
606 mm	Overall length over the assembly	[DWG] dimension
265 N·m (T_{KN}) / 530 N·m ($T_{K max}$)	Coupling nominal / max torque	[DS] §1
7000 rpm	Coupling max speed	[DS] §1
45 mm	Coupling max bore	[DS] §1
85 mm / 56 mm / 0.95 kg	Hub outer diameter / hub length / hub weight	[DS] §1
PU, 98 Shore A, red	Spider material, hardness and colour	[DS] §1; [BOM] line 6
-30 °C to +90 °C	Spider temperature range	[DS] §1
5.5 kW, 4-pole, IE3, frame 132S	Motor rating	[DWG] pos 1; [BOM] line 4
Bore 38H7, keyway	Coupling hub bore	[BOM] line 5
Ø32 h6	Gearbox output shaft	[DWG] pos 6; [BOM] line 2
35 x 52 x 7, NBR	Oil seal dimensions and material	[BOM] line 11
35 x 72 x 17	Bearing dimensions	[BOM] line 12

Value	Applies to	Source
M16 x 1.5	Breather and drain plug thread	[BOM] lines 13, 16
Qty 4 / 6 / 2 / 1	Bolt, guard screw, hub and spider quantities	[DWG] parts list; [BOM]
"Disconnect and lock out power"; "fixed guard"; "genuine NK-42-S98 only"	Safety requirements	[DS] §4, §5

10. Recorded source conflicts

Conflict	[DWG]	[DS]	Resolution used in this section
Permissible radial misalignment	0.2 mm (Note 4)	0.22 mm (§2)	Drawing value 0.2 mm governs (tighter, assembly-specific)
Distance between hubs E	18 mm ± 0.5 (Note 3)	18 mm, no tolerance (§1)	Drawing value 18 mm ± 0.5 governs

End of section. Prepared from drawing SK400-GB-012 Rev D, parts list SK400-GB-000 Rev D and supplier datasheet NK-DS-42 only. No external sources were used.