

CLASSIFICATION

- [I] GENERAL
 [II] MACHINE BODY
 [III] HYDRAULIC SYSTEM
 [IV] ELECTRICAL SYSTEM
 [V] ENGINE

TABLE

- [I] GENERALITES
 [II] CORPS
 [III] SYSTEM HYDRAULIQUE
 [IV] SYSTEM ELECTRIQUE
 [V] MOTEUR

GRUPPENINDEX

- [I] ALLGEMEINES
 [II] HAUPTTEINHEIT
 [III] HYDRAULISCHES SYSTEM
 [IV] ELECTRISCHES SYSTEM
 [V] MOTOR

Record of Revisions
Rapport de Révision
Inspektionsaufzeichnungen

Symbol <i>Symboles</i> Symbol	Date <i>Date</i> Datum	Main Revised Points & Corrective Measures <i>Principaux points de révision et mesures correctives</i> Hauptpunkte der Inspektion und korrektive Maßnahmen			Person-in-charge <i>Personne responsable</i> Verantwortlicher
	1989 June 28th	1. KH-91 Specification 2. Rubber track removing method	1. <i>Caractéristiques KH-91</i> 2. <i>Méthode de dépose de chenille en caoutchouc</i>	1. Technische Daten KH-91 2. Ausbauverfahren für Gummigleisketten	Hirakata C. E. Service Engineering Sect. M. Kanai
	1991 Sept. 30th	1. Service information (SERVICE BULLETIN)	1. <i>Informations d'entretien (SERVICE BULLETIN)</i>	1. Service-information (SERVICE BULLETIN)	Hirakata C.E. Service Engineering Sect. M.Tanaka
					
					
					

Precautions for Disassembly and Reassembly

Machines must be disassembled and assembled efficiently and safely.

It is very important to thoroughly understand the construction and function of the machine, to make all appropriate preparations, and start operations according to the specified working procedures.

(1) Preparation for disassembly

1. Cleaning

Remove mud and dirt from the body before disassembly.

2. Acceptance inspection

The machine must be checked before it is disassembled to record existing conditions, such as those listed below.

- Model, serial number, and hourmeter reading
- Reason for repair and repair history
- Element stains
- Fuel and oil condition
- Parts damage * (Take photographs if necessary.)

3. Equipment and tools

Prepare equipment, tools, cranes and parts storage racks as required.

Précautions Pendant le Démontage et le Remontage

Les machines doivent être démontées et remontées de manière efficace et sans danger.

Il est primordial de comprendre parfaitement la construction et le fonctionnement de l'engin, afin d'effectuer toute la préparation nécessaire et d'entreprendre les travaux conformément à la marche-à-suivre.

(1) Préparation avant le démontage

1. Nettoyage

Oter la boue et la poussière collée au corps avant de démonter.

2. Vérification d'admissibilité

L'engin doit être contrôlé avant le démontage. Prendre note de son état actuel en se référant à la liste ci-dessous.

- *Modèle, numéro de série, lecture du compteur d'heures.*
- *Cause de la réparation – historique des réparations.*
- *Salissures.*
- *Combustible et graissage: état.*
- *Pièces endommagées (prendre des photographies si nécessaire).*

3. Appareillage et outils

Préparer l'appareillage, les outils, les grues, les casiers d'entreposage des pièces, selon la méthode adéquate.

Vorsichtsmaßnahmen bei Demontage und Montage

Maschinen müssen auf effektive Weise und gefahrlos zerlegt werden.

Es ist daher außerordentlich wichtig, Konstruktion und Funktion der Maschine vollständig zu verstehen. Nur so können die entsprechenden Vorbereitungen getroffen und die vorgeschriebenen Arbeitsverfahren durchgeführt werden.

(1) Vorbereitung für Demontage

1. Reinigung

Schlamm und Schmutz von der Maschine entfernen, ehe sie demontiert wird.

2. Annahmeinspektion

Vor der Demontage muß die Maschine geprüft werden, um den tatsächlichen Zustand wie er in der nachfolgenden Liste beschrieben ist festzustellen.

- Modell, Seriennummer und Betriebsstundenanzeige
- Grund für die Reparatur und Vorgeschichte
- Verfärbungen
- Füllmengen von Kraftstoff und Öl
- Beschädigte Teile* (fotografieren, falls erforderlich.)

3. Ausrüstung und Werkzeuge

Ausrüstung, Werkzeuge, Kräne und Regale zum Lagern der Teile nach den Erfordernissen vorbereiten.

(4) Table of quantity water and oil
 (4) *Tableau des quantités d'eau et d'huile*
 (4) Tabelle der ausströmmenge wasser und Öle

Unit: [L]
 Unité: [US.gal]
 Einheit:

Item Pièce Gegenstand		Model Modèle Modell	KH-36	KH-41	KH-51	KH-61
Soft water Eau douce Weich Wasser	Radiator Radiateur Kühler		3.6 0.95	4.2 1.11	—	—
	Reserve tank Réservoir Reservetank		—	—	—	—
Engine oil Huile moteur Motoröl	Engine crank case Carter moteur Kubelwellengehäuse		1.6 0.42	2.1 0.55	3.2 (3.5) 0.85 (0.92)	—
Hydraulic oil Huile hydraulique Hydraulicöl	Operating oil tank Réservoir à huile de fonctionnement Betriebsöltank	Full Plein Voll	23 6.08	—	60 15.85	—
		Tank Réservoir Tank	17 4.49	—	45 11.89	—
Gear oil Huile à engrenage Getriebeöl	Traveling reduction gear case Carter d'engrenage de réduction de voyage Gehäuse des Fahrbetriebs-Untersetzungsgetriebes		1.6 0.42	—	2.3 0.61	—
	Swivel reduction gear case Carter d'engrenage de réduction à pivot Gehäuse des Dreh-Untersetzungsgetriebe		0.58 0.15	—	1.3 0.34	—
	Track roller Galet inférieur Laufrolle		0.025 0.007	—	0.05 0.013	—
	Front idler Roue folle avant Vorderleitrad		0.03 0.008	—	0.04 0.011	—
Light oil Huile légère Leichtesöl	Fuel tank Réservoir à combustible Kraftstofftank		19 5.02	—	23 6.08	—

Item Pièce Gegenstand		Model Modèle Modell	KH-66	KH-91	KH-101	KH-151
Soft water Eau douce Weich Wasser	Radiator Radiateur Kühler		4.0 1.06	—	7.0 1.85	—
	Reserve tank Réservoir Reservetank		1.0 0.26	—	—	—
Engine oil Huile moteur Motoröl	Engine crank case Carter moteur Kubelwellengehäuse		5.0 (5.6) 1.32 (1.48)	—	6.5 (7.5) 1.72 (1.98)	—
Hydraulic oil Huile hydraulique Hydraulicöl	Operating oil tank Réservoir à huile de fonctionnement Betriebsöltank	Full Plein Voll	84 22.19	110 29.1	118 31.17	160 42.27
		Tank Réservoir Tank	68 17.96	85 22.46	104 27.47	125 33.02
Gear oil Huile à engrenage Getriebeöl	Traveling reduction gear case Carter d'engrenage de réduction de voyage Gehäuse des Fahrbetriebs-Untersetzungsgetriebes		2.3 0.61	—	—	3.5 0.92
	Swivel reduction gear case Carter d'engrenage de réduction à pivot Gehäuse des Dreh-Untersetzungsgetriebe		1.3 0.34	—	—	2.2 0.58
	Track roller Galet inférieur Laufrolle		0.05 0.013	—	—	0.07 0.018
	Front idler Roue folle avant Vorderleitrad		0.04 0.011	—	—	—
Light oil Huile légère Leichtesöl	Fuel tank Réservoir à combustible Kraftstofftank		54 14.27	—	—	66 17.44

Note: () includes oil filter. Note: () comprend le filtre à huile. Hinweis: () einschließlich Ölfilter.

	KH-36 [H]	KH-41 [H]	KH-51 [H]	KH-61 [H]
	Vertical, water-cooled 4 cycle, 2 cylinder, diesel Diesel 4 tps, 2 cylindres, refroidi par eau, vertical 4-Takte, 2-Zylinder-Diesel, wassergekühlt, vertical			
	Kubota Z620-KW	Kubota D950-BH ₁	Kubota D950-BH ₂	Kubota D950-BH ₂
	8.8 kW (12 PS) / 2800 rpm	11.8 kW (16 PS) / 2400 rpm	14.0 kW (19 PS) / 3000 rpm	14.7 kW (20 PS) / 3000 rpm
	10.2 kW (14.1 HP) / 2800 rpm	13.6 kW (18.7 HP) / 2400 rpm	16.1 kW (22.3 HP) / 3000 rpm	17.0 kW (23.4 HP) / 3000 rpm
	37.7 cu.in. (618 cm ³)	56.5 cu.in. (927 cm ³)		
	Cell starter (with glow Plug) Démarreur à Pile (avec bougie de Pré-chauffage) Zellenanlasser (mit Glühkerze)			
	130.3 in (3310 mm)	137.2 in (3485 mm)	164.6 in (4180 mm)	171.3 in (4350 mm)
	38.6 in (980 mm)	←	55.1 in (1400 mm)	57.1 in (1450 mm)
	36.6 in (930 mm)	37.8 in (960 mm)	55.1 in (1400 mm)	57.1 in (1450 mm)
	83.3 in (2115 mm) [78.7 in (2000 mm)]	←	92.9 in (2310 mm) [92.3 in (2345 mm)]	←
	6.7 in (170 mm)	←	11.5 in (292 mm)	←
	2865 lb (1320 kg) [2600 lb (1200 kg)]	3185 lb (1465 kg) [2920 lb (1345 kg)]	5180 lb (2415 kg) [4785 lb (2235 kg)]	5665 lb (2635 kg) [5270 lb (2455 kg)]
	1.1 mph (1.8 km / h)	1.2 mph (1.9 km / h)	1.0 mph (1.6 km / h)	1.0 mph (1.6 km / h) *10.9 mph (1.4 km/h)
	29.4 kPa, 0.3 kgf/cm ² , 4.3 psi [26.5 kPa, 0.27 kgf/cm ² , 3.8 psi]	27.5 kPa, 0.28 kgf/cm ² , 4.0 psi [25.5 kPa, 0.26 kgf/cm ² , 3.7 psi]	32.4 kPa, 0.33 kgf/cm ² , 4.7 psi [30.4 kPa, 0.31 kgf/cm ² , 4.4 psi]	29.4 kPa, 0.30 kgf/cm ² , 4.3 psi [27.5 kPa, 0.28 kgf/cm ² , 4.0 psi]
	58% (30°)			
	1910 lbf (866 kgf)	2007 lbf (910 kgf)	3605 lbf (1635 kgf)	→
	39.4 in (1000 mm)	←	51.2 in (1300 mm)	←
	28.7 in (730 mm)	←	45.3 in (1150 mm)	←
	7.9 in × 31 × 3.5 in (200 mm × 31 × 90 mm)	9.1 in × 31 × 3.5 in (230 mm × 31 × 90 mm)	9.8 in × 37 × 4.0 in (250 mm × 37 × 101.6 mm)	11.8 in × 37 × 4.0 in (300 mm × 37 × 101.6 mm)
	Gear pump, Pompe à engrenages, Zahnradpumpe			
	19.1 MPa, 195 kgf/cm ² , 2775 psi	19.1 MPa, 195 kgf/cm ² , 2775 psi	14.7 MPa, 150 kgf/cm ² , 2135 psi	14.7 ^{+0.2} _{-0.2} MPa, 150 ⁺³⁰ ₋₃₀ kgf/cm ² , 2135 ⁺⁴⁰ ₋₃₀ psi
	—		13.2 MPa, 135 kgf/cm ² , 1920 psi	13.2 MPa, 135 kgf/cm ² , 1920 psi
	3.0 US.gal/min (11.5 ℓ/min)	3.5 US.gal/min (13.2 ℓ/min)	6.4 US.gal/min (24.3 ℓ/min)	6.4 US.gal/min (24.3 ℓ/min) *16.7 ^{+0.2} _{-0.2} US.gal/min (21.0 ℓ/min)
		1.9 US.gal/min (7.0 ℓ/min)	4.5 US.gal/min (17.1 ℓ/min)	4.5 US.gal/min (17.1 ℓ/min)
	4.5 US.gal (17 ℓ) [Max. 6.1 US.gal (23 ℓ)]		11.9 US.gal (45 ℓ) [Max. 15.9 US.gal (60 ℓ)]	
	1.2 cu.ft (0.035 m ³)	1.4 cu.ft (0.04 m ³)	2.1 cu.ft (0.06 m ³)	2.3 cu.ft (0.065 m ³)
	1.4 cu.ft (0.04 m ³)	1.6 cu.ft (0.045 m ³)	2.5 cu.ft (0.07 m ³)	2.6 cu.ft (0.075 m ³)
	15.7 in (400 mm)	17.7 in (450 mm)	17.7 in (450 mm)	18.9 in (480 mm)
	73.4 in (1865 mm)	76.4 in (1940 mm)	91.3 in (2320 mm)	100.0 in (2540 mm)
	113.8 in (2890 mm)	119.5 in (3035 mm)	152.0 in (3860 mm)	154.3 in (3920 mm)
	132.1 in (3355 mm)	136.6 in (3470 mm)	165.2 in (4195 mm)	173.0 in (4395 mm)
	74.8 in (1900 mm)	91.1 in (2315 mm)	102.8 in (2610 mm)	107.3 in (2725 mm)
	80°: left, gauche, Linke, 50°: right, droit, Recht		90°: left, gauche, Linke, 50°: right, droit, Recht	
	36.6 in×9.8 in (930 mm×250 mm)	←	55.1 in×15.2 in (1400 mm×385 mm)	57.1 in×15.2 in (1450 mm×385 mm)
	6.3 in/6.9 in (160 mm/175 mm)	←	13.2 in/15.2 in (335 mm/385 mm)	←
	9.4 rpm (9.4 tpm)	8.5 rpm (8.5 tpm)	8.2 rpm (8.2 tpm)	←
	75 dB (A)	←	78 dB (A)	←

*1. SN 10452~

[4] Mécanisme supérieur

(1) Ensemble réducteur de pivot

1. Dépose

1. Vue externe du carter

- ① Moteur hydraulique
- ② Ensemble réducteur de pivot

(Lors du remontage)

* Couple de serrage du boulon de montage du carter d'ensemble réducteur.

KH-36, 41	12.6~15.0 kgf·m, 91.1~108.5 ft-lbf 123.6~147.1 N·m
KH-51, 61, 66, 91 101, 151	20.0~23.0 kgf·m, 144.7~166.5 ft-lbf 196.1~225.6 N·m
Utiliser des agents de blocage de vis	

2. Déposer l'ensemble moteur. Desserrer le bouchon de vidange et vidanger l'huile.

③ Bouchon de vidange

* Huile pour engrenages: M80B ou voir I-12

KH-36, 41	0.58 ℓ, 0.15 U.S.gal.
KH-51, 61, 66, 91, 101	1.3 ℓ, 0.34 U.S.gal.
KH-151	2.2 ℓ, 0.58 U.S.gal.

(Lors du remontage)

Fixer le couvercle et le tube de jauge à tige. Remarquer que tous les boulons de montage du couvercle n'ont pas la même longueur.

Appliquer uniformément un produit adhésif sur les surfaces de contact.

Maintenir la jauge à tige d'huile avec son inclinaison vers l'avant de l'engin.

3. Déposer le couvercle du carter et redresser les griffes des rondelles à cliquets dans l'arbre de pignon pour extraire la plaque d'extrémité.

- ④ Rondelle avec cliquet
- ⑤ Boulon
- Couple de serrage: 7.9~9.2 kgf·m
- ⑥ Arbre de pignon

(Lors du remontage)

Vérifier que le goujon d'assemblage est sur sa position correcte dans la plaque d'extrémité.

[4] Obere Baugruppe

(1) Dreh-Reduktionsgetriebeeinheit

1. Ausbau

1. Außenansicht des Gehäuses

- ① Hydraulikmotor
- ② Dreh-Reduktionsgetriebegehäuse, komplett

(Beim Zusammenbau)

* Anzugsmoment für Getriebegehäuse-Befestigungsschraube

KH-36, 41	12.6~15.0 kgf·m, 91.1~108.5 ft-lbf 123.6~147.1 N·m
KH-51, 61, 66, 91 101, 151	20.0~23.0 kgf·m, 144.7~166.5 ft-lbf 196.1~225.6 N·m
Schraubenbindemittel verwenden	

2. Den Motor ausbauen. Die Ölablaßschraube lösen und das Öl ablassen.

③ Ölablaßschraube

* Getriebeöl: M80B oder auf I-12 Bezug nehmen.

KH-36, 41	0.58 ℓ, 0.15 U.S.gal.
KH-51, 61, 66, 91, 101	1.3 ℓ, 0.34 U.S.gal.
KH-151	2.2 ℓ, 0.58 U.S.gal.

(Beim Zusammenbau)

Den Deckel und das Ölmeßstabrohr anbringen. Beachten, daß die Deckelbefestigungsschrauben unterschiedliche Lagen aufweisen. Auf die Kontaktflächen eine gleichmäßige Dichtmittelschicht auftragen.

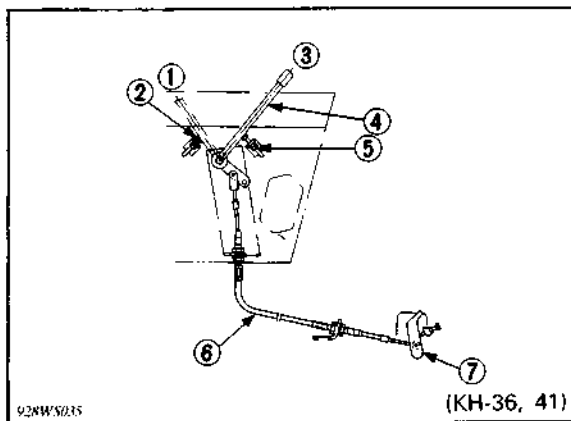
Das Ölmeßstabrohr mit der Abschrägung gegen die Motorfrontseite richten.

3. Den Gehäusedeckel entfernen und die Klauen der Zwischenscheibensperre in der Ritzelwelle nach oben klappen. Danach das Lagerschild entfernen.

- ④ Zwischenscheibe mit Sperre
- ⑤ Schrauben
- Anzugsmoment: 7.9~9.2 kgf·m
- ⑥ Ritzelwelle

(Beim Zusammenbau)

Sicherstellen, daß sich die Paßstifte in der richtigen Position im Lagerschild befinden.

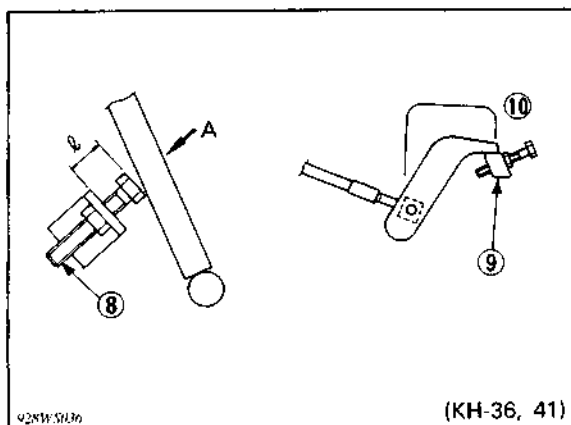


(KH-36, 41)

(A) MAX. position adjustment

After adjusting the idling speed, slowly tilt the acceleration lever all the way to the MAX. position. Now apply the stopper (a) and lock it with the lock nut. (Now be certain that the engine is running at maximum speed.)

- ① STOP position
- ② Stopper (b)
- ③ MAX. position
- ④ Acceleration lever
- ⑤ Stopper (a)
- ⑥ Acceleration lever cable
- ⑦ Speed adjust lever at engine

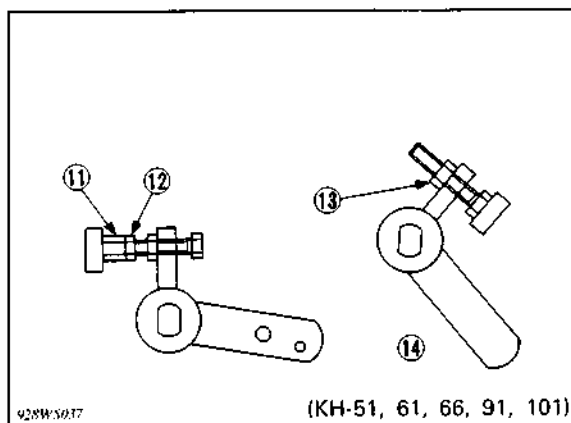


(B) STOP position adjustment

Tilt the acceleration lever all the way to the STOP position. Just when the engine speed adjust lever comes into contact with the stopper at the engine, apply the bolt of the stopper (b) to the acceleration lever.

Then rotate the stopper (b) one turn counterclockwise, as viewed from direction "A", to make distance "l" longer. Finally lock the stopper (b) with the lock nut. (Now make sure the engine stops.)

- ⑧ Stopper (b)
- ⑨ Stopper at engine
- ⑩ MAX. position



(KH-51, 61, 66, 91, 101)

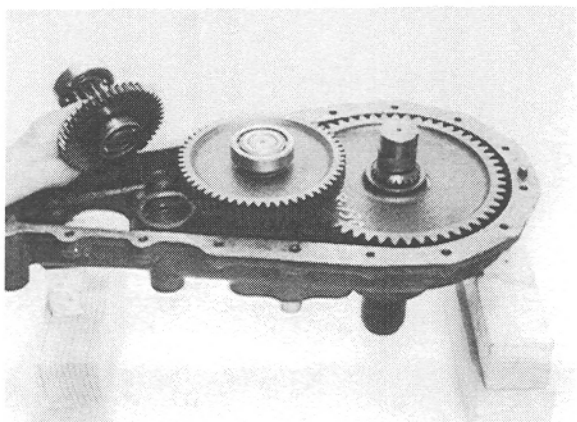
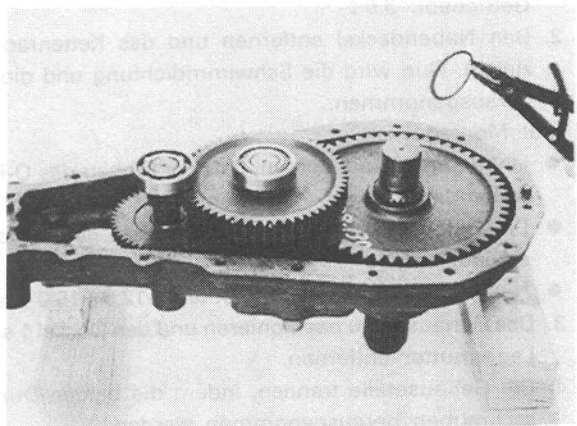
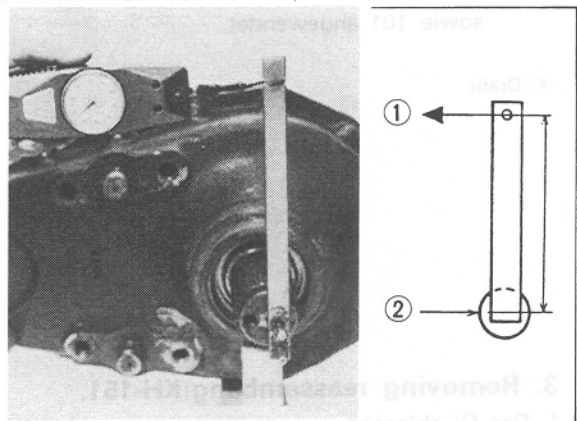
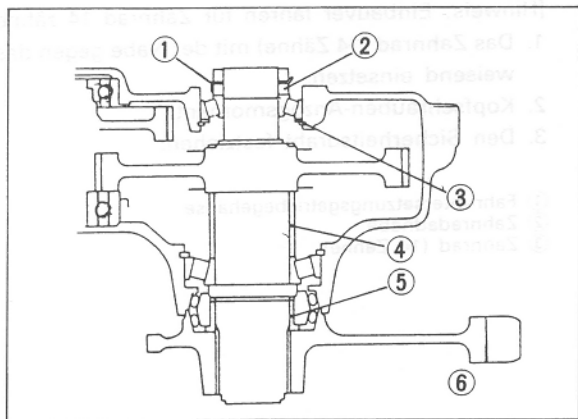
(A) MAX. position adjustment

Make sure the MAX. position of the acceleration lever and that of the speed adjust lever at the engine are in synchronization, and tighten the lock nut.

(B) STOP position adjustment

Make sure the STOP position of the acceleration lever and that of the stopper at the engine are in synchronization, and loosen the nut one turn, and tighten the lock nut. (distance "l" lengthened)

- ⑪ Nut
- ⑫ Lock nut
- ⑬ Lock nut
- ⑭ STOP position



(When reassembling)

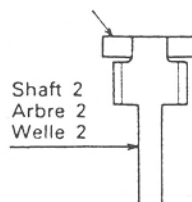
- Stepped side of collar 3 ⑤ should be toward the sprocket side.
- Tighten up the taper roller.
(without installing the sprocket)
3.5±1 kgf×230mm (7.72 lbf×9.06 in.)
(sprocket installing)
7.0~9.5 kgf×230mm (15.43 lbf~20.94 lbf×9.06 in.)
- 1 st bearing nut tightening torque.
10 kgf-m, 72.3 ft-lbf
- Bearing nut tightening torque.
15~20 kgf-m, 108.5~144.6 ft lbf
- Lock the bearing washers securely (at both sides). If the washers are poorly tight, retighten as required.

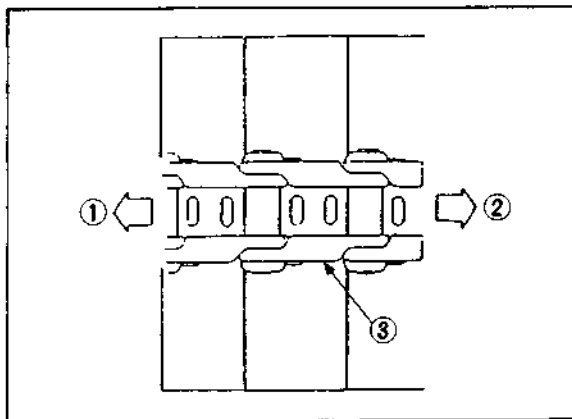
- | | |
|-------------------|--|
| ① Bearing washer | ④ Collar 2 |
| ② 1st bearing nut | ⑤ Collar 3 |
| ③ Collar | ⑥ Stepped side to be toward the sprocket |
| ① Torque | |
| ② Axle | |

5. Remove the snap ring off the output shaft.

6. Pull out the shaft 2 assembly.

* Pay attention to the bearing direction: The maked side to be outward.





(Assembling onto the machine)

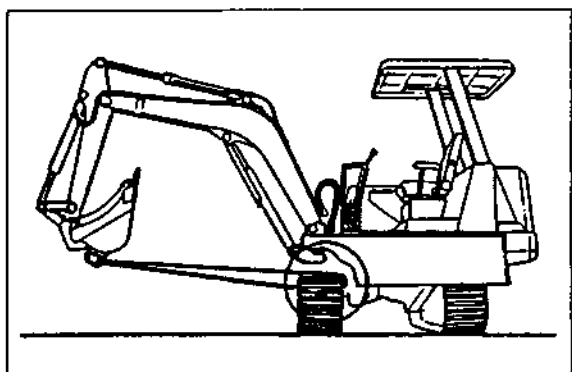
1. Jack up the machine. Lay the track link below the machine so that the sprocket will be properly engaged to the end of the track link. Be careful not to confuse the direction of the track link.

- ① Sprocket side
- ② Idler side
- ③ shoe link

2. Lower the machine. Match the end of the track link with the sprocket. Now slowly tilt the traveling lever for the forward position to wind up the track link.

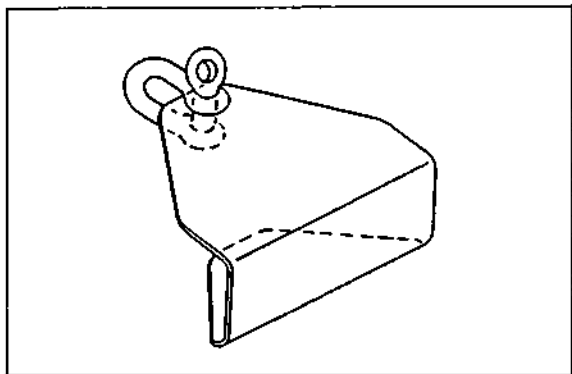
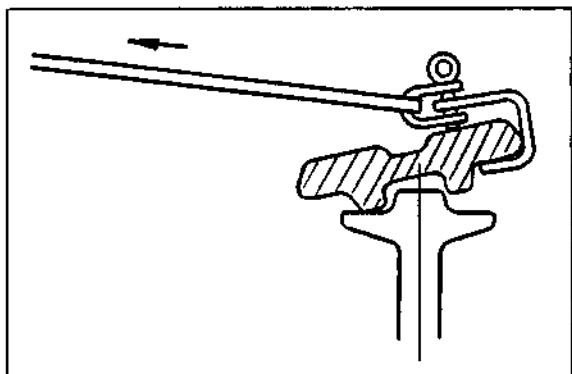
*Note: Place a wood block to keep the track link end off the ground.

3. Matching the holes at both ends of the track link, drive in the master pin. Make sure the notch in the master pin head is in its specified direction. Finally bend the tip of the lock pin for surer setting.

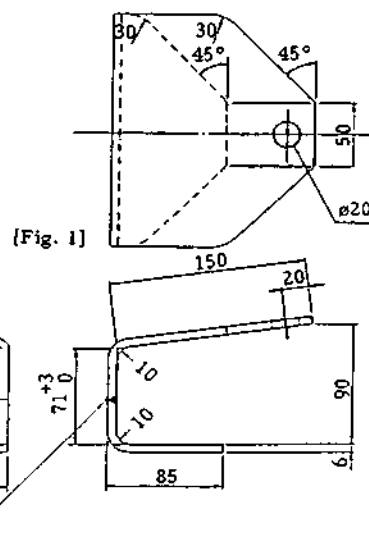


[Rubber track dismounting]

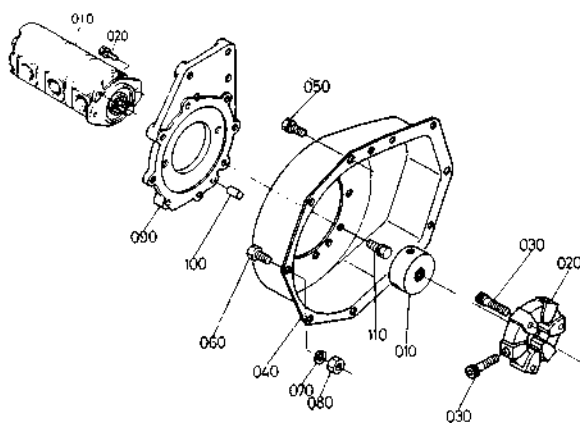
1. Loosen the tension cylinder grease nipple to let grease come out until track shoe becomes fully loose.
2. Position the front attachment and install the nylon sling and special hook as shown in Fig.
3. Pull the nylon sling horizontally and rotate the rubber track forward until track link comes off the idler.



● Special hook



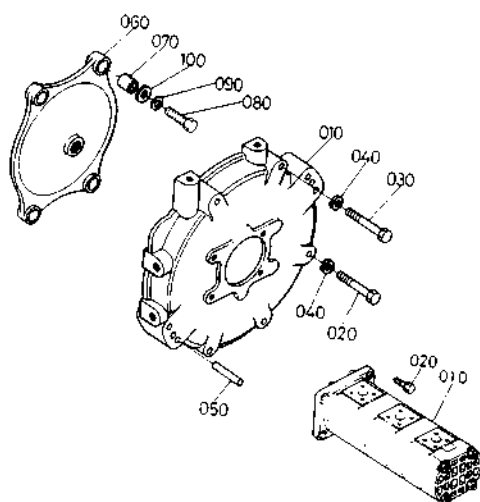
(KH-51, 61)



1. Pump mounting bolt tightening torque:
2.4—2.8kgf·m
(17.4—20.3ft.lbf)

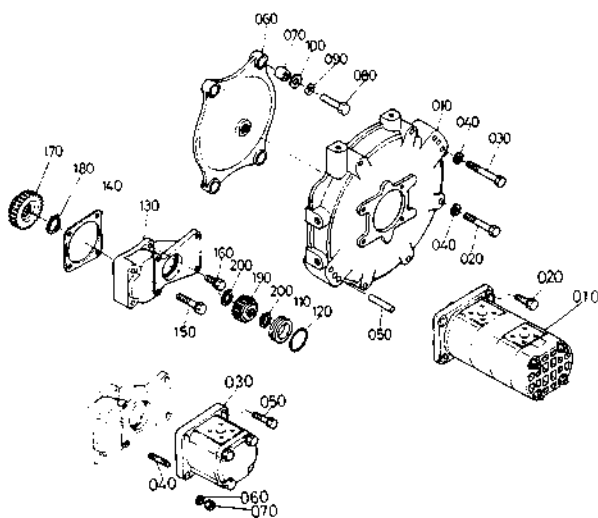
010: Pump flange
020: Coupling
090: Flange

KH-66, 91)

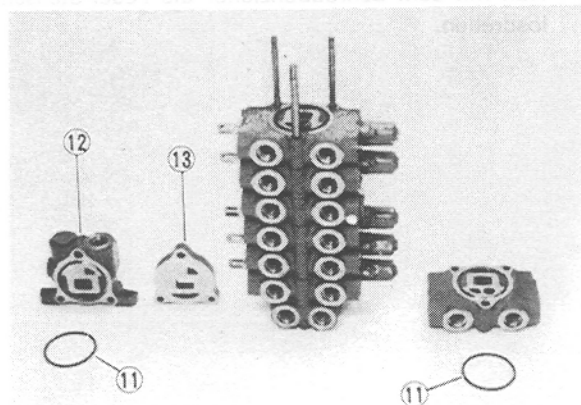
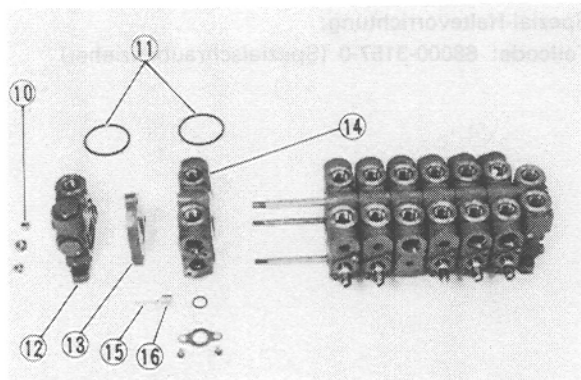
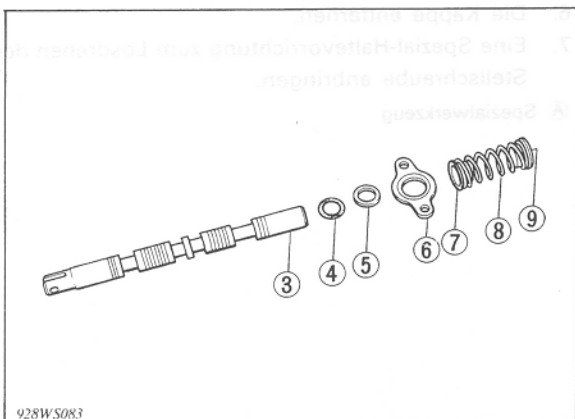
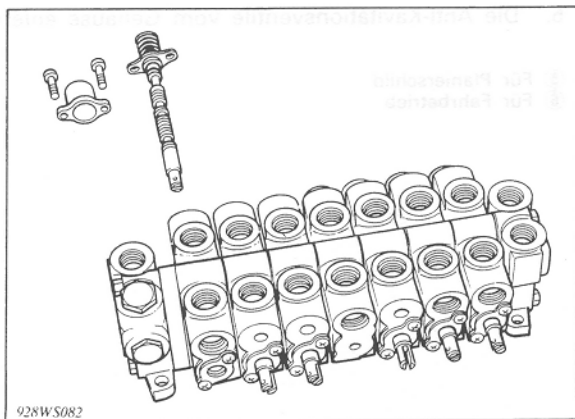


060: Flange
070: Coupling rubber
080: Bolt

(KH-101, 151)



2. (KH-101, 151)
Round side of external circlip 200 of pump 3 should be at gear side.
(Gear)
170: 26T gear (KH-101)
27T gear (KH151)
190: 17T gear (KH-101)
16T gear (KH151)



9. Pull out the spool. Do not confuse which spool comes from which section.

(When reassembling)

Make sure the spools move smoothly.

10. Remove the seal plate first and then the O ring and the wiper ring.

(When reassembling)

- Replace the O ring ④ and wiper ring ⑤ with new ones.
- Apply hydraulic oil over the both rings ④ and ⑤.

- ③ Spool
- ④ O ring
- ⑤ Wiper ring
- ⑥ Seal plate
- ⑦ Spring seat
- ⑧ Spring
- ⑨ Spring set-screw

Remove the nuts ⑩ to separate the sections from each others.

*Put marks on all the sections not to confuse order.

(When reassembling)

- Put the sections together in the upright position as shown in the photo. Then lay the assembly on a surface plate to check to see if the sections are parallel with each others. Now tighten up the nuts.
- Tightening torque of nut ⑩:
10 mm dia. tie rod; 4.7 kgf-m, 40.0 ft-lbf.
8 mm dia. tie rod; 1.9 kgf-m, 13.7 ft-lbf.
- Do not forget to mount the load check valve ⑯ and the spring ⑮.

- ⑩ Nut
- ⑪ O ring
- ⑫ Outlet section
- ⑬ Spacer
- ⑭ Dozer section
- ⑮ Spring
- ⑯ Load check valve

(3) Inspection

(Points)

1. Mesurer le temps demandé pour un mouvement complet avec une attache avant standard et sans charge.
2. Prendre plusieurs mesures et effectuer l'évaluation sur la valeur moyenne.
3. Quand deux mesures sont inhérentes, tels que mouvoir (d'avant en arrière) et pivoter (de droite à gauche), prendre les deux mesures sans établir leur moyenne.
4. Assurer la sécurité autour de la machine pendant la vérification.

(Conditions)

1. Mesurer les vitesses au tpm de moteur maximum.
2. Température de l'huile hydraulique : $45 \pm 5^\circ\text{C}$.
3. Tester sur un terrain plat.
4. Prendre des mesures après avoir répéter des opérations respectives, sans charge, plusieurs fois.

1. Cylindre de flèche (Au-dessus du sol-max)

1. Retracter le cylindre du bras et le cylindre du support complètement.
2. Abaisser le support comme indiqué dans l'illustration.
3. Tourner le moteur à son tpm maximum.
4. Mesurer le temps nécessaire à la flèche pour mouvoir du bas vers l'extrémité du cylindre.

(3) Inspektion

(Punkte)

1. Die erforderliche Zeit für einen vollen Hub mit einem Standard-Werkzeug an der Vorderseite und unbelastet messen.
2. Mehrere Messungen durchführen und die Auswertung anhand des Mittelwertes vornehmen.
3. Wenn zwei Messungen keine Bezug zueinander haben, so wie Fahrbetrieb (vorwärts und rückwärts) oder Drehung (rechts und links), beide Messungen nehmen und nicht den Mittelwert bilden.
4. Während der Inspektion auf Sicherheit im Arbeitsbereich der Maschine achten.

(Bedingungen)

1. Die Geschwindigkeiten bei maximaler Motordrehzahl messen.
2. Temperatur des Hydrauliköls: $45 \pm 5^\circ\text{C}$.
3. Auf einer ebenen Fläche prüfen.
4. Die Messungen vornehmen, nachdem die betreffenden Betriebsarten mehrere Male unbelastet durchgeführt wurden.

1. Auslegerzylinder (Über dem Boden-max.)

1. Arm-Kübelzylinder vollständig einziehen.
 2. Den Kübel wie auf dem Foto gezeigt absetzen.
 3. Den Motor mit Höchstdrehzahl laufen lassen.
 4. Die für den Ausfahrvorgang des Auslegers vom Boden bis zum Zylinderende erforderliche Zeit messen.
- * Ohne die Kissen-Betriebsstungen.

(Second)

KH-51		*1 KH-61		KH-66		KH-91		KH-101		KH-151	
A	B	A	B	A	B	A	B	A	B	A	B
—	—	—	—	—	—	—	—	—	—	—	—
2.1~2.7	3.2	1.9~2.5 2.2~2.8	3.0 3.4	1.7~2.3	2.8	1.9~2.5	3.0	2.1~2.7	3.2	2.7~3.3	4.0
3.2~3.8	4.6	2.4~3.0 2.8~3.4	3.6 4.1	3.3~3.9	4.7	3.2~3.8	4.6	3.4~4.0	4.8	3.9~4.5	5.4

* Sans durée de fonctionnement de coussion
*1. %N 10452~

* Betriebszeit ohne Dämpfung
*1. %N 10452~

2. Cylindre du bras (Mouvement entier)

1. Placer la flèche et le support comme indiqué dans l'illustration.
2. Mesurer le temps nécessaire au cylindre du bras pour exécuter un mouvement complet.

2. Armzylinder (voller Hub)

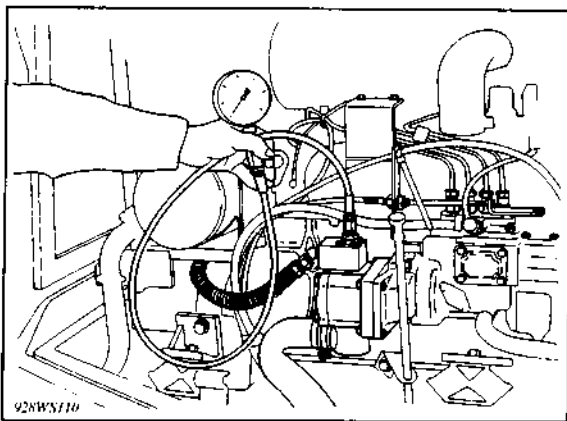
1. Ausleger und Kübel wie auf dem Foto gezeigt einstellen.
2. Die für einen Vollausschlag des Armzylinders erforderliche Zeit messen.

(Second)

KH-51		*2 KH-61		KH-66		KH-91		KH-101		KH-151	
A	B	A	B	A	B	A	B	A	B	A	B
5.1~5.7	6.8	5.2~5.8 6.0~6.6	7.0 7.9	4.4~5.0	6.0	4.7~5.3	6.4	3.4~4.0	4.8	3.9~4.5	5.4
3.4~4.0	4.8	3.6~4.2 4.2~4.8	5.0 5.8	3.0~3.6	4.3	3.5~4.1	4.9	2.4~3.0	3.6	2.7~3.3	4.0

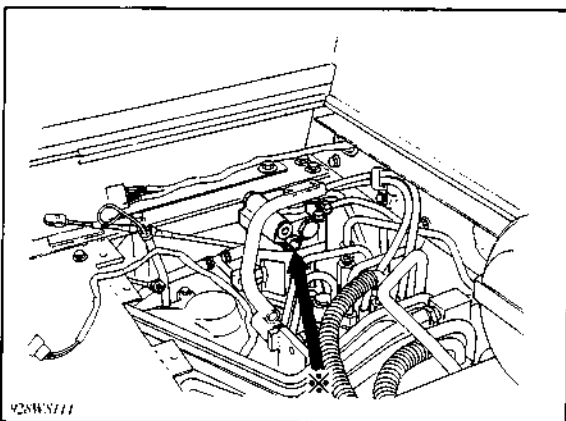
A: Norme de référence
B: Limite autorisée
*2. %N 10452~

A: Bezugswert
B: Verschleißgrenze
*2. %N 10452~

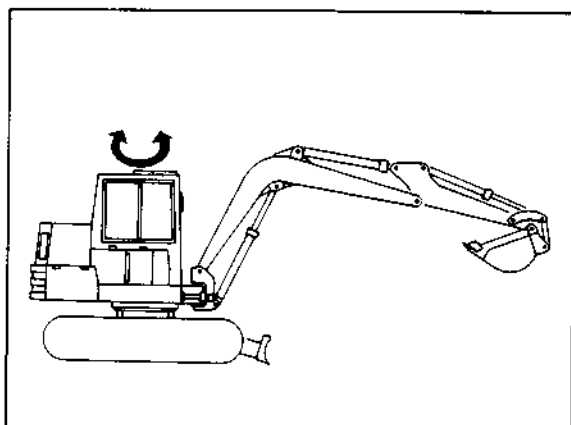


3. Overload relief valve pressure measurement

1. Remove the delivery side adaptor plug and set a pressure gauge.
2. Adjust the set pressure for both main relief valves to approximately 0.98 MPa (10 kgf/cm², 142.2 psi) higher than the set pressure for the overload relief valve.
3. Relieve cylinder at maximum engine rpm and read the gauge.
4. Repeat this step several times to insure correct readings.
5. If the measurement is outside the specification, readjust.
6. Reduce the main relief valve set pressure to the specified value.



※ Swivel motor relief valve



4. Swivel motor (drain amount)

1. Position the front attachment as shown in the illustration.
2. Remove the drain hose of the swivel motor at the joint section (photo) of the tank and receive drain oil in a reservoir.
3. Swivel the machine for one minute at max. engine rpm and measure amount of hydraulic oil in the pan.
4. If the measurement exceeds the specification, determine the cause and replace the assembly.

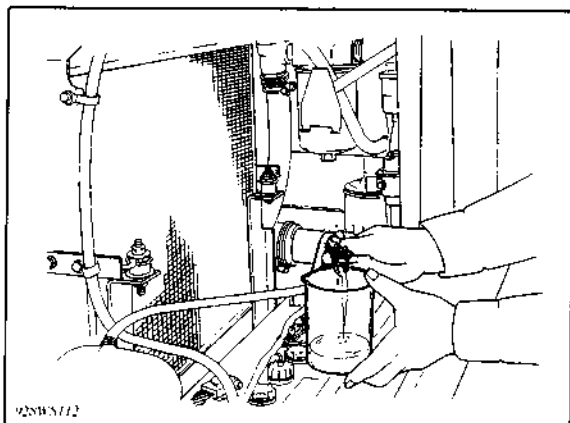
Assure safety around the swivel radius.



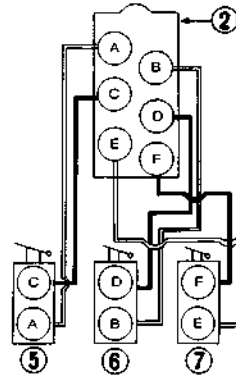
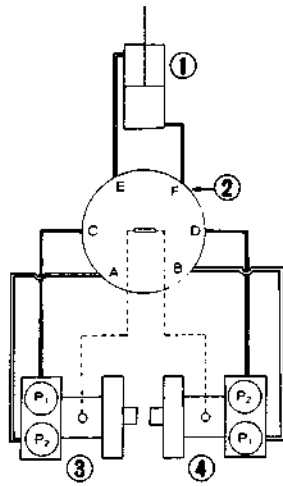
[Kayaba Maker's reference value]

KH-36, 41, 51, 61, 66, 91, 101, 151

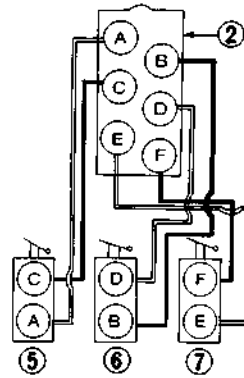
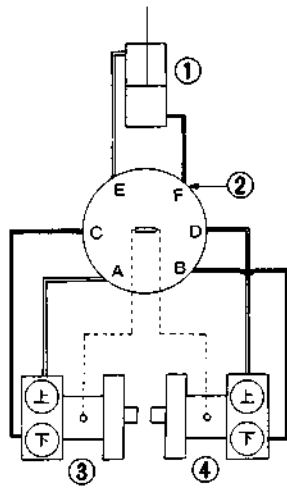
- When swivel motor is locked:
4.0 l/min ≥, 1.06 usgal/min ≥
- While swivel motor is rotating:
0.5 l/min ≥, 0.13 usgal/min ≥



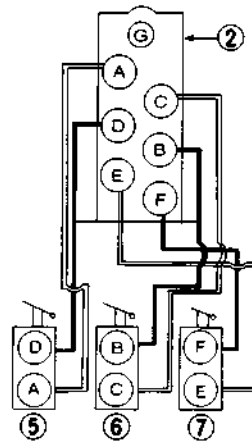
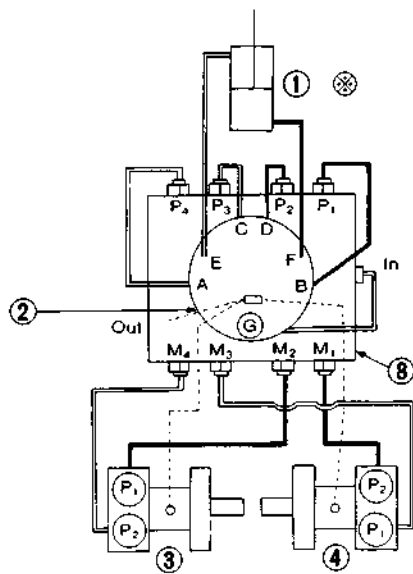
(KH-91)



(KH-101)

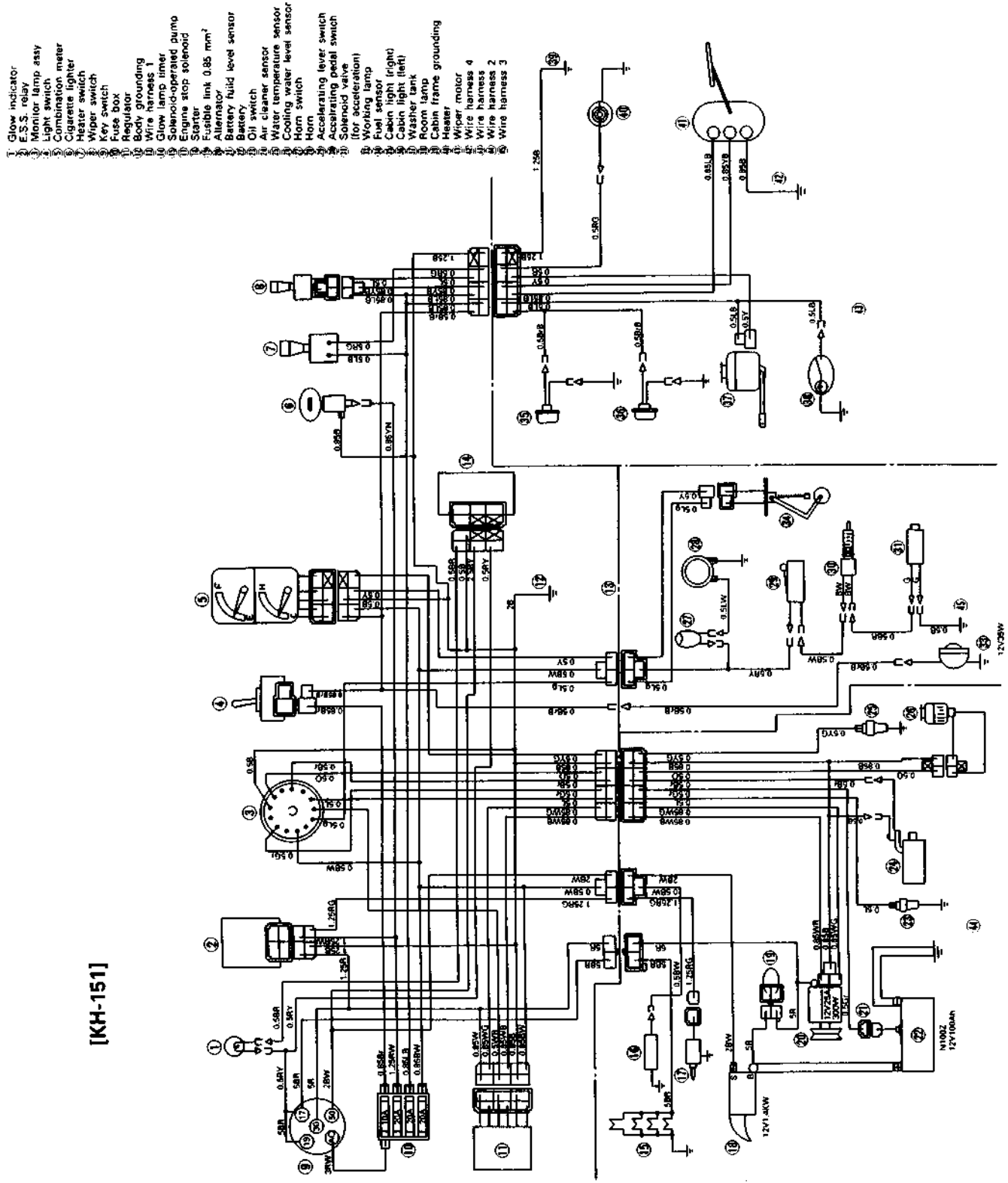


(KH-151)



Phenomenon	Possible cause	Correction	Ref. page
Air filter element clog warning lamp lighting	Air filter element clogged	Replace.	IV-16-17, 21
	Broken wire between panel board and vacuum switch	Recheck and repair.	IV-16-17
	Vacuum switch defective	Replace.	IV-16-17
	Panel board defective	Replace.	IV-12-13
Air filter element clog warning lamp failure to light up	Panel board defective	Replace.	IV-12-13
	Short-circuit between panel board and vacuum switch	Recheck and repair.	IV-16-17
	Vacuum switch defective	Replace.	IV-16-17
	Lamp broken	Replace.	IV-12-13
Battery fluid warning lamp lighting	Battery fluid short or recharging not enough	Refill or recharge.	IV-18-19, 21
	Broken wire between panel board and battery fluid level sensor	Recheck and repair.	IV-21
	Panel board defective	Replace.	IV-12-13
	Battery fluid level sensor defective	Replace.	IV-18-19
	Battery level sensor wrongly connected to the cell next to battery negative terminal	Reconnect to the second cell.	IV-18-19
Battery fluid warning lamp failure to light up	Panel board defective	Replace.	IV-12-13
	Lamp broken	Replace.	
Cooling water warning lamp lighting	Cooling water short	Refill.	I-11, 08-09
	Short-circuit between panel board and cooling water level switch	Recheck and repair.	IV-14-15
	Cooling level switch defective	Replace.	IV-14-15
Cooling water warning lamp failure to light up	Panel board defective	Replace.	IV-12-13
	Broken wire between panel board and cooling water level switch	Recheck and repair.	IV-14-15
	Cooling water level switch defective	Replace.	IV-14-15
	Lamp broken	Replace.	IV-14-15
Fuel meter inoperative	Fuel meter defective	Replace.	
	Tank unit (variable resistor) defective	Replace.	IV-12-13
	Broken wire between tank unit and fuel meter	Recheck and repair.	IV-12-13
Thermometer inoperative	Thermometer defective	Replace.	IV-18-19
	Thermo-sensor (thermistors) defective	Replace.	IV-18-19
	Broken wire between thermometer and thermo-sensor	Recheck and repair.	IV-12-13
Working lamp failure to light up	Lamp broken	Replace.	
	Wire broken	Recheck and repair.	
	Connector disconnected	Recheck and reconnect.	
	Short-circuit or fuse blown out	Recheck and repair.	IV-10-11
All electricals inoperative All easy checker lamps failure to light up, and fuel thermometer inoperative even with key switch on	Fusible link blown out	Recheck and repair.	IV-12-13
	Fuse blown out	Replace.	IV-10-11
	Broken wire between key switch, panel board and meter	Recheck and repair.	IV-12-13
Fuse blown easily	Short-circuit between fuse and lamp due to a wire being caught in	Recheck and repair.	
Engine failure to stop even by turning off main switch	Stop solenoid defective	Recheck and repair.	IV-21
	Link mechanism defective	Recheck and repair.	IV-21
	Timer defective	Recheck and repair.	IV-21
	Broken wire between timer and grounding wire	Recheck and repair.	IV-21
	Broken wire between timer and stop solenoid	Recheck and repair.	IV-21

[KH-151]



- 1. Indicateur de préchauffage
- 2. Relais E.S.S. (Système de commutation électronique)
- 3. Ensemble de ampoules
- 4. Interrupteur d'éclairage
- 5. Compresseur combiné
- 6. Allumage
- 7. Interrupteur de préchauffage
- 8. Commutateur de l'assise-plac
- 9. Commutateur de la clé de contact
- 10. Boîte à fusibles
- 11. Régulateur
- 12. Mise à la terre de la carrosserie
- 13. Harnais de câbles 1
- 14. Minuteur du voyant de préchauffage
- 15. Préchauffage (type à chauffage rapide)
- 16. Pompe commandée par solénoïde
- 17. Démarreur
- 18. Bague de fusible de 0,85 mm²
- 19. Démarreur
- 20. Défecteur du niveau du fluide de refroidissement
- 21. Batterie
- 22. Interrupteur à l'huile
- 23. Défecteur de l'huile
- 24. Défecteur de la température de l'eau
- 25. Défecteur de l'eau de refroidissement
- 26. Interrupteur de l'avertisseur
- 27. Avertisseur
- 28. Commutateur du levier d'accélération
- 29. Commutateur de la pédale d'accélération
- 30. Soupape à commande par solénoïde (pour l'accélération)
- 31. Lampe de opération
- 32. Défecteur du carburant
- 33. Eclairage de la cabine (droite)
- 34. Eclairage de la cabine (gauche)
- 35. Réservoir de lavage
- 36. Eclairage de la cabine
- 37. Mise à la terre du châssis de la cabine
- 38. Dispositif du chauffage
- 39. Moteur de l'assise-glace
- 40. Harnais de câbles 4
- 41. Harnais de câbles 2
- 42. Harnais de câbles 3

- 1. Glühanzeige
- 2. E.S.S. Relais
- 3. Lamp
- 4. Lichtschalter
- 5. Kombiinstrument
- 6. Heizer
- 7. Wassertemperatur
- 8. Zündschalter
- 9. Sicherungskasten
- 10. Regler
- 11. Gehäusemasse
- 12. Kabelbaum 1
- 13. Glühlampenmotor
- 14. Glühlampe (Schnell-Aufheiztyp)
- 15. Pumpe (Magnetantrieb)
- 16. Motorstop-Magnetventil
- 17. Anlasser
- 18. Schmelzbarer Ring 0,85 mm²
- 19. Lichtmaschine
- 20. Batteriefüllungsstandsmonitor
- 21. Batterie
- 22. Ölwanne
- 23. Wassertemperatursensor
- 24. Wassertemperatursensor
- 25. Wassertemperatur
- 26. Gaspedalschalter
- 27. Gaspedalschalter
- 28. Magnetventil
- 29. zur Beschleunigung
- 30. Arbeitsscheinwerfer
- 31. Kraftstoffsensor
- 32. Kabinenbeleuchtung (rechts)
- 33. Kabinenbeleuchtung (links)
- 34. Schabenwaschbehälter
- 35. Raumlampe
- 36. Kabinenrahmen-Masse
- 37. Heizung
- 38. Wischermotor
- 39. Kabelbaum 4
- 40. Kabelbaum 2
- 41. Kabelbaum 3

- 8. Noir
- 9. Blanc
- 10. Rouge
- 11. Vert
- 12. Bleu
- 13. Orange
- 14. Jaune
- 15. Gris

- 8. Schwarz
- 9. Weiß
- 10. Rot
- 11. Grün
- 12. Blau
- 13. Orange
- 14. Gelb
- 15. Braun
- 16. Grau