

MacGREGOR

MEMBER OF THE INCENTIVE GROUP

2213-60124

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-
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INTRODUCTION

This edition differs from edition 2 by addition of some hydraulic oils for low temperature as well as where a stable viscosity is required.

Based upon the principles outlined within MGN 10942 - Hydraulic Fluid Selection, Design Directions, the products of the major oil companies have been selected against the grades required by the aforementioned standard. The following 9 sheets give the companies selected characteristics according to the various grades or duties as listed herebelow:

Sheet No.	Grade or Duty
2	Automatic Transmission Fluid
3	ISO VG Class T 15
4	ISO VG Class T 22
5	ISO VG Class T 32
6	ISO VG Class T 46
7	ISO VG Class T 68
8	Artic or Reefer Duty below -35°C
9	Hydrautorque Hinge - Special Duty
10	All Season - Extra High Viscosity

For each vessel, when the fluid grade has been selected by MGN and the oil company who shall supply the lubricants has been nominated by the owner, then the particular fluid can be recognised and advised to the interested party as required, e.g. MGN purchase department, shipyard, owner, etc., dependent upon who shall supply the fluid to the vessel

IMPORTANT NOTES

The MGN instruction manual which is placed aboard the vessel shall also include the relevant sheet from this standard.

The column regarding "FZG (90) test stage 11" is a special requirement related to the use of hydraulic motors of Hägglunds manufacture (see Hägglund doc. No. A1-4,8) and as such must be considered for installations incorporating their motors.

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GROUP STANDARD

Automatic Transmission Fluid

Oil Company	Product Name	Oil Company Product Number	Temp. °C for Visc. = 750 cSt	Kinematic Viscosity cSt at Stated Temperature				Pour Point °C	Flash Point C.O. C. °C	Viscosity Index	Density at 15°C kg/dm³	Included Additives				Compliance with FZG (90) t.s. 11
				-10°C	±0°C	+20°C	+40°C	+65°C				Anti-wear	Anti-rust	Anti-oxid'n	Anti-foam	
ARAL	ATF SGF 84			600	290	92	38	17	190	150	0.890	x	x	x	x	x
B.P.	AUTRAN GM-MP	1717	-17	420	230	85	36,6	17	214	203	0.846	x	x	x	x	-
BURMAH-CASTROL	CASTROL TQ		-16	600	280	82	37	14	210	175	0.880	x	x	x	x	-
CHEVRON	AUTOMATIC TRANSMISSION FLUID		-11	680	305	95,1	38,4	16,6	200	164	0.870	x	x	x	x	-
ELF	ELFMATIC G2			600	280	85	35	21	210	164	0.866	x	x	x	x	x
ESSO	AUTOMATIC TRANSMISSION FLUID		-15	460	235	76	36	16	192	159	0.880	x	x	x	x	x
FINA	PURFIMATIC FLUID	B 4624	-11	695	325	95	41	18	200	149	0.884	x	x	x	x	-
KUWAIT	Q8 AUTO 14		-10	748	345	101	40	18	170	176	0.871	x	x	x	x	-
MOBIL	ATF 220	522177	-16	500	230	80	35	15,5	201	161	0.870	x	x	x	x	-
MOYAS	ATF TYPE A 52		-12	625	295	91	37	16	190	160	0.880	x	x	x	x	-
SHELL	DONAX TM		-12	690	320	100	40	16	210	168	0.880	x	x	x	x	x
	ATF DEXRON II		-10	400	220	75	34	17	196	202	0.878	x	x	x	x	-
TEBOIL	AUTOMATIC FLUID		-15	500	250	85	36	17	196	175	0.880	x	x	x	x	x
TEXACO CALTEX	TEXAMATIC 9226 (TEXAMATIC DEXRON II)	01841	-17	420	230	80	36,9	16,5	194	172	0.877	x	x	x	x	x
TOTAL	DEXRON			607	290	89,3	36,8	16	180	154	0.870	x	x	x	x	x
GENERAL	ATF DEXRON		-11	700	320	100	39,9	17	204	147	0.873	x	x	x	x	-
IDEMITSU	APOLLO OIL DEXRON		-9	850	360	105	40,6	17,5	202	150	0.871	x	x	x	x	-
COSMO	DEXRON II		-11	700	330	100	40,3	17,5	212	156	0.872	x	x	x	x	-
NIPPON	PANTORQUE DEXRON		-14	600	270	85	35,7	16	195	172	0.876	x	x	x	x	-

GROUP STANDARD

ISO VG Class T15

Oil Company	Product Name	Oil Company Product Number	Temp. °C for Visc. = 750 cSt	Kinematic Viscosity cSt at Stated Temperature				Pour Point °C	Flash Point C.O.C. °C	Viscosity Index	Density at 15°C kg/dm³	Included Additives				Compliance with FZG (90) T.s. 11
				-10°C	±0°C	+20°C	+40°C	+65°C				Anti-wear	Anti-rust	Anti-oxid'n	Anti-foam	
ARAL	VITAMOL 1010			180	90	32	14	7	-51	155	0.885	x	x	x	-	x
B.P.	BARTRAN HV 15		-27	145	80	31	14,9	7,6	-51	160	0.874	x	x	x	x	x
BURMAH-CASTROL	HYSPIN AWH 15	6026	-32	140	80	31	15	7	-51	165	0.870	x	x	x	x	x
CHEVRON	MECHANISM LPS 15		-29	160	85	32	15	7,4	-45	165	0.860	x	x	x	x	x
ELF	VISGA 15 or HYDRELF 15			175	90	33	15	8	-45	190	0.860	x	x	x	x	x
ESSO	UNIVIS N 15		-27	135	74	28,6	14	7,15	-45	189	0.862	x	x	x	x	-
FINA	HYDRAN HV 15	B 5076 C	-30	148	81	32	14,9	7,5	-45	168	0.861	x	x	x	x	x
KUWAIT	O8 HADYN 15	VI 101 = NO GRADE AVAILABLE														
MOBIL	DTE 11 M	602664	-27	160	87	33	16	8,1	-47	173	0.866	x	x	x	x	-
NYNAS	HYDOL 15		-30	150	85	32	16	8	-51	155	0.880	x	x	x	x	-
SHELL	TELLUST T 15		-23	205	98	32	15	7,2	-54	160	0.860	x	x	x	x	-
TEBOIL	HYDRAULIC OIL 15		-28	160	85	32	15	7	-57	150	0.890	x	x	x	x	x
TEXACO (CALTEX)	RANDO HDZ 15		-32	152	83	33	16	8	-60	154	0.903	x	x	x	x	x
TOTAL	EQUIVIS ZS 15	24497		139	79	31	15	7,5	-51	165	0.840	x	x	x	x	x
GENERAL	NO GRADE AVAILABLE															
IDEMITSU	NO GRADE AVAILABLE															
COSMO	NO GRADE AVAILABLE															
NIPPON	HYRANDO WIDE 15		-25	170	90	32	15,4	7,7	-40	148	0.859	x	x	x	x	-

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**GROUP
STANDARD**

ISO VG Class T22

Oil Company	Product Name	Oil Company Product Number	Temp. °C for Visc. = 750 cSt	Kinematic Viscosity cSt at Stated Temperature					Flash Point C. O. C. °C	Pour Point °C	Viscosity Index	Density at 15°C kg/dm ³	Included Additives				Compliance with FZG (90) t.s. 11
				-10°C	±0°C	+20°C	+40°C	+65°C					Anti-wear	Anti-rust	Anti-oxid'n	Anti-foam	
ARAL B.P. BURMAH-CASTROL	VITAM GF 22 ¹⁾		-20	320	160	51	22	10	-36	200	100 ¹⁾	0,870	x	x	x	x	x
	BARTRAN HV 22			270	140	50	22,3	10,6	-39	178	155	0,872	x	x	x	x	x
CHEVRON ELF ESSO	NO GRADE AVAILABLE																
	VISGA 22 or HYDRELF 22			250	95	49	22	11	-33	184	185	0,860	x	x	x	x	x
	UNIVIS N 22		-21	300	132	46	20,9	9,95	-42	197	153	0,860	x	x	x	x	-
FINA KUWAIT MOBIL	HYDRAN HV 22	B5076C	-22	290	148	51	22,3	10,6	-42	183	156	0,859	x	x	x	x	x
	Q8 HADYN 22	VI 98 = NO GRADE AVAILABLE															
NYNÄS SHELL TEBOIL	NO GRADE AVAILABLE																
	HYDOL 22		-23	230	130	45	21	10	-45	180	150	0,880	x	x	x	x	-
	TELLUST 22		-20	325	152	49	22	10	-54	176	178	0,870	x	x	x	x	x
	HYDRAULIC OIL 22		-21	300	150	50	22	10	-54	190	160	0,880	x	x	x	x	x
TEXACO (CALTEX) TOTAL GENERAL	NO GRADE AVAILABLE																
	NO GRADE AVAILABLE		-22	280	245	48	21,8	10	-42,5	194	150	0,865	x	x	x	x	-
	HYDRAULIC WIDE 22																
IDEMITSU	SUPER HYDRO 22 WR		-20	307	145	48	22	9,8	-40	172	143	0,878	x	x	x	x	-
COSMO	COSMO HYDRO HV 22		-20	310	150	48	22,7	10	-40	194	141	0,863	x	x	x	x	-
NIPPON	HYRANDO WIDE 22		-18	320	155	50	22,3	10,5	-40	194	143	0,862	x	x	x	x	-

1. The Viscosity Index is below 135 and must be considered when recommending such fluids for particular installations.

GROUP STANDARD

Oil Company	Product Name	Oil Company Product Number	Temp. °C for Visc. = 750 cSt	Kinematic Viscosity cSt at Stated Temperature					Pour Point °C	Flash Point C. O. C. °C	Viscosity Index	Density at 15°C kg/dm³	Included Additives				Compliance with FZG (90) t.s. 11
				-10°C	±0°C	+20°C	+40°C	+65°C					Anti-wear	Anti-rust	Anti-oxid'n	Anti-foam	
ARAL B.P. BURMAH-CASTROL	VITAM HF 32	6029	-13	350	200	69	32	15	-42	190	180	0,870	x	x	x	x	x
	BARTAN HV 32		-12	465	230	75	31,8	14,5	-30	200	153	0,875	x	x	x	x	x
	HYPIN AWH 32		-12	480	240	75	32	14	-33	225	150	0,870	x	x	x	x	x
CHEVRON ELF ESSO	MECHANISM LPS 32	6029	-16	460	222	75	32	16,5	-40	180	162	0,870	x	x	x	x	x
	VISGA 32 or HYDR ELF 32		-13,5	470	250	78	34	14	-42	200	155	0,870	x	x	x	x	x
	UNIVIS N 32		-13,5	515	225	71	30	13,4	-42	212	151	0,870	x	x	x	x	-
FINA KUWAIT MOBIL	HYDRAN HV 32	602698	-13	530	258	78	32,2	14,2	-42	206	150	0,868	x	x	x	x	x
	Q8 HANDEL 32		-16,5	454	229	77	33	16	-42	196	220	0,865	x	x	x	x	-
	DTE 13 M		-16	460	228	75	33	14,7	-40	188	155	0,883	x	x	x	x	x
NYNAS SHELL TEBOL	HYDOL 32	24498	-18	350	190	67	31	15	-48	165	190	0,880	x	x	x	x	x
	TELLUST 32		-14	525	242	78	33	14	-51	170	181	0,872	x	x	x	x	x
	HYDRAULIC OIL 32 S		-19	350	180	65	29	14	-51	180	190	0,880	x	x	x	x	x
TEXACO (CALTEX) TOTAL GENERAL	RANDO HDZ 32	24498	-22	360	190	71	33	15,3	-45	174	185	0,885	x	x	x	x	x
	EQUIVIS ZS 32		-15	448	224	74	32	14,6	-42	200	160	0,870	x	x	x	x	x
	HYDRAULIC WIDE 32		-15	480	240	75	31,4	13,5	-42,5	202	149	0,873	x	x	x	x	-
IDEMITSU COSMO NIPPON	SUPERHYDRO 32 WR	24498	-15	480	230	75	33,3	14	-40	196	138	0,867	x	x	x	x	-
	COSMO HYDRO HV 32		-13	580	260	78	31,7	14	-40	214	141	0,865	x	x	x	x	-
	HYRANDO WIDE 32		-12,5	600	260	78	32,5	14	-40	212	145	0,868	x	x	x	x	-

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GROUP STANDARD

ISO VG Class T46

Oil Company	Product Name	Oil Company Product Number	Temp. °C for Visc. = 750 cSt	Kinematic Viscosity cSt at Stated Temperature					Flash Point C. O. C. °C	Viscosity Index	Density at 15°C kg/dm³	Included Additives				Compliance with FZG (90) t.s. 11
				-10°C	±0°C	+20°C	+40°C	+65°C				Pour Point °C	Anti-wear	Anti-rust	Anti-oxid'n	
ARAL B.P. BURMAH-CASTROL	VITAM HF 46	6027	-7	570	300	104	46	21	-51	200	180	x	x	x	x	x
	BARTAN HV 46		-8	800	380	115	46,5	20	-30	206	152	x	x	x	x	x
	HYSPIN AWH 46		-8	825	400	118	46	19	-33	225	150	x	x	x	x	x
CHEVRON ELF ESSO	MECHANISM LPS 46	6027	-9	810	400	120	46	20	-40	180	160	x	x	x	x	x
	VISGA 46 or HYDRELF 46		-8,5	580	300	110	48	21	-42	220	155	x	x	x	x	x
	UNIVIS N 46		-8,5	850	375	111	44,3	18,8	-39	221	152	x	x	x	x	x
FINA KUWAIT MOBIL	HYDRAN HV 46	B5076C 602722	-8	875	400	117	46	19,5	-39	210	153	x	x	x	x	x
	Q8 HANDEL 46		-8	875	405	118	47	22	-39	200	184	x	x	x	x	x
	DTE 15 M		-8	900	400	118	47	19,5	-40	218	151	x	x	x	x	x
NYNÄS SHELL TEBEIL	HYDOL 46 (F)	99045	-13	625	300	110	50	23	-45	168	195	x	x	x	x	x
	TELLUS T 46		-9	845	370	115	47	21	-45	210	186	x	x	x	x	x
	HYDRAULIC OIL 46		-14	550	290	100	46	22	-51	190	200	x	x	x	x	x
TEXACO (CALTEX) TOTAL GENERAL	RANDO HDZ 46	99045	-11	610	320	112	50	28,7	-39	204	192	x	x	x	x	x
	EQUIVIS ZS 46		-9	754	362	112	46	20	-36	215	160	x	x	x	x	x
	HYDROFLUID WIDE 46		-9	850	390	120	46,3	19	-37,5	214	148	x	x	x	x	x
IDEMITSU COSMO NIPPON	SUPER HYDRO 46 WR	99045	-8	920	400	120	45,7	18	-40	218	138	x	x	x	x	x
	COSMO HYDRO HV 46		-7,5	1000	420	120	47,0	19	-40	230	141	x	x	x	x	x
	HYRANO WIDE 46		-7,5	1000	420	120	46,2	19	-40	224	145	x	x	x	x	x

GROUP STANDARD

ISO VG Class T68

Oil Company	Product Name	Oil Company Product Number	Temp. °C for Visc. = 750 cSt	Kinematic Viscosity cSt at Stated Temperature				Pour Point °C	Flash Point C.O.C. °C	Viscosity Index	Density at 15°C kg/dm³	Included Additives				Compliance with FZG (90) t.s. 11
				-10°C	±0°C	+20°C	+40°C	+65°C				Anti-wear	Anti-rust	Anti-oxid'n	Anti-foam	
ARAL	VITAM HF 68			1000	515	164	68	29	-37	210	0,880	x	x	x	x	x
B.P.	BARTAN HV 68		-2	1700	750	196	70,5	28	-30	208	0,885	x	x	x	x	x
BURMAH-CASTROL	HYPIN AWH 68	6028	-2	1200	550	160	68	27	-33	225	0,880	x	x	x	x	x
CHEVRON	MECHANISM LPS 68		-3	1260	600	175	68	28	-40	180	0,870	x	x	x	x	x
ELF	VISGA 68 or HYDREL 68			1500	720	195	73	29	-36	220	0,890	x	x	x	x	x
ESSO	UNIVIS N 68		-2,5	1450	620	175	66,3	26,7	-36	224	0,879	x	x	x	x	x
FINA	HYDRAN HV 68	B5076C	-3	1550	690	185	68,6	27,5	-39	224	0,878	x	x	x	x	x
KUWAIT	Q8 HANDEL 68		-1,5	1527	676	183	68	29	-30	210	0,878	x	x	x	x	x
MOBIL	DTE 16 M	602771	-1	1750	730	190	68	26,5	-40	222	0,887	x	x	x	x	x
NYNAS	HYDOL 68		-5	1400	650	180	68	27	-39	195	0,890	x	x	x	x	x
SHELL	TELLUST 68		-2	1450	650	185	72,5	30	-40	230	0,880	x	x	x	x	x
TEBOIL	HYDRAULIC OIL 68		-3	1300	600	180	68	28	-42	208	0,880	x	x	x	x	x
TEXACO (CALTEX)	RANDO HDCZ 68	24218	-9	920	455	152	65	29	-36	212	0,889	x	x	x	x	x
TOTAL	EQUIVIS ZS 68			1310	606	175	68	28	-33	160	0,880	x	x	x	x	x
GENERAL	NO GRADE AVAILABLE															
DEMITSU	NO GRADE AVAILABLE															
COSMO	COSMO HYDRO HV 68		-3	1600	680	180	68,2	27	-40	236	0,879	x	x	x	x	x
YIPON	NO GRADE AVAILABLE															

GROUP STANDARD

Arctic or Reefer Duty below -35°C

Oil Company	Product Name	Oil Company Product Number	Kinematic Viscosity cSt at Stated Temperature					Flash Point C. O. C. °C	Pour Point °C	Viscosity Index	Density at 15°C kg/dm³	Included Additives			
			-50°C	-40°C	-30°C	-20°C	±0°C	+40°C	+65°C			Anti-wear	Anti-rust	Anti-oxid'n	Anti-foam
ARAL	NO GRADE AVAILABLE														
B.P.	ENERGOL SHF-LT 15														
BURMAH-CASTROL	CASTROLAERO 585 B	1973	2100	487	320	170	55	13,9	7,5	>300	0,862	x	x	x	x
CHEVRON	AVIATION HYD FLUID A		340	195	120	75	37	13,5	8,4	>300	0,860	x	x	x	x
ELF	AVIATION HYD OIL 20 H 515		432					15,3	-60			x	x	x	x
ESSO	UNIVIS J 13		1600	500	205	110	43	13	8,3	376	0,860	x	x	x	x
FINA	HYDRAN EF 15	B5104B	2200	480	210	115	46	14,1	8,8	395	0,863	x	x	x	x
KUWAIT	NO GRADE AVAILABLE														
MOBIL	AERO HFA	MIL5606A	510	270	155	95	45	14,1	8,6	300	0,865	x	x	x	x
NYNAS	HYDRAULOLJA 131		1450	440	200	85	27,5	16,5	-51	360	0,870	x	x	x	x
SHELL	AEROSHELL FLUID 4	MIL-H5106	1800	470	200	120	47	15	8,5	>400	0,859	x	x	x	x
TEBOIL	POLAR		2900	950	380	170	75	20,3	12,4	370	0,871	x	x	x	x
TEXACO (CALTEX)	NO GRADE AVAILABLE														
TOTAL	AEROHYDRAULIC 520		490					14	-66	370	0,868				
GENERAL	NO GRADE AVAILABLE														
IDEMITSU	HYDRAULIC FLUID 7243		1600	485	180	90	42	14	8,5	375	0,819	x	x	x	x
COSMO	COSMO HYDRO HV 15 K		2000	460	190	95	42	14	8,5	365	0,831	x	x	x	x
NIPPON	NO GRADE AVAILABLE														

NOT TO BE USED WITH VARIABLE DISPLACEMENT PUMPS OR PISTON PUMPS WITHOUT ACCEPTANCE FROM THE PUMP MANUFACTURE,
AS AN ALTERNATIVE OTHER OILS ACCORDING TO PAGE 10 CAN BE USED.

GROUP STANDARD

Hydramorque Hinge - Special Duty

Oil Company	Product Name	Oil Company Product Number	Temp. °C for Visc. = 750 cSt	Kinematic Viscosity cSt at Stated Temperature				Pour Point °C	Flash Point C.O. C. °C	Viscosity Index	Density at 15°C kg/dm³	Included Additives				Compliance with FZG (90) t.s. 11
				-10°C	±0°C	+20°C	+40°C					+65°C	Anti-wear	Anti-rust	Anti-oxid'n	
ARAL	NO GRADE AVAILABLE															
B.P.	NO GRADE AVAILABLE															
BURMAH-CASTROL	NO GRADE AVAILABLE															
CHEVRON	NO GRADE AVAILABLE															
ELF	NO GRADE AVAILABLE															
ESSO	NO GRADE AVAILABLE															
FINA	NO GRADE AVAILABLE															
KUWAIT	NO GRADE AVAILABLE															
MOBIL	PEGASUS THO 15 K		-8	850	400	110	44,7	19	-42,5	214	154	0,873	x	x	x	x
NYNAS	NO GRADE AVAILABLE															
SHELL	EP HYDRA-HINGE OIL		-18	420	210	70	32	15	-37,5	166	180	0,885	x	x	x	x
TEBOIL	NO GRADE AVAILABLE															
TEXACO (CALTEX)	NO GRADE AVAILABLE															
TOTAL	NO GRADE AVAILABLE															
GENERAL	HYDROFLUID TH 46		-7,5	1000	420	110	42	17	-42,5	204	146	0,876	x	x	x	x
IDEMITSU	SUPER HYDRO 46 WR		-8	920	400	120	45,7	18	-40	218	138	0,867	x	x	x	x
COSMO	COSMO HYDRO HV 46		-7,5	1000	420	120	47,0	19	-40	230	141	0,870	x	x	x	x
NIPPON	NO GRADE AVAILABLE															

SPECIAL NOTE - THOSE PRODUCTS SHOWN ARE ONLY AVAILABLE IN JAPAN

GROUP STANDARD

All Season - Extra High Viscosity

Oil Company	Product Name	Oil Company Product Number	Temp. °C for Visc. = 750 cSt	Kinematic Viscosity cSt at Stated Temperature				Flash Point C. O. C. °C	Pour Point °C	Viscosity Index	Density at 15°C kg/dm ³	Included Additives					Compliance with FZG (90) t.s. 11
				-30°C	-20°C	±0°C	+40°C +65°C					Anti-wear	Anti-rust	Anti-oxid'n	Anti-foam		
ARAL	NO GRADE AVAILABLE																
B.P.	NO GRADE AVAILABLE																
BURMAH-CASTROL	Castrol Hyspin AWV 32		~-35	~600		30,2	~18	-53	111	355	0,876	x	x	x	x	-	
CHEVRON	NO GRADE AVAILABLE																
ELF	NO GRADE AVAILABLE																
ESSO	Univis J 26		-36	450	200	85	26	17	96	398	0,876	x	x	x	x	-	
FINA	NO GRADE AVAILABLE																
KUWAIT	Q 8 Hindmith		~-35	574	~225	~100	30,9	~16	102	356	0,875	x	x	x	x	-	
MOBIL	Flowrex 1		~-35	640		28	-15	-50	115	335	0,880	x	x	x	x	-	
NESTE	28 SUPER		-35	490	268	160	28,9	18	90	366	0,874	x	x	x	x	-	
NYNAS	Hydraulic Oil 131		-36	400	200	85	28	17	105	350	0,870	x	x	x	x	-	
SHELL	Tellarcic S.9603		-37	500	240	90	29	17	90	365	0,880	x	x	x	x	-	
STATOIL	Hydraulic Oil 26		-36	470	250	90	24	13	107	380	0,876	x	x	x	x	-	
TEBOIL	NO GRADE AVAILABLE																
TEXACO (CALTEX)	NO GRADE AVAILABLE																
TOTAL	NO GRADE AVAILABLE																
GENERAL																	
IDEMITSU																	
COSMO																	
NIPPON	NO GRADE AVAILABLE																

IN SYSTEMS WITH VARIABLE DISPLACEMENT PUMPS THESE OILS CAN BE USED FOR ARCTIC OR REEFER USE.

THESE OILS ARE SUITABLE FOR MOST MGN HYDRAULIC SYSTEMS EXCEPT HYDRAUTORQUE HINGE SYSTEMS AND SYSTEM INCORPORATING MOTOR FROM HÄGGLUND's.