



NORDISK MARINE HYDRAULIK  
DANMARK A/S  
Marinebuen 6 - DK-4700 Nestved  
Tlf. 55771800 - Telex 40124 - Fax 55773177

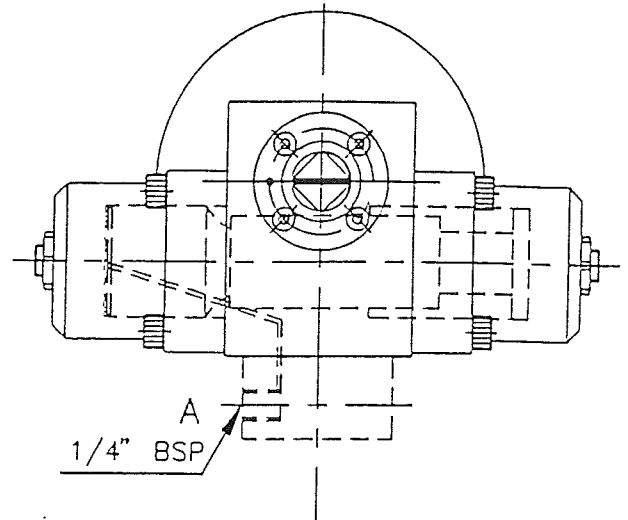
Actuator type BHAG  
1-LINE SYSTEM

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## DESIGN

- New design based on many years' experience of rack- and pinion type actuators.
- Compact high torque output.
- Fixed and locked mounting on valve.
- Independent end stop adjustment OPEN/CLOSED.
- Turning max. 100°.
- Floating piston.
- Suitable for mounting everywhere.
- Optional mounting direction - vertical/horizontal or upside down.
- Approved by all the classification societies.

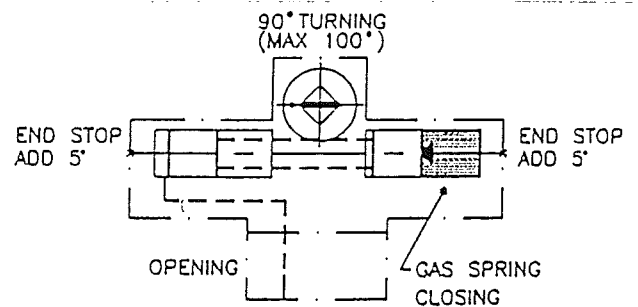


## FUNCTION

Actuator type BHAG is a single acting quarter turn actuator with "gas spring" closing or opening, designed for all types of butterfly-, plug- and ball valves.

A special accessories programme allows a varied combination of operating modes.

Especially designed for heavy duty service including the possibility for submersion in different media.



## TECHNICAL DATA

Working pressure	: 135 bar
Rotation	: 90° (+10°)
Test pressure	: 1,5 * max. working pressure
Oil viscosity	: Hydraulic oil ISO 15-46 (see spec.)
Temperature range	: -20°C/+80°C
Oil purity	: ISO 4406 16/13
Types of valves	: Butterfly-, plug-, ball-, and 3-way valves etc.
Mounting	: Directly on valve (locked)
Adjustment	: Opening/closing position ±5°
Mounting conditions	: Dry and wet places Wet places: open deck, flooded and submerged (with special surface treatment and tophat)
Indication	: Visual mechanical in top
Emergency operation	: Hand pump
Accessories	: Control blocks with remote indication/Mech. gear box emerg. operation/Hand pump unit etc.

SPECIAL DESIGN : Available on request



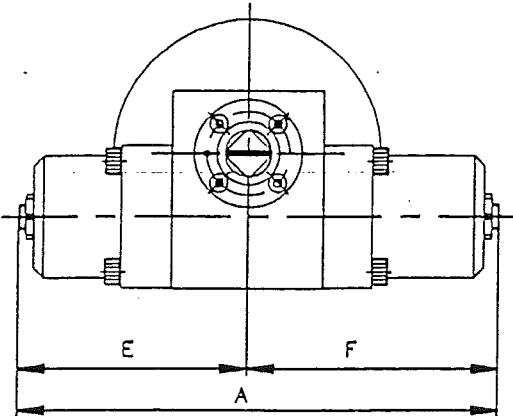
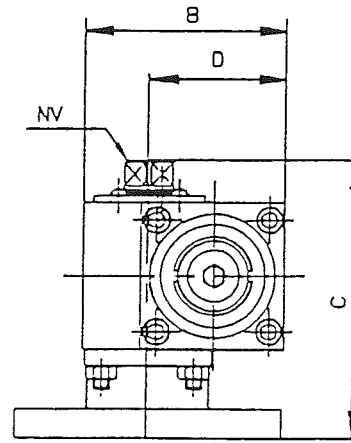
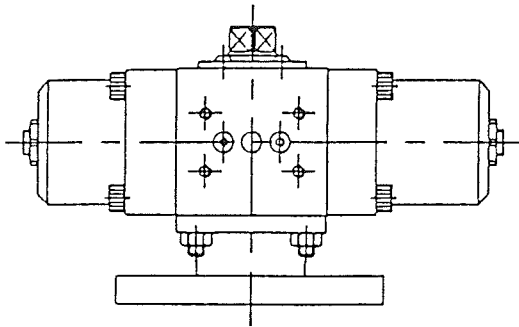
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# Actuator type BHAG 1-LINE SYSTEM

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## MAIN DIMENSION



### MATERIALS:

Seals	: NBR
Housing	: GGG 40
Cylinder	: GGG 40
Piston	: Hardened steel
Pinion	: Surface treatment high tensile steel
Rack	: High tensile steel
Interm. flange	: GGG 40
Coupling	: Steel

The torque is calculated at  
working pressure = 135bar

All dimensions are in millimetres

TORQUE more than 3900 NM on request

ACTUATOR	TORQUE		OIL VOL.	A	B	C	D	E	F	H	NV	WEIGHT	ID-NUMBER
	CLOSING	OPENING											
BHAG 1	110Nm	165Nm	37 cm <sup>3</sup>	244	97	135	65	114	130	12.5	17	8.3kg	021-6332
BHAG 2	305Nm	455Nm	100 cm <sup>3</sup>	343	123	165	87	164	179	14	27	18kg	021-6442
BHAG 3	640Nm	960Nm	210 cm <sup>3</sup>	417	150	196	102	201	216	18	34	33kg	021-6682
BHAG 4	1300Nm	1950Nm	427 cm <sup>3</sup>	511	190	248	133	252	259	18	44	55kg	021-3303
BHAG 5	2600Nm	3900Nm	853 cm <sup>3</sup>	624	220	310	160	304	320	21	54	105kg	021-8353

### COATING:

Standard	: RAL 6024 green	} Or on request
Submerged:	: 1*125my Tar epoxy	
On deck	: 1*75my Galvosil (Zinc silicate)	

### CLASSIFICATION:

Meet all requirements to:  
DNV, LRS, ABS, USCG, BV  
GL, USSR, NATO, US MIL. SPEC.  
DANISH NAVY, NORWEGIAN NAVY



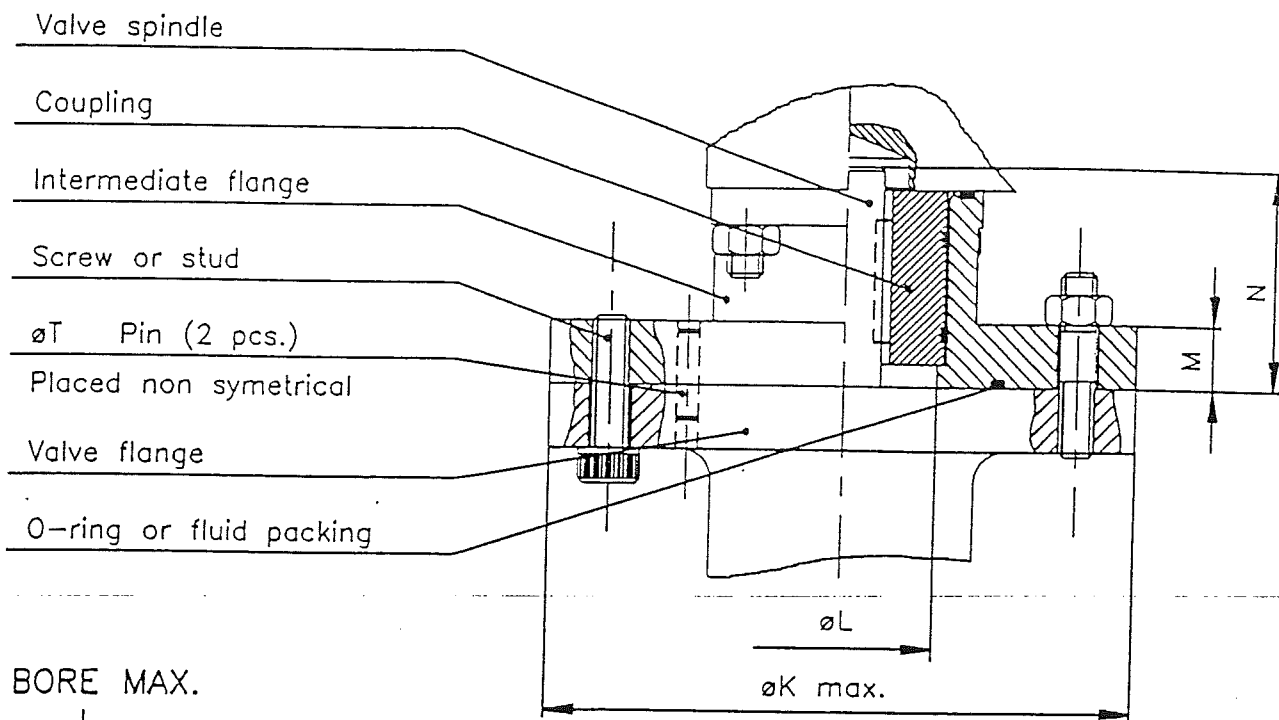
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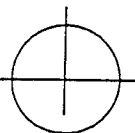
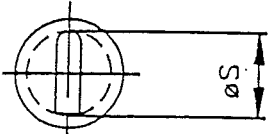
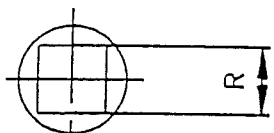
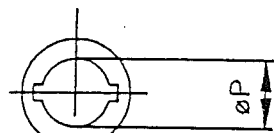
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## VALVE ADAPTION



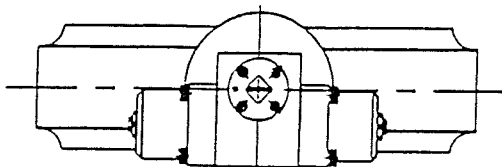
BORE MAX.



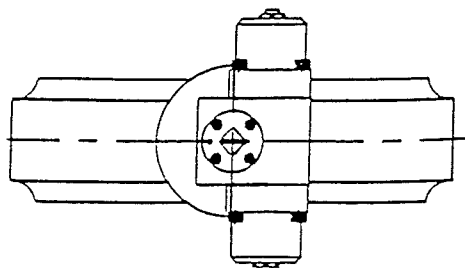
BORE ON REQUEST

BHAG 5	270	110	25	100	80	66	94	16
BHAG 4	230	87	20	75	60	50	71	10
BHAG 3	190	70	15	60	50	42	59	8
BHAG 2	175	53,5	15	50	40	34	48	8
BHAG 1	130	41	14	45	30	27	38	6
ACTUATOR	øK	øL	M	N	øP	R	øS	øT

## POSITIONING OF ACTUATOR ON VALVE



ACROSSWISE



LENGTHWISE



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## SERVICE AND MAINTENANCE

Dependent on location of valve system and application frequency the actuator sealings should be inspected once a year.

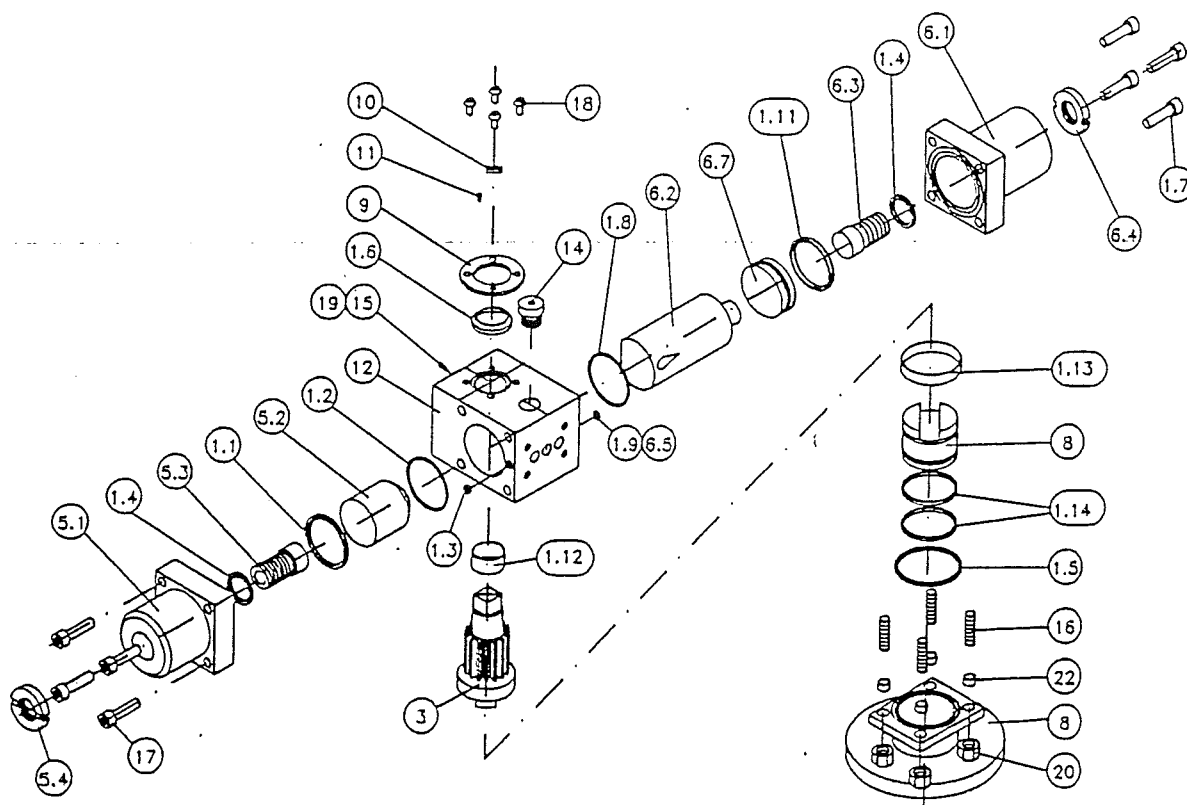
Systems subject to such inspections are cargo-, fuel oil-, ballast-, bilge- and sea side valve systems to ensure reliable and safe functions of these important systems.

Other types of valve systems should be tested as described below.

Open and close the valves once a year (at least)

Inspect the sealings after 4000 opening- and closing functions.

It is recommended to replace all the actuator sealings in case that the actuator is being totally dismantled.



POS.	DESCRIPTION	Qty.	MATR.	POS.	DESCRIPTION	Qty.	MATR.
1.1	O-ring	1	NBR	6.1	Cylinder	1	GGG40
1.2	O-ring	1	NBR	6.2	Gaspert	1	Hardn.- & Stainless st.
1.3	O-ring	1	NBR	6.3	Adj. screw	1	Sea water resist. brass
1.4	O-ring	2	NBR	6.4	Counter nut	1	Sea water resist. brass
1.5	O-ring	1	NBR	6.7	Piston	1	GGG40
1.6	Scraper	1	NBR	7	Coupling	1	Steel
1.8	O-ring	1	NBR	8	Interm. flange	1	GGG40
1.9	O-ring	1	NBR	9	Plate	1	MS58
1.10	PO-55	1	Bronze reinforced	10	Indicator	1	ACRYL
1.12	Bearing	1	Pampus metallopla	11	Indicator	1	PVC
1.13	Bearing	1	Pampus metallopla	12	Pack. bushing	1	MS 58
1.14	PO-55	2	Bronze reinforced	14	Stop valve	1	Sea water resist. brass, acidproof stainless steel
2	Housing	1	GGG40	15	Name plate	1	Stainless steel
3	Pinion	1	Surface treated high tensile steel	16	Stud	4	Stainless steel
5.1	Cylinder	1	GGG40	17	Screw	8	Steel ISO 8.8
5.2	Piston	1	Hardened steel	18	Screw	4	Stainless steel
5.3	Adj. screw	1	Sea water resist. brass	19	Rivet No. 0	2	Stainless steel
5.4	Counter nut	1	Sea water resist. brass	20	Nut	4	Stainless steel



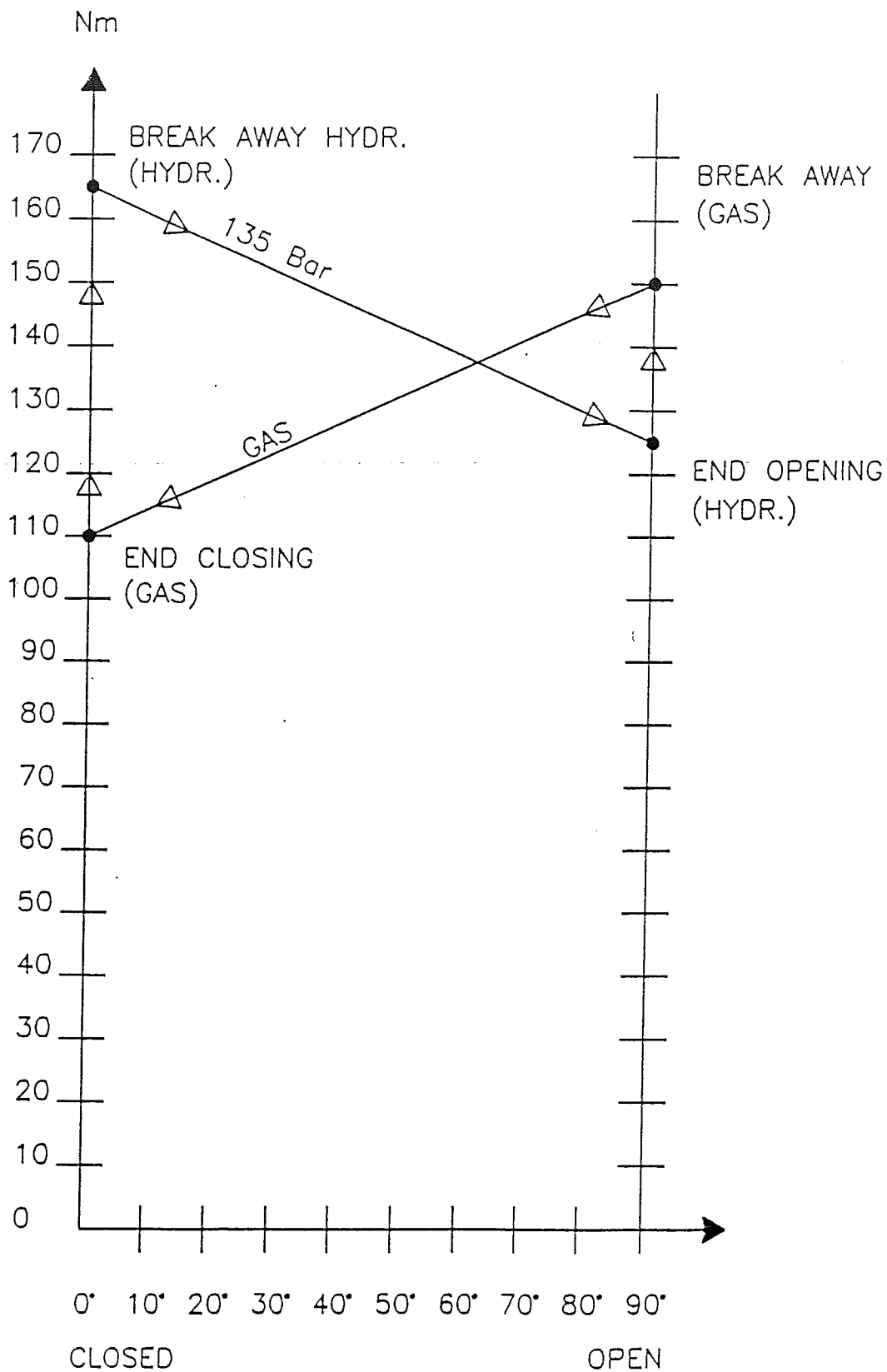
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BHAG 1

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## TORQUE DIAGRAM





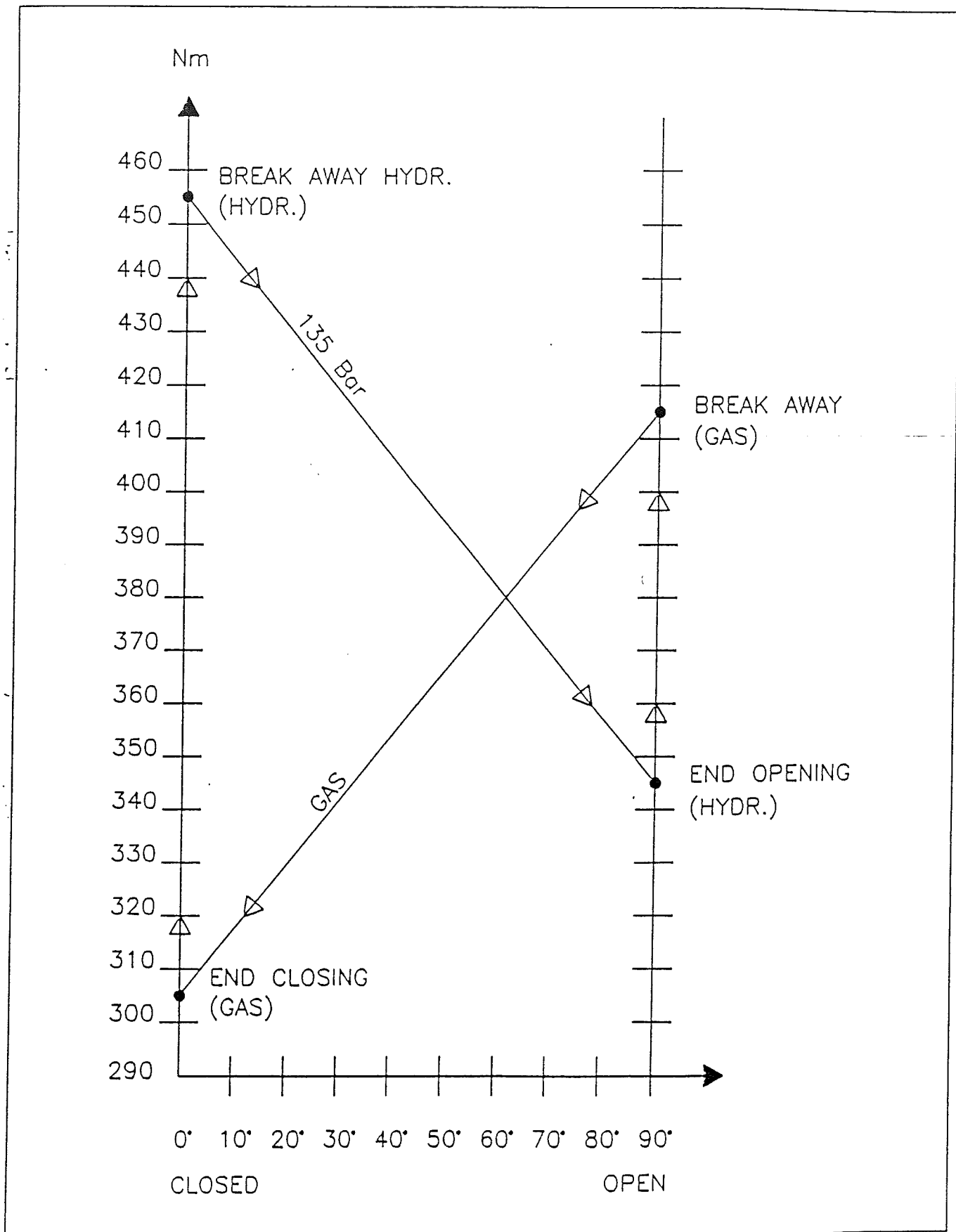
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Actuator type  
BHAG 2

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## TORQUE DIAGRAM





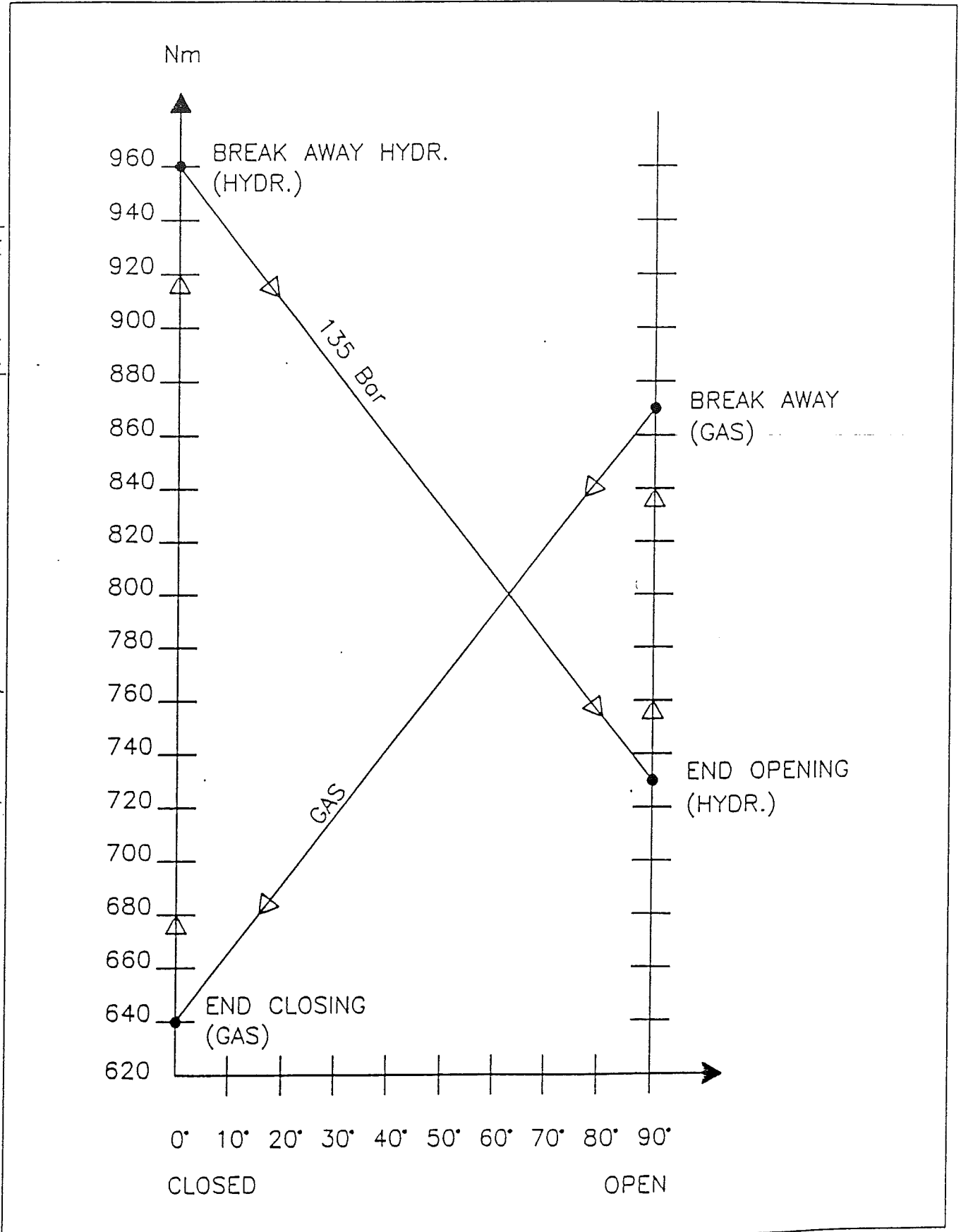
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BHAG 3

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# TORQUE DIAGRAM





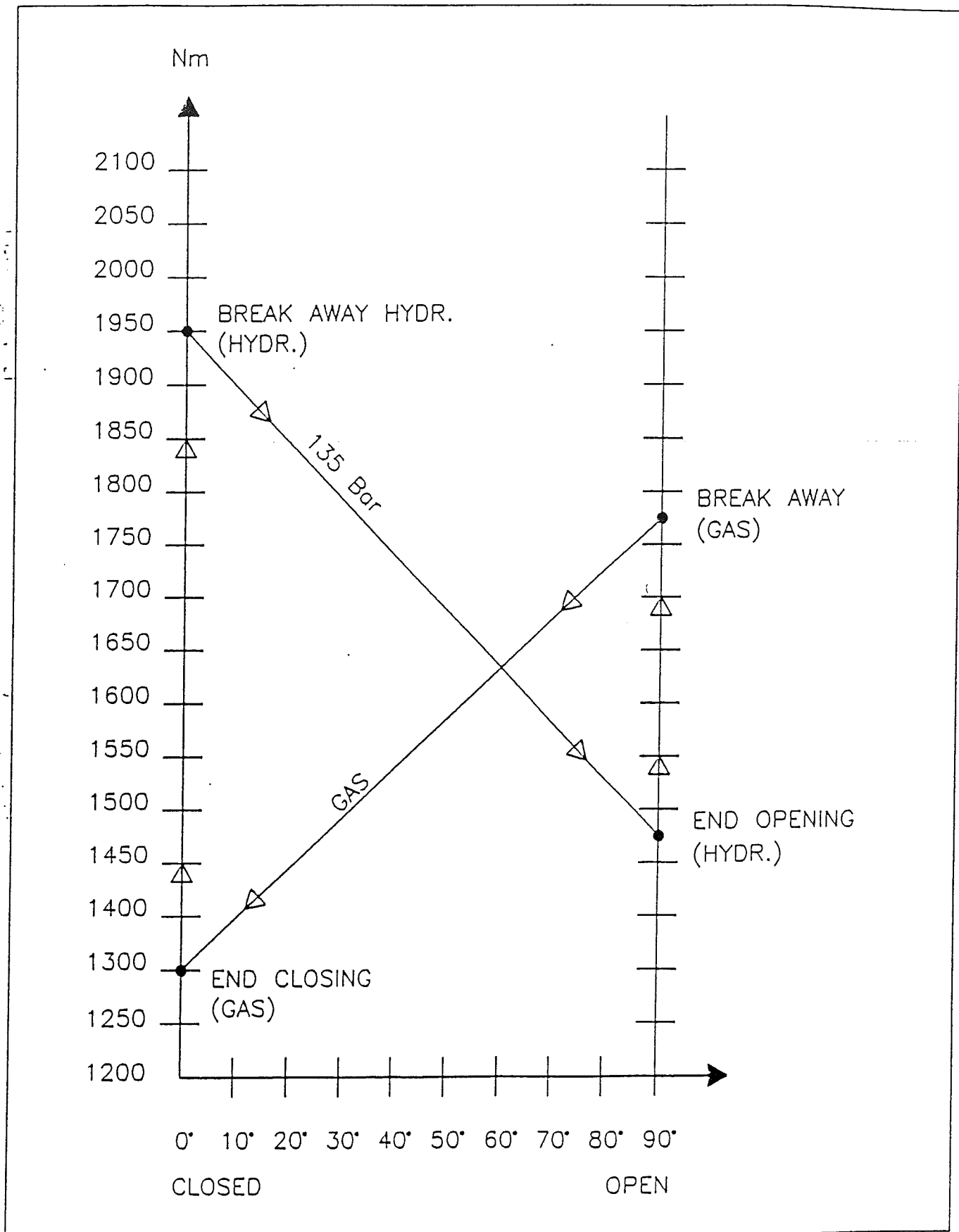
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BHAG 4

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## TORQUE DIAGRAM







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Actuator type  
BHAG 5

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## TORQUE DIAGRAM

