



D.C.

High Duty Double Acting Solenoid

Built-in rectifier for A.C. supply
Range up to 25 mm and 690 Ncm

1

Product group

Type

G TU W

- According to VDE 0580
(conform with article 10 of direction 73/23/EEC –
according to CENELEC memorandum no. 3 of March 1987).
- Linear force characteristic (fig. 2) – Six sizes
- Robust cylindrical construction with body mounting
for push and pull operation and optional flange
mounting at either end
- Connections with plug connector or terminal box
- Coil with insulation to class F for voltages
up to 250 volts
- Terminal box arrangement can be provided with
built-in rectifier for A. C. supply up to 250 volts
- Fork ends are available (list Z GA)
- Protection classification – DIN VDE 0470 / EN 60529
Plug connector Z KB X – IP 54 (DIN 46247)
Terminal box – IP 54
- High endurance, maintenance-free bearings
- Suitable for operation in any attitude
- G TCA list for single acting solenoids
- Size 060 available as shotbolt assembly –
double acting energise to lock and unlock
- Modifications and special designs on request
- General-purpose solenoid with high endurance
for arduous service in the fields of:
Machine tools Automation
Office machines Remote control
Packaging and textile machinery

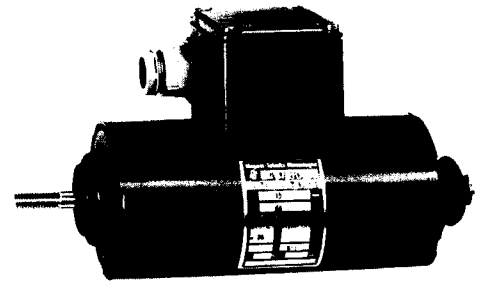


Fig. 1
Type G TU W 070 T43 A02
(terminal box)

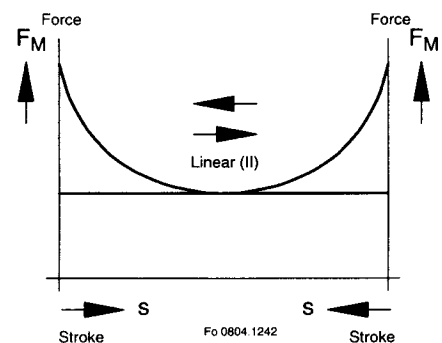


Fig. 2
Force characteristic G TU W



Performance tables for type G TU W

max. voltage (U_N): 250 V

G TU W		040					050					060				
Duty rating ED (%)		100	40	25	15	5	100	40	25	15	5	100	40	25	15	5
Stroke s (mm)		8					10					12				
Holding force (N)		47	83	103	128	190	117	183	204	262	350	200	300	365	410	595
Magnetic force F _M (fig. 2) (N)		12,4	21	26	31,5	54,5	20,4	35	41	57	97	45,5	67	82	96	162
Work rating A _N (Ncm)		9,9	16,8	20,8	25,2	43,6	20,4	35	41	57	97	54,6	80,4	98	115	194
Power consumption P ₂₀ (W)		16,5	41	66	98	262	21,2	53	60	144	335	35	77	106	148	550
Frequency of oper. (S _h max.) (1/h)		30000	16000	10000	6000	2000	27000	13000	8000	5000	1900	19000	9500	6000	4000	1600
Closing time t ₁ (ms)		120	85	75	70	70	130	110	106	100	91	185	145	140	126	108
Opening time t ₂ (ms)		120	85	75	70	70	130	110	106	100	91	185	145	140	126	108
Inductance L = τ · R (τ · 10 ⁻³)	Time constant τ (ms)															
	Armature open															
	Position closed															
Armature weight m _A (kg)																
Solenoid weight m _M (kg)																
G TU W		070					080					090 ¹⁾				
Duty rating ED (%)		100	40	25	15	5	100	40	25	15	5	100	40	25	15	5
Stroke s (mm)		15					20					25				
Holding force (N)		236	450	485	580	765	340	535	630	725	850	307	520	630	765	1080
Magnetic force F _M (fig. 2) (N)		52	84	105	130	195	55	87	110	135	194	73,5	124	145	173	276
Work rating A _N (Ncm)		78	126	158	195	293	110	174	220	270	388	184	310	362	433	690
Power consumption P ₂₀ (W)		32,5	85	142	230	500	45	102	159	250	590	52	131	202	318	824
Frequency of oper. (S _h max.) (1/h)		16000	8500	5500	3600	1400	14500	7500	4500	3200	1300	11000	5500	4000	2600	1100
Closing time t ₁ (ms)		215	165	160	145	120	240	190	180	160	130	310	240	220	195	155
Opening time t ₂ (ms)		215	165	160	145	120	240	190	180	160	130	310	240	220	195	155
Inductance L = τ · R (τ · 10 ⁻³)	Time constant τ (ms)															
	Armature open															
	Position closed															
Armature weight m _A (kg)																
Solenoid weight m _M (kg)																

1) Solenoid sizes ... 100, 120, 140 (100 - 140 mm Ø) available

PERFORMANCE TABLE

terms are explained in Technical Bulletin G XX & VDE 0580/35.

TABLE BASIS

24 V/5 - 100 % duty Ambient temperature 35° C
 Heat insulated base Free air mounted
 Horizontal working Pull arrangement
 Tolerance ± 10 % (inherent & manufacture).

MAGNETIC FORCE (F_M)

is listed in HOT condition at 90 % of rated voltage (increase approx. 20 % at rated voltage). Adjust for armature weight.

POWER CONSUMPTION (P₂₀)

is listed with a 20° C coil temperature (decrease/HOT).

DUTY RATING (ED %)

% of energized time per operation cycle: $\frac{t_{on}}{t_{on} + t_{off}} \times 100$.

Max. energized time/cycle:

100 % continuous: 40 % - 120 secs., 25 % - 75 secs., 15 % - 45 secs., 5 % - 15 secs.

OPERATING TIMES (t₁/t₂)

are listed per cycle of operation in HOT condition at rated voltage with weight load of 70 % of Force (F_M) at and over rated stroke.

ARRANGEMENT

Standard arrangement is for body mounting:

Plug connector ...43 A 01 (plug Z KB X 311 B 01)

Terminal box ...43 A 02 (D.C.), ...43 A 10/A 12 (A.C., built-in rectifier)

Flanges are available for either or both ends.

Fork ends available for plungers (list Z GA).

SUPPLY VOLTAGE:

Standard D.C.: 24 V, 97 V, 195 V, 205 V, 214 V D.C. (max. 250 V) (for rectified 110 V, 220 V, 230 V, 240 V, 50/60 Hz A.C.).

May be provided with built-in rectifier (... A 10/A 12), not size 040.

PROTECTION

Paint (Trop) - Plating/sealed coil (Spec. Trop).

Conversion Factors

1 N = 0.102 kp ≈ 0.1 kg
 1 kg = 2.2 lb.
 1 mm = 0.039 in.
 1 Ncm = 0.086 in. lb.

Dimension tables for type G TU W

Plug connector

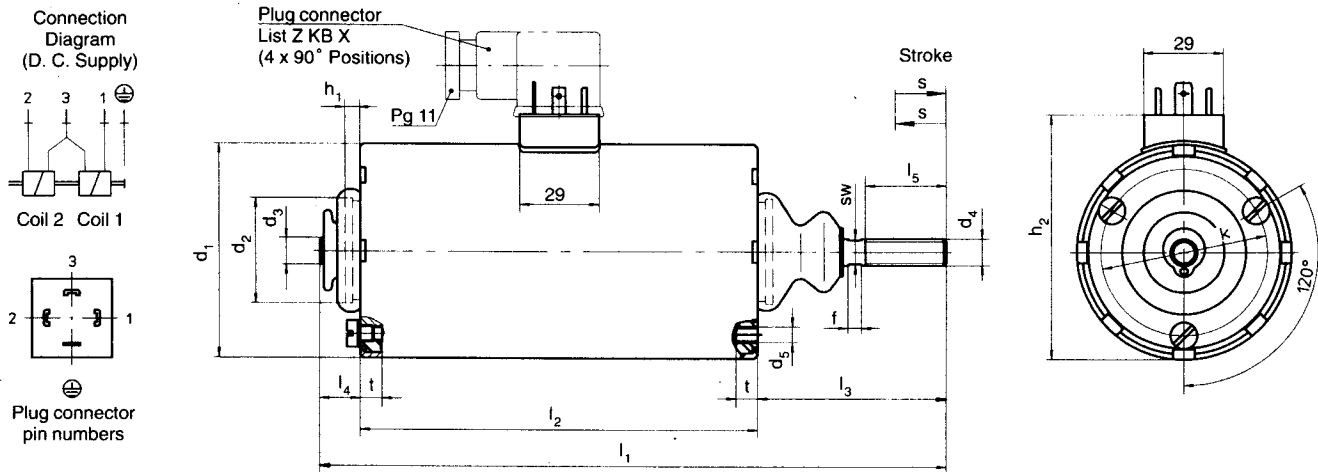


Fig. 4
Type G TU W 040 T 43 A01 to
G TU W 090 T 43 A01

Terminal box

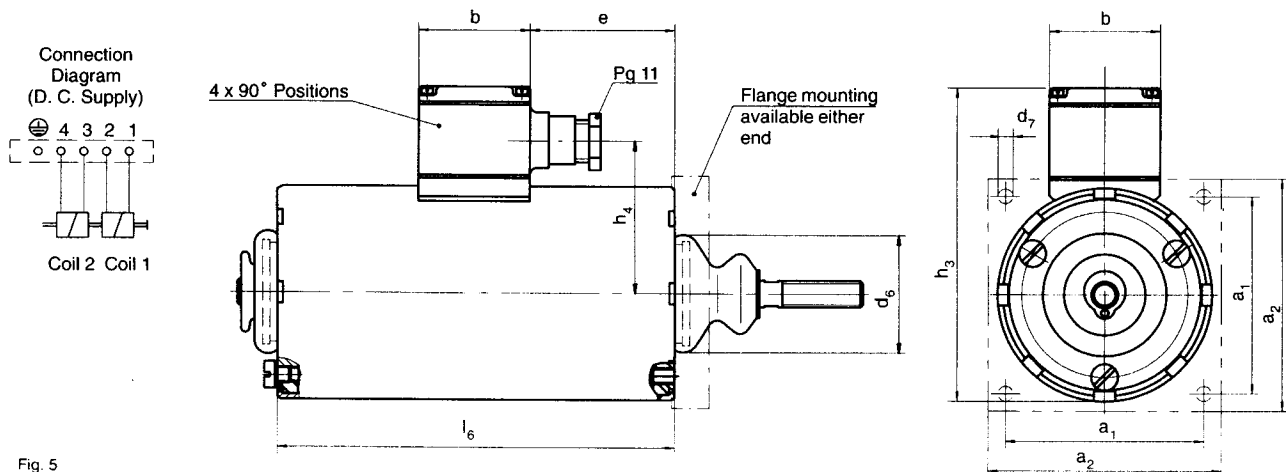


Fig. 5
Type G TU W 040 T 43 A02 to
G TU W 090 T 43 A02
... A10 / A12 with rectifier (not size 040)

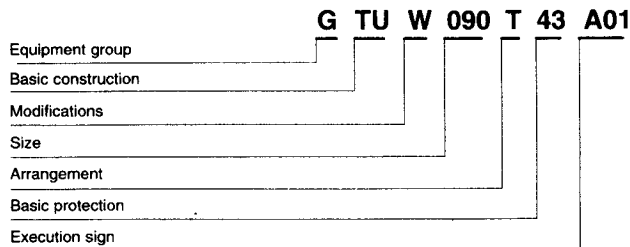
Type	G TU W						Type	G TU W					
Size	040	050	060	070	080	090	Size	040	050	060	070	080	090
Dim.	Dims. mm						Dim.	Dims. mm					
a ₁	38	46	54	62	72	80	h ₃	77	87	97	116,5	126,5	136,5
a ₂	50	60	70	80	90	100	h ₄	38,5	43,5	48,5	57,5	62,5	67,5
b	40	40	40	56	56	56	k	30	34	45	52	62	68
d ₁	40	50	60	70	80	90	l ₁	134	156	181	210	233	278
d ₂	22	25	32	38	42	52	l ₂	85	104	124	142	148	176
d ₃	5	5	6	8	10	12	l ₃	37	40	45	54	70	85
d ₄	M5	M5	M6	M8	M10	M12	l ₄	12	12	12	14	15	17
d ₅	M3	M4	M5	M5	M6	M6	l ₅	15	15	18	20	30	40
d ₆	24	27	34	40	44	54	l ₆	90	113,5	133,5	153	159	188
d ₇	4,8	5,8	5,8	7	9,5	9,5	s	8	10	12	15	20	25
e	25,5	35	45	46	49	63	t*	4	5	5	5	8	10
f	3	3	4	5	5	5	sw	4,5	4,5	5	7	9	10
h ₁	4	4	4	5	5	5	Fork end ¹⁾ Z GA K	050	050	060	080	100	120
h ₂	51,5	61,5	71,5	90	100	110							

1) List Z GA

*Do not use overlength screws

Classification of solenoids type G TU W

Type code



Order Example

1. Equipment group	D.C. classification		- G
Basic construction			- TU
Modification	Standard		- W
Size	Select from tables		- 090
Arrangement	Standard		- T
Protection	- Plug connector	- 43	- 43
	- Terminal box	- 43	
Execution sign	Plug connector	- A01	- A01
	Terminal box	- A02	
	Rectifier/terminal box		
	(sizes 050, 060, 070)	- A10	
	(sizes 080, 090)	- A12	
2. State:			
Voltage standards – page 2			- = 24 V
Duty rating (ED %) – from tables			- 100 %
(5, 15, 25, 40, 100 %)			
3. Additional requirements:			
D.C. plug (3 pole/earth) Z KB X 311 B01			
Flanges for mounting			
Special protection – tropical or special tropical			
Fork end Z GA page 3			
Spare bellows seals			
Shotbolt assembly for size 060			

Special

Special solenoids are available to meet the requirements of specific applications, such as short duty rating, high ambient temperature, special voltages etc., for which full operating, application and working conditions and environment should be specified in accordance with Technical Bulletins GXX.