

VFanuc robot check: 4 Fanuc robots in session "default"

I only read the backups and changed nothing. This was a signal and data check of the backups, not a geometric check.

Comparison of the robots

Robot	Model / rated payload	Software / VW user	UT used	UF used	PAYLOAD used	Travel track	Errors	Warnings
K9GHNE203315R01	R-2000iB/210F, 210 kg	V7.6310, VW user –	1, 2	0, 1	1	–	0	4
K9GHNE203315R02	R-2000iB/210F, 210 kg	V7.6310, VW user –	1, 2	0, 1	1	–	1	4
kezorv114470r01rs1kfu1	R-2000iC/210L, 210 kg	V9.1618, VW user –	1, 15	0, 1	1	–	0	5
kemurt131180r01rs1kfu1	R-2000iC/210L, 210 kg	V9.1620, ARGDISP GR02.260 62	1, 3, 5, 6, 32	0, 1	1, 2, 3, 4, 32	E1 along X	0	5

The station mixes two controller generations (V7.63 and V9.16), and only kemurt has a VW user version in the backup.

Findings

K9GHNE203315R02

- **ERROR: UT 2 is used but not set** (X, Y, Z, W, P, R are all 0). It is used in folge123 (8 points) and in motn021–025 and motn033. On R01 the same UT 2 is set (X -1.1, Y 0.1, Z 1064.3).
- **MAKRO980 calls MAKRO941–946** (lines 29–34), but those Makros are not in the backup. Nothing calls MAKRO980, so this is a leftover rather than a runtime error.
- **MAKRO998 is called 15 times** (every Folge), but the backup has only MAKRO998.VR. It is probably a KAREL program, so it could not be checked.
- **UT 1, UT 2 and UF 1 have no comment.**
- **Mastering of motion groups 3 and 4: REF_DONE = FALSE.** They are mastered, but quick mastering is not possible.

K9GHNE203315R01

- **All used UT, UF and PAYLOAD entries are set.**
- The same MAKRO941–946 / MAKRO998 warnings as R02.
- **UTs and UF 1 have no comments.** Groups 3 and 4 have REF_DONE = FALSE.

kezorv114470r01rs1kfu1

- **UT 1, UT 15, UF 1 and PAYLOAD 1** (170.7 kg, 81 % of rated) are set and plausible. Group 1 is mastered.
- **UP002 has about 240 point lines**, but no Folge calls it. FOLGE071 calls only UP001. Also not called: UP009, UP100, UP106, UP201 and UP901.
- **FOLGE001 has no PAYLOAD[...] line.**
- **The IP address is empty in the backup.** The UTs and UF have no comments.
- **Group 5 has REF_DONE = FALSE.**

kemurt131180r01rs1kfu1

- All used UTs (1, 3, 5, 6, 32) and UF 1 are set and have names.
- Travel track: axis 7 limits are -2050 ... +430 mm, and all points lie between -1757.0 and +345.0 mm.
- PAYLOAD 3 and 4 ("G2 OT" / "G2 MT", 60 kg each): inertia IX = 0, so the data were probably entered by hand rather than identified.
- PAYLOAD 32 ("DS") is 210.0 kg, which is 100 % of the rated payload. It is probably the factory default value; check it. It is used in 4 lines.
- UT 2, UF 2 ("BHF 1"), UF 3 ("BHF 2") and UF 6 ("SICK Kal. Platte") are set but no point uses them.
- Group 5 has REF_DONE = FALSE.

Unused Makros (candidates to clean up, Makro 50–59 skipped)

- K9GHNE203315R01 and R02: MAKRO002–014, 072, 073, 076, 077, 084, 085, 102–149 (19 Makros), 512, 513, 900, 980.
- kezorv114470r01rs1kfu1: MAKRO040, 064, 065, 067, 069, 512, 520, 521, 523, 524, 604, 900, 919, 947, 957, 967, 977, 980.
- kemurt131180r01rs1kfu1: every called Makro exists. For the unused ones, the editor's list was cut off, so I can't give them.

Same on all 4 robots

- Group 1 is mastered (MASTER_DONE and REF_DONE = TRUE). The robots are mounted on the floor (MOUNT_ANGLE 0).
- Software limit switches of J1–J6 are valid:
 - R-2000iB (K9robots): J1 ±180°, J2 -60/+76°, J3 -132.04/+230°, J4 ±360°, J5 ±125°, J6 ±360°.
 - R-2000iC (kezorv, kemurt): J1 ±185°, J2 -60/+76°, J3 -120.71/+180°, J4 ±360°, J5 ±125°, J6 ±360°.
- Every UP called from a Folge exists.

What the programmer must do

1. On K9GHNE203315R02, teach or enter UT 2 (compare with UT 2 on R01). Until then, Folge 123 and MOTN021–025 / MOTN033 run with the flange as TCP.
2. Get a backup that includes MAKRO998 (the KAREL program), or confirm it is a standard VW KAREL program.
3. On kemurt, check PAYLOAD 32 (210 kg) and run payload identification for PAYLOAD 3 and 4.
4. On kezorv, decide whether UP002 is still needed. Add a PAYLOAD line to FOLGE001.
5. Clean up: on the K9robots, delete MAKRO980 or add the missing MAKRO941–946. Remove the unused Makros, UTs and UFs, and add comments to the UTs and UFs on K9and kezorv.
6. Set REF_DONE for the extra motion groups (K9groups 3/4, kezorv and kemurt group 5).

How I checked and what I didn't

- **What I read:** the english/*.LS programs of all 4 robots (1588 files including the german copies), plus SYSFRAME.VA, SYMOTN.VA and SYSMASST.VA.
- **Payload inertia:** I checked only IX, not IY/IZ.
- **Not checked:**
 - UTOOL_NUM / UFRAME_NUM against each point
 - .TP files that have no .LS
 - Folge comments
 - \$MASTER_COUN pulse counts