Arndt & Voß GmbH
Elektronik - Meßtechnik

M40098.V01 axial elasticity measuring unit
M40098.V02   Additional analysis of the inclination characteristic curve

1. Functions

1.1 Measurement task: examination of the axial elasticity of axial joints.
Elasticity is measured by push and pull load with a programmable tester and checked at compliance with its tolerance:

1.2 representation of the results of measurement
The measured value is announced as a numerical value. In addition, the result of grouping is announced, therefore GOOD or NOT GOOD.
Additionally, the signal response of axial movement is represented as a wave form over the time axis:
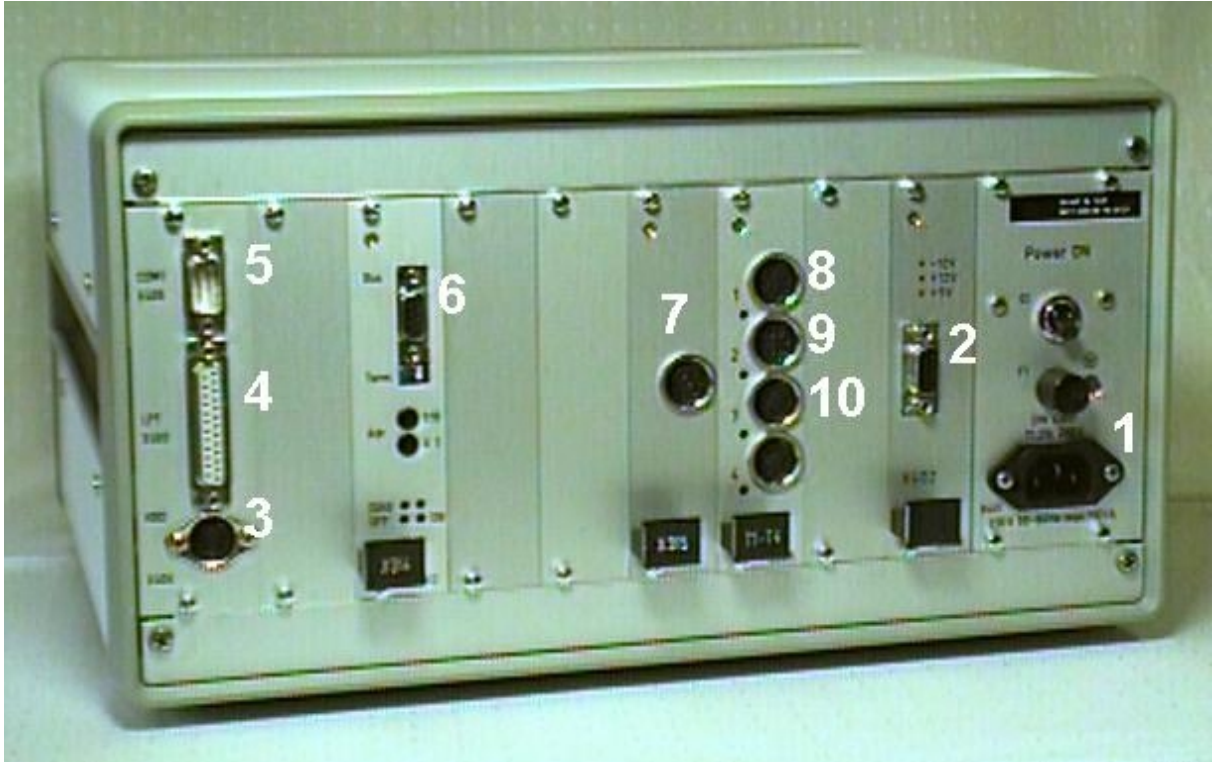
2. Construction

- Measuring computer QP300: 486DX/66; 4MB RAM; 540MB Harddisk;
        3,5" Floppy-Disk 1,44MB
        monochrome VGA Display
        32 I/O Optocoupler
        1x DMS-, 1xinductive, 1x analogue measuring input
        Num. Keyboard
- Case 2/3 19", 4HE

3.   Connection and control elements

Reverse of the case:

(1) X401 Europlug power supply   input 230V/50Hz
(2) X402 9pol. socket MIN D   test socket
(3) X404 5pol. socket DIN   keyboard entry
(4) X403 25pol. socket MIN D   printer exit
(5) X405 9pol. plug MIN D   serial interface
(6) X314 9pol. socket MIN D   pro bus interface
(7) X315 6pol. socket 680:   exit to servo valve
(8) T1-4/1 5pol. socket 680:   input load cell
(9) T1-4/2 5pol. socket 680:   input way stylus
(10) T1-4/3 5pol. socket 680:   input way for carriage position 0..10V

4. Programming

Turn on device. After loading the program, the device is in the operating mode AUTOMATIC and therefore ready to operate, if the drive cover is closed. In order to be able to carry out inputs the lid must be opened. As a result, it is changed to SETUP.
The sub-operating modes appear in the menu bar:

       F1 inputs
       F2 store measured values on floppy disk
       F3 store diagnostic data on floppy disk
       F4 store program on floppy disk
       F5 install program of floppy disk
       F8 zeros

4.1 F1 inputs

Axial elasticity measuring unit: settings

model-no.	1		
Axial UL ym	32	kp	80
Axial LL ym	1	ki	1.5
		Faktor (kp+ki)	10
Axial offset ym	0		
Nominal force kg	300	drawing no.	030.261.071.504
period sec.	0.5	description	Traglenker.Teil1
no. of conditioning	1		

key * = Escape settings

Possible for selection only after opening the concludable drive cover!

The ratings are entered in the input fields in sequence. The jump into the next field occurs by double pressing the press button ENTER.
If the respective value is set aside darkly, he can be retyped directly by input of the new value. If only ENTER is entered, the old value is maintained.
After all fields were processed, the input menu is left automatically again.

Meaning of the individual input fields:
Axial elasticity UL: upper tolerance limit for the axial elasticity
Axial elasticity LL: lower tolerance limit for the axial elasticity

Axial elasticity offset: Correction constant factor for the axial elasticity in order to correct
                           mechanical offset
Nominal force: Peak value of force for pull and push in kg
period: Time of a pull/push cycle in seconds
No. of conditioning: Number of pull/push cycles before the measuring cycle
Kp: Proportional part of the PID controller
Ki: Integral part of the PID controller
Factor(kp+ki):   Sum factor

4.2 F2 store measured values on floppy disk
Possible for selection only after opening the concludable drive cover!
Storage of the measured values occurs here in the PROCON format. The measured value floppy disk must contain a valid PROCON test flow chart.
The features are arranged as follows:

Channel   feature --
1   axial elasticity   MAX-MIN value

4.3 F3 store diagnostic data on floppy disk
Selection possible only after opening the concludable drive cover!
In the case of technical problems intern expiry dates can be transmitted for analysis on floppy disk.

4.4 F4 store program copy on floppy disk
Selection possible only after opening the concludable drive cover!
The current programme version and the parameters are transmitted onto floppy disk.

4.5 F5 load program from floppy disk
Selection possible only after opening the concludable drive cover!
The backup of the parameters and/or the installation of a new programme version occurs here. This becomes only effective during the new start of the computer.

4.6 F8 zeros
Selection possible only after opening the concludable drive cover!
The force actual value is set to zero.
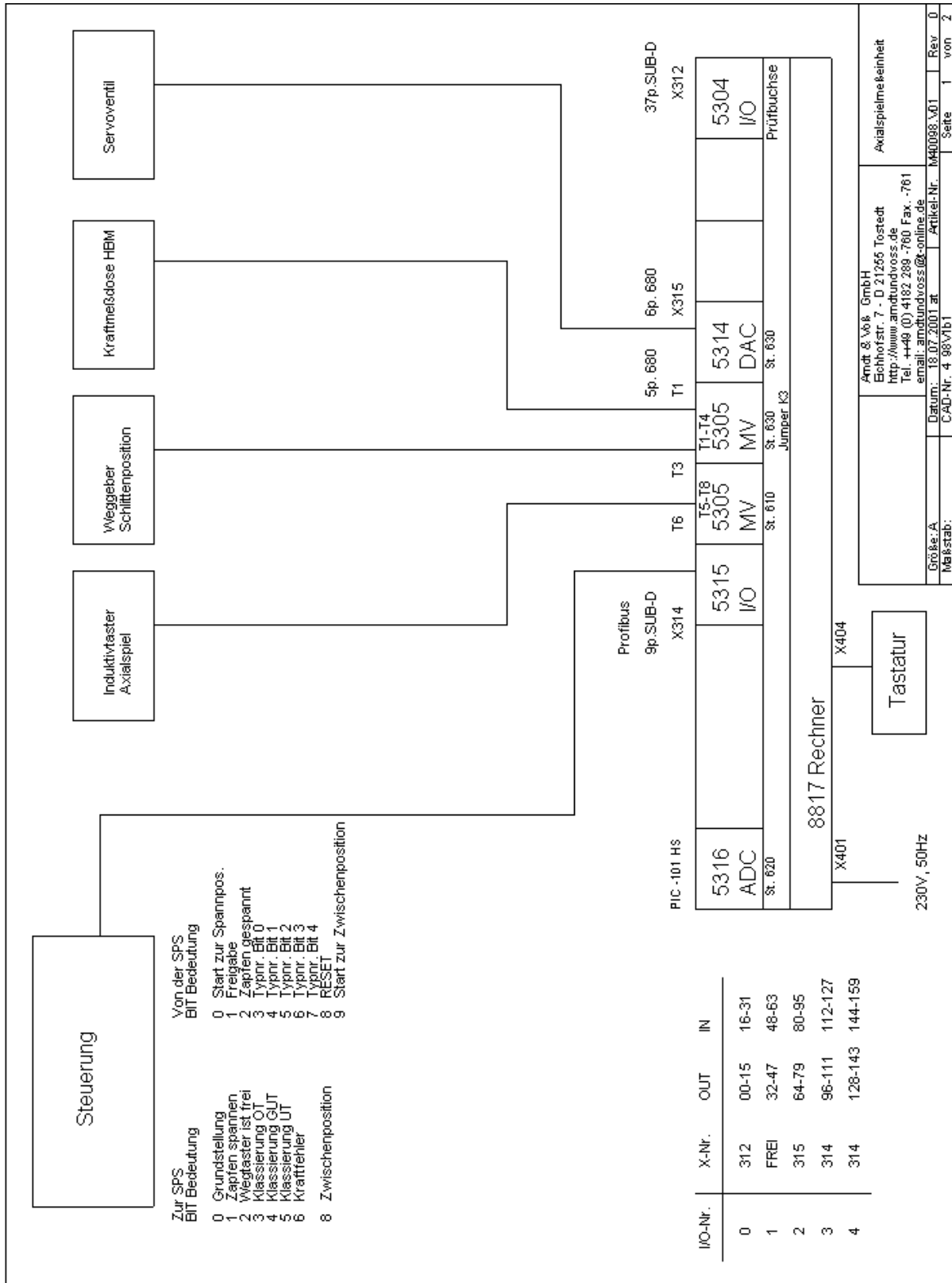
5. Operating mode

M40098.V01

Inputs	Outputs	settings	result
Start ⚫	startposition ⚫	Axial UL ym **75**	drawing no. **030.261.071.504**
peg clamped ⚫	clamp peg ⚫	Axial LL ym **32**	description **Traglenker.Teil1**
ready 🟢	tracer free ⚫		No. of values **100**
RESET ⚫	intermediate position ⚫	Nominal force kg **300**	Axial ym **25** / Classification **LL**
Position act.val. mm **75.475**	model-no. **1**	period sec. **0.5**	Axial ym / Inspect
tracer act.val. ym **-0.1**	step	no. of conditioning **1**	
force act.val. N **4**	SETUP 🟢	Offset Position **75**	

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Version: 170

F4:backup Program to disk F5:restore Program from disk
F1:settings F2:meas.val. to disk F3:chart to disk F8:force set Zero   / Statistik
position: F6:UP F7:DOWN STORE: F9:SET position

M40098.V02

Axial elasticity measuring unit [App.#2 40098219.TST]			
Inputs	**Outputs**	**settings**	**result**

Start ●	**startposition** ●	**Axial UL ym** 75	**drawing no.** 030.261.071.504
peg clamped ●	**clamp peg** ●	**Axial LL ym** 32	**description** Traglenker.Teil1
ready ●	**tracer free** ●		**No. of values** 100
RESET ●		**Nominal force kg** 300	**inclination %** 45 **Axial ym** 25 **Classification** LL

Position act.val. mm 75.45	**model-no.** 1	**period sec.** 0.5	**course of force** [Inspect]
tracer act.val. ym -0.1	**step** -10	**no. of conditioning** 1	
force act.val. N 0.4	**SETUP** ●	**Offset Position** 75	

Arndt & Voß M40098.V02   F4:backup Program to disk F5:restore Program from disk
Version: 219   F1:settings F2:meas.val. to disk F3:chart to disk F8:force set Zero
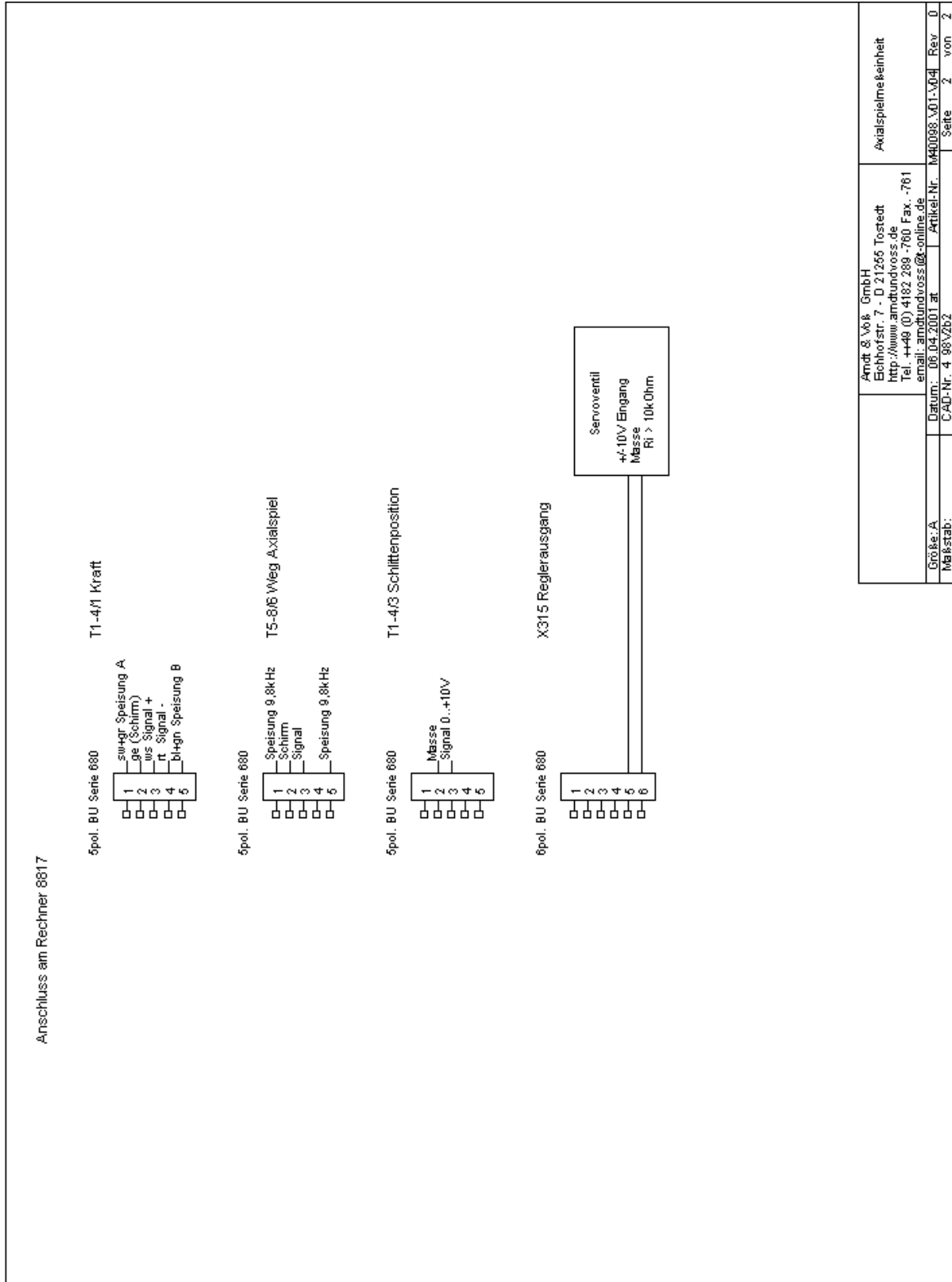   position: F6:UP F7:DOWN STORE: F9:SET clamp position F10: SET start position

The measuring computer waits for the starting signal from the SPS.
The following sizes are announced:
Measured value and grouping of the axial elasticity
The measured value process of the way of the former measurement STATUS:
          0: Measure ready

6. Junction diagrams

Servoventil

Kraftmeßdose HBM

Weggeber Schlittenposition

Induktivtaster Axialspiel

Steuerung

Tastatur

8817 Rechner

37p.SUB-D X312	6p. 680 X315	5p. 680 T1	T1-T4	
5304 I/O	5314 DAC	5305 MV	T5-T8 5305 MV	5315 I/O
Prüfbuchse	St. 630	St. 630 Jumper K3	St. 610	X314

Profibus 9p.SUB-D X314

PIC-101 HS

5316 ADC St. 620

X404 X401

230V, 50Hz

Zur SPS / BIT Bedeutung
0 Grundstellung
1 Zapfen spannen
2 Wegtaster ist frei
3 Klassierung OT
4 Klassierung GUT
5 Klassierung UT
6 Kraftfehler

8 Zwischenposition

Von der SPS / BIT Bedeutung
0 Start zur Spannpos.
1 Freigabe
2 Zapfen gespannt
3 Typnr. Bit 0
4 Typnr. Bit 1
5 Typnr. Bit 2
6 Typnr. Bit 3
7 Typnr. Bit 4
8 RESET
9 Start zur Zwischenposition

I/O-Nr.	X-Nr.	OUT	IN
0	312	00-15	16-31
1	FREI	32-47	48-63
2	315	64-79	80-95
3	314	96-111	112-127
4	314	128-143	144-159

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Datum: 18.07.2001 at
CAD-Nr. 4 98Vtb1

Axialspielmeßeinheit

Größe: A
Maßstab:

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Security comments according to VDE 0411

General technical

time for warming up	20 minutes
temperature	0...+40 Grd C
atmospheric humidity	on to 75% rel.
frequency	50/60 Hz
power supply voltage	230V +/-10%
security	according to VDE 0411, protection class 1

This unit is built and checked under DIN 57411 part 1/VDE 0411 part 1 and
left the factory in a safe and perfect condition. To preserve this condition and
to guarantee a safe working the user has to follow the comments and warnings
which are given in this instructions.
Before turning on the power you have to make sure, that the voltage of operation and the
mains voltage correspond.
The mains plug may only be inserted into a socket with ground contact. The
safety effect may not be abolished by an extension lead without ground connection.
The opening of covers or removing of components, except if it is possible to do
by hand, might uncover parts or connections under dangerous voltage.
Racks may only be used inside a cover.
If an adjustment, a maintenance or a repair at the opened unit under voltage
is unavoidable, it may be done only by a qualified employee, who is well aqainted with the
dangers involved.

ATTENTION:

After the end of those works, the unit has to be checked according to
VDE 0411, part 1.
You have to make sure, that only fuses of the given type and values are taken
for replacement. The use of mended fuses or short-circuiting them is inadmissible.
If it is presumed, that a safe work is not possible, you have to take this unit out of work. A
safe work may not be possible, if
- there are visible damages at the unit.
- the unit doesn´t work.
- after longer storage under unfavourable circumstances.
- after heavy stress of transport.