Product Data Sheet
FCDS-20044-EN Rev. 1
June 2025

Biffi EHT and EHTS

Quarter-Turn and Linear Actuators

Double-acting and spring-return electro-hydraulic solutions for on/off valves on heavy-duty service, suitable for high-pressure supply, SMART and wide performance range version.

BIFFI

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General Application

EHT and EHTS electro-hydraulic actuators use a self-contained power unit to provide operation and control of 1/4 in. turn and linear valves in on/off and modulating applications when the primary power source (instrument air or hydraulic supply) is unavailable.

Technical Data

MAWP (Design Pressure):	EHT/EHTS 352 barg maximum
Supply medium:	Mineral hydraulic oil (other contact factory)
Output torque:	EHT double-acting torque (thrust) to 1,000,000 N·m (8,000,000 N) EHTS spring ending torque (thrust) up to 240,000 N·m (350,000 N)

Ambient Temperature

Standard Range:	-20 to +55 °C / -4 to +131 °F
Extended Range:	Contact factory
Motor Voltage:	AC (3-phase or single phase), DC
Frequency:	50 or 60 Hz
MAWP:	Maximum Allowable Working Pressure is the pressure defined for the design of the actuator pressure containing parts.
MOP:	Maximum Operating Pressure is the pressure that generates the torque used to engineer the mechanical loaded parts of the actuator and it is the one required to produce the Maximum Operating Torque (MOT) of the actuator.

Features

- On/off, quick-acting and heavy-duty modulation
- Quarter-turn and linear options
- Complete level of customization
- Standard and SMART configuration
- Configuration with rack of accumulator ensures instantaneous response to commands
- Critical parts manufactured from 316 stainless steel as a standard to prevent corrosion
- 316 L stainless steel cabinet and oil tank as standard
- 316/316 L stainless steel tubing and fittings
- Hydraulic manual local control as standard
- Onboard or remote HPU installation
- Hydrogen service ready

Approvals

Actuators Safety Integrity Level:	Suitable for use in SIL3 applications
Area Classification: IP	Weatherproof (as a standard other contact factory)
ATEX/IECEx:	Min. Ex d IIB (IIB + H2 or IIC on request)
Enclosure Standards: IEC 60529	IP65 (other contact factory)
Pressure Equipment Directive:	2014/68/EU
Machinery Directive:	2006/42/EC

Figure 1. Double-Acting Quarter-Turn

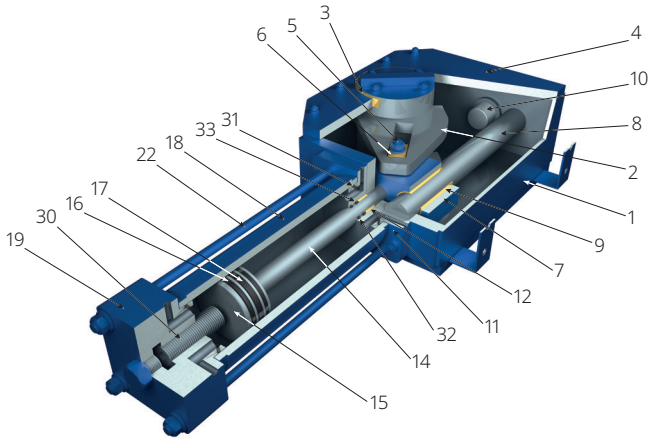


Figure 2. Single-Acting Quarter-Turn

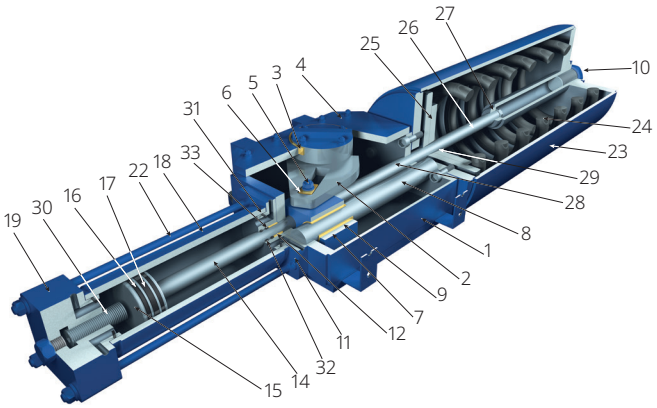


Table 1. Materials

	Part	Material
1	Housing	Carbon steel
2	Yoke	Carbon steel
3	Yoke bushing	Bronze
4	Cover	Carbon steel
5	Guide block pin	Alloy steel
6	Sliding block	Bronze
7	Guide block	Carbon steel
8	Guide bar	Alloy steel (hard chrome plated)
9	Guide block bushing	Steel + Bronze + PTFE
10	Travel stop screw	Carbon steel
11	Cylinder head flange	Carbon steel
12	Piston rod bushing	Steel + Bronze + PTFE
13	Piston rod seal	Nitrile-Butadiene Rubber (NBR)
14	Piston rod	Alloy steel (hard chrome plated)
15	Piston	Carbon steel
16	Piston guide sliding ring	PTFE + Graphite
17	Piston seal O-ring	PTFE + NBR

	Part	Material
18	Cylinder tube	Carbon steel (ENP)
19	Cylinder end flange	Carbon steel
20	Cylinder seal O-ring	NBR
21	Sealing washer	PVC
22	Tie rod	Alloy steel
23	Spring container	Carbon steel
24	Spring	Carbon steel
25	Spring thrust flange	Carbon steel
26	Guide rod	Alloy steel (hard chrome plated)
27	Guide rod bushing	Steel + Bronze + PTFE
28	Container rod	Alloy steel (hard chrome plated)
29	Container rod bushing	Steel + Bronze + PTFE
30	Stop setting screw	Carbon steel
31	Back-up ring	NBR
32	Piston rod seal ring	PTFE + Graphite + NBR
33	O-ring	NBR

Linear Actuators

Figure 3. Double-Acting

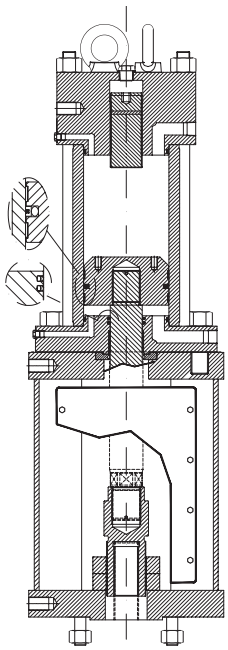


Figure 5. Spring-Return

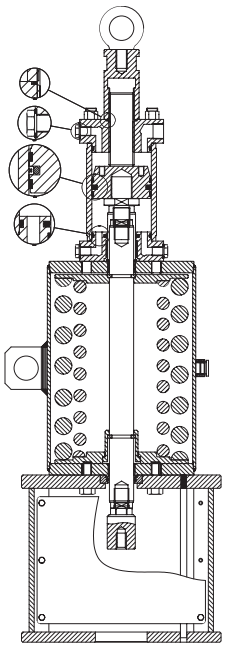


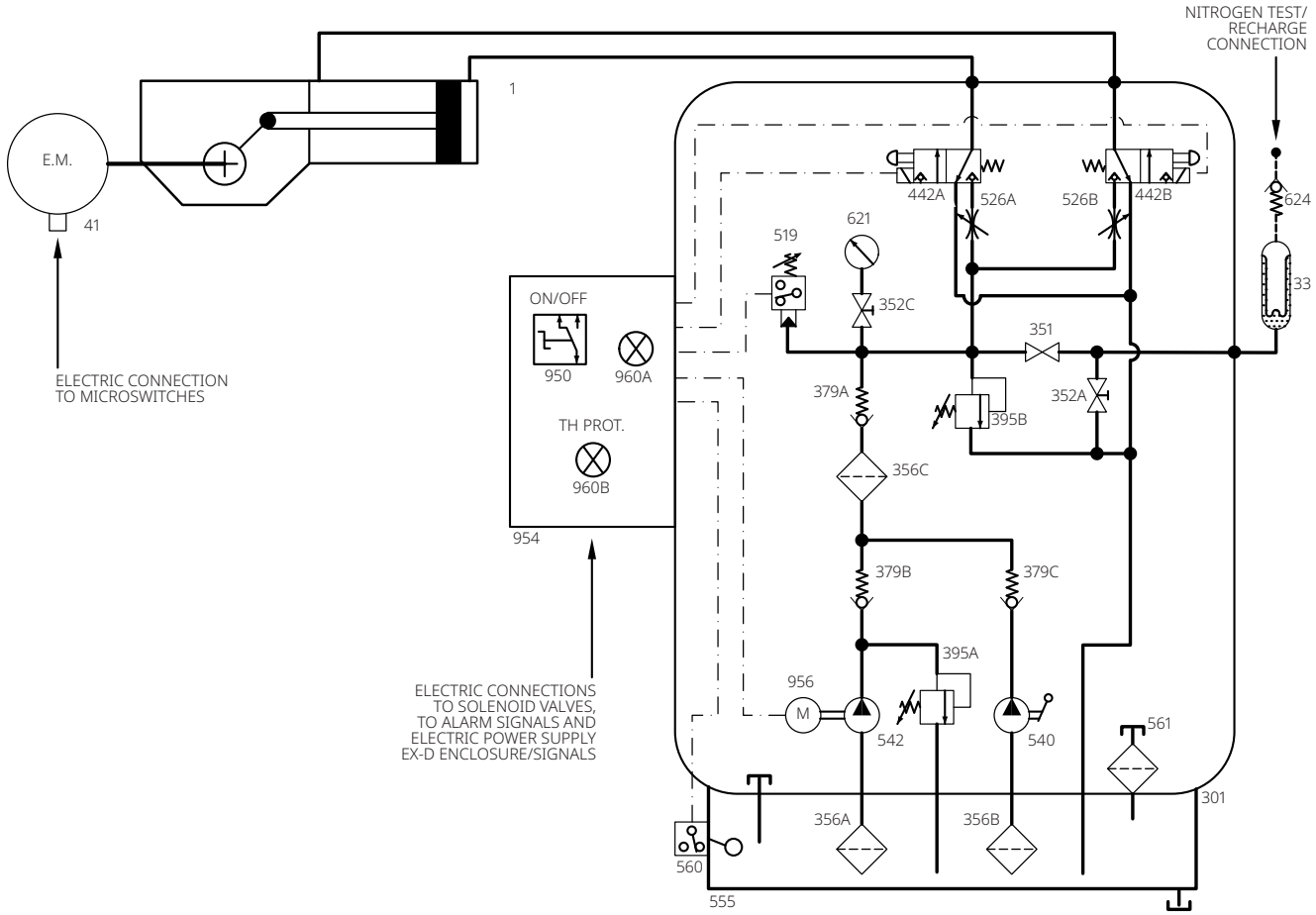
Figure 4. Spring-Return Compact Design

NOTE:
Dimensions are according to the requested valve stroke and thrust.

Control Schematic (Samples)

EHT Quarter-Turn

Figure 6. On/off



EHTS Quarter-Turn

Figure 7. On/off

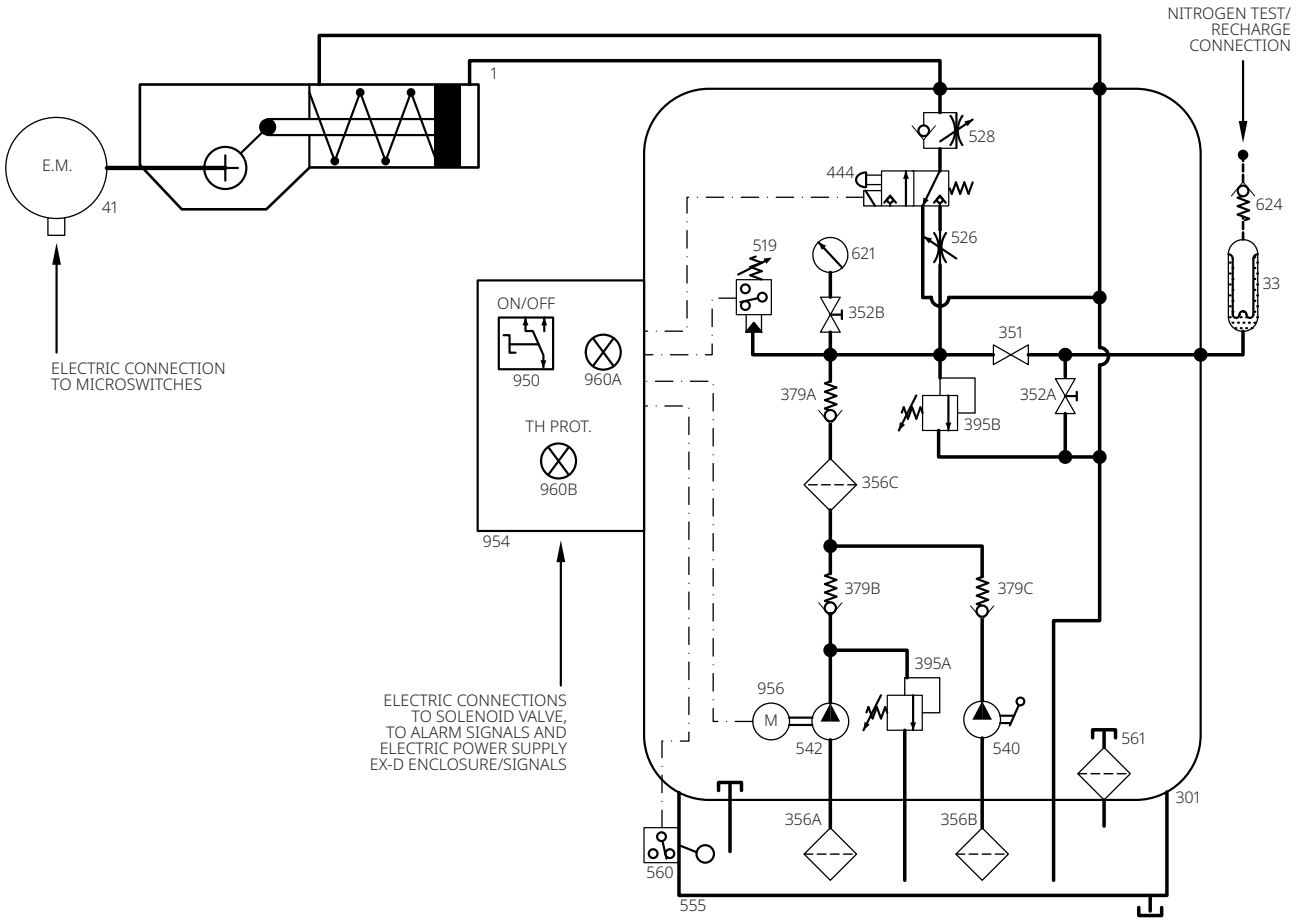


Figure 8. Quick-Acting, Smart, Modulating

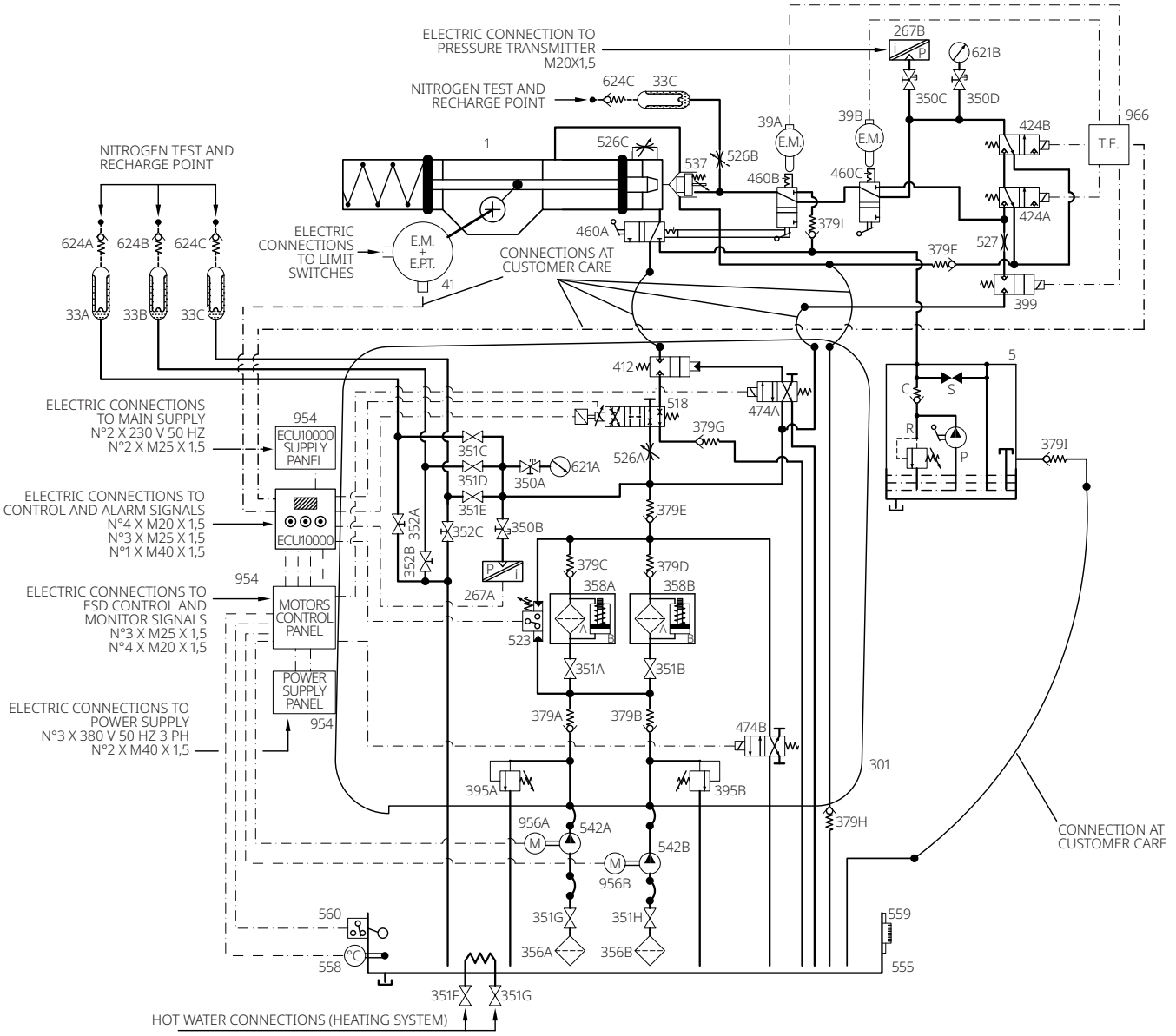
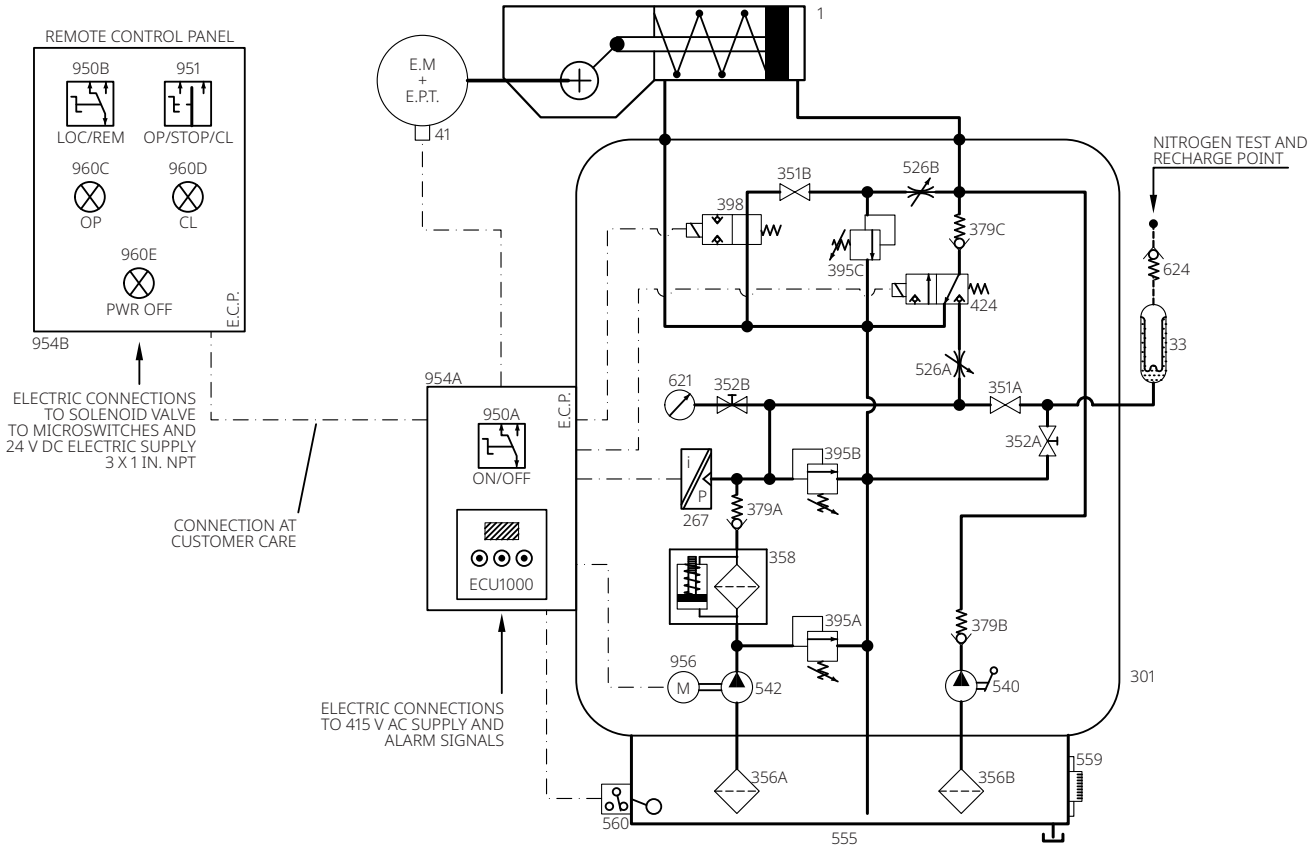
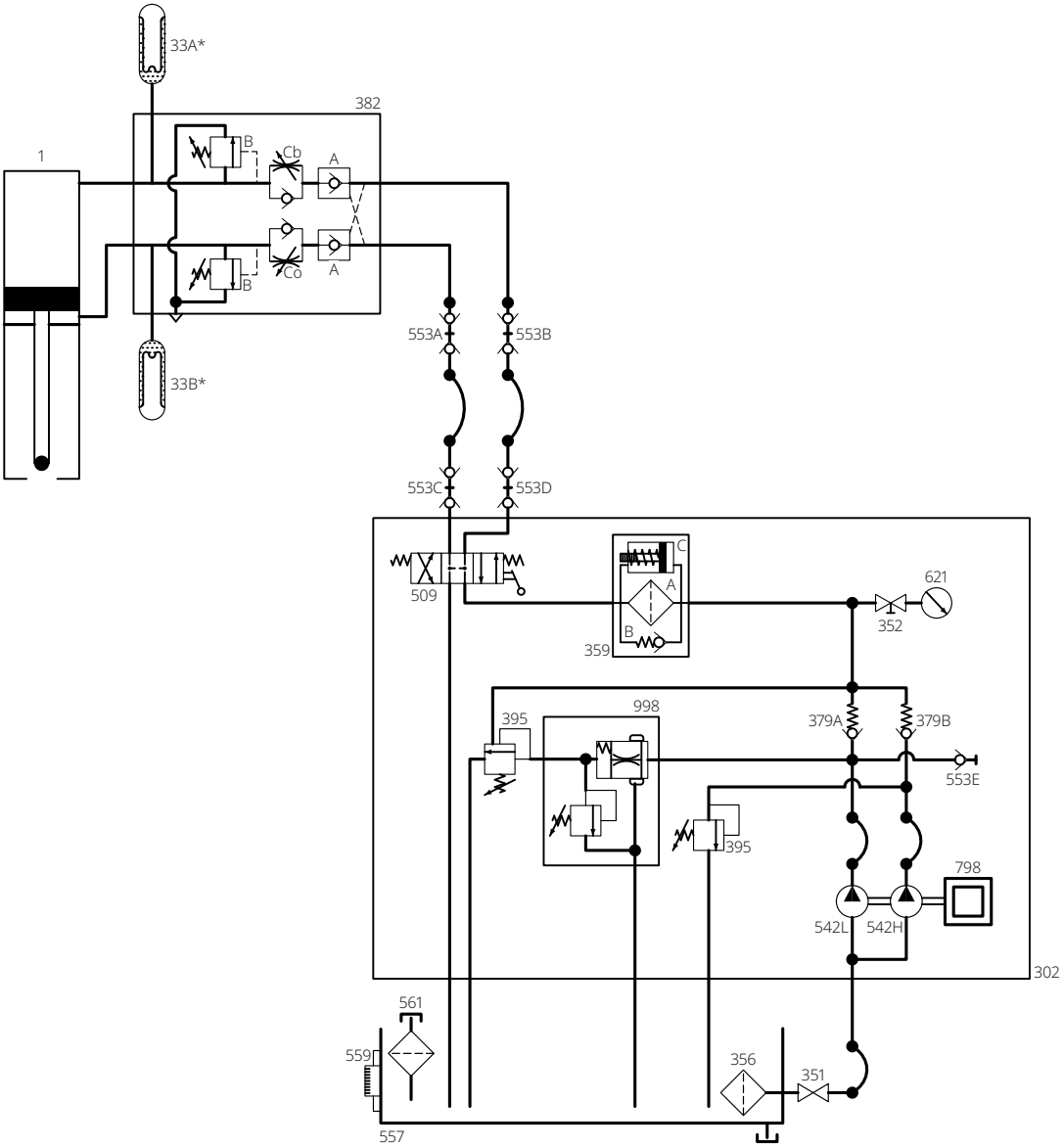


Figure 9. Quick-Acting, Smart, Modulating, Remote Control Panel



EHT Linear Actuators

Figure 10. On/off, Remote HPU Installation (Portable Type)

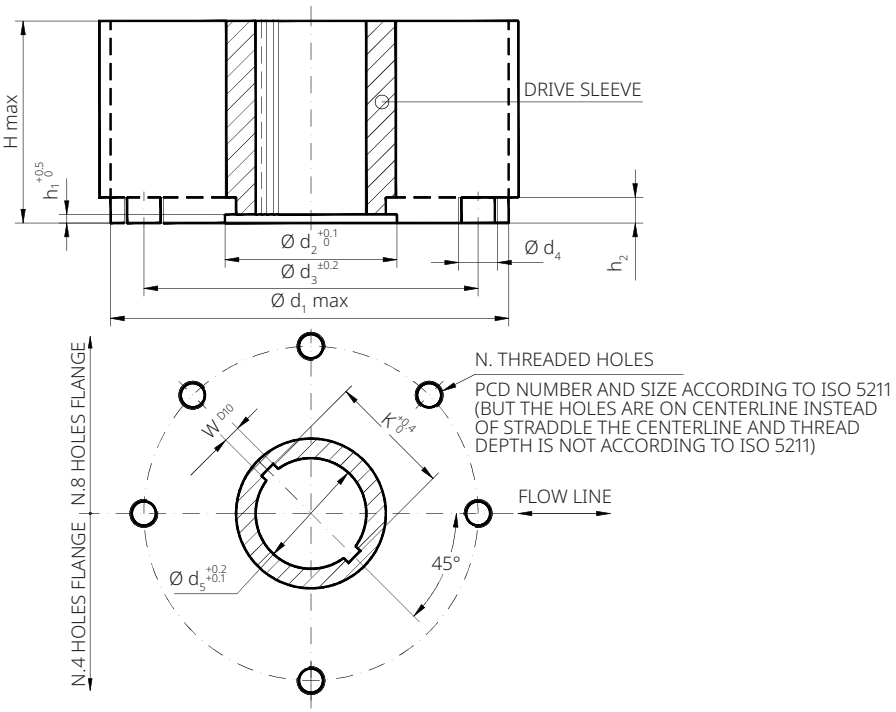


NOTE:
* For thermal expansion compensation

EHT and EHTS High Pressure Electro-Hydraulic Actuators

Mounting Dimensions

Figure 11. Actuator Models 0.3 to 6 (SCN6200E - Rev. 15/10/19)



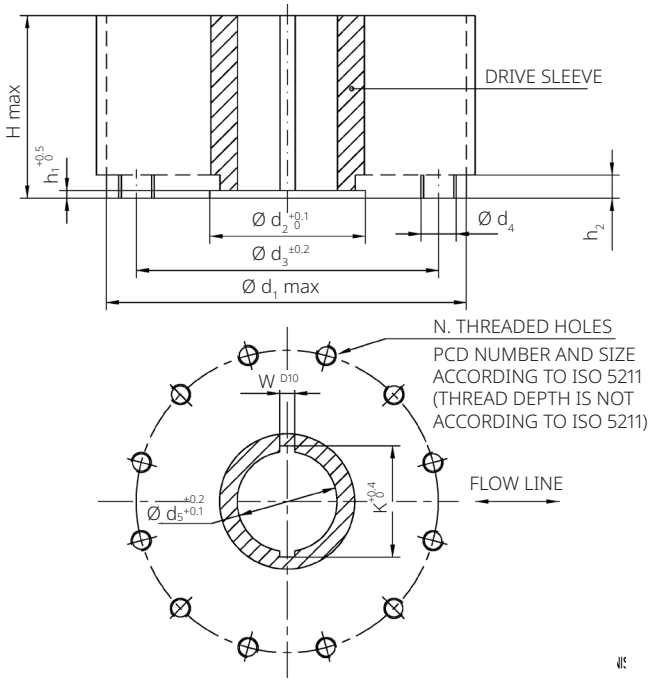
TOP VIEW OF THE SCOTCH YOKE MECHANISM
(ACTUATOR SHOWN IN CLOSED POSITION)

Table 2. Coupling dimensions (mm) Models 0.3 to 6

Actuator Model	Ø d_1	Ø d_2	Ø d_3	Ø d_4	N	h_1	h_2	H max	Ø d_5	W	K
0.3	240	93	165	M20	4	5	17	127	70	12	75.6
0.9	310	112	254	M16	8	5	19	150	86	14	93.6
1.5	360	144	298	M20	8	6	19	190	112	18	119.0
3	430	195	356	M30	8	9	23	200	157	25	167.8
6	520	250	406	M36	8	14	29	260	200	28	212.8

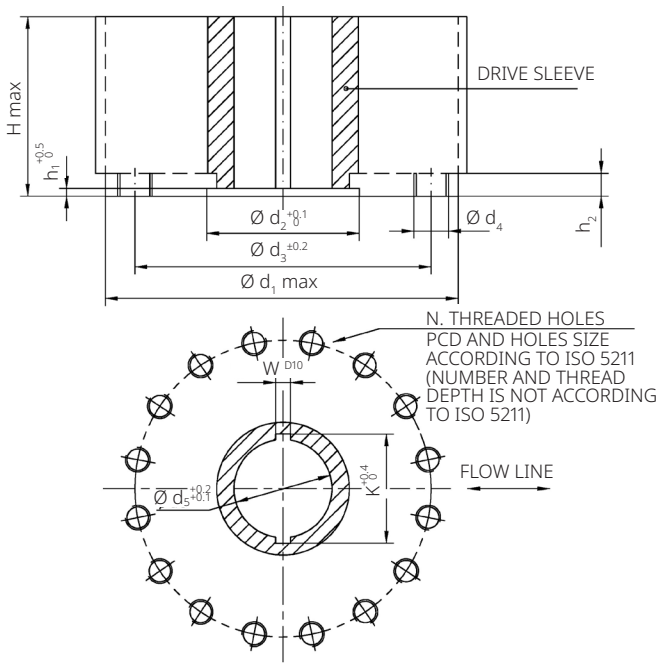
NOTE:
Ø d_1 is maximum adapter flange diameter.

Figure 12. Actuator Model 14 (SCN6201E - Rev. 16/06/20)



TOP VIEW OF THE SCOTCH YOKE MECHANISM
(ACTUATOR SHOWN IN CLOSED POSITION)

Figure 13. Actuator Models 18 and 32 (SCN6201E - Rev. 16/06/20)



TOP VIEW OF THE SCOTCH YOKE MECHANISM
(ACTUATOR SHOWN IN CLOSED POSITION)

Table 3. Coupling Dimensions (mm) Model 14

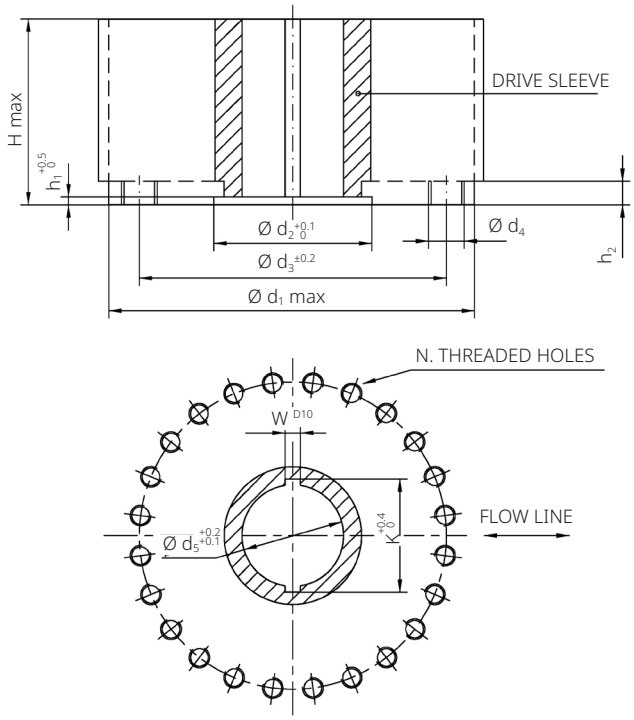
Actuator Model	Ø d_1	Ø d_2	Ø d_3	Ø d_4	N	h_1	h_2	H max	Ø d_5	W	K
14	580	250	483	M36	12	10	29	340	175	45	195.8

Table 4. Coupling Dimensions (mm) Models 18 and 32

Actuator Model	Ø d_1	Ø d_2	Ø d_3	Ø d_4	N	h_1	h_2	H max	Ø d_5	W	K
18	680	290	603	M36	16	12	32	350	200	45	220.8
32	780	310	603	M36	16	12	32	400	220	50	242.8

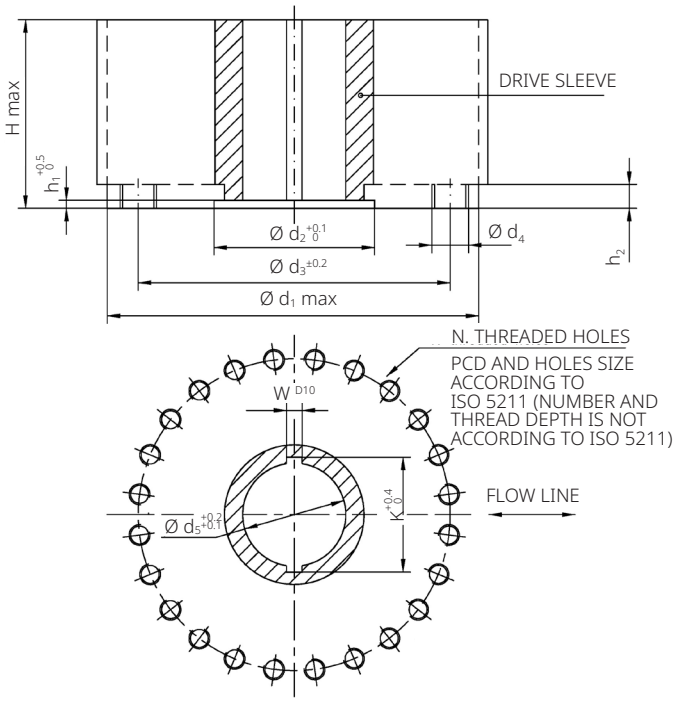
NOTE:
Ø d_1 is maximum adapter flange diameter.

Figure 14. Actuator Model 50 (SCN62011 - Rev. 15/10/19)



TOP VIEW OF THE SCOTCH YOKE MECHANISM
(ACTUATOR SHOWN IN CLOSED POSITION)

Figure 15. Actuator Models 65 and 80 (SCN62013 - Rev. 19/06/20)



TOP VIEW OF THE SCOTCH YOKE MECHANISM
(ACTUATOR SHOWN IN CLOSED POSITION)

Table 5. Coupling Dimensions (mm) Model 50

Actuator Model	Ø d_1	Ø d_2	Ø d_3	Ø d_4	N	h_1	h_2	H max	Ø d_5	W	K
50	800	315	698	M36	24	10	32	430	240	56	264.8

Table 6. Coupling Dimensions (mm) Models 65 and 80

Actuator Model	Ø d_1	Ø d_2	Ø d_3	Ø d_4	N	h_1	h_2	H max	Ø d_5	W	K
65	910	370	813	M42	24	12	37	540	280	46	327.4
80	900	970	813	M42	24	12	37	540	280	46	327.4

NOTE:
Ø d_1 is maximum adapter flange diameter.

Figure 16. Actuator Model 100 (SCN62015 - Rev. 22/07/22)

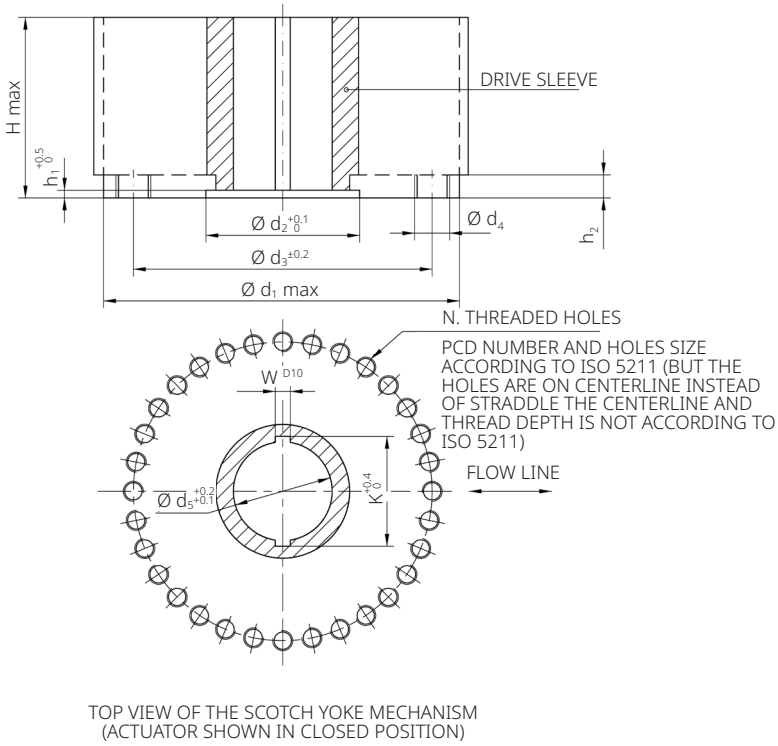


Table 7. Coupling dimensions (mm) Model 100

Actuator Model	Ø d_1	Ø d_2	Ø d_3	Ø d_4	N	h_1	h_2	H max	Ø d_5	W	K
100	1200	450	1042	M42	32	8	57	600	300	70	328.8

NOTE:
Ø d_1 is maximum adapter flange diameter.

Figure 17. Stem Acceptance

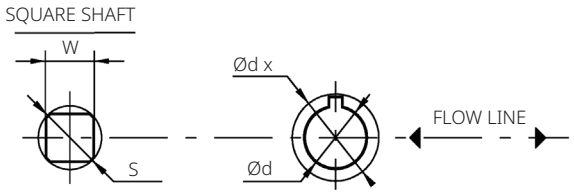


Table 8. Stem Acceptance Dimensions for Insert Bushes (mm)

Housing Size	Maximum Stem Diameter with Rectangular Key d (bxh) [2] (mm)	Maximum Accepted Diameter Described by the Key dx [3] (mm)	Maximum Accepted Square Stem (mm)		Maximum Accepted Square Stem Height (mm)**
			W	S*	
0.3	53 (16x10)	64	46	64	120
0.9	62 (18x11)	73	55	73	140
1.5	85 (22x14)	99	73	99	180
3	126 (32x18)	145	104	145	190
6	161 (40x22)	185	133	185	250
14	105 (28x16)	121	-	-	340
18	122 (32x18)	140	-	-	350
32	160 (40x22)	183	-	-	400
50	160 (40x22)	183	-	-	430
65	-	-	-	-	540
80	-	-	-	-	540
100	-	-	-	-	600

NOTES:
1. The listed maximum acceptance values are applicable for stems with keyways parallel or perpendicular to the flow line and for square stems with diagonal parallel with the flow line.
2. Key according to UNI6604 or DIN 6885 sh.1 or ISO 773 or equivalent.
3. For stem with key not correspondent to any specification, check the dimension dx.

* S max: maximum external diameter in case of rounded edge.
** Without adapter flange.

EHT and EHTS Pneumatic Actuator

Accessories Mounting Dimensions

Figure 18. Actuator Models 0.3 to 100

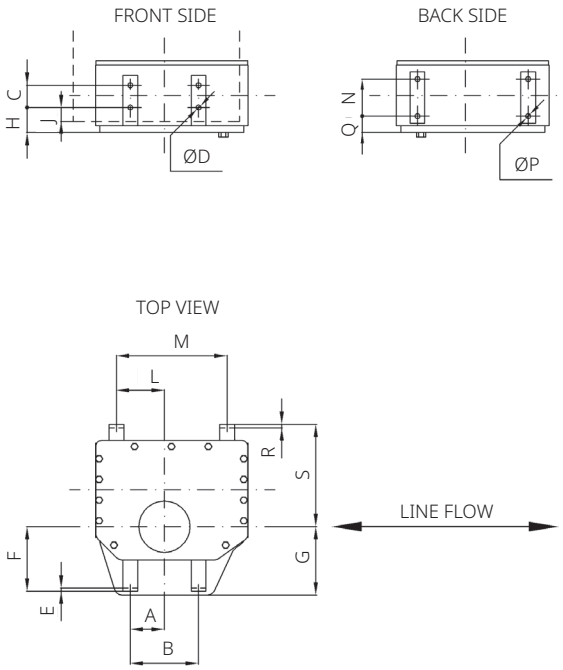


Table 9. Accessories Mounting Dimensions (mm)

Actuator Model	A	B	C	Ø D	E	F	G	H	J	L	M	N	Ø P	Q	R	S
0.3	77.5	155	60	14	5	113	119	37	12	92	200	60	14	36	5	200
0.9	92.5	185	60	14	5	155	170	61	35	85	200	60	14	48	5	243
1.5	92.5	185	60	14	5	175	185	62	35	130	300	100	14	45	5	284
3	117.5	235	85	23	8	203	215	57	25	230	500	100	14	54	5	371
6	137	455	115	23	8	248	260	59	22	224	500	100	14	87	8	480
14	315	630	200	27	10	227	330	97	55	220	500	170	27	99	8	543
18	315	630	200	27	10	235	340	72	32	306	680	215	27	80	10	600
32	315	630	200	27	10	385	395	72	32	414	890	215	27	149	10	660
50	387.5	860	250	30	12	372	387	77	35	473	1030	215	27	163	10	1072
65	391	860	250	30	15	380	455	107	50	474	1030	215	27	270	15	830
80	500	1000	250	30	15	437.5	450	107	50	500	1100	215	27	270	15	900
100	500	1100	250	30	20	564	600	127	50	500	1100	215	27	333	15	1275

Figure 19. Accessories Mounting Holes on Actuator Top (Cover and Yoke)

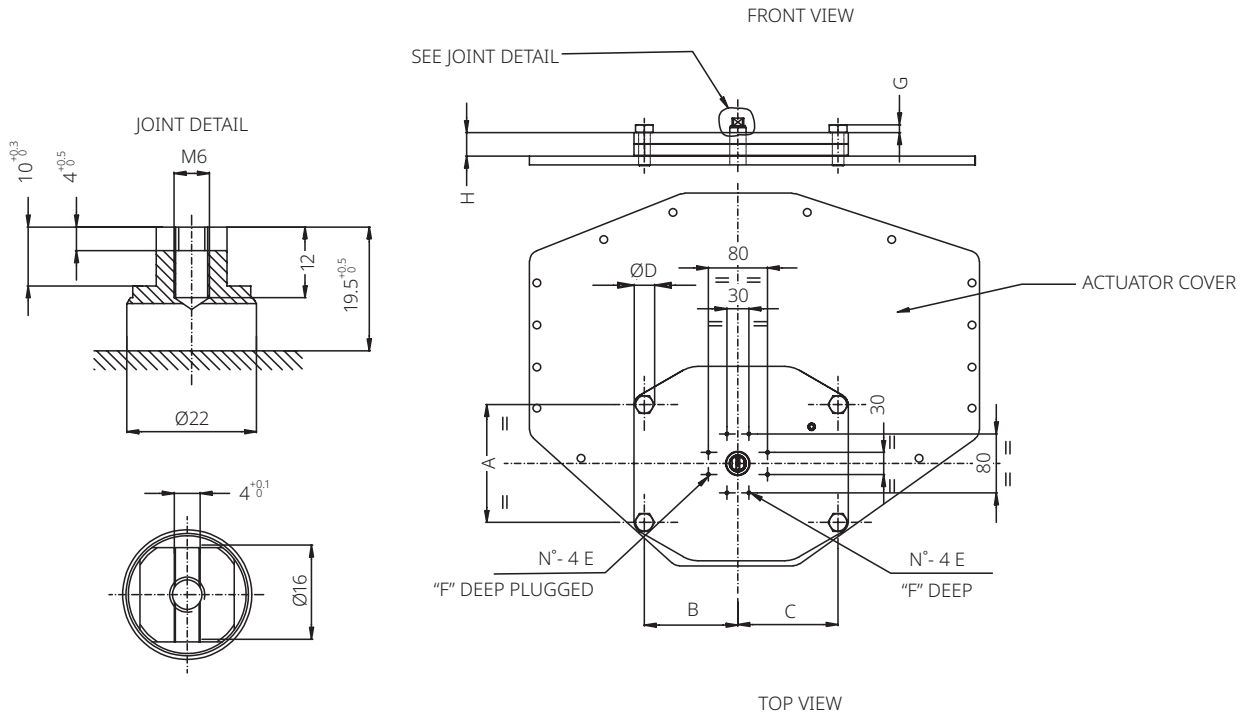


Table 10. Dimensions (mm)

Actuator Model	A	B	C	D	E	F	G	H
0.3	N/A	N/A	N/A	N/A	M5	9	N/A	32
0.9	N/A	N/A	N/A	N/A	M5	9	N/A	32
1.5	N/A	N/A	N/A	N/A	M5	9	N/A	32
3	160	127	136	30	M5	9	11	32
6	160	127	136	30	M5	9	11	32
14	160	127	136	30	M5	9	11	32
18	314	109	109	30	M5	9	11	29
32	314	109	109	30	M5	9	11	29
50	280.6	138.5	138.5	37	M5	9	13	32
65	410	180	180	44	M5	9	16	32
80	410	180	180	44	M5	9	16	32
100	460	205	205	44	M5	9	16	32

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