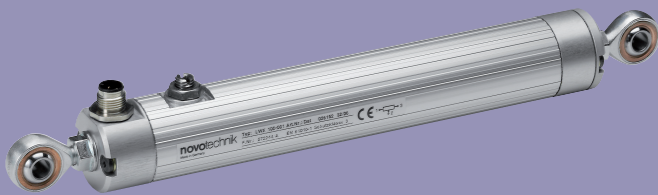


Position Transducers Pivot head mounting potentiometric up to 750 mm, IP67

Series LWX,
Model 001



Special features

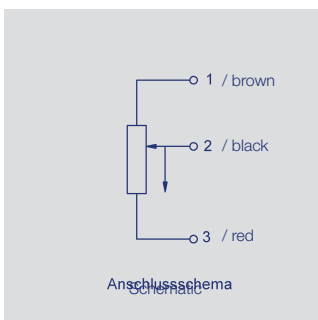
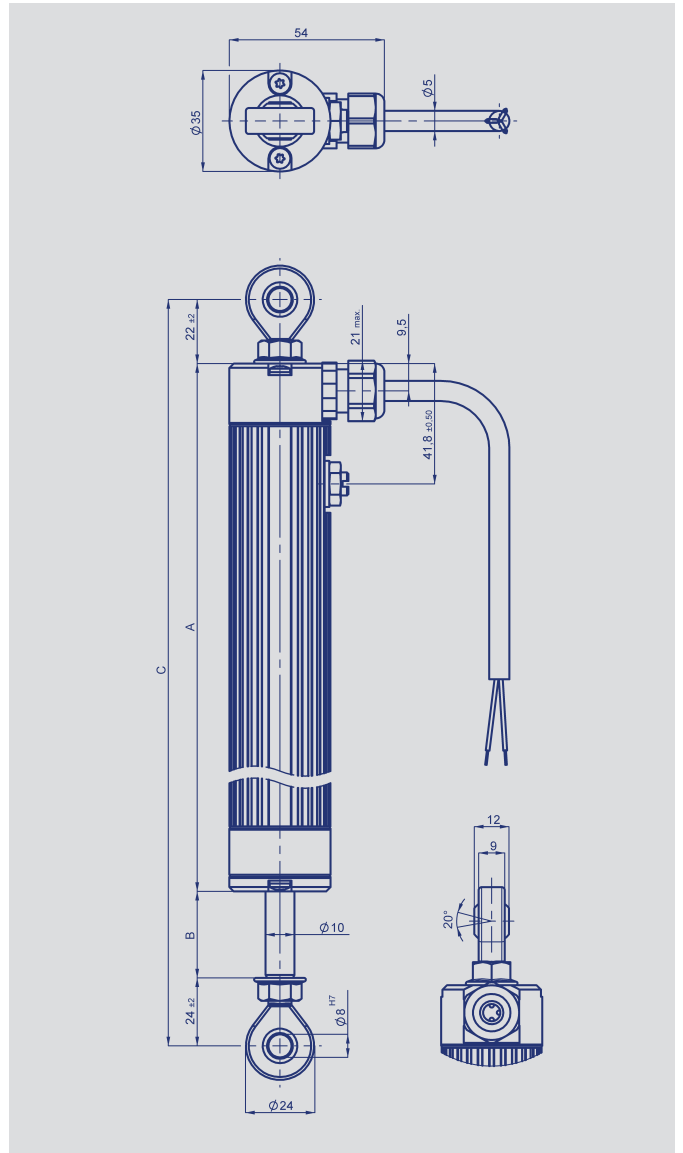
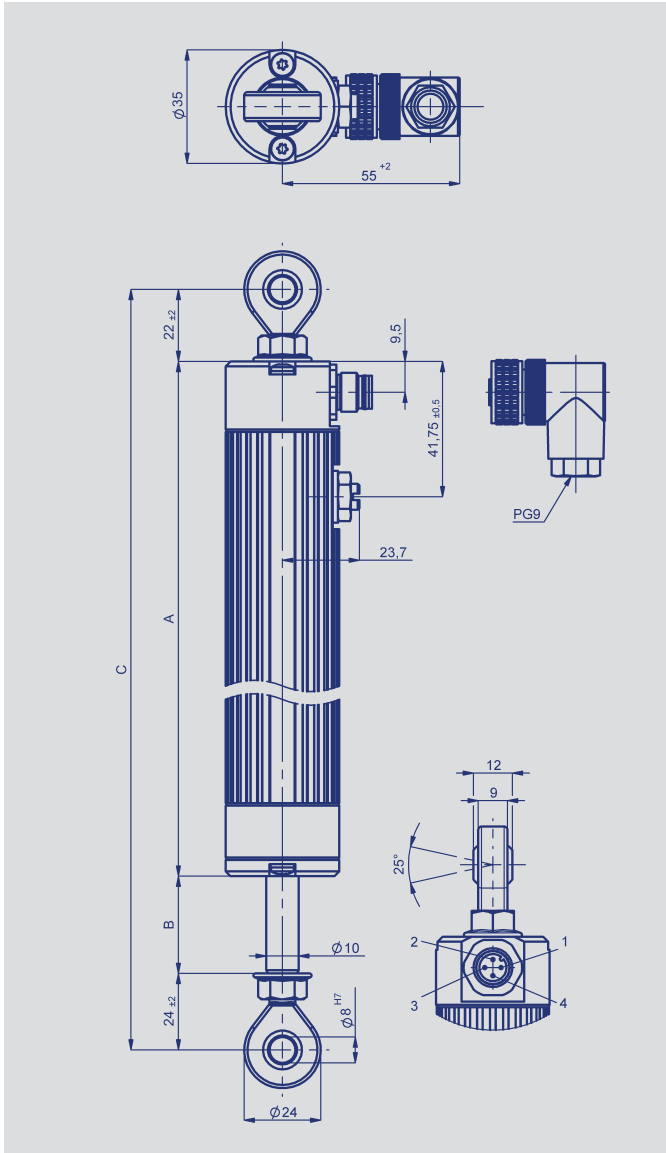
- protection class IP 67
- all-metal housing
- corrosion resistant
- patented differential pressure compensation system compensates for pump effect of push rod movement
- high vibration resistance
- suitable for harsh environmental conditions (humidity, oil, dust)
- twin-bearing actuating rod
- mountable via low-backlash pivot heads with a large angle of free movement (up $\pm 12.5^\circ$)
- outstanding linearity up to $\pm 0.04\%$
- resolution better than 0.01 mm
- long life up to 50 million movements, depending on application
- cable or connector version available
- version IP65, see LWG data sheet
- with shaft protection sleeve, see LWX series 002 data sheet

Designed for extreme operating environments, the LWX series features all-metal construction and patented pressure equalization technology to prevent buildup that could degrade operation in mechanical, vehicle, automation and robotic applications where an extended operating life is essential.

These rugged position transducers provide direct, absolute measurement of displacement or length.

Pivot-head mountings minimize backlash and guarantee high accuracy.

Description	
Housing	aluminium, anodized
Mounting	see drawing
Actuator rod	stainless steel (1.4305), rotatable
Bearings	metal-polymer slide bearing
Resistance element	conductive plastic
Wiper assembly	precious metal multi-finger wiper, elastomer-damped
Electrical connections	4-pin round connector, M12x1 or 3-wire PVC-cable, 3x0.34 mm ² , shielded, 1 m length



Type designations	LWX 0050	LWX 0075	LWX 0100	LWX 0150	LWX 0175	LWX 0225	LWX 0250	LWX 0300	LWX 0360	LWX 0450	LWX 0500	LWX 0600	LWX 0750	
Electrical Data														
Defined electrical range	50	75	100	150	175	225	250	300	360	450	500	600	750	mm
Electrical stroke	52	77	102	152	178	228	254	304	366	457	508	610	762	mm
Nominal resistance	2	3	3	5	5	5	5	5	5	5	5	5	10	kΩ
Resistance tolerance	20													±%
Independent linearity	0.2	0.1	0.1	0.08	0.07	0.07	0.07	0.06	0.05	0.05	0.05	0.05	0.04	±%
Repeatability	0.01													mm
Recommended wiper operating current	≤ 1													μA
Maximum allowed wiper current (system malfunction)	10													mA
Maximum permissible applied voltage	42													V
Effective temperature coefficient of the output-to-applied voltage ratio	typical 5													ppm/K
Insulation resistance (500 VDC)	≥ 10													MΩ
Dielectric strength (500 VAC, 50 Hz)	≤ 100													μA
Mechanical Data														
Body length (dimension A)	178	203	229	279	305	356	381	432	507	621	686	812	996	±2 mm
Mechanical stroke (dimension B)	56	81	107	157	183	233	259	309	370	462	512	614	766	±2 mm
Minimum distance between pivot heads, nominal (dimension C)	224	249	275	325	351	402	427	478	553	667	732	858	1042	mm
Weight with connector approx.	413	453	493	573	613	693	733	832	1023	1167	1247	1407	1647	g
Operating force horizontal	typical 50													N
vertical	typical 50													N
Initial operating force horizontal	max. 150 (*)													N
Environmental Data														
Temperature range	-30 ... +100													°C
Operating humidity range	0 ... 95 (no condensation)													% R.H.
Vibration	5...2000 Amax = 0.75 amax= 20													Hz mm g
Shock	50 11													g ms
Life	> 50 x 10 ⁶ (typical)													movem.
Operating speed	5													m/s max.
Protection class	IP67 (DIN EN 60529), includes dynamic operation													

* Initial operating force is dependent on ambient temperature and inactive time.

Order designations (connector version)		Order designations (cable version)	
Type	P/N	Type	P/N
LWX-0050-001	026150	LWX-0050-001-201	026250
LWX-0075-001	026151	LWX-0075-001-201	026251
LWX-0100-001	026152	LWX-0100-001-201	026252
LWX-0150-001	026154	LWX-0150-001-201	026254
LWX-0175-001	026155	LWX-0175-001-201	026255
LWX-0225-001	026157	LWX-0225-001-201	026257
LWX-0250-001	026158	LWX-0250-001-201	026258
LWX-0300-001	026160	LWX-0300-001-201	026260
LWX-0360-001	026162	LWX-0360-001-201	026262
LWX-0450-001	026166	LWX-0450-001-201	026266
LWX-0500-001	026168	LWX-0500-001-201	026268
LWX-0600-001	026172	LWX-0600-001-201	026272
LWX-0750-001	026178	LWX-0750-001-201	026278

Included in delivery (connector version)

Angled connector M12
(4x0.75 mm², Ø 9.5 mm),
EEM 33-89, unshielded, IP67.

Recommended accessories

MAP process control indi-
cators with display MUP /
MUK signal conditioners for
standard voltage and current
outputs.

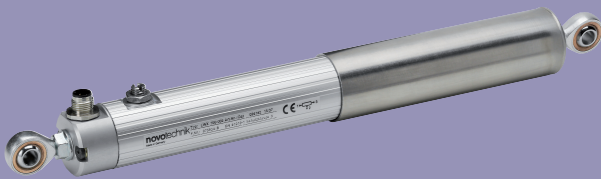


Important

All values specified in this data sheet for linearity, lifetime and temperature coefficient are only valid for a sensor used as a voltage divider with virtually no load applied to the wiper $\leq 1 \mu\text{A}$.

**Position Transducers
Pivot head mounting
potentiometric
up to 750 mm, IP67**

Series LWX,
Model 002
Shaft protected



Special features

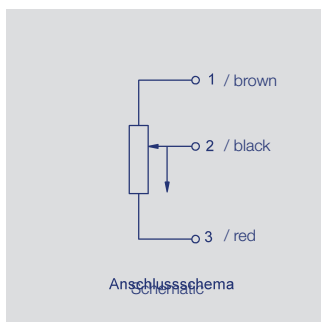
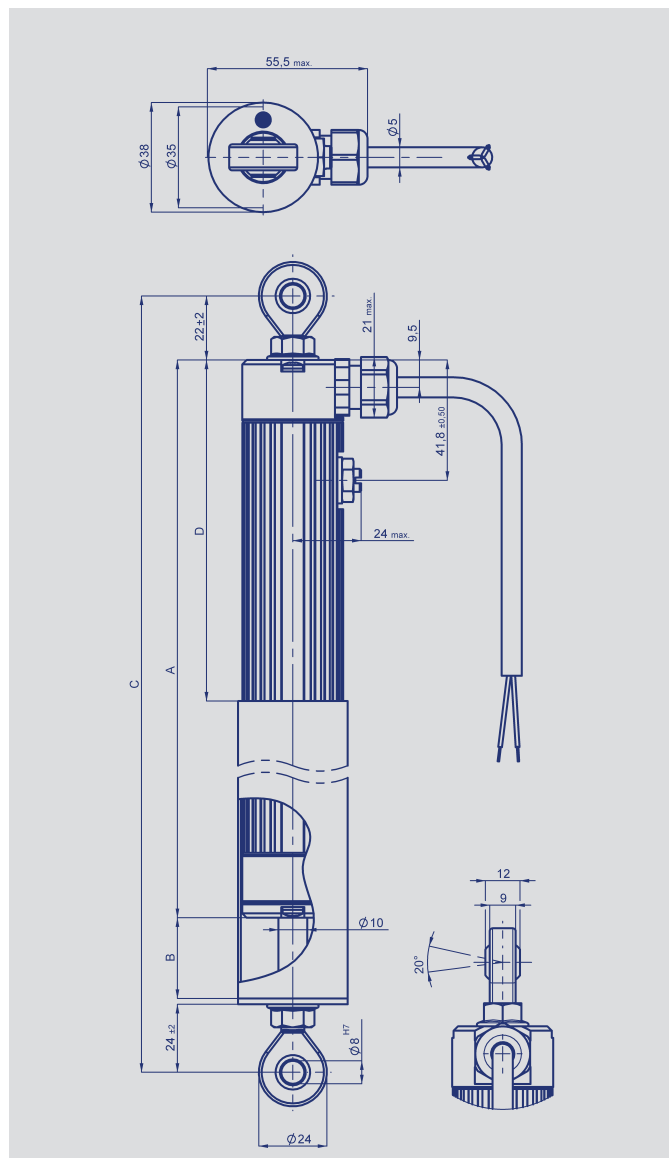
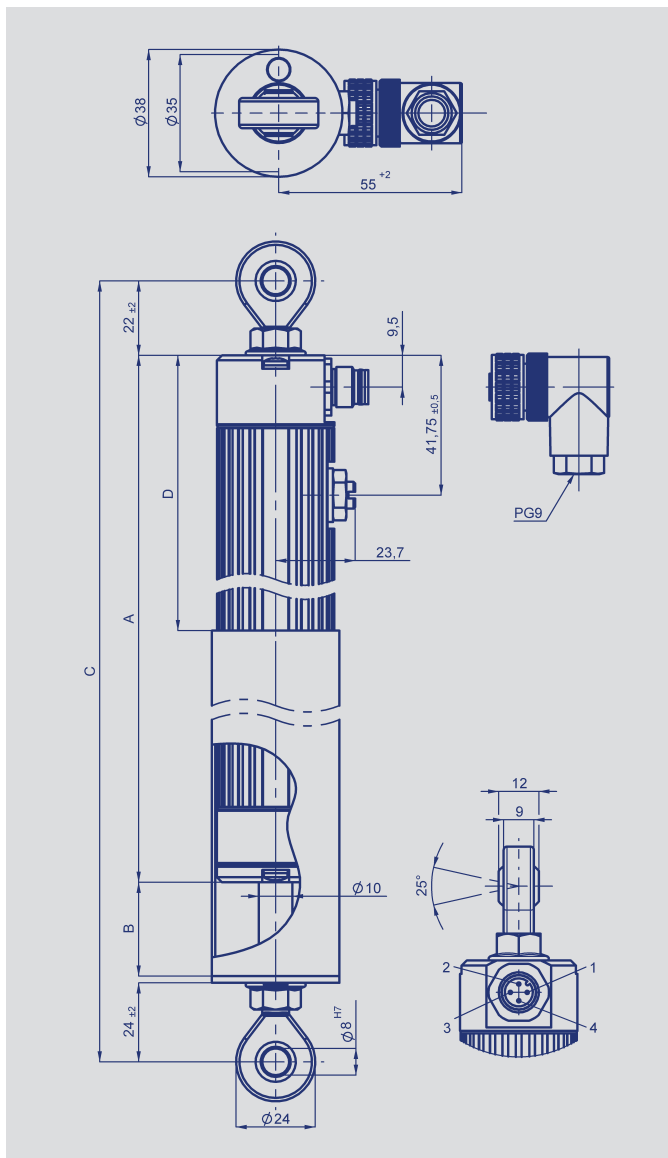
- protection class IP 67
- all-metal housing
- corrosion resistant
- patented differential pressure compensation system compensates for pump effect of push rod movement
- high vibration resistance
- suitable for harsh environmental conditions (humidity, oil, dust)
- twin-bearing actuating rod
- mountable via low-backlash pivot heads with a large angle of free movement (up $\pm 12.5^\circ$)
- outstanding linearity up to $\pm 0.04\%$
- resolution better than 0.01 mm
- long life up to 50 million movements, depending on application
- cable or connector version available
- version IP65, see LWG data sheet
- without shaft protection sleeve, see LWX series 001 data sheet

Designed for extreme operating environments, the LWX series features all-metal construction and patented pressure equalization technology to prevent buildup that could degrade operation in mechanical, vehicle, automation and robotic applications where an extended operating life is essential.

These rugged position transducers provide direct, absolute measurement of displacement or length.

Pivot-head mountings minimize backlash and guarantee high accuracy.

Description	
Housing	aluminium, anodized
Mounting	see drawing
Guard tube	stainless steel (1.4301 or 1.4307)
Actuator rod	stainless steel (1.4305), rotatable
Bearings	metal-polymer slide bearing
Resistance element	conductive plastic
Wiper assembly	precious metal multi-finger wiper, elastomer-damped
Electrical connections	4-pin round connector, M12x1 or 3-wire PVC-cable, 3x0.34 mm ² , shielded, 1 m length



Type designations	LWX 0050	LWX 0075	LWX 0100	LWX 0150	LWX 0175	LWX 0225	LWX 0250	LWX 0300	LWX 0360	LWX 0450	LWX 0500	LWX 0600	LWX 0750	
Electrical Data														
Defined electrical range	50	75	100	150	175	225	250	300	360	450	500	600	750	mm
Electrical stroke	52	77	102	152	178	228	254	304	366	457	508	610	762	mm
Nominal resistance	2	3	3	5	5	5	5	5	5	5	5	5	10	kΩ
Resistance tolerance	20													±%
Independent linearity	0.2	0.1	0.1	0.08	0.07	0.07	0.07	0.06	0.05	0.05	0.05	0.05	0.04	±%
Repeatability	0.01													mm
Recommended wiper operating current	≤ 1													μA
Maximum allowed wiper current (system malfunction)	10													mA
Maximum permissible applied voltage	42													V
Effective temperature coefficient of the output-to-applied voltage ratio	typical 5													ppm/K
Insulation resistance (500 VDC)	≥ 10													MΩ
Dielectric strength (500 VAC, 50 Hz)	≤ 100													μA
Mechanical Data														
Body length (dimension A)	176	201	227	277	303	354	379	430	505	619	684	810	9974	±2 mm
Mechanical stroke (dimension B)	54	79	105	155	181	231	257	307	368	460	510	612	764	±2 mm
Minimum distance between pivot heads, nominal (dimension C)	224	249	275	325	351	402	427	478	553	667	732	858	1042	mm
Open housing area (dimension D)	84	90	90	90	90	90	90	91	105	127	142	166	198	±2 mm
Weight with connector approx.	489	556	623	757	824	958	1025	1159	1353	1594	1728	1996	2398	g
Operating force horizontal	typical 50													N
vertical	typical 50													N
Initial operating force horizontal	max. 150 (*)													N
Environmental Data														
Temperature range	-30 ... +100													°C
Operatig humidity range	0 ... 95 (no condensation)													% R.H.
Vibration	5...2000 Amax = 0.75 amax= 20													Hz mm g
Shock	50 11													g ms
Life	> 50 x 10 ⁶ (typical)													movem.
Operating speed	5													m/s max.
Protection class	IP67 (DIN EN 60529), includes dynamic operation													

* Initial operating force is dependent on ambient temperature and inactive time.

Order designations (connector version)		Order designations (cable version)	
Type	P/N	Type	P/N
LWX-0050-002	026180	LWX-0050-002-201	026280
LWX-0075-002	026181	LWX-0075-002-201	026281
LWX-0100-002	026182	LWX-0100-002-201	026282
LWX-0150-002	026183	LWX-0150-002-201	026283
LWX-0175-002	026184	LWX-0175-002-201	026284
LWX-0225-002	026185	LWX-0225-002-201	026285
LWX-0250-002	026186	LWX-0250-002-201	026286
LWX-0300-002	026187	LWX-0300-002-201	026287
LWX-0360-002	026188	LWX-0360-002-201	026288
LWX-0450-002	026189	LWX-0450-002-201	026289
LWX-0500-002	026192	LWX-0500-002-201	026292
LWX-0600-002	026193	LWX-0600-002-201	026293
LWX-0750-002	026194	LWX-0750-002-201	026294

**Included in delivery
(connector version)**

Angled connector M12
(4x0.75 mm², Ø 9.5 mm),
EEM 33-89, unshielded, IP67.

Recommended accessories

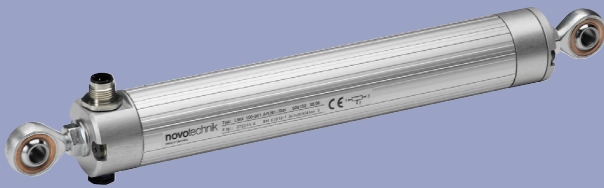
MAP process control indi-
cators with display
MUP / MUK signal
conditioners for standard
voltage and current outputs.

**Important**

All values specified in this data sheet for linearity, lifetime and temperature coefficient are only valid for a sensor used as a voltage divider with virtually no load applied to the wiper $\leq 1 \mu\text{A}$.

Transducer Pivot head mounting potentiometric up to 750 mm, IP67

Series LWX
Model 003



Designed for extreme operating environments, the LWX series features an all-metal construction and a pressure compensation technology to prevent buildup that could degrade operation in mechanical, vehicle, automation and robotic applications where an extended operating life is essential.

Special features

- protection class IP67
- all-metal housing
- corrosion resistant
- differential pressure compensation system with GORE membrane - compensates for pump effect of push rod movement
- high vibration resistance
- suitable for harsh environmental conditions (humidity, oil, dust)
- double beared actuating rod
- mountable via low-backlash pivot heads with a large angle of free movement (up $\pm 12.5^\circ$)
- outstanding linearity up to $\pm 0.04\%$
- resolution better than 0.01 mm
- long life up to 50 million movements, depending on application
- cable or connector version available
- version IP65 see data sheet LWG
- shaft protected version see data sheet LWX, model 004

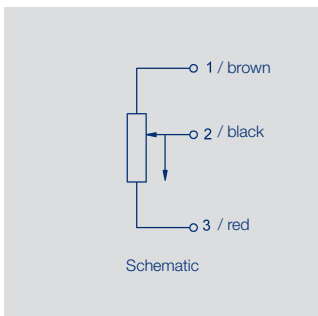
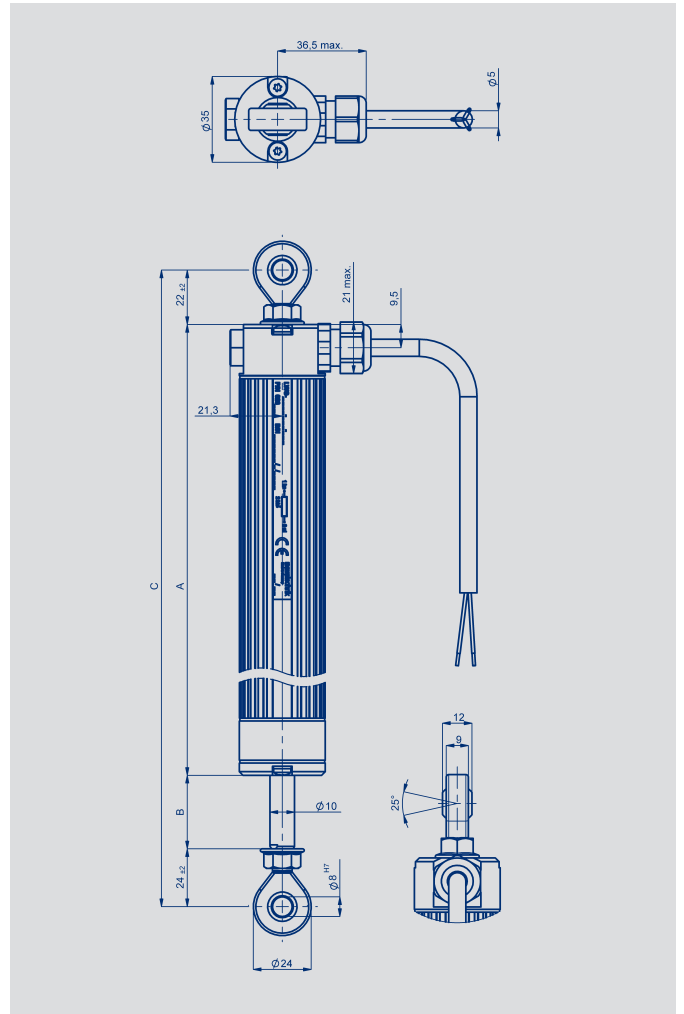
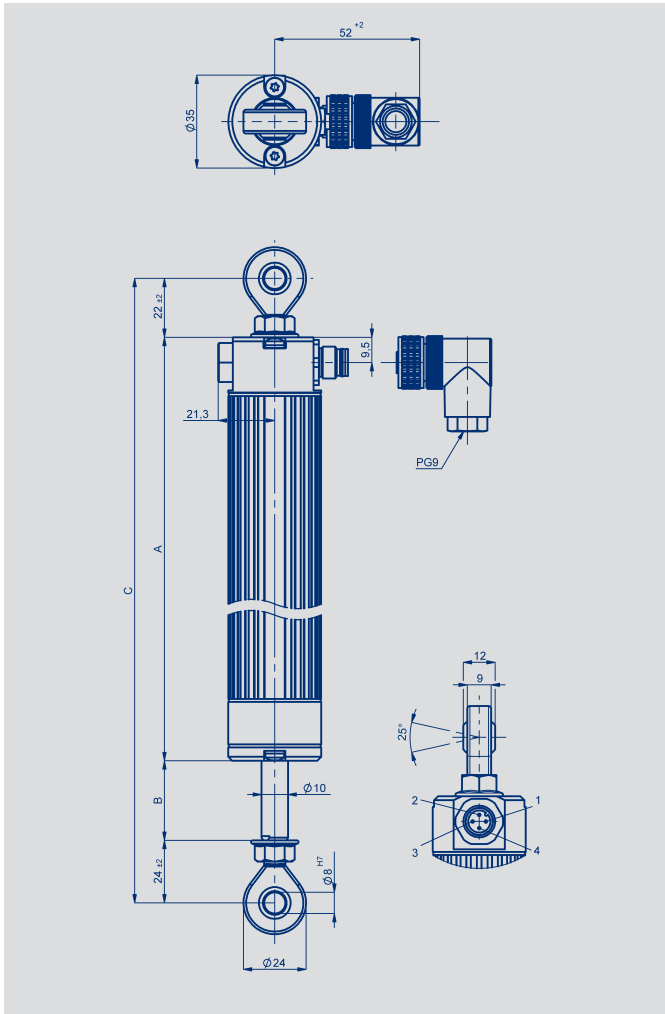
Applications

- steering cylinders in mobile machines
- building equipment
- machines in the media-polluted environment (e.g. production of concrete fabricated components)

These rugged position transducers provide direct, absolute measurement of displacement or length.

A free-pivot-head mounted on the actuating rod eliminates backlash guaranteeing high accuracy.

Description	
Housing	aluminium, anodized
Mounting	see drawing
Actuating rod	stainless steel (1.4305), rotatable
Bearings	metal-polymer slide bearing
Resistane element	conductive plastic
Wiper assembly	precious metal multi-finger wiper, elastomer damped
Electrical connections	4-pin round connector, M12x1 or 3-wire PVC-cable, 3x0.5 mm ² (AWG 20), shielded, 1 m length



Type designations	LWX 0050	LWX 0075	LWX 0100	LWX 0150	LWX 0175	LWX 0225	LWX 0250	LWX 0300	LWX 0360	LWX 0450	LWX 0500	LWX 0600	LWX 0750	
Electrical Data														
Defined electrical range	50	75	100	150	175	225	250	300	360	450	500	600	750	mm
Electrical stroke	52	77	102	152	178	229	254	305	366	457	508	610	762	mm
Nominal resistance	2	3	3	5	5	5	5	5	5	5	5	5	10	kΩ
Resistance toleranz	20													± %
Independent linearity	0.2	0.1	0.1	0.08	0.07	0.07	0.07	0.06	0.05	0.05	0.05	0.05	0.04	± %
Repeatability	0,01													mm
Recommended operating wiper current	≤1													μA
Max. wiper current in case of malfunction	10													mA
Max. permissible applied voltage	42													V
Effective temperature coefficient of the output-to-applied voltage ratio	typical 5													ppm/K
Insulation resistance (500 VDC)	≥ 10													MΩ
Dielectric strength (500 VAC, 50 Hz)	≤ 100													μA
Mechanical Data														
Body length (dimension A)	178	203	229	279	305	356	381	432	507	621	686	812	996	± 2 mm
Mechanical stroke (dimension B)	56	81	107	157	183	233	259	309	370	462	512	614	766	± 2 mm
Minimum distance between pivot heads, nominal (dimension C)	224	249	275	325	351	402	427	478	553	667	732	858	1042	mm
Weight with connector approx.	413	453	493	573	613	693	733	832	1023	1167	1247	1407	1647	g
Operating force horizontal	typical 50													N
vertical	typical 50													N
Tearing force horizontal	150 *)													N
Environmental Data														
Temperature range	-30...+100			°C										
Operating humidity range	0... 95 (no condensation)			% R.H.										
Vibration	5...2000 Amax =0.75 amax =20			Hz mm g										
Shock	50 11			g ms										
Life	>50 x 10 ⁶ typical			movements										
Operating speed	5			m/s max.										
Protection class	IP 67 (DIN EN 60529), also dynamic													

*) Depending on the environmental temperature and standstill time, the necessary force for the initial operating of the push rod can increase.



Order designations (connector version)		Order designations (cable version)	
Type	P/N	Type	P/N
LWX-0050-003-101	026302	LWX-0050-003-201	026402
LWX-0075-003-101	026303	LWX-0075-003-201	026403
LWX-0100-003-101	026304	LWX-0100-003-201	026404
LWX-0150-003-101	026306	LWX-0150-003-201	026406
LWX-0175-003-101	026307	LWX-0175-003-201	026407
LWX-0225-003-101	026309	LWX-0225-003-201	026409
LWX-0250-003-101	026310	LWX-0250-003-201	026410
LWX-0300-003-101	026312	LWX-0300-003-201	026412
LWX-0360-003-101	026314	LWX-0360-003-201	026414
LWX-0450-003-101	026318	LWX-0450-003-201	026418
LWX-0500-003-101	026320	LWX-0500-003-201	026420
LWX-0600-003-101	026324	LWX-0600-003-201	026424
LWX-0750-003-101	026330	LWX-0750-003-201	026430

Important

All values specified in this data sheet for linearity, lifetime and temperature coefficient are only valid for a sensor used as a voltage divider with virtually no load applied to the wiper ($I_e < 1 \mu A$).



Female connector,
angled



Female connector,
angled



Signal conditioner
e.g. MUP-110

Included in delivery (connector version)

M12x1 female connector,
angled, with coupling nut,
screw termination, $4 \times 0.75 \text{ mm}^2$,
cable diameter 6 ... 8 mm,
IP67, not shieldable,
EEM 33-89

Recommended accessories

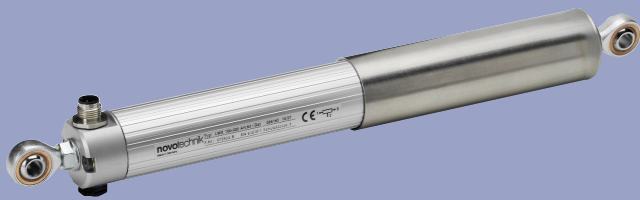
M12x1 female connector, 4-pin,
angled, with molded cable,
shielded, $4 \times 0.34 \text{ mm}^2$, IP67,
open ended:
length 2 m, EEM 33-33,
P/N 005601;
length 5 m, EEM 33-63,
P/N 005610;
length 10 m, EEM 33-99,
P/N 005696.
(other versions see data sheet
Accessories M12-connection
system)

Recommended accessories

Process-controlled indicators
MAP... with display,
Signal conditioner MUP... /
MUK ... for standardized
output signals.

**Transducer
Pivot head mounting
potentiometric
up to 750 mm, IP67**

Series LWX
Model 004
Shaft protected



Designed for extreme operating environments, the LWX series features an all-metal construction and a pressure compensation technology to prevent buildup that could degrade operation in mechanical, vehicle, automation and robotic applications where an extended operating life is essential.

Special features

- protection class IP67
- all-metal housing with shaft protection
- corrosion resistant
- differential pressure compensation system with GORE membrane - compensates for pump effect of push rod movement
- high vibration resistance
- suitable for harsh environmental conditions (humidity, oil, dust)
- double beared actuating rod
- mountable via low-backlash pivot heads with a large angle of free movement (up $\pm 12.5^\circ$)
- outstanding linearity up to $\pm 0.04\%$
- resolution better than 0.01 mm
- long life up to 50 million movements, depending on application
- cable or connector version available
- version IP65 see data sheet LWG
- version without shaft protection see data sheet LWX, model 003

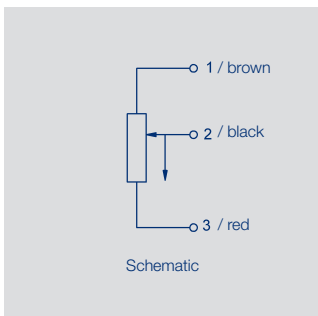
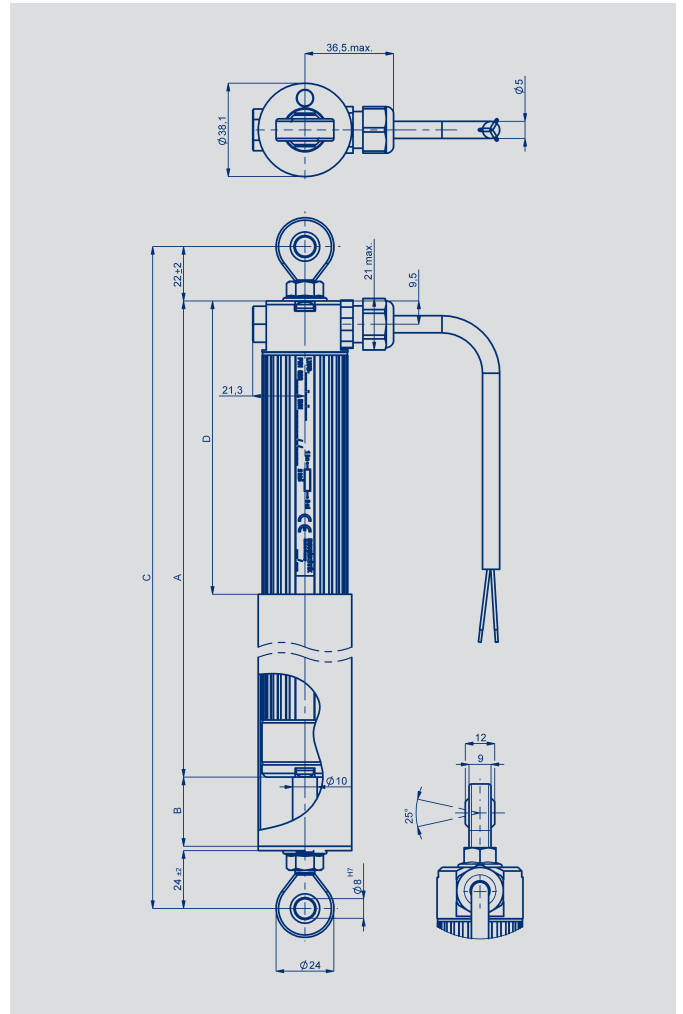
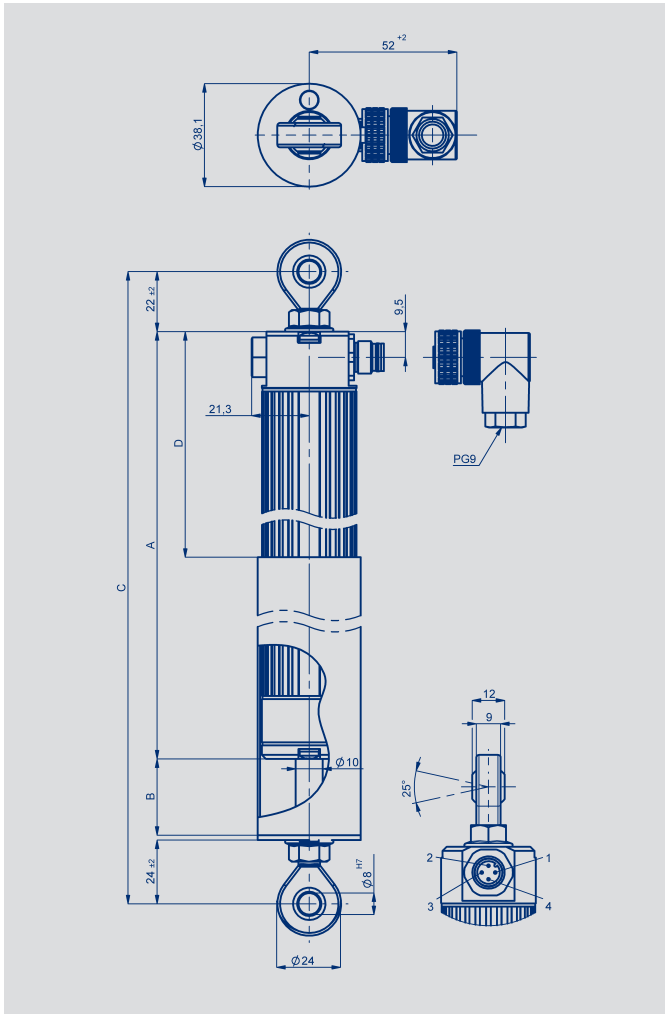
Applications

- steering cylinders in mobile machines
- building equipment
- machines in the media-polluted environment (e.g. production of concrete fabricated components)

These rugged position transducers provide direct, absolute measurement of displacement or length.

A free-pivot-head mounted on the actuating rod eliminates backlash guaranteeing high accuracy.

Description	
Housing	aluminium, anodized
Mounting	see drawing
Actuating rod	stainless steel (1.4305), rotatable
Bearings	metal-polymer slide bearing
Resistance element	conductive plastic
Wiper assembly	precious metal multi-finger wiper, elastomer damped
Electrical connections	4-pin round connector, M12x1 or 3-wire PVC-cable, 3x0.5 mm ² (AWG 20), shielded, 1 m length



Type designations	LWX 0050	LWX 0075	LWX 0100	LWX 0150	LWX 0175	LWX 0225	LWX 0250	LWX 0300	LWX 0360	LWX 0450	LWX 0500	LWX 0600	LWX 0750		
Electrical Data															
Defined electrical range	50	75	100	150	175	225	250	300	360	450	500	600	750	mm	
Electrical stroke	52	77	102	152	178	229	254	305	366	457	508	610	762	mm	
Nominal resistance	2	3	3	5	5	5	5	5	5	5	5	5	10	kΩ	
Resistance toleranz	20													± %	
Independent linearity	0.2	0.1	0.1	0.08	0.07	0.07	0.07	0.06	0.05	0.05	0.05	0.05	0.04	± %	
Repeatability	0,01													mm	
Recommended operating wiper current	≤1													μA	
Max. wiper current in case of malfunction	10													mA	
Max. permissible applied voltage	42													V	
Effective temperature coefficient of the output-to-applied voltage ratio	typical 5													ppm/K	
Insulation resistance (500 VDC)	≥ 10													MΩ	
Dielectric strength (500 VAC, 50 Hz)	≤ 100													μA	
Mechanical Data															
Body length (dimension A)	176	201	227	277	303	354	379	430	505	619	684	810	994	± 2 mm	
Mechanical stroke (dimension B)	54	79	105	155	181	231	257	307	368	460	510	612	764	± 2 mm	
Minimum distance between pivot heads, nominal (dimension C)	224	249	275	325	351	402	427	478	553	667	732	858	1042	mm	
Open housing area (dimension D)	84	90	90	90	90	90	90	90	103	126	141	164	196	± 2 mm	
Weight with connector approx.	413	453	493	573	613	693	733	832	1023	1167	1247	1407	1647	g	
Operating force															
horizontal	typical 50													N	
vertical	typical 50													N	
Tearing force															
horizontal	150 *)													N	
Environmental Data															
Temperature range	-30...+100														°C
Operating humidity range	0... 95 (no condensation)														% R.H.
Vibration	5...2000 Amax =0.75 amax =20														Hz mm g
Shock	50 11														g ms
Life	>50 x 10 ⁶ typical														movements
Operating speed	5														m/s max.
Protection class	IP 67 (DIN EN 60529), also dynamic														

*) Depending on the environmental temperature and standstill time, the necessary force for the initial operating of the push rod can increase.



Order designations (connector version)	
Typ	P/N
LWX-0050-004-101	026502
LWX-0075-004-101	026503
LWX-0100-004-101	026504
LWX-0150-004-101	026506
LWX-0175-004-101	026507
LWX-0225-004-101	026509
LWX-0250-004-101	026510
LWX-0300-004-101	026512
LWX-0360-004-101	026514
LWX-0450-004-101	026518
LWX-0500-004-101	026520
LWX-0600-004-101	026524
LWX-0750-004-101	026530

Order designations (cable version)	
Typ	P/N
LWX-0050-004-201	026602
LWX-0075-004-201	026603
LWX-0100-004-201	026604
LWX-0150-004-201	026606
LWX-0175-004-201	026607
LWX-0225-004-201	026609
LWX-0250-004-201	026610
LWX-0300-004-201	026612
LWX-0360-004-201	026614
LWX-0450-004-201	026618
LWX-0500-004-201	026620
LWX-0600-004-201	026624
LWX-0750-004-201	026630

Important

All values specified in this data sheet for linearity, lifetime and temperature coefficient are only valid for a sensor used as a voltage divider with virtually no load applied to the wiper ($I_e < 1 \mu A$).



Female connector,
angled



Female connector,
angled



Signal conditioner
e.g. MUP-110

Included in delivery (connector version)

M12x1 female connector,
angled, with coupling nut,
screw termination, $4 \times 0.75 \text{ mm}^2$,
cable diameter 6 ... 8 mm,
IP67, not shieldable,
EEM 33-89

Recommended accessories

M12x1 female connector, 4-pin,
angled, with molded cable,
shielded, $4 \times 0.34 \text{ mm}^2$, IP67,
open ended:
length 2 m, EEM 33-33,
P/N 005601;
length 5 m, EEM 33-63,
P/N 005610;
length 10 m, EEM 33-99,
P/N 005696.
(other versions see data sheet
Accessories M12-connection
system)

Recommended accessories

Process-controlled indicators
MAP... with display,
Signal conditioner MUP... /
MUK ... for standardized
output signals.