



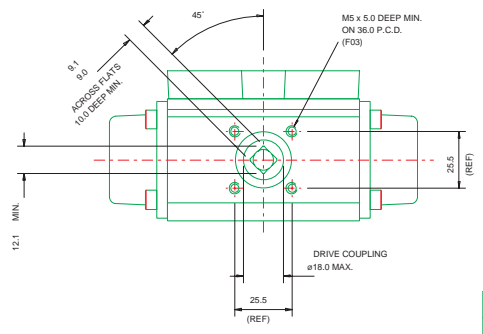
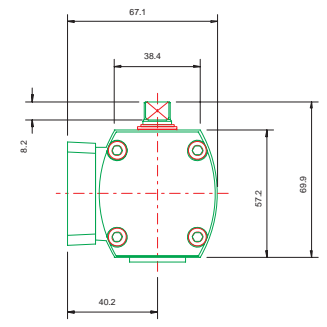
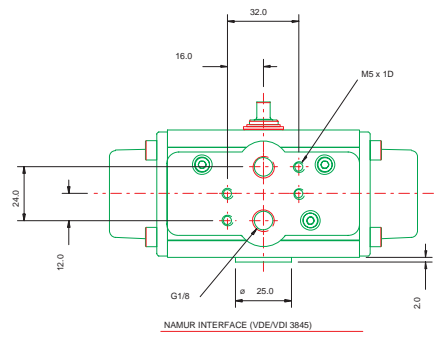
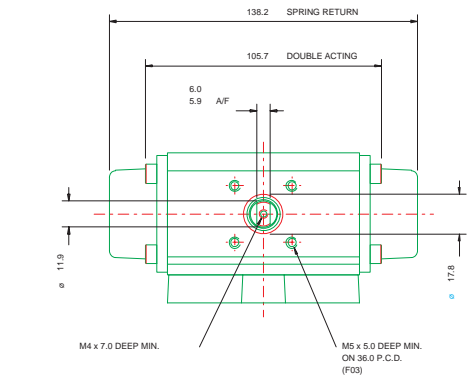
Drawing Index

ACTUATOR ASSEMBLY DRAWINGS

Drawing Title

Number

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ACTUATOR SHOWN IN CLOSED POSITION
WITH PISTONS TOGETHER.
OPENING COUNTER-CLOCKWISE.
(VIEWED FROM ABOVE)

REV	C/N	SIGN	DATE	CHK	DATE	SCALE	DRAWN:- DATE:-	CRH DATE:-	CHK:- DATE:-	DAS DATE:-	APP:- DATE:-	RSG DATE:-	TITLE	SIZE	DRAWING NUMBER	SHEET 1 OF 1	REV
B	27749	AA	27/10/1997	DAS		1/1	DAS 16/06/1995						40R SERIES ACTUATOR SIZE 05 MOUNTING & INSTALLATION DETAILS	A1	40R-05-0001		B

UNSPECIFIED TOLS
DIMENSIONS:- ø
ANGLES:- °

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WORCESTER CONTROLS
BURRELL HILL, HAYWARDS Heath, WEST SUSSEX, BN15 1TL, ENGLAND

FOR PARTS REFER TO WORCESTER SPEC 300001
DAS
06/07/1995

APP:-
DATE:-

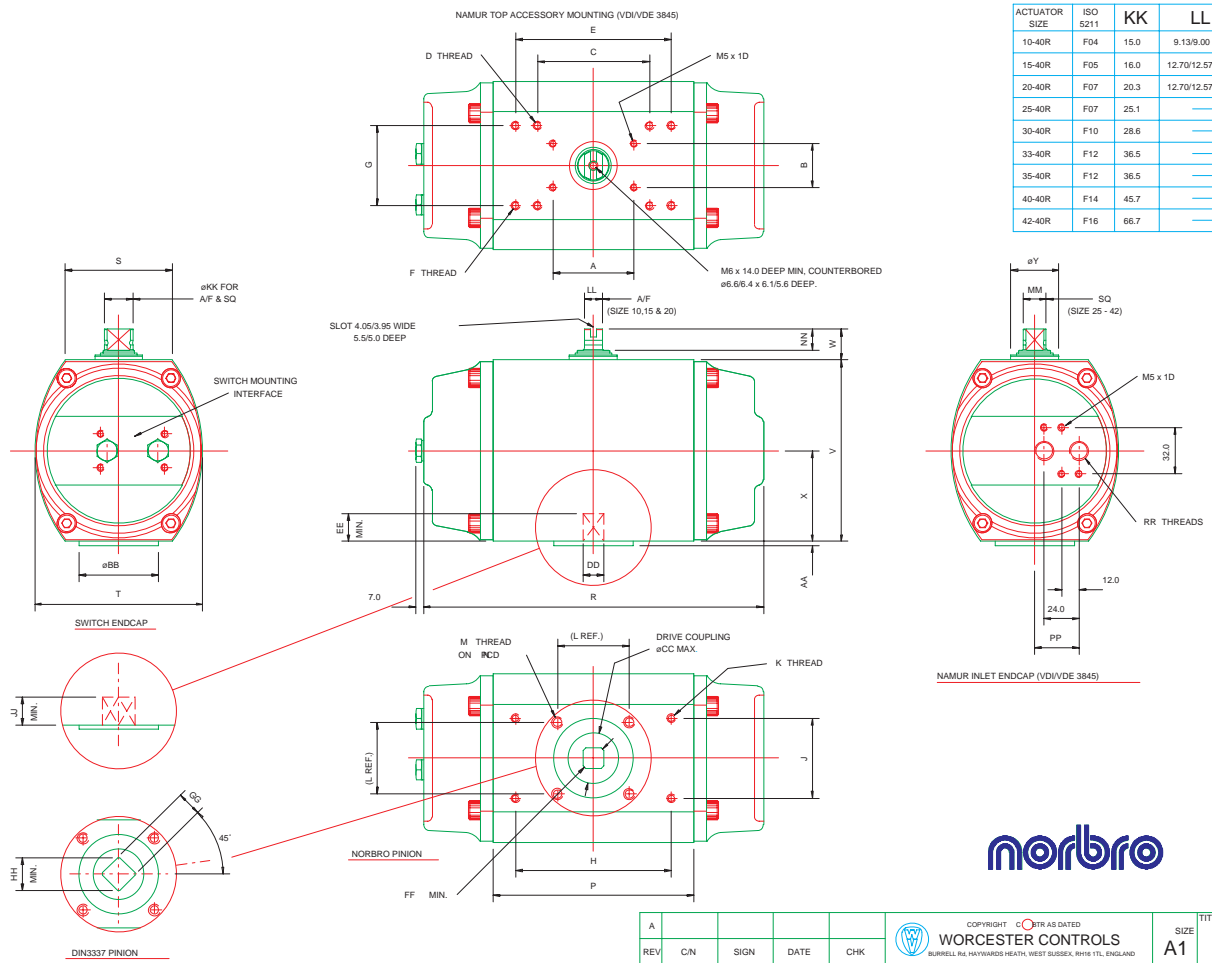
RSG
DATE:-

DRAWING NUMBER
40R-05-0001

SHEET 1 OF 1
REV
B

ACTUATOR SIZE	ISO 5211	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	V	W	X	Y	ACTUATOR SIZE	ISO 5211	AA	BB	CC	DD	EE	FF	GG	HH	JJ
10-40R	F04	80.0	30.0	—	—	—	—	73.0	31.8	—	M5x1D	29.7	M5x1.5D	42.0	89.7	154.6	48.6	76.8	85.5	20.0	42.8	23.3	10-40R	F04	3.0	30.0	23.0	11.23/11.10	15.0	13.8	11.11/11.00	14.1	12.0
15-40R	F05	80.0	30.0	—	—	—	—	73.0	31.8	—	M5x1D	35.4	M6x1.5D	50.0	113.5	194.4	55.6	94.0	104.0	20.0	52.0	26.0	15-40R	F05	3.0	35.0	26.0	14.40/14.27	19.0	17.8	14.11/14.00	18.1	16.0
20-40R	F07	80.0	30.0	107.2	M6x1D	—	—	49.2	107.2	49.2	M6x1D	49.5	M8x1.5D	70.0	138.8	234.5	74.3	116.0	126.0	20.0	62.5	33.3	20-40R	F07	3.0	55.0	33.0	14.40/14.27	19.0	17.8	17.11/17.00	22.2	19.0
25-40R	F07	80.0	30.0	107.2	M6x1.5D	—	—	49.2	107.2	49.2	M6x1.5D	49.5	M8x1.5D	70.0	156.9	269.9	83.3	135.5	146.6	30.0	73.3	41.4	25-40R	F07	3.0	55.0	42.0	19.18/19.05	27.0	23.8	17.11/17.00	22.2	19.0
30-40R	F10	80.0	30.0	161.1	M6x1.5D	—	—	73.0	161.1	73.0	M6x1.5D	72.1	M10x1.5D	102.0	188.7	324.7	100.3	155.0	167.5	30.0	83.8	48.2	30-40R	F10	3.0	70.0	48.0	19.18/19.05	27.0	23.8	22.13/22.00	28.2	24.0
33-40R	F12	80.0	30.0	161.1	M8x1.5D	—	—	86.0	161.1	86.0	M8x1.5D	88.4	M12x1.5D	125.0	226.6	397.1	127.0	206.0	214.0	30.0	107.0	52.3	33-40R	F12	3.0	85.0	55.0	25.53/25.40	33.0	31.8	27.13/27.00	36.2	29.0
35-40R	F12	80.0	30.0	212.8	M8x1.5D	133.4	M8x1.5D	101.6	212.8	101.6	M8x1.5D	88.4	M12x1.5D	125.0	247.7	422.3	145.0	213.0	217.0	30.0	108.5	58.1	35-40R	F12	3.0	85.0	61.0	25.53/25.40	33.0	31.8	27.13/27.00	36.2	29.0
40-40R	F14	130.0	30.0	—	—	—	—	133.4	—	—	M8x1.5D	101.6	M16x1.5D	140.0	294.4	508.4	137.5	244.9	276.0	50.0	149.0	66.5	40-40R	F14	3.5	100.0	72.0	28.70/28.57	40.0	35.8	36.16/36.00	48.2	38.0
42-40R	F16	130.0	30.0	—	—	—	—	133.4	—	—	M8x1.5D	101.6	M20x1.5D	165.0	359.4	615.7	165.0	283.0	316.0	50.0	170.0	88.9	42-40R	F16	4.0	130.0	90.0	46.16/46.00	50.0	57.6	46.16/46.00	60.2	48.0

ACTUATOR SIZE	ISO 5211	KK	LL	MM	NN	PP	RR
10-40R	F04	15.0	9.13/9.00	—	15.2	21.5	G1/8
15-40R	F05	16.0	12.70/12.57	—	13.1	26.0	G1/4
20-40R	F07	20.3	12.70/12.57	—	13.0	30.5	G1/4
25-40R	F07	25.1	—	19.05/18.92	21.2	33.5	G1/4
30-40R	F10	28.6	—	22.23/22.10	20.9	34.5	G1/4
33-40R	F12	36.5	—	28.58/28.45	20.2	45.0	G1/4
35-40R	F12	36.5	—	28.58/28.45	19.9	43.0	G1/4
40-40R	F14	45.7	—	34.93/34.80	37.0	46.6	G1/4
42-40R	F16	66.7	—	50.80/50.67	34.5	58.0	G1/4



ACTUATOR SHOWN IN CLOSED POSITION WITH PISTONS TOGETHER. OPENING COUNTER-CLOCKWISE. (VIEWED FROM ABOVE)

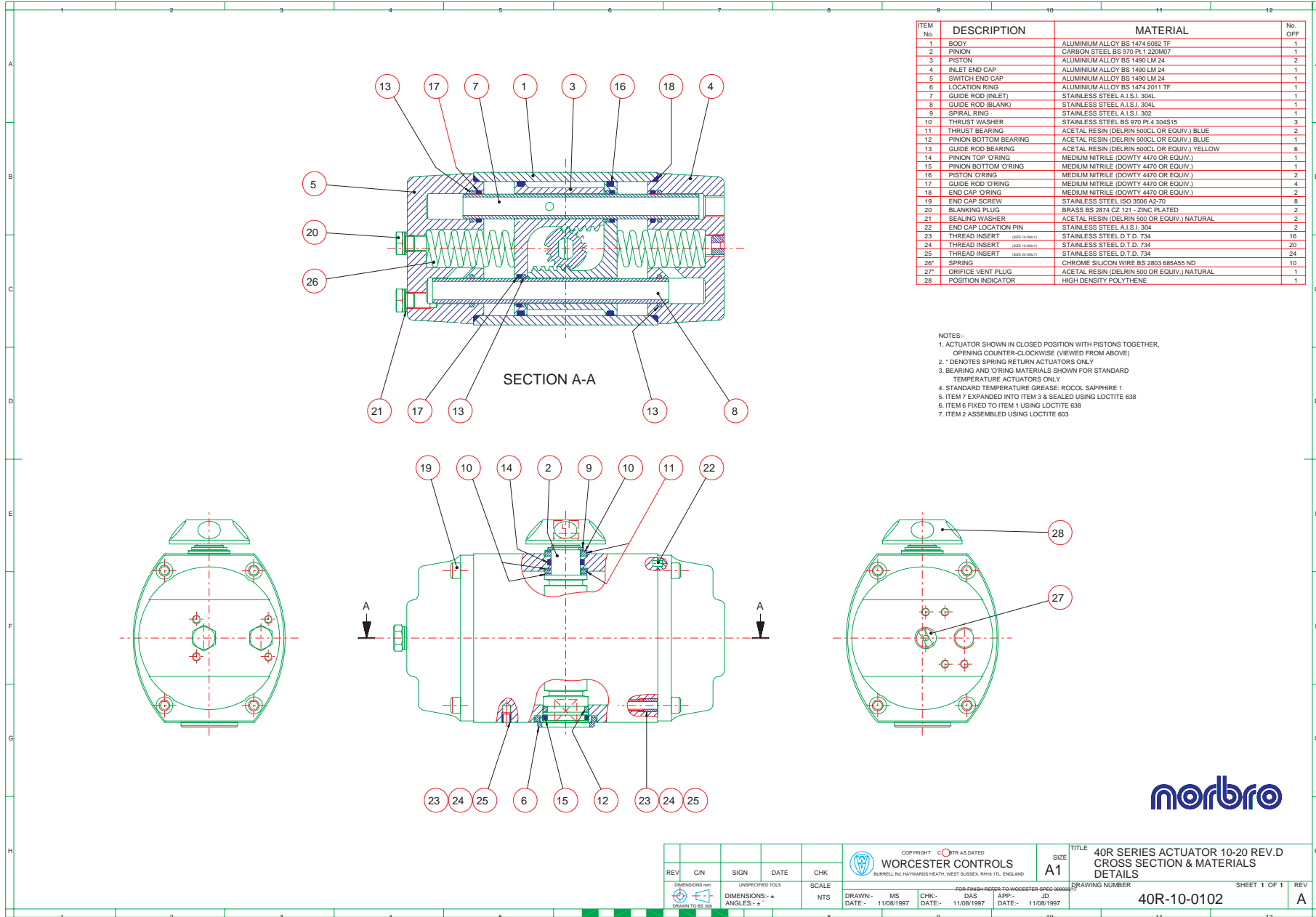


REV	C/N	SIGN	DATE	CHK	SCALE	DRAWN	DAS	CHK	M/S	APP	DATE	TITLE	SIZE	DRAWING NUMBER	SHEET 1 OF 1	REV
					NTS							40R SERIES ACTUATOR 10-42 REV.D MOUNTING & INSTALLATION DETAILS	A1	40R-10-0101		A

UNSPECIFIED TOLS DIMENSIONS - # ANGLES - #

FOR REFERENCE TO WORCESTER SPEC 3000 517

DATE: 01/10/1997 DATE: 01/10/1997 DATE: 01/10/1997

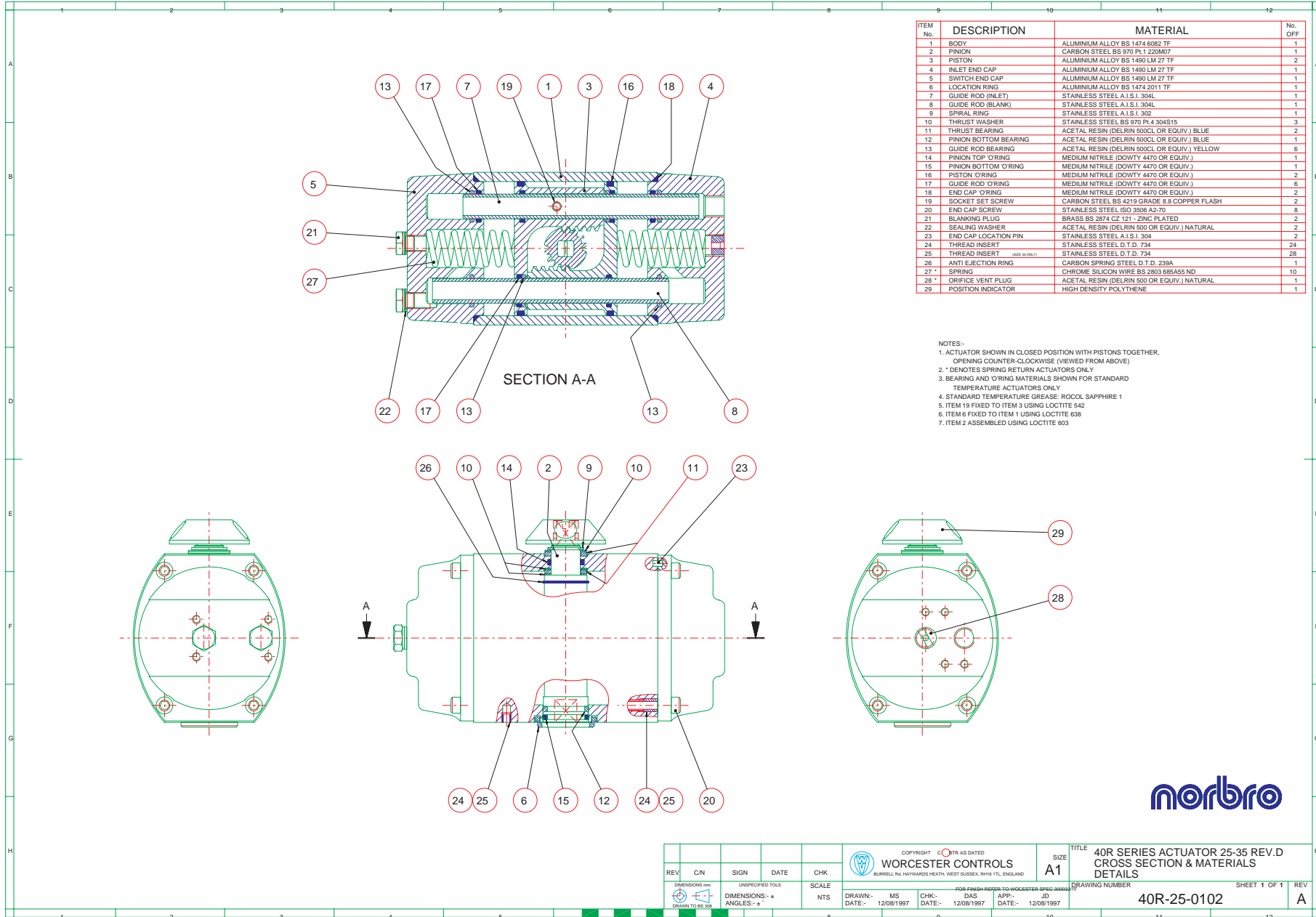


ITEM No.	DESCRIPTION	MATERIAL	No. OFF
1	BODY	ALUMINIUM ALLOY BS 1474 8052 TF	1
2	PINION	CARBON STEEL BS 970 PL1 220M07	1
3	PISTON	ALUMINIUM ALLOY BS 1480 LM 24	2
4	INLET END CAP	ALUMINIUM ALLOY BS 1480 LM 24	1
5	SWITCH END CAP	ALUMINIUM ALLOY BS 1480 LM 24	1
6	LOCATION RING	ALUMINIUM ALLOY BS 1474 2011 TF	1
7	GUIDE ROD (INLET)	STAINLESS STEEL A.I.S.I. 304L	1
8	GUIDE ROD (BLANK)	STAINLESS STEEL A.I.S.I. 304L	1
9	SPIRAL RING	STAINLESS STEEL A.I.S.I. 302	1
10	THRUST WASHER	STAINLESS STEEL BS 970 PL 4 304S15	3
11	THRUST BEARING	ACETAL RESIN (DELTRIN 500CL OR EQUIV.) BLUE	2
12	PINION BOTTOM BEARING	ACETAL RESIN (DELTRIN 500CL OR EQUIV.) BLUE	1
13	GUIDE ROD BEARING	ACETAL RESIN (DELTRIN 500CL OR EQUIV.) YELLOW	6
14	PINION TOP O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	1
15	PINION BOTTOM O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	1
16	PISTON O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	2
17	GUIDE ROD O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	4
18	END CAP O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	2
19	END CAP SCREW	STAINLESS STEEL ISO 3506 A2-70	8
20	BLANKING PLUG	BRASS BS 2874 CZ 121 - ZINC PLATED	2
21	SEALING WASHER	ACETAL RESIN (DELTRIN 500 OR EQUIV.) NATURAL	2
22	END CAP LOCATION PIN	STAINLESS STEEL A.I.S.I. 304	2
23	THREAD INSERT	(ISO 10263/1) STAINLESS STEEL D.T.D. 734	16
24	THREAD INSERT	(ISO 10263/1) STAINLESS STEEL D.T.D. 734	20
25	THREAD INSERT	(ISO 10263/1) STAINLESS STEEL D.T.D. 734	24
26	SPRING	CHROME SILICON WIRE BS 2803 685AS5 ND	10
27	ORIFICE VENT PLUG	ACETAL RESIN (DELTRIN 500 OR EQUIV.) NATURAL	1
28	POSITION INDICATOR	HIGH DENSITY POLYTHENE	1

- NOTES:-
1. ACTUATOR SHOWN IN CLOSED POSITION WITH PISTONS TOGETHER. OPENING COUNTER-CLOCKWISE (VIEWED FROM ABOVE)
 2. * DENOTES SPRING RETURN ACTUATORS ONLY
 3. BEARING AND O'RING MATERIALS SHOWN FOR STANDARD TEMPERATURE ACTUATORS ONLY
 4. STANDARD TEMPERATURE GREASE: ROCOL SAPPHIRE 1
 5. ITEM 7 EXPANDED INTO ITEM 3 & SEALED USING LOCTITE 638
 6. ITEM 6 FIXED TO ITEM 1 USING LOCTITE 638
 7. ITEM 2 ASSEMBLED USING LOCTITE 603



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DIMENSIONS mm UNSPECIFIED TOLS DIMENSIONS - # ANGLES - # °				SCALE NTS	
DRAWN:- MS DATE:- 11/08/1997		CHK:- DAS DATE:- 11/08/1997		APP:- DATE:- 11/08/1997	
FOR PARTS REFER TO WORCESTER-SPIC 00004 17				SIZE A1	
DRAWING NUMBER 40R-10-0102				SHEET 1 OF 1 REV A	

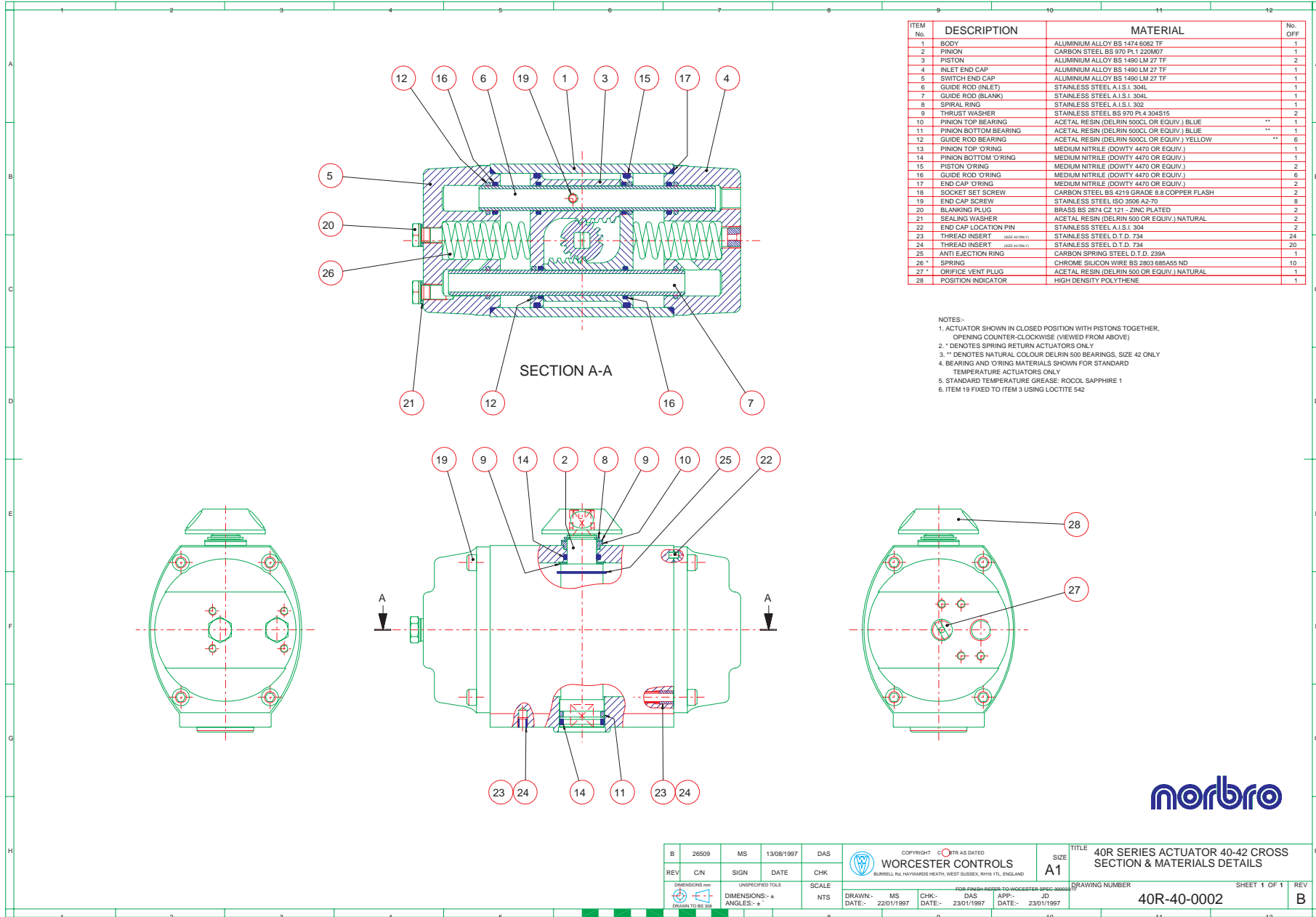


ITEM No.	DESCRIPTION	MATERIAL	No. OFF
1	BODY	ALUMINIUM ALLOY BS 1474 6062 TF	1
2	PINION	CARBON STEEL BS 970 PL1 220M07	1
3	PISTON	ALUMINIUM ALLOY BS 1480 LM 27 TF	2
4	INLET END CAP	ALUMINIUM ALLOY BS 1480 LM 27 TF	1
5	SWITCH END CAP	ALUMINIUM ALLOY BS 1480 LM 27 TF	1
6	LOCATION RING	ALUMINIUM ALLOY BS 1474 2011 TF	1
7	GUIDE ROD (INLET)	STAINLESS STEEL A.I.S.I. 304L	1
8	GUIDE ROD (BLANK)	STAINLESS STEEL A.I.S.I. 304L	1
9	SPIRAL RING	STAINLESS STEEL A.I.S.I. 302	1
10	THRUST WASHER	STAINLESS STEEL BS 970 PL 4 304S15	3
11	THRUST BEARING	ACETAL RESIN (DELTRIN 500CL OR EQUIV.) BLUE	2
12	PINION BOTTOM BEARING	ACETAL RESIN (DELTRIN 500CL OR EQUIV.) BLUE	1
13	GUIDE ROD BEARING	ACETAL RESIN (DELTRIN 500CL OR EQUIV.) YELLOW	6
14	PINION TOP O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	1
15	PINION BOTTOM O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	1
16	PISTON O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	2
17	GUIDE ROD O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	6
18	END CAP O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	2
19	SOCKET SET SCREW	CARBON STEEL BS 4219 GRADE 8.8 COPPER FLASH	2
20	END CAP SCREW	STAINLESS STEEL ISO 3506 A2-70	8
21	BLANKING PLUG	BRASS BS 2874 C2 121 - ZINC PLATED	2
22	SEALING WASHER	ACETAL RESIN (DELTRIN 500 OR EQUIV.) NATURAL	2
23	END CAP LOCATION PIN	STAINLESS STEEL A.I.S.I. 304	2
24	THREAD INSERT	STAINLESS STEEL T.D. 734	24
25	THREAD INSERT	STAINLESS STEEL T.D. 734	28
26	ANTI EJECTION RING	CARBON SPRING STEEL D.T.D. 239A	1
27	SPRING	CHROME SILICON WIRE BS 2803 685A55 ND	10
28	ORIFICE VENT PLUG	ACETAL RESIN (DELTRIN 500 OR EQUIV.) NATURAL	1
29	POSITION INDICATOR	HIGH DENSITY POLYTHENE	1

- NOTES:-
1. ACTUATOR SHOWN IN CLOSED POSITION WITH PISTONS TOGETHER. OPENING COUNTER-CLOCKWISE (VIEWED FROM ABOVE)
 2. * DENOTES SPRING RETURN ACTUATORS ONLY
 3. BEARING AND O'RING MATERIALS SHOWN FOR STANDARD TEMPERATURE ACTUATORS ONLY
 4. STANDARD TEMPERATURE GREASE: ROCOL SAPPHIRE 1
 5. ITEM 19 FIXED TO ITEM 3 USING LOCTITE 542
 6. ITEM 6 FIXED TO ITEM 1 USING LOCTITE 638
 7. ITEM 2 ASSEMBLED USING LOCTITE 603



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REV C/N SIGN DATE CHK	DIMENSIONS mm UNSPECIFIED TOLS DIMENSIONS - # ANGLES - # °	SCALE NTS	DRAWN:- MS DATE:- 12/08/1997	CHK:- DAS DATE:- 12/08/1997	APP:- DATE:- 12/08/1997
DRAWING NUMBER 40R-25-0102				SHEET 1 OF 1 REV A	SIZE A1

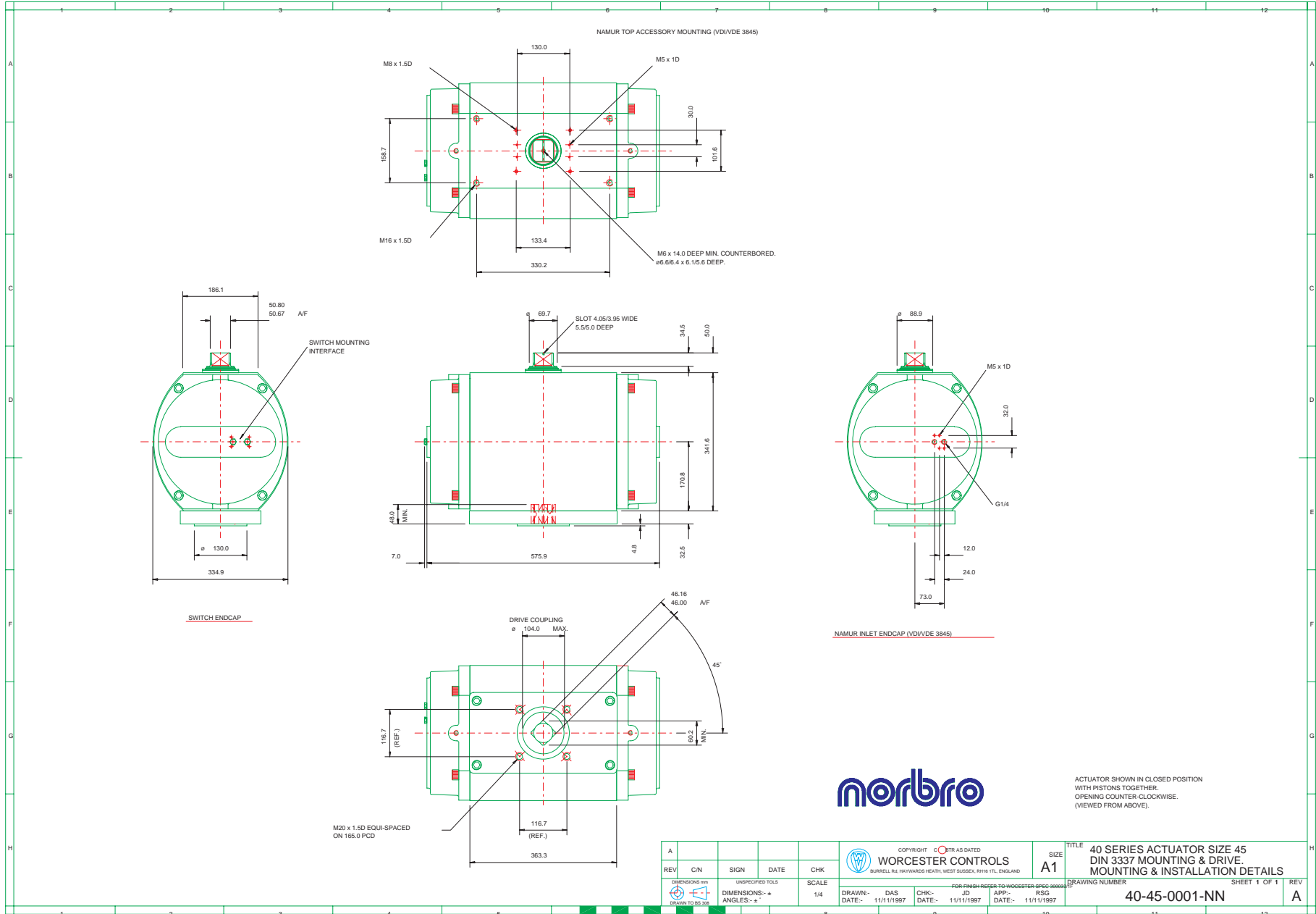


ITEM No.	DESCRIPTION	MATERIAL	No. OFF
1	BODY	ALUMINIUM ALLOY BS 1474 6062 TF	1
2	PINION	CARBON STEEL BS 970 PL1 220M07	1
3	PISTON	ALUMINIUM ALLOY BS 1490 LM 27 TF	2
4	INLET END CAP	ALUMINIUM ALLOY BS 1490 LM 27 TF	1
5	SWITCH END CAP	ALUMINIUM ALLOY BS 1490 LM 27 TF	1
6	GUIDE ROD (INLET)	STAINLESS STEEL A.I.S.I. 304L	1
7	GUIDE ROD (BLANK)	STAINLESS STEEL A.I.S.I. 304L	1
8	SPRAL RING	STAINLESS STEEL A.I.S.I. 302	1
9	THRUST WASHER	STAINLESS STEEL BS 970 PL 4 304S15	2
10	PINION TOP BEARING	ACETAL RESIN (DELTRIN 500CL OR EQUIV.) BLUE	** 1
11	PINION BOTTOM BEARING	ACETAL RESIN (DELTRIN 500CL OR EQUIV.) BLUE	** 1
12	GUIDE ROD BEARING	ACETAL RESIN (DELTRIN 500CL OR EQUIV.) YELLOW	** 6
13	PINION TOP O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	1
14	PINION BOTTOM O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	1
15	PISTON O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	2
16	GUIDE ROD O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	6
17	END CAP O'RING	MEDIUM NITRILE (DOWTY 4470 OR EQUIV.)	2
18	SOCKET SET SCREW	CARBON STEEL BS 4219 GRADE 8.8 COPPER FLASH	2
19	END CAP SCREW	STAINLESS STEEL ISO 3506 A2-70	8
20	BLANKING PLUG	BRASS BS 2874 C2 121 - ZINC PLATED	2
21	SEALING WASHER	ACETAL RESIN (DELTRIN 500 OR EQUIV.) NATURAL	2
22	END CAP LOCATION PIN	STAINLESS STEEL A.I.S.I. 304	2
23	THREAD INSERT	STAINLESS STEEL D.T.D. 734	24
24	THREAD INSERT	STAINLESS STEEL D.T.D. 734	20
25	ANTI EJECTION RING	CARBON SPRING STEEL D.T.D. 239A	1
26	SPRING	CHROME SILICON WIRE BS 2803 BR545 ND	10
27	ORIFICE VENT PLUG	ACETAL RESIN (DELTRIN 500 OR EQUIV.) NATURAL	1
28	POSITION INDICATOR	HIGH DENSITY POLYTHENE	1

NOTES:-
 1. ACTUATOR SHOWN IN CLOSED POSITION WITH PISTONS TOGETHER, OPENING COUNTER-CLOCKWISE (VIEWED FROM ABOVE)
 2. * DENOTES SPRING RETURN ACTUATORS ONLY
 3. ** DENOTES NATURAL COLOUR DELTRIN 500 BEARINGS, SIZE 42 ONLY
 4. BEARING AND O'RING MATERIALS SHOWN FOR STANDARD TEMPERATURE ACTUATORS ONLY
 5. STANDARD TEMPERATURE GREASE: ROCOL SAPPHIRE 1
 6. ITEM 19 FIXED TO ITEM 3 USING LOCTITE 542

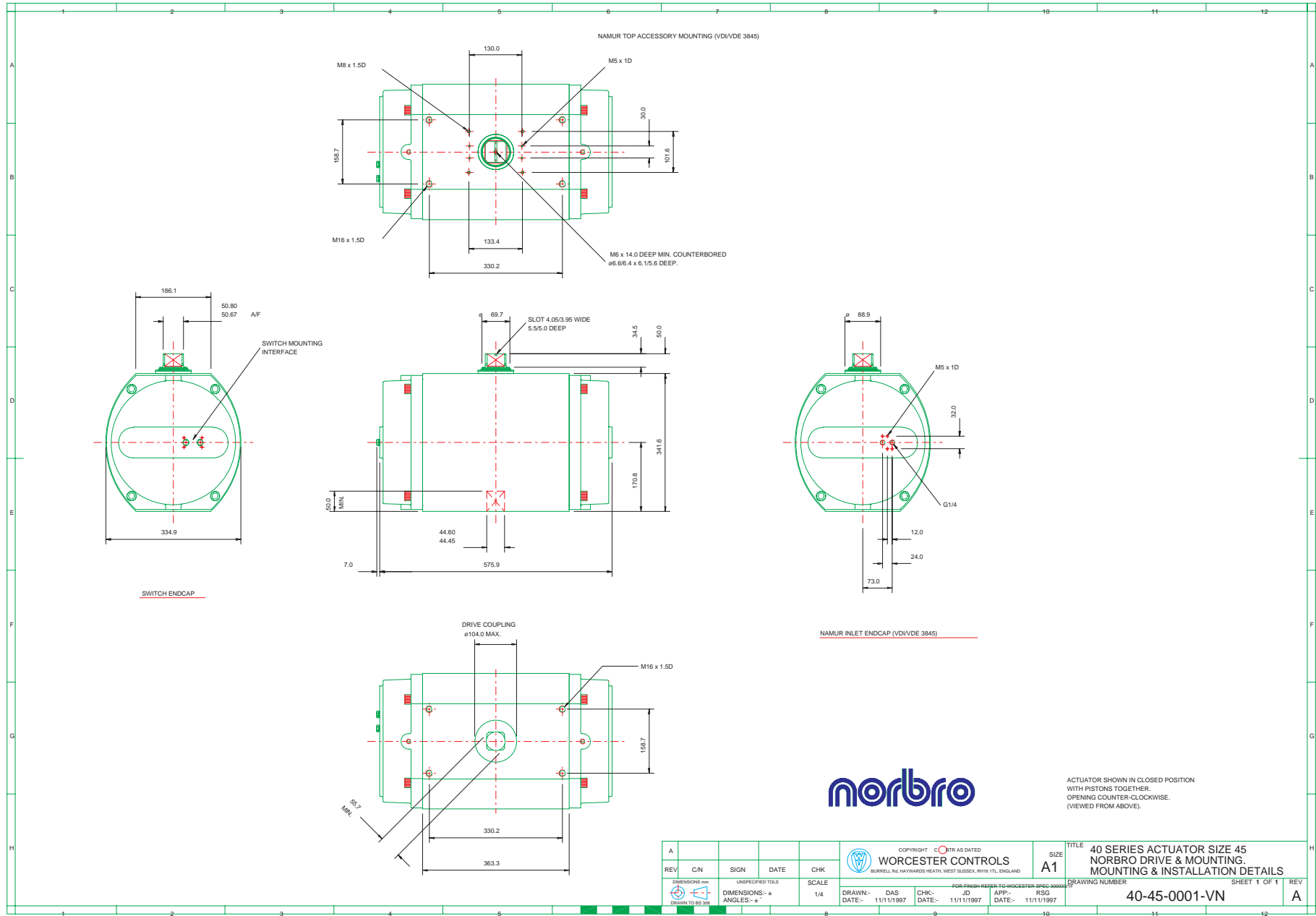


B	26509	MS	13/08/1997	DAS	 COPYRIGHT © 2014 AS DATED WORCESTER CONTROLS <small>BURRELL HILL NAVYARDS HEATH, WEST SUSSEX, BN15 1TL, ENGLAND</small>	SIZE	A1	TITLE	40R SERIES ACTUATOR 40-42 CROSS SECTION & MATERIALS DETAILS
REV	C/N	SIGN	DATE	CHK		SCALE	DRAWING NUMBER	40R-40-0002	SHEET 1 OF 1
DIMENSIONS mm UNDESIGNED TOOLS DIMENSIONS - # ANGLES - # °					SCALE	DRAWN:-	MS	CHK:-	MS
DIMENSIONS mm UNDESIGNED TOOLS DIMENSIONS - # ANGLES - # °					SCALE	DATE:-	22/01/1997	DATE:-	23/01/1997
DIMENSIONS mm UNDESIGNED TOOLS DIMENSIONS - # ANGLES - # °					SCALE	DATE:-	23/01/1997	DATE:-	23/01/1997

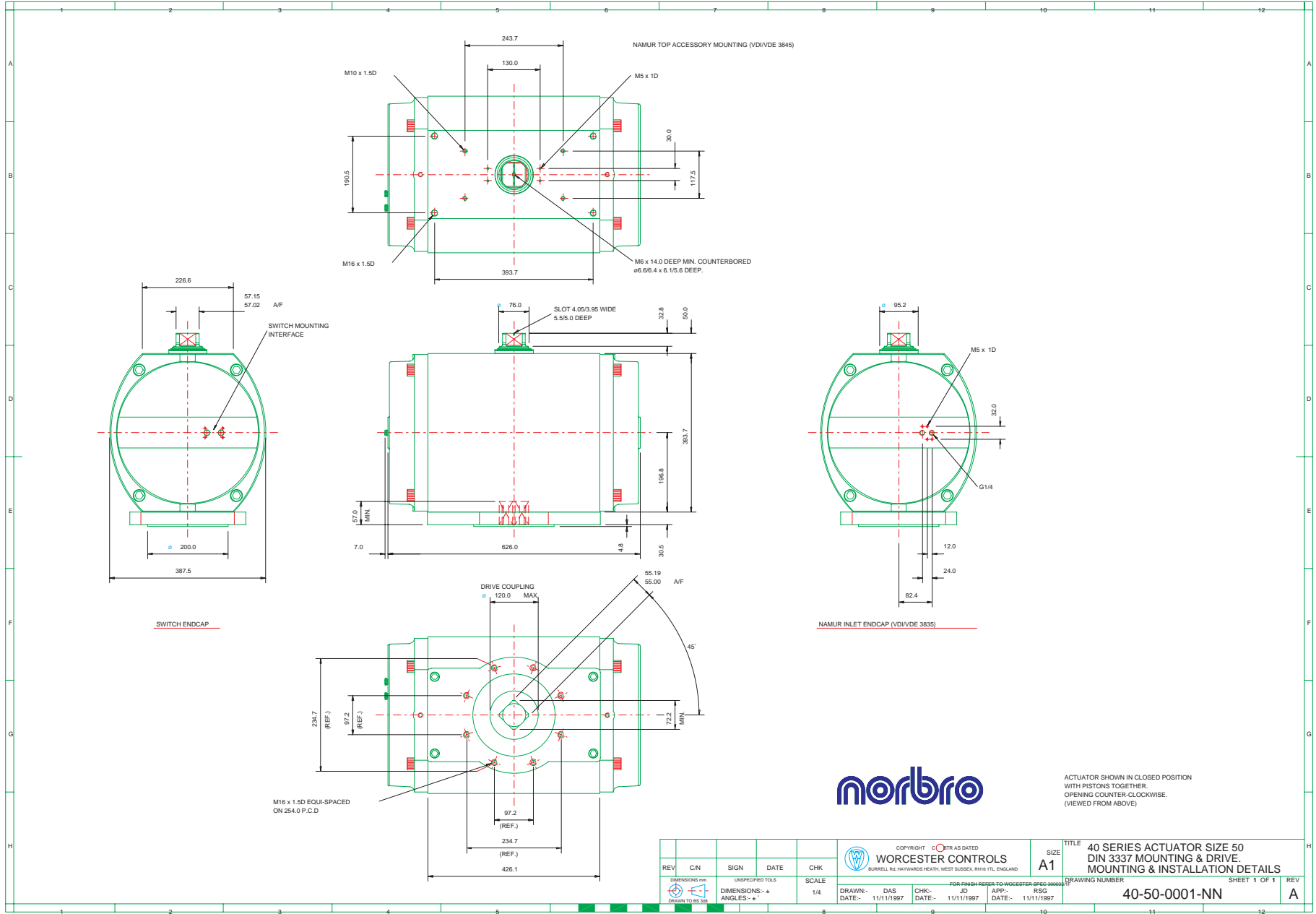


ACTUATOR SHOWN IN CLOSED POSITION WITH PISTONS TOGETHER. OPENING COUNTER-CLOCKWISE. (VIEWED FROM ABOVE).

A	REV	C/N	SIGN	DATE	CHK	COPYRIGHT © 1997 AS DATED WORCESTER CONTROLS <small>BURRELL HILL, HAYWARDS HEATH, WEST SUSSEX, BN15 1TL, ENGLAND</small>			TITLE A1	40 SERIES ACTUATOR SIZE 45 DIN 3337 MOUNTING & DRIVE MOUNTING & INSTALLATION DETAILS		REV			
DIMENSIONS mm <small>UNSPECIFIED TOL.</small> DIMENSIONS - ± ANGLES - °						SCALE 1/4	DRAWN:- DATE:-	DAS 11/11/1997	CHK:- DATE:-	JD 11/11/1997	APP:- DATE:-	RSC 11/11/1997	DRAWING NUMBER 40-45-0001-NN	SHEET 1 OF 1	A



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DIMENSIONS IN mm <small>DRAWN TO BS 308</small>	UNSPECIFIED TOLS DIMENSIONS - # ANGLES - # °	SCALE 1/4	DIMENSIONS - # ANGLES - # °	DIMENSIONS - # ANGLES - # °	DRAWING NUMBER 40-45-0001-VN
DIMENSIONS - # ANGLES - # °	DIMENSIONS - # ANGLES - # °	DIMENSIONS - # ANGLES - # °	DIMENSIONS - # ANGLES - # °	DIMENSIONS - # ANGLES - # °	SHEET 1 OF 1 REV A



ACTUATOR SHOWN IN CLOSED POSITION WITH PISTONS TOGETHER. OPENING COUNTER-CLOCKWISE. (VIEWED FROM ABOVE)

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REV	C/N	SIGN	DATE	CHK	SIZE
					A1
DIMENSIONS mm <small>UNSPECIFIED TOLS</small>			SCALE	DRAWN:- DAS DATE:- 11/11/1997	
DIMENSIONS - ° ANGLES - °			1/4	CHK:- RSC DATE:- 11/11/1997	
DRAWING NUMBER 40-50-0001-NN				SHEET 1 OF 1 REV A	

