Instruction Manual - English - GB

1. General

This instruction manual should be read completely by the user before starting to use the Weasler PTO drive shaft. Also read the instruction handbook of recipient machinery. Be certain that only a properly trained and physically able person will install and maintain the drive shaft.

It is not allowed to use the PTO drive shaft without guard, with a damaged guard or without using the restraining members correctly attached. A PTO drive shaft guard restraining system is required in the European Union (EU) countries. Worn or damaged parts must be replaced with original Weasler parts before operating. Do not expose guarded parts of the shaft by cutting or enlarging the grease access holes. Do not step on, over or under a PTO drive shaft.

PTO drive shafts and (safety) clutches have to match the power take off and the machine type. See the instructions with your machine for recommended type and size of shaft and clutches. Overload can cause damage. See also table 1 for nominal load for each design drive shaft. Do not operate above recommended speeds.

It is not allowed to connect clutches to the tractor PTO in the European Union (EU) countries**.**

After operation, parts of the PTO drive shafts (e.g. clutches) can reach high temperatures. Do not touch!

No device (e.g. adaptors) shall be installed between the tractor PTO and the PTO drive shaft. Except length adjustment, no changes may be made to the PTO drive shaft and its guard. Always make sure machine is completely shut down if working around, on, or removing blockages.

A PTO drive shaft transmits power from the tractor to the implement. The main components of a PTO drive shaft are mentioned in Figure 1.

1 = PTO Yoke; 2 = Journal Cross Assembly; 3 = PIC Yoke / Safety Clutch

4 = Inner Yoke & Telescoping Members; 5 = PTO Drive Shaft Guard; 6 = Restraining Member

1.1. Explanation of the symbols used on the PTO drive shaft guard:

Fig. 2a: Read the operator's manual always!

Fig. 2b: Do not open or remove safety shields while machine or PTO drive shaft is running!

Fig. 2c: **D**o not operate the PTO drive shaft without guards in place.

Fig. 2d: Do not operate without all PTO drive shaft guards, tractor, and implement shields in place.

Fig. 2e: Assemble PTO drive shaft with arrow pointed to the tractor.

Fig. 2f: This PTO drive shaft is suitable for use with tractor or self-propelled machine and power receiving machine guarding combination as specified in the operator's manual.

Fig. 4a: Do not operate if the overlap is less then this 50 mm when in a straight line.

Fig. 4b: Maintain proper clearance between PTO drive shaft guard and PIC shield.

2. Coupling the PTO drive shaft

Turn off the tractor completely! Clean and grease the tractor PTO and the machine PIC (Power Input Connection). Attach the PTO drive shaft to the implement PIC first and then to the tractor PTO. On the PTO drive shaft guard is indicated which side of the shaft should be connected to the tractor (Fig. 2e). Return tractor PTO master shield to operating position if moved for drive shaft attachment.

The end yokes of the PTO drive shaft can have the following means of attachment:

- **QD-Pin (Fig. 3a):** Press the pin in and simultaneously slide the PTO drive shaft onto the PTO or PIC until the pin fully engages. Not to be used for ground driven implements or type 1 (1 3/8-6 spline) front tractor PTO connections or in yokes without torque limiter.
- **Safety Slide or Spring Lock (Fig. 3b):** Slide the yoke partially on the PTO or PIC and then slide and hold the collar rearward. Then slide the yoke on the PTO or PIC until the collar can be moved forward into the locked position.
- **Auto-Lok (Fig. 3c):** Slide the collar rearward until the collar locks in the rear position. Then slide the yoke on the PTO / PIC until the collar clicks into the locked position.
- **Clamp-bolt (Fig. 3d):** Remove the bolt out of the end-yoke. Slide the yoke onto the PTO or PIC and assemble the bolt & nut (nut must trail direction of rotation). The nut should be tighten sufficiently (M12 = 91Nm; M16 = 226Nm; ½ -13 = 101Nm; 5/8-11 = 204Nm).

Always double check if the end yokes are securely locked!

To avoid damage to the driveshaft guard, it may be necessary to remove the tractor drawbar for mounted and semi-mounted implements and the lower links secured in a suitable position for trailed machines.

3. Guarding

Check the guard of the PTO drive shaft and the PTO & PIC shield for damage. Damaged or missing guards must be replaced before operating the machine! PIC shield must fully enclose drive shaft on all sides up to first bearing on implement.

After connecting the PTO drive shaft to the implement, always check for sufficient overlap between the PIC guard and the PTO drive shaft guard (see Fig. 4a). Do not operate if the overlap is less then this 50 mm when in a straight line.

Check the maximum distance between the end of the PTO drive shaft guard and the axis of the locking device of the tractor yoke.

For a 1⅜ ” 6 or 21 spline: C = 80 mm max. For a 1¾ ” 20-spline: C = 90 mm max. For a 2 ¼ ” 22-spline: C = 110 mm max.

Tractor PTO master shield per ISO 500 requirements and clearance zones around PTO must be maintained. Clearance between the PTO Drive Shaft guard and PIC shields must be less than 150 mm and in at least one plane greater than 50 mm (see Fig. 4b). On some tractors the maximum allowed angles may not be achieved which could result in damage to PTO drive shaft guards.

For maximum diameter of PTO Drive Shaft guard cone on the PIC end see table 1.

4. Restraining members

A drive shaft guard restraining system is required in the European Union (EU) countries. Chains must be securely attached to the PTO & PIC shield designated area, in order to prevent the PTO drive shaft guard from rotating. Be careful to allow sufficient movement of the PTO shaft in all working and transport positions (Fig. 6). Replace damaged chains immediately! Disconnected or broken restraint members may be hazardous.

Never use the chain to support the PTO drive shaft.

If the PTO drive shaft is uncoupled from the tractor PTO, or self-propelled machine, always connect the shaft to the support of the implement.

5. Maximum working angles for standard joints

The following max angles for standard joints of the PTO shaft have to be observed:

– 25° at continuous operation*.
– 45° at short duration*.
– 90° at standstill.

** For 77-series drive shafts use 15° max. For AB1 & AW10-series use 25° max.*

Always ensure equal joint angles. Disengage the PTO drive shaft if joint angles are too large or unequal. At the max working angles, check that the guard of the PTO drive shaft does not interfere with the rotating shaft itself or with any parts of the tractor or implement (e.g. drawbar, PTO / PIC shield, tires, etc.). Decrease the maximum working angles in those conditions. Not following the max angle instructions can damage the PTO drive shaft and / or the implement!

Short duration maximum joint angle airbone noise emissions do not exceed 90dBA sound pressure level and 100 dBA sound power levels at 1000 Rpm at operator workstation. Hearing protection may be required.

6. Minimum and maximum length (profile tubes).
Try to obtain the greatest possible overlap (Pu) on the profile tubes when using the shaft at its max operating lengths (Lbmax) (Fig. 5).
For lemon / star profile tubes use: Lbmax = Lz + ½Pu.
For triangle profile tubes use: Lbmax = Lz + ⅔Pu
(Lz = fully compressed length)
During transport and not in operation, always ensure a minimum of 100 mm overlap (Pu). The minimum operating length of the PTO drive shaft should be longer than the compressed length (Lz).

7. Disassembly of the safety guard
Unlatch the Easy Lock grease nipple with a screw-driver (Fig. 7a). Hold back the chain (as it may block the bearing). Turn the bearing in the direction as indicated and remove the safety guard (Fig. 7b).

8. Length adjustment (profile tubes)
Any modification to the length of the shaft must be done by specially trained people only. Contact your dealer!
To adjust the length on the profile tubes, place the half shafts next to each other in the shortest working position and mark them (Fig. 8a).
Shorten inner guard tube as marked, shorten outer guard tube 40 mm shorter as inner guard tube. Shorten inner and outer profile tubes by the same length as the inner guard tube (Fig. 8b). Round off all sharp edges and remove burrs (Fig. 8c). Remove all debris. Grease the outside of the inner profile tube over it's full length (Fig. 8d).

9. Assembly of the safety guard
Grease the yoke bearing groove fully around (Fig. 9a). Place the bearing in the groove of the yoke (Fig. 9b). Slip on the guard half (Fig. 9c). Turn the bearing in the direction as indicated (Fig. 9d). Press the Easy Lock grease nipple into position until it clicks and cannot be removed manually (Fig. 9e).

10. Maintenance
Before putting into operation or after any prolonged period of not using or after seasonal storage, inspect the shaft carefully. Lubricate the PTO shaft as described in #10.1. Inspect the whole safety guard of the shaft, as well as the PTO shield and the PIC shield. If the guard of the PTO drive shaft does not rotate free from the shaft, has missing parts, is damaged, or the safety signs are missing or illegible, the parts must be repaired or replaced. Replacing or repairing should be done by your dealer.

Make sure the PTO drive shaft is stored in a manner which will not damage the guard of the PTO drive shaft.
Store your equipment inside and do not allow the PTO drive shaft to rest on the ground. Rust and mud may interfere with the shaft's locking devices and other parts of the PTO drive shaft.

10.1. Lubrication
Lubricate the PTO drive shaft with high quality multi-purpose grease, meeting the N.L.G.I 2-Class (max 1% Molybdenum Disulfide). Follow recommendations as indicated in Fig. 10 (unless otherwise specified on the guard or in the machines user manual). If access holes are available, lubricate fittings through access holes.
R-kits have black seals; P-kits have blue seals; E-kits and M-kits have orange seals.

Replacement parts must be lubricated at the time of assembly and during use per the lube recommendations.

11. SAFETY CLUTCHES & WIDE-ANGLE CV JOINTS

Star Ratchet clutches (Fig. 11a)
When overload occurs, the torque is limited and during the period of slipping the torque is transmitted in a pulsating manner. Noise acts as a warning. The operating speed of the shaft with this clutch should not exceed 700 rpm. Higher speeds will damage the clutch. Lubricate the clutch every 50 shaft operating hours (25g).

Shear bolt clutches (Fig. 11b)
When the torque is exceeded, the bolt shears and the power flow is interrupted. The limited torque will be re-established by replacing the broken shear bolt. Replace sheared bolts with the manufacturer's recommended diameter, length and grade only! Lubricate the clutch every 250 shaft operating hours (14g).

Friction clutches (Fig. 11c & 11d)
When overload occurs, the torque is limited and transmitted constantly during the period of slipping. Short duration torque peaks are limited. After prolonged periods of non-use friction clutch must be checked for freeze-up. Release the friction discs and adjust to correct torque before putting into operation. Before seasonal storage, release spring tension.
Store the clutch dry. Do not exceed the manufacturer's recommended settings or do not use a spring that is not recommended.
Measure original spring height before releasing the springs!

Overrunning clutches (Fig. 11e)
Overrunning clutches protect the driveline against heavy rotating masses. Lubricate the clutch every 250 shaft operating hours (14g).

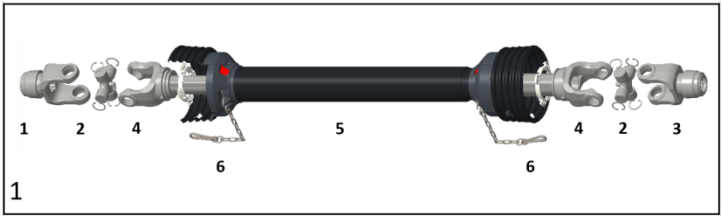
Automatic clutches (Fig. 11f)
When the torque exceeds its limits, the power flow is interrupted. After disengaging the PTO-shaft, the connection is re-established.

Wide-angle CV joints 50 º (Fig. 11g)
To ensure uniform transmission of rotary motion in any angular position. Maximum articulation of the wide-angle CV joint:
- 35 º at continuous operation*
- 50 º at standstill and short duration*
* 350 shaft in AS250 guard: 25° short and continuous operation.
* 650 shaft in AS450 guard: 15° short and continuous operation.
Angles above the 50 º will damage the CV-joint!

Wide-angle CV joints 80 º (Fig. 11h)
To ensure uniform transmission of rotary motion in any angular position Maximum articulation of the wide-angle CV joint:
- 25 º at continuous operation.
- 80 º at standstill and short duration*.
* for 345 and 365 guard: 45° short duration.
Angles above the 80 º will damage the CV-joint!

This product is marked CE in accordance with the relevant harmonization legislation: 2006/42/EC Machinery Directive.

See www.weasler.com for the latest declaration of conformity documents.



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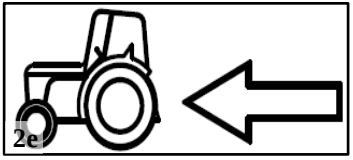
2a


2b

2c

2d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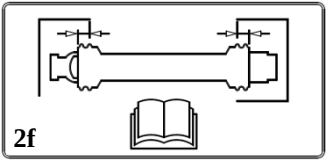
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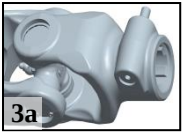

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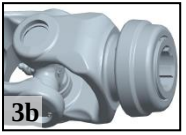

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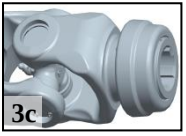

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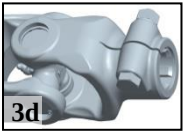

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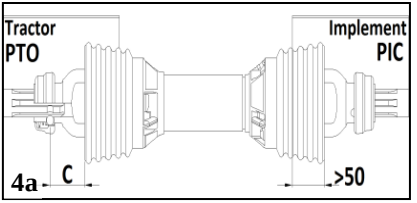

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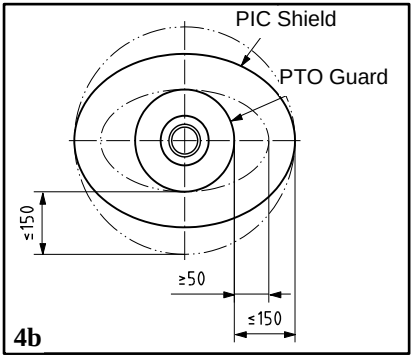

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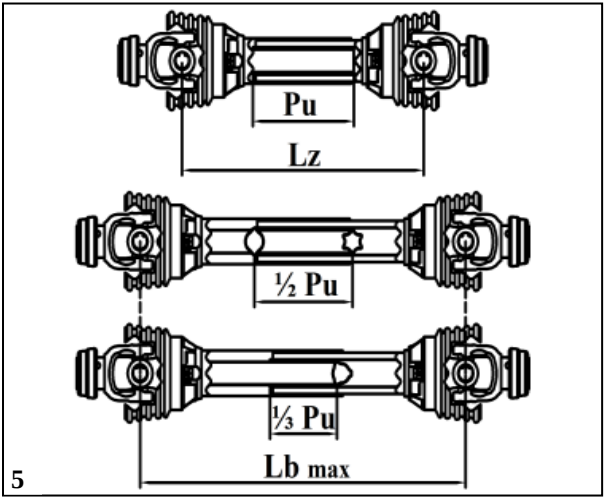

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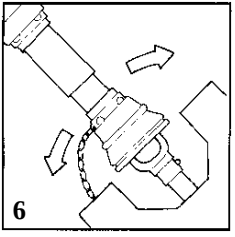
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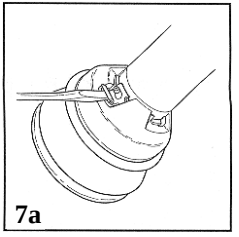
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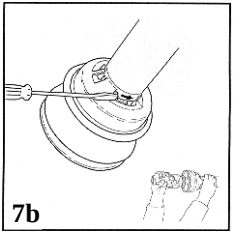
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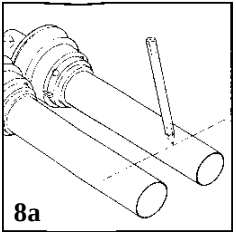
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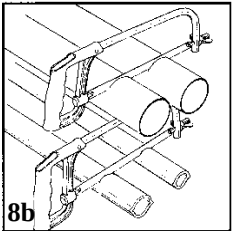
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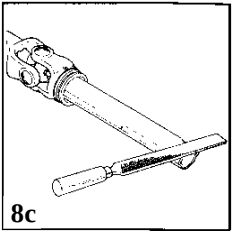
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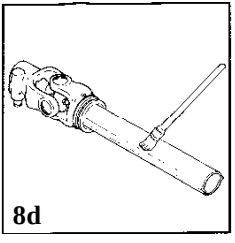
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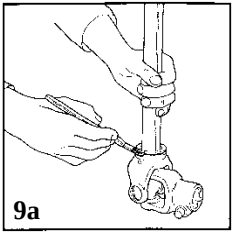
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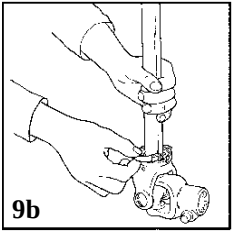
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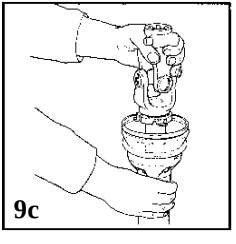
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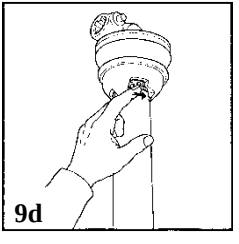
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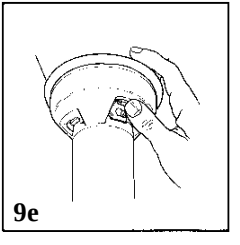
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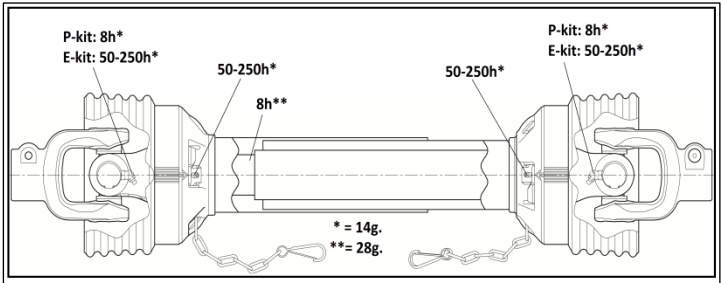
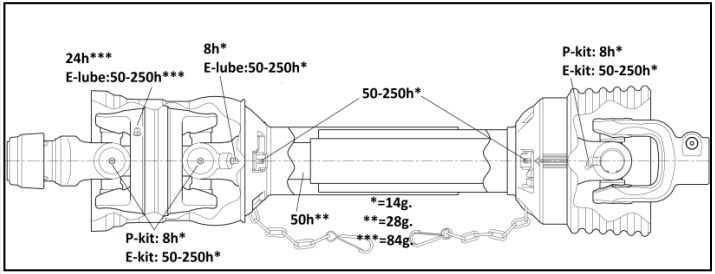

P-kit: 8h*
E-kit: 50-250h*
50-250h*
8h**
50-250h*
P-kit: 8h*
E-kit: 50-250h*
* = 14g.
**= 28g.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P-kit: 8h*
E-kit: 50-250h*
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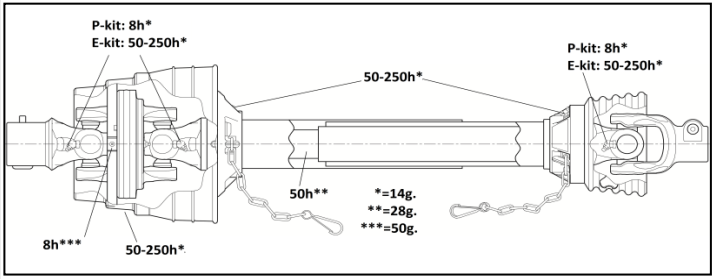
P-kit: 8h*
E-kit: 50-250h*


P-kit: 8h*
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***=50g.
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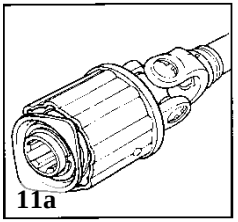

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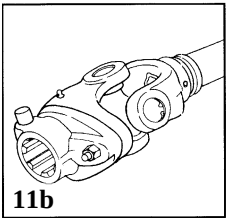

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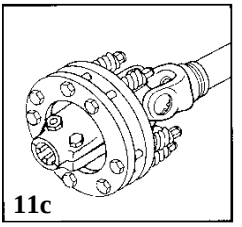

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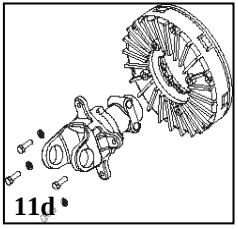

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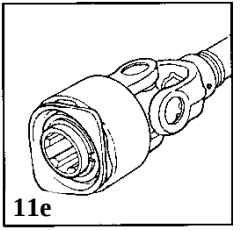

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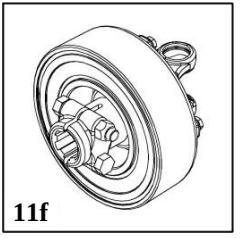

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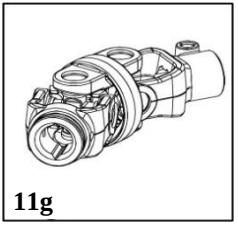

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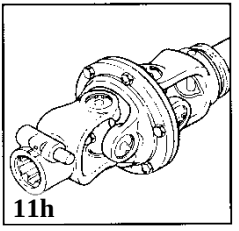

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TABLE 1 - Nominal Operating Power * & Guard Diameter	540 rpm		1000 rpm		Guard Type								
					100	250	255	350	450	325 (WWCV)	345 (EUCV)	365 (EUCV)	375 (WWCV)
PTO Drive Shaft Type	kW P/R kit	kW E/M kit	kW P/R kit	kW E/M kit	155	155	155	185	196	172	224	258	197
													maximum diameter - PIC end, mm
AW19	6	-	10	-	x	x	x						
AB1 & AW10	11	14	17	22	x	x	x						
AB2 & AW20	16	19	25	28	x	x	x						
AB3 & AW11	22	28	33	43		x	x						
AB4	27	34	42	52		x	x	x					
AW21	27	34	42	52		x	x	x					
AB5 & AW35	39	48	60	74				x	x				
AB6 & AW22	48	59	74	91				x	x				
AB7N & AW36	60	70	92	107				x	x				
AB8	75	90	115	138					x				
AW24	75	90	115	138				x	x				
AB9	89	112	138	173					x				
AW26	84	111	130	171					x				
07	-	8	-	12		x	x						
6	10	14	16	22		x	x						
12	14	19	22	30		x	x						
14	21	28	33	43		x	x	x					
35	38	52	59	80		x		x	x				
44	57	77	89	118				x	x				
55	79	102	122	157				x	x				
77	-	127	-	197					x				
AB2-80, AW20-80	23	26	36	39						x			
AB4-80, AW21-80	27	34	41	52							x		
AB6-80, AW35-80	39	49	59	76							x		
AW36-80	60	70	92	107								x	
380, AB4-80, AW21-80	26	39	40	72						x			
480, AB6-80, AW35-80	48	59	74	91						x			
580	59	71	91	110									x
680, AB8-80, AB9-80, AW36-80	87	112	133	173									x
150	12	15	19	24		x	x						
170	12	15	19	24				x		x			
350, AB4-50, AW21-50	23	31	36	47		x		x					
450, AB6-50, AW35-50	42	57	65	89				x		x			
650, AB8-50, AB9-50, AW36-50	87	112	133	173									x

* universal joint angle 5°, CV joint 10° life 1000h

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