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Regulations for DME Service Stations and Road Tank Trucks in the Netherlands

Appendices

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Appendix I DME product information

In table 1 the physical, chemical and toxicological properties of DME are given.

Notes concerning table 1:

– temperature and pressure

Gaseous DME can be liquefied by compression and/or refrigeration. Normally DME is marketed as a liquid, under pressure and at environmental temperature.

Deliveries of liquid DME from a storage vessel do not cause a change of temperature in the vessel, therefore the pressure during delivery remains constant. Deliveries of gaseous DME do cause evaporation of the liquid DME in the storage vessel. The required heat of evaporation for this process reduces the temperature of the fluids in the vessel, which in turn results in a degrease of pressure in the vessel.

– Vapour density

Gaseous DME weights approximately 1.8 times as much as air. Therefore if DME is discharged into the open air, through leakages or otherwise, it will spread out at ground level and accumulate at the lowest places (e.g. cellars, drains, gullies).

– Inflammability and explosivity

Liquid DME vaporises quickly under atmospheric conditions. As it vaporises the DME expands to a volume which is approximately 350 times as large as the liquid volume.
Expansion and subsequent dispersion of the gas in air could cause a large spread of explosive DME/air mixtures at ground level, which are easily ignitable by sparks, open fire hot surfaces or static electricity.

– asphyxiation

Dispersion of a DME/air mixture also causes displacement of oxygen at ground level. When a person is enveloped in a cloud of such a mixture, he is in danger of asphyxiation.

Table I Properties of DME

		Source
Chemical designation	dimethyl ether	
Chemical formula	$(CH_3)_2O$	
Colour	colourless	[1]
Odour	slight ethereal odour	[1]
Toxicity	slightly toxic	[1]
Molar mass	46,1	[2]
Vapour density	1.59	[1]
Volume of liquid phase at 20 °C (l/kg)	1.92	[3]*
Volume of vapour phase at 20 °C (l/kg), at atmospheric pressure	667	*
Expansion-factor at transition from liquid to vapour at 20 °C	350	*
Cubic expansion coefficient of liquid per °C	$2.3x10^{-3}$	*
Boiling point at 1 bar (°C)	- 24.8	[1]
Flash point (24°C)	- 41	[1]
Vapour pressure (20 °C)	5.3	[3]
Heat of evaporation	-	
Specific heat of liquid at 15 °C (kJ/kg.°C)	-	
Specific heat of vapour at constant pressure at 15 °C (kJ.kg.°C)	-	
Critical temperature (°C)	127	[3]
Critical pressure	53.3	[3]
Flammability limits (vol%)	2.7 - 18.6	[2]
Ignition energy	0.29	[2]
Auto ignition temperature	235	[2]
Solubility in water (g/100ml, 18 °C)	6.7	[2]

Notes:

[1] Safety Assessment of DME fuel
M. Paas consulting Ltd., TP 12998[E], April 1997

[2] Chemiekaartenboek
12th edition, 1997
ISBN: 90 6092 938 1

[3] Carl R. Yaws
Thermodynamic and Physical Property Data, 1992
ISBN 0-88415-031-3

* Values are calculated

Appendix II Appurtenances for DME, list of accepted makes

For LPG a list of ancillaries as approved by the Dutch Stoomwezen is available. For DME however such a list of accepted makes does not exist. Due to the fact that in general the behaviour of DME is more or less equal to the behaviour of propane or butane for a number of otems (equipment) the list of appurtenances as made for propane and butane is really helpful. Therefore the list of appurtenances for propane and butane as approved by the Dutch Stoomwezen is attached to this document.

It should be noticed that the specific requirements for the process equipment should always be given by the supplier of the equipment.

Regels voor toestellen onder druk Rules for pressure vessels	Toebehoren voor propaan en butaan Lijst van aanvaarde fabrikaten Appurtenances for propane and butane List of accepted makes	M 0806 | 83-12

Dit blad vormt een onderdeel van de 'Regels voor toestellen onder druk' en is alleen bestemd voor toepassing binnen het kader van die Regels.
Het karakter van de Regels, de totstandkoming en de verkrijgbaarheid ervan zijn uiteengezet in de Inleiding (blad G 0100). Daarin is tevens verklaard wat verstaan wordt onder 'bevoegde instantie'.

This sheet forms part of the 'Rules for pressure vessels', and is intended for use only within the framework of those Rules.
The character of the Rules, their realization and availability are explained in the Introduction (sheet G 0100). The latter sheet also states what is meant by 'competent boby'.

In dit blad wordt verwezen naar:

This sheet refers to:

G 0100, A 0100

Inhoud

Contents

1. Toepassingsgebied

Dit blad is van toepassing op de volgende soorten toebehoren in installaties voor opslag en aflevering van propaan, motorpropaan (LPG) of butaan:

- ☐ veiligheidskleppen;
- ☐ afsluitorganen;
- ☐ terugslagkleppen;
- ☐ stromingsbegrenzers;
- ☐ drukregelaars;
- ☐ slangen;
- ☐ niveau-aanwijzers;
- ☐ buigzame metalen leidingen;
- ☐ pompen;
- ☐ combinaties van een of meer van de bovengenoemde soorten toebehoren.

Dit blad is dus *niet* van toepassing op toebehoren van verbruikstoestellen.

1. Scope

This sheet is applicable to the following kinds of appurtenances in installations for the storage and delivery of propane, LPG and butane:

- ☐ safety valves;
- ☐ valves;
- ☐ non-return valves;
- ☐ flow limiters;
- ☐ pressure controllers;
- ☐ hoses;
- ☐ level indicators;
- ☐ flexible metal lines;
- ☐ pumps;
- ☐ combinations of one or more of the above-mentioned kinds of appurtenances.

This sheet is therefore *not* applicable to consumer apparatus.

2. Algemeen

Het in par. 1 genoemde toebehoren mag worden toegepast als het fabrikaat is vermeld in bijlage 1 en als het is geleverd binnen de daarbij vermelde geldigheidstermijn.
In bijlage 1 is alleen toebehoren met nominale maat ≤ DN50 opgenomen; voor grotere afmetingen wende men zich tot de bevoegde instantie.
Zie blad A 0100 voor het begrip nominale maat.

2. General

The appurtenance mentioned in Section 1 may be used if the make is stated in Appendix 1 and if it has been supplied during the period of validity stated for it.
In Appendix 1 only appurtenances with a nominal size ≤ DN50 are included; for larger dimensions apply to the competent body.
See sheet A 0100 for the concept nominal size.

3. Aanvaardingsprocedure

Een aanvraag tot aanvaarding van het toebehoren moet worden gericht tot de bevoegde instantie. De bevoegde instantie beoordeelt en keurt het toebehoren volgens:

Voorschriften voor de keuring van het toebehoren van propaan-, LPG- en butaaninstallaties.
Dienst voor het Stoomwezen[1]

Voor zover dit nodig is, worden daarbij extra eisen gesteld.

Na aanvaarding ontvangt de aanvrager daarvan schriftelijk bericht. Tot opneming van het toebehoren in bijlage 1 dient dit bericht als bewijs van de aanvaarding. Bij de eerstvolgende herziening wordt het toebehoren in bijlage 1 opgenomen, tenzij de aanvrager vooraf mededeelt dat hij een dergelijke vermelding niet wenst.

De aanvaarding is geldig gedurende het kalenderjaar waarin zij werd verleend en gedurende vier daaropvolgende jaren, zolang geen wijziging optreedt in de gegevens die tot de aanvaarding hebben geleid. Bij geconstateerde afwijkingen stelt de bevoegde instantie een onderzoek in en wordt de aanvaarding opnieuw overwogen.

3. Acceptance procedure

An application for acceptance of the appurtenances must be addressed to the competent body. The competent body assesses and inspects the appurtenances in accordance with:

Where necessary, additional requirements will be formulated.

After acceptance the applicant is informed in writing hereof. Until the appurtenances has been included in Appendix 1 this notification will serve as proof of acceptance. Upon the next revision the appurtenances will be included in Appendix 1, unless the applicant states in advance that he does not wish such inclusion.

The acceptance is valid during the calendar year in which it was granted and for four successive years, as long as no change occurs in the data that led to acceptance. If deviations are found, the competent body establishes an investigation and the acceptance is reconsidered.

[1] verkrijgbaar bij de bevoegde instantie.

[1] available from the competent body.

De aanduiding * in de kolom 'model-aanduiding op het toebehoren' verwijst naar het typekeurbewijs voor fabrikant/importeur.

The designation * in the column 'model-designation on the item' refers the type approval certificate for manufacturer/importer.

fabrikaat make	soort type	merk mark	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Aeroquip	slang/hose	'Aeroquip'	1503-4 t/m 40	4,8–60 mm		1987-11
	" "	"	2651-4 t/m 32	4,8–46 mm		1987-11
	" "	"	2681-4 t/m 32	6,4–50,8 mm		1987-11
	" "	"	FC 321-12	½"		1989-04
Alfa Proces Controls Ltd.	breekkoppeling/ breaking clutch	'APC BREAKAWAY'	KSB 1- . . . . . *	1¼"		1987-06
Application Des Gaz	drukregelaar/ pressure controller	'Camping Gaz International'	28 mb Butane 500 g/h	M 16 × 1,5		1988-08
	terugslagklep/ non-return valve	'06F5'	06F5	M 22 × 1,25		1989-06
Argus G m b.H.	kogelkraan/ ball cock	'Argus'	BK serie/series 3021* FBK serie/series 3041; 3051* MK serie/series 3101; 3103* FK serie/series 3121; 3131* FFK serie/series 3151* SFFK serie/series 3171; 3172*	4–50 mm		1986-11
	breekkoppeling/ breaking clutch	"	341168			1986-11
			399817			
Argus G m b.H. + Bettis Actuators and Controls Ltd.	gestuurde afsluiter/ control valve	'Argus-Bettis'	afsluiter serie/valve series: BK; FBK; MK; FK; FFK; SFFK; EK. stuur unit/control unit: CR-30-SR; CR-70-SR	4–50 mm		1988-02
Argus G m b.H. + El-o-matic B.V.	gestuurde afsluiter/ control valve	'Argus-El-o-matic'	afsluiter serie/valve series: BK; FBK; MK; FK; FFK; SFFK; EK. stuur unit serie/control unit series: PE	¼–2"		1988-09

fabrikant make	soort type	kenmerk mark	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Argus GmbH / Hills-Mc Canna Co	gestuurde afsluiter/ control valve	'Argus-Ramcon'	afsluiter serie/valve series: BK; FBK; MK; FK; FFK; SFFK; EK. stuur unit/control unit: R-16 CFS t/m R-96 CFS; R-2000 DFS t/m R-8400 DFS.	4–50 mm		1988-02
Argus GmbH / Delta Flow Systems Ltd	gestuurde afsluiter control valve	'Argus-DFS'	afsluiter serie/valve series: BK; FBK; MK; FK; FFK; SFFK; EK. stuur unit/control unit R-35-DFS	2"		1989-04
B A C / Elo-matic B.V.	gestuurde afsluiter/ control valve	'BAC-Elo-matic'	afsluiter serie/valve series: NP; PQR; NPL; NR stuur unit serie/control unit series: PE	¼"–2"		1988-09
B A C / Von Rohr A.G.	gestuurde afsluiter/ control valve	'BAC-Von Rohr A.G.'	afsluiter serie/valve series: NP stuur unit/control unit: MAD 4.21.6.2.Po	15–50 mm		1988-04
Bastian Blessing USA & L.P Gas E. quipment England (REGO)	afsluiter valve	'Rego'	2553; 2553A	½"; ¾"		1988-02
" "	"	"	9101Ct	¾"		1989-06
" "	"	"	7505AP . . . 7508AP; 7509BP; 7510BP; 7511AP . . . 7514AP*	¼"–2"		1987-05
" "	"	"	7550P; 7551P; 7550U 7704P; 7704LP; 7705P; 7706P*	¼"–1¼" 1½"; 2"		1987-05 1988-02

fabrikaat make	soort type	kenmerk mark	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Bastian Blessing USA & LP Gas Equipment Engeland (REGO)	afsluiter/valve	'Rego'	A 8017BLP; A 8017BP; A 8017DP	¾"; 1"		1988-02
" "	"		TA 7034	1½"		1989-04
" "	"		WA 7513AP; WA 7514AP; WG 7513P*; WG 7514P*	2"		1987-05
" "	"	"	LA 7513AP; LG 7513P; LA 7514AP; LG 7514P*	2"		1988-02
	bodem afsluiter/ bottom valve	" "	LA 7781F; LA 7782; LA 7782A; LA 7782B; LA 7782E; LA 7782EA; LA 7782EB	1¼"–2"		1988-02
" "	"	"	serie/series: 7772	2"		1988-04
" "	"	"	Series: A 7781; A 7782	1¼"–2"		1989-06
	breekkoppeling/ breaking clutch	"	A 2141A6; A 2141A8	¾"–1"		1986-12
	stromingsbegrenzer/ flow limiter	"	serie/series: 1519 *	¾"–2"		1988-04
"	"	"	Series: A 3500; A 7537; A 7939; A 8523; A 8525	¾"–2"		1988-04
"	"	"	3272; 3282; 3292; 7574*	¼"–2"		1988-04
	drukregelaar/ pressure controller	"	E-567	¼"		1980-05
"	"	"	2403A; -B; -S; -T; -U; 2903A; -B	¼"–¾"		1988-05
"	"	"	1584; 1586; 1588	½"–1"		1989-06

fabrikaat make	soort type	kenmerk mark	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Bastian Blessing USA & LP Gas E. quipment Engeland (REGO)	flesafsluiter/ gas cylinder valve	'Rego'	Series: 3101; 3103; 3109; 7140; 8102; 8103; 8180; 9103	$\frac{3}{4}$"		1988-04
	gecombineerde afsluiter/ combined valve	"	6542A; 7556; 8475; 8477; 8555; 8593	$\frac{3}{4}$"–2"		1988-04
	gecombineerde drukregelaar/ combined pressure controller	"	7519D * 2523D; 7523 *			1989-06 1989-06
	inhoudsmeter/ capacity meter	"	2072C; A 9091 – A 9095*	$\frac{3}{4}$"–1"		1988-06
	snelafsluiter/ quick-acting valve	"	A 7507LHB; A 7508LHB	1"		1988-06
	"	"	7553; 7554	$\frac{1}{4}$"–$\frac{3}{4}$"		1988-06
	"	"	A 7853A	$\frac{1}{4}$"		1988-06
	terugslagklep/ non-return valve	"	3146; 3176; 3186	$\frac{3}{4}$"–2"		1988-06
	"	"	A 3400L4	2"		1988-06
	"	"	6586B	2"		1988-06
	"	"	E 7572B; E 7572F; E 7580E	$\frac{3}{4}$"; 1$\frac{1}{4}$"		1987-08
	"	"	7781AF	1$\frac{1}{4}$"		1989-06
	ullage-afsluiter/ ullage valve	"	3165; TSS 3169; TA 3169F	$\frac{1}{4}$"		1988-04

fabrikant make	soort type	kenmerk mark	model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks		geldig tot valid until
Bastian Blessing USA & LP Gas Equipment Engeland (REGO)	verdeelstuk voor veiligheidsklep/ distribution piece for safety valve	'Rego'	8542; AA 8542*	2"			1989-04
	"		(A) 8550; (A) 8560; (A) 8570*	3"–4"			1985-12
	veiligheidsklep/ safety valve	"	AA 3126L	1"	instelldruk/ 24,1 set pressure	bar	1988-04
	"	"	3127B; 3127G; 3127T*	1"	" 8,6; 17,2; 21,5	"	1989-04
	"		3128;*	3"	" 8,6; 17,2	"	
	"		3129*	1"	" 8,6; 14,7; 17,2; 20,7	"	
	"	"	3131B; 3131C; 3131G;*	3"	" 8,6; 10,8; 17,2; 21,5	"	1986-03
	"	"	3131T		" 8,6; 17,2; 20,7	"	
	"	"	3132B; 3132G; T 3132L;*	1¼"	" 8,6; 17,2	"	
	"	"	T 3132B; W 3132G*	1"	" 8,6; 13,8; 14,7; 17,2	"	
	"	"	3133B; 3133; 3133; 313G*	1¼"	" 8,6; 13,8; 14,7; 17,2	"	
	"	"	3135B; 3135; 3135;* 3135G	1½"	" 8,6; 17,2; 21,5	"	
	"	"	3149B; 3149G; 3149T*	2½"			
	"	"	serie/series; 7534; 7583;* 7584; 8684; 8685	¾"–2"	" 8,6; 10,8; 14,7; 15,8; 16; 17,2; 19; 20; 21,5; 25; 27	"	1989-04
	"	"	7544G; 7544R;* 7544T; 7544K	1"	" 17,2; 19,4; 21,5; 25,9	"	1989-04
	"	"	7545G*	¾"	" 17,2	"	1989-04
	"	"	A 8534FGN *	2"	" 17,2	"	1986-08

fabrikant make	soort type	kenmerk mark	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Bastian Blessing USA & I.P. Gas Equipment Engeland (RECSO)	vloeistofontlastklep/ liquid relief valve	'Rego'	SS 8001; SS 8802; SS 8802I;* SS 8022	¼"; ⅜"		1986-12
	vulafsluiter filling shut-off valve	"	A 7197DM; A 7797; 7798	1"		1986-12
	vulklep filling valve	"	3147; 3187; 7547B; 7579; 8579	¾"–2"		1988-04
	"	"	6579	1¼"		1989-06
Bastian Blessing USA & I.P. Gas Equipment Engeland + J.G.N. Cupedo & Zn	gestuurde afsluiter/ control valve	'Rego-Cupedo'	aandrijving-Cupedo/ driving mechanism-Cupedo® serie/series: H.O.R. ¾"–2"	¾"–2"		1988-04
			afsluiter-Rego/valve-Rego serie/series: 7505 – 7514			
Wilh. Bitter	kogelkraan/ ball cock	(B)	K 800	4–25 mm		1986-12
	"	"	K 831.8G; K832.8G; K 833.8G K 831.6G; K 832.8.6G; K 833.8.6G	15–50 mm		1986-09
Blackmer Pump Div.	pomp/pump	'Blackmer'	LGF 1C; LGF 1PC; LGB 1C; LGB 1PC	1"		1989-06
	"	"	LGRL 1¼; LGRLF 1¼; LGL 1¼; LGLF 1¼; LGL 1½	1¼"–1½"		1989-06
	"	"	LGL 2E; TLGLD 2E	2"		1989-06
	vloeistofontlastklep/ liquid relief valve	"	BV ¾; BV 1; BV 1¼; BV 1½; BV 2	¾"–2"		1989-06

fabrikaat make	soort type	kenmerk mark	model-aanduiding op het toestel model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Machinefabriek Boessenkool B.V. A.S.Br...dr Müller	vulpistool/ filling pistol	NB	3594A	¾"		1989-04
	afsluiter valve		P 296 *	¾"		1986-06
	gecombineerde afsluiter/ combined valve	" "	P 298	¾"		1986-02
	ullage-afsluiter ullage valve	" "	P 297	¼"		1986-11
	"	" "	P 487			1986-06
	"	" "	P 497	¼"		1986-06
	veiligheidsklep/ safety valve	" "	P 291 *	1"	instelddruk 17,2 bar/set pressure 17,2 bar	1986-06
	vulklep/filling valve	" "	P 290	¾"		1986-06
	"	" "	P 380 *			1986-06
	"	" "	P 390 *			1986-06
	"	" "	P 395	¾"		1986-11
Buschjost GmbH & Co.	magneet-afsluiter/ magnet valve	'Buschjost'	84929.59.8461; 84929.60.8461; 84929.70...73.8461	15-50 mm		1987-06
	"	"	84932.75...79.8461; 84933.30...34.8461	¾"-2"		1987-07
	"	"	84933-(70-75)-8466	20-50 mm		1988-04

fabrikaat make	soort type	kenmerk mark	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
G. Castellazzo Cevoteux SA	terugslagklep/ non-return valve	'G. Castellazzo'	V.D.P.D.			1986-03
	flesafsluiter gas cylinder valve		P 66	$\frac{3}{4}$"		1986-07
	"	"	77901			1989-09
	"	"	7851; 78510	W 19,8 × $1\frac{1}{14}$"		1989-05
	"	"	77100; 77200			1986-03
	afsluiter/valve	"	serie/series: 7135; 7135 – 7139; 71350-71399	$\frac{3}{4}$"		1989-06
	gecombineerde afsluiter/ combined valve	"	LORC88-78521			1986-07
	gecombineerde afsluiter + snelkoppeling/ combined valve + quick-acting clutch	"	afsluiter/valve: 1839; 71466 koppeling/clutch: 1840; 74801			1989-04
	gecombineerde vulklep: combined filling valve	"	Serie/series 7040; 70400; 70402; 70403			1986-07
	ullage-afsluiter/ ullage valve	"	serie/series 7155; 7155 – 7158; 71550-71589	$\frac{3}{4}$"		1989-04
	"	"	Serie/series 7160 (7160 – 7163; 7165 – 7169 + 7169LG); (71600 – 71639 + 71650 – 71699)	$\frac{3}{4}$"		1989-06

fabrikaat make	soort type	kenmerk mark	model-aanduiding op het te beproeven item model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Cevoduav SA	veiligheidsklep safety valve		7075; 70750 *	1"	instelddruk/set pressure: 17,2; 17,5 bar	1989-06
"	"		Serie/series 7100: * 7101 – 7103; 71010 – 71039	1–1¼"	" " : 13,8; 15,0; 15,6; " 16,0; 17,5 "	1989-04
"	"		Serie/series: 7110; 7111; 71111	¾"	" " : 13,8; 15,0; 15,6; " 16,0; 17,5 "	1989-05
"	"		Serie/series: 7112; 7112; 71120	1"	" " : 13,8; 15,0; 15,6; " 16,0; 17,5 "	1989-05
"	vulklep/filling valve		Serie/series 7025 (7025 – 7031);* (70250 – 70310)	¾"		1989-06
"	"		7000; 7001; 70000; 70019	1¼"		1989-06
"	"		70100	¾"		1986-08
"	"		70111	¾"		1987-07
Continental	slang/hose	'Conti-Jescoro'	Conti-Jescoro-LPG	19–100 mm		1985-07
"	"	'Conti-LPG'	Conti-LPG	13–100 mm		1986-03
"	"	'Conti-Jeha-LPG'	Conti-Jeha-LPG	13–100 mm		1986-03
Corken Int. Co.	pomp/pump	'Corken'	F9; F10; F12; F14; F15 C9; C10; C12; C14	1"; 1¼"; 1½"		1986-12
"	"	"	C 51A; F 51A	¾"; 1"		1986-12
"	"	"	Serie/series: 521; 522	2"		1989-01

fabrikaat make	soort type	kenmerk mark	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Corken Int. Co.	vloeistofontlastklep/ liquid relief valve	'Corken'	B 166; T 166; B 177; B 165S*	¾"-2"		1989-05
Cotel SA	koppeling cluich	'Media'	Faster HNV	¼"		1988-11
Dafram Spa	kogelkraan ball cock	'Dafram'	7321; 7325; 7341; 7343; 7349; 7361; 7365; 7381; 7383; 7389	¼"-2"		1988-10
Handelsbond Deuverom B.V.	vul-nozzle fulling nozzle					1987-07
Edmondo Balsamo	flesafsluiter gas cylinder valve		3A-370			1986-07
Hulles	breekkoppeling/ breuking clutch		ARK-19	¾		1986-09
	vulpistool/ filling pistol	"	ZVG			1986-09
	slang/hose	'Elaflex'	LPG-19	19 mm		1986-11
Ernesto Armaturen	terugslagklep/ non-return valve	'EO'	22-L	¾"		1987-01
EWO	veiligheidsklep safety valve	'EWO'	351 *	¼"	instelldruk 24,5 bar/set pressure 24,5 bar	1986-12
Fiege L.P.G. B.V.	vulklep/filling valve	'F3173'	F3173-4.83			1987-06
	"	'F170203'	F170203			1987-12

fabrikant make	soort type	kenmerk mark	model-aanduiding of het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Fisher Controls Co	afsluiter/valve	'Fisher'	N 300-10; N 300-12; N 300-16; N 300F-16	¼"–2"		1986-09
"	"	"	N 400-10; N 400-12; N 400-16; N 400F-16	¼"–2"		1986-09
"	"	"	N 560-26; N 561-26	2"		1989-01
"	"	"	Series: B 60011 – B 60311; B 660; B 661	¾"		1985-11
"	gecombineerde afsluiter/ combined valve	"	L 677 AR	¾"		1985-11
"	bodemafsluiter/ bottle n valve	"	Serie/series: C 208-10; C 401-16; C 402-16; C 407-16; C 421-16; C 427-16	1¼"–2"		1988-05
"	drukregelaar/ pressure controller	"	912/115; 912/264			1986-09
"	"	"	64/33; 64/35; 64/36; 64/222			1986-04
"	"	"	67/683; 67/684; 67/685			1986-04
"	gecombineerde drukregelaar/ combined pressure controller	"	R 966/114			1986-09
"	niveau-aanwijzer/ level indicator	"	J 30; J 31	1"		1986-07

fabrikaat make	soort type	kenmerk mark	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Fisher Controls Co.	veiligheidsklep/ safety valve	'Fisher'	## 110; ## 113; ## 135; ## 138; ## 160*; ## 163; ## 185; ## 188	¼"–¾"	insteldruk 17,2 bar; 21,5 bar/ set pressure 17.2 bar; 21,5 bar	1985-11
	"	"	## 123; ## 124; ## 148; ## 173*	½" ¾"	insteldruk 25,9 bar; 31 bar/ set pressure 25,9 bar; 31 bar	1985-11
	"	"	## 225; ## 250; ## 275; ## 280-250*	¾"–2"	instelduk 17,2 bar/set pressure 17,2 bar	1985-11
	"	"	## 225*	¾"	instelduk 15,6 bar/set pressure 15,6 bar	1986-11
	"	"	## 720; ## 730*	2"–3"	instelduk 17,2 bar/set pressure 17,2 bar	1985-11
	vulpistool filling pistol	"	N 480	1"		1986-08
Hamco-IMZ BV	afsluiter valve veiligheidsklep/ safety valve	'WvM'	WM-11-V WM-4-8-V	¾" 1"	instelduk 17,5 bar/set pressure 17,5 bar	1988-07 1988-07
	vulklep/filling valve	'IMZ'	CV 7-6N8; CV 7-6N9	¾"		1989-04
The Fulflo Spec. Co. Inc.	vloeistofontlastklep: liquid relief valve	'Fulflo'	SVB-15x2; SVB-25x2; SVB-35x2; SVB-45x2; SVB-55x2	¼"–1"		1987-12
GOK	drukregelaar/ pressure controller	'GOK'	01 025-09			1985-11
	"	"	01 039-02; 01 042-06; 01 042-07; 01 043-06			1985-11
	"	"	01 529-01; 01 529-02			1985-11
	"	"	01 641-01			1985-11
	"	"	01-635-00			1985-11

fabrikaat make	soort type	kenmerk mark	model-benaming op het te beoordelen item model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
GOK	instelbare drukregelaar/ adjustable pressure controller	'GOK'	01 782-00; 01-782-01			1985-11
	"		01 911-01; 01 911-02			1985-11
Oscar Gossler K G.	slang hose	'Gossler-LPG'	Orangeflex flüssiggas-schlauch	19–75 mm		1986-03
Gustav F. Gerst GmbH & Co	terugslagklep- non-return valve	'Gestra'	2.0540 (RK 41/44)			1987-05
Hattersley Newman Hender	kogelkraan/ ball cock	'Heaton'	fig. 10115	15–50 mm		1987-08
Hutchinson	slang hose	'Hutch'	Propaan-gasslang *	8; 9; 12 mm		1985-12
Industriele Maatschappij Zutphen B.V.	breukventiel/ bursting valve	'IMZ of INDMY'	CV-15-7-UNM *			1985-10
	vulklep/filling valve	"	CV-2	$\frac{3}{4}$"		1986-07
	"	"	CV-2-6 SUM	M26 × 1		1987-03
	"	"	CV-7-6N	$\frac{3}{4}$"		1986-07
Kabelmetal Electro	buigzame metalen leiding/flexible metal pipe	'Flexwell-sicher-heitsrohr'	16/30 CU-PN25; 30/48 CU-PN25*	16–30 mm		1988-04
Kitunaru Valve Mfg Co Ltd.	kogelkraan/ ball cock	'KTM'	E 0101-29; E 0101-30; E 0105; E 0106	$\frac{1}{2}$"–2"		1986-09
Klein S.A.	slang hose	'ROBAFORM'	ROBAFORM-Propaangasslang *	8 mm		1987-07

fabrikaat make	soort type	kenmerk merk	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
KOSAN A/S	drukregelaar/ pressure controller	'KOSANGAS'	COMPACT 182			1987-06
	flesafsluiter/ gas cylinder valve	'KOSAN'	186 A			1987-06
Lebon & Visser N.V.	vulpistool filling pistol	'LV'	501			1988-04
L.P. Gas Equipment Ltd	drukregelaar/ pressure controller	'Rego'	503 A; 503 B			1989-06
	flesafsluiter/ gas cylinder valve	"	8101 COVT; 8101 COVTX			1989-06
	gestuurde afsluiter/ control valve	"	M 1105; M 1106; (W)M 1113; (W)M 1114* Actuators: M 1105; M 1106; M 1114 Afsluiters/Valves: A 7505; A 7506; (A) 7705; (A) 7706; A 7513(F); WA 7513AP; WG 7513P; A 7514(F); WA 7514AP; WG 7514P	¾"; 2"		1986-09
	terugslagklep/ non-return valve	"	3146S; 3176S; 3186S	¾"; 1¼"; 2"		1988-06
	vulklep/filling valve	'LP-GE-UK'	M 1122 *	¾"		1987-02
	"	"	M 1122A	¾"		1989-05

fabrikaat make	soort type	kenmerk mark	model-aanduiding van het item model-designation of the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Metal Goods Mfg Co.	stromingsbegrenzer/ flow limiter	'M.G.M.'	40; 41*	½"–2"		1989-04
	"	"	166 I	2"		1989-04
	terugslagklep non-return valve	"	serie 50; 51	½"–2"		1989-04
	"	"	serie 167 I	2"		1989-04
Teleflex bar Medial B.V.	snelkoppeling quick-acting clutch	'Media'	85 1616 0300; 85 1616 0600	½"		1989-10
Nova Comet	drukregelaar pressure controller	'Nova-Comet'	Fig. 75/E			1985-11
	"	"	2202/80	¼"; ⅜"		1989-04
	"	"NC"	R 83			1988-11
	"	SAP	ADT 04	½"		1988-10
Officina Della Pergola	afsluiter/valve	"	ADT 00; ADT 11	½"		1988-10
	uitlage afsluiter/ uitlage valve	"	ADT 02	1"	instelddruk 17,5 bar/set pressure 17,5 bar	1988-10
	veiligheidsklep safety valve	"	ADT 03; ADT 13	¾"		1988-10
	vulklep/filling valve	"	ADT 23			1988-10
	vulklep + uitlage afsluiter/ filling valve + uitlage valve	"	BUTAPAL ®	13–100 mm		1988-02
Phillips Gummi und Asbest Gesellschaft	slang hose	'Butapal'				

fabrikaat make	soort type	kenmerk mark	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Rheinhütte	pomp/pump	R	RSG 20	2"		1987-12
Reca	drukregelaar, pressure controller	'Reca'	72-1-4			1989-04
Rochester	niveau-aanwijzer level indicator	'Rochester'	6280; 6281; 6283; 6284; 6290; 6293			1988-06
	"	'Magnetel'	6336; 6339; 6342; 6360			1988-06
	"	'Rochester'	7550; 7553			1986-07
	"	'RG of Rochester'	(B) 6241; (B) 6244; (B) 6281;* (B) 6284			1989-06
Schrumlik B.V.	niveau-aanwijzer/ level indicator	'Livello'	L1; L2; L3			1986-07
Schulz & Rackow	afsluiter/valve	'S.R.'	484	¾"		1985-12
	drukregelaar pressure controller	"	590			1985-12
	niveau-aanwijzer/ level indicator	"	705			1985-12
	terugslagklep non-return valve	"	485*	¾"		1985-12
	veiligheidsklep/ safety valve	"	486*	1"	instelddruk 15,9 bar; 17 bar/ set pressure 15,9 bar; 17 bar	1985-12
Sero-Pumpenfabrik GmbH	pomp,pump	'SERO'	SRHS 335WG 11x/1.40	32/65 mm		1988-07

fabrikaat make	soort type	kenmerk mark	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
Sierra	drukregelaar/ pressure controller	'Sierra'	MOD. 156/MG			1988-06
..	..	'Gautzsch Gimeg'	S 102			1989-03
..	..	..	163/E			1989-04
..	..	Ⓢ	101			1985-11
..	..	..	159			1989-04
SIIII	pomp/pump	'SIIII'	CEIIII 3605/5 AO 146.09.4 CEIIII 3607/5 AO 146.09.4			1987-08
..	..	..	SBZ 5003B; SBZ 5004B			1987-12
Smit L P G App. B.V.	vulpistool/ filling pistol	'Smit-Nuenen'	M 4			1986-07
Theo Armaturen A.G.	kogelkraan/ ball cock	'VALTAC'	1544; 1566	¼"-2"		1989-04
Talleres Mecanicos Rubert SA	kogelkraan ball cock	'JC'	512 AIT	15-50 mm		1988-04
Talleres Mecanicos Rubert SA AMG Antrieb und Mechanik GmbH	gestuurde afsluiter/ control valve	'JC-AMG'	afsluiter/valve: 512AIT actuator: SAF 025	15-50 mm		1988-04
Viking Pump Div. Houdaille Ind. Inc.	pomp/pump	'Viking'	HL 195 DL; HL 195 DL-795004	1½"		1988-08
..	..	..	HL 195V	2"		1988-11

fabrikaat make	soort type	kenmerk mark	model-aanduiding op het toebehoren model-designation on the item	aansluitmaat mating dimension	opmerkingen remarks	geldig tot valid until
I.P.G. Inst. de Visser B.V.	vulpistool/ filling pistol	'CdV'	V5			1987-11
The Worcester Valve Co. Ltd.	kogelkraan/ ball cock	'Worcester'	44; F 44	½"–2"		1985-11
"	"	"	Series F51; F52; 54	½"–2"		1985-11
"	"	"	4211	½"–2"		1985-11
"	"	"	Series: F81; AF81	½"–2"		1985-11
The Worcester Valve Co. Ltd. El-o-matic B.V.	gestuurde afsluiter/ control valve	'Worcester-El-o-matic'	afsluiter series/ valve series: 44; 45; 51–56; 59; 81; 4211 actuator serie: PE	½"–2"		1988-09
The Worcester Valve Co. Ltd. Norbro Ltd.	gestuurde afsluiter/ control valve	'Worcester-Norbro'	afsluiter series/ valve series: 44; 45; 51–56; 59; 81; 4211 actuator: 10-90 FKB-40-OG; 10-90-RKB-40-SGB	½"–2"		1988-08
The Worcester Valve Co. Ltd. Von Rohr A.G.	gestuurde afsluiter control valve	'Worcester-Von Rohr AG'	afsluiter/valve: AF 54; 53 actuator: MAD 3.21.6.5. Po	25–50 mm		1987-01

Appendix III Regulations concerning the qualification of contractors for the construction, maintenance, repair, inspection and testing of DME-installations

1. Introduction

In order to ensure the safe construction and operation of DME installations the Inspection Agency requires contracting companies who want to be active in this field to prove their capabilities.
A contractor is only eligible for qualification if, to the satisfaction of the Agency, the contractor meets certain requirements.

This 'Regulation concerning the qualification of contractors for the construction, repair, maintenance, inspection and testing of DME-installations' provides these requirements as well as the procedure to be followed for receipt of a certificate of registration as qualified contractor.

2. Definition of terms

DME-Installation
A DME service station or the DME transport facilities built on a road tank truck.

Contractor (qualified)
Contractor is a company which carries out activities in the field of construction, maintenance, repair, inspection and testing of DME-installations.
A qualified contractor has acquired a valid certificate of Registration from the Inspection Agency.

Inspection Agency
An institute, governmental or private, authorised to perform inspection work on an DME installation or part there-of. This includes all matters related to the engineering, fabrication, inspection and testing of such installations.

'Regulations'
The regulations given in the 'Regulations for DME Service Stations and Road Tank Trucks".

Rules
The rules, regulations and procedures issued by the Inspection Agency.

3. Qualification procedure

1 The contractor fills in an 'Application Form' and a 'Declaration by Contractor', shown as attachments I and II respectively.
2 The Inspection Agency reviews whether the information furnished by the contractor meets the requirements as set forth in 'Requirements for qualification'.
3 The Inspection Agency is entitled to investigate the validity of the information provided by the contractor.

4 The Inspection Agency takes a decision on the application and informs applicant by registered letter of its decision.
5 If qualification is granted the Inspection Agency provides the contractor with a 'Certificate of Registration" as qualified contractor. An example of such a certificate is shown as attachment III.
6 A refusal to grant qualification will be motivated by the Inspection Agency.
7 A qualified contractor is placed under the jurisdiction of the Inspection Agency as described in 'Supervision by the Inspection Agency'.
8 The Inspection Agency will charge contractor for its activities on the basis of fixed rates as act forth in 'Rates of the Inspection Agency'.

4. Requirements for qualification

Contractors are eligible for qualification if they are active in some or all of the following fields;
a: construction, b: repair, c: maintenance, d: inspection and e: testing of DME installations and to the satisfaction of the Inspection Agency meet the following requirements:

1. Be registered at ..... (The applicable governmental or local Authority).
2. Have sufficient in-house specialists who are familiar with:
   - the 'DME-regulations' for the activities concerned,
   - the 'rules' as defined by the Inspection Agency,
   - the properties of DME.
3. Take responsibility for the professional skills of their personnel.
4. Possess tools and machinery in sufficient quantities to execute the work.
5. Employ sufficient trained and experienced personnel as regards to:
   - materials manufacturing;
   - the appurtenances;
   - operation and safety of the installation;
   - interpretation of drawings and schemes as far as relevant for the execution of the work.
6. Have the means to perform quality control on materials and appurtenances.
7. Have a professional administration and an organisation with clear levels of responsibility.

5. Validity of qualification

1. The qualification is valid from the date of issue of the certificate until December 31 of the following year.
   The validity will be extended, on contractor's request, with two-yearly periods if c prove to the Inspection Agency: either to have built at least one DME-installation ir years or to have performed repair, maintenance, testing or inspection work more then o:

2. The qualification expires:
   - at liquidation of the contracting company or:
   - on the day when contractor declares his intention to stop all activities in the field contractor is qualified, or:

- if the Inspection Agency terminates the validity of qualification.
  The Inspection Agency is entitled to terminate the qualification if contractor does not meet his obligations under the terms of this regulation, or if contractor no longer meets the requirements for qualification as set forth in 'Reguirements for qualification'.

6. Obligation of the qualified contractor

The qualified contractor at all times shall execute the work for which he is qualified in a professional manner and with due observance of the regulations.

7. Supervision by the Inspection Agency

1. The Agency provides the application forms and all required information.
2. The Agency regularly controls whether the contractor still meets the requirements for qualification as well as whether the contractor meets his obligations with regard to the qualification.
3. The Agency maintains a Register of all qualifications granted, cancelled, suspended or withdrawn. Interested parties, e.g. local or governmental bodies or other contracting companies, will on request receive information from this register.

8. Rates of the Inspection Agency

The Inspection Agency will charge companies for the following main activities (with inclusion of related activities):

1. Evaluation of the information provided by applicant.
2. Visits to contractor's premises and/or DME-installations.
3. Processing and finalisation of an application, including Registration.
4. Evaluation of a request for extension of a qualification.

Companies will be charged on the basis of fixed, Government approved, rates for:

- working and travelling hours, or parts there-of, spent in the performance of above activities.
- travelling and lodging expenses.

9 Final statements

1. Copies of this regulation will be provided by the Agency on request of interested parties.
2. This regulation will become effective on ..... (date).

Attachment I

APPLICATION FORM

I, the undersigned, herewith request registration as qualified contractor under the terms of the 'Regulation concerning the qualification of contractors for the construction, maintenance, repair, inspection and testing of DME-installations'. I provide for this purpose the following information:

1. Name and address of company

2. Location of company's factory(ies)

3. Registration place, date and number of company

4. Name(s) and surname(s), place and date of birth and function within the company of company representative(s)

5. Qualification is requested for:
   a. engineering and construction of complete installations
   b. maintenance
   c. repair
   d. inspection
   e. testing

6. Is your company equipped to

	perform the activity(ies) as defined under 5. Above ?	
7.	Is welding expertise as defined in the DME-regulations' available within your company ?	
8.	Any further information which may be of relevance for this application.	

I declare to have this form truthfully completed.

Place and date :

Name of applicant :

Signature of applicant :

Attachment II

DECLARATION BY CONTRACTOR

I, the undersigned .....(name),

.....(function)

of .....(company name)

established at.....(company address)

taking domicile at above address for the purpose of this declaration,

DECLARE :

1. To be lawfully established as a contractor at the above address.
2. To intend the performance, in a professional manner, of the activities as meant in the 'Regulation concerning the qualification of contractors for a: construction, b: maintenance, c: repair, d: inspection and e: testing of DME installations'. This declaration is not applicable to activities crossed-out.
3. To be equipped as a contractor in accordance with the requirements set forth in the "Regulation" mentioned under 2. above.
4. To supervise personally, or provide for the supervision of, all activities concerned with the execution of work as defined under 2. above.
5. To have truthfully completed the application form for qualification.
6. To be familiar with the contents of the regulation mentioned under 2. above, to accept this regulation completely and to feel bound by it.

Place and date :

Signature :

Attachment III

CERTIFICATE OF REGISTRATION

I, the undersigned, Director of the Inspection Agency, herewith declare that:

Name and address of contractor:

is registered as a qualified contractor as meant in the 'Regulation concerning the qualification of contractors for construction, maintenance, repair, inspection and testing of DME installations', for a: construction, b: maintenance, c: repair, d: inspection and e: testing of DME installations. This certificate is not applicable to activities crossed-out.

The Director of the
Inspection Agency,

Signature :
Date of issue :
Place of issue :

Appendix IV Procedure for the commissioning of new or degassed DME-installations

1. The commissioning shall be performed by a qualified contractor.
   Throughout duration of the work one of the contractor's employees shall be in charge and have ultimate responsibility for the correct execution of procedural and safety regulations.

2. Commissioning shall be in the open air on an enclosed space.
   Prior to commissioning the correct assembly of all parts of the installation shall be checked. All appurtenances of re-tested installations must have been fitted with new gaskets and checked on their proper performance.

3. If the person in charge considers that venting of DME-containing gases will be required during commissioning, he shall prior to commencing the work ascertain whether:
   - Any burnable materials, open fire, heated objects with a surface temperature in excess of the auto-ignition temperature (zone 1 or 2) respectively 80% of the auto-ignition temperature (zone 0) or other possible sources of ignition are present within a distance of 15 metres from the storage vessel. If so he shall have the situation remedied.
   - The weather allows job execution; e.g. not during misty or calm weather.
   - Procedures and safety regulations are available at the site. The procedures may differ, depending on the selected method of execution. They shall, by exception, be drawn up by the operating companies theirselves, together with the safety regulations to be taken. These company regulations shall remain within the framework of this procedure.
   - The local or regional fire-brigade has been informed of the kind of activity and job procedure planned.
   - The jobsite is demarcated with warning signs stating that work is being executed and smoking and open fires are prohibited.
   - At least two portable powder extinguishers with a charge of 7 kg. powder each are present at the site and available for immediate use.
   - The truck engine is not running (truck's facilities only)
   - The electrical installation has been switched-off and de-energised.
   - The checklist (see attachment) has been filled in as far as possible and has been signed. This list shall be completed as work progresses.

4. The leakage test, required by the Inspection Agency shall be performed either with DME at a pressure of *[hold]* barg minimum or with nitrogen or another suitable inert gas at a pressure of *[hold]* barg minimum. If during testing with DME leakages are found which can only be remedied after vessel and piping have been depressurized and degassed, the 'Procedure for depressurization and degassing of DME-installations' shall be followed.
   [It is assumed that the minimum pressure required for leakage testing is specified by the supplier.]

If an inert gas-test has been performed, the vessel shall be depressurized until the pressure in the vessel is atmospheric. Thereafter the vessel may be filled with DME-vapours.

5. Pressurisation of the vessel with DME, for testing as well as commissioning purposes, may only be done in the vapour phase, through connection with a nozzle in a vapour line of another DME storage vessel or DME road tank truck.

Attention:

Depending on the circumstances the gas concentration in the surroundings of the vessel shall be measured continuously, or at short intervals, if the possibility exists of gas leakages while work progresses.

6. After pressurization the installation is ready for usage and can be taken over by the company representative. The contractor representative shall make this official by handing-over to the company representative a signed copy of the completed checklist.

Attachment

INSTALLATION CHECKLIST

This checklist shall be available at the job site and be filled in as work on the installation progresses.

1. General data

Location	:
Activity	:
Client company	:
Company representative	:
Signature of company representative	: ……..
Contractor	:
Contractor representative	:
Signature of contractor representative:	: ……..

2. To be filled in daily by contractor

Date	:
Weather windy/calm	:
clear/misty	:
Temperature (°C)	:
Number of contractor personnel on-site	:

Safety-measures

Fire-brigade informed	:
No burnable material or ignition sources within 15 metres distance	:
Warning signs placed	:
Number/Type/Capacity of fire-fighting equipment on-site	:

3	Work progress
A.	Degassing
0	1 and 2 filled in completely
0	Gas detection and oxygen measuring instruments tested
0	Hoses unrolled. Hoses purged with nitrogen. (truck's facilities only)
0	Truck engine stopped. (truck's facilities only)
0	Electrical installation switched off and de-energised
0	Checked on safety of venting/flaring situation
0	Storage vessel and piping depressurized
0	Piping purged with nitrogen
0	Liquid LPG pumped off as far as possible
0	Storage vessel completely filled with water or purged with nitrogen
0	Storage vessel completely aerated
0	Oxygen measurement in vessel ..... vol.% 02
0	Gas test in vessel .....% LEL (Lower explosion limit)
	Measurements performed by:
0	Vessel ready for entry of personnel
	Oxygen measurement ..... Vol. % 02
	Checked by contractor representative :
	signature :
B.	Commissioning
0	1. filled in completely
0	All appurtenances checked and provided with new gaskets
0	Vessel pressurised with nitrogen or air or with DME-vapours through connection with a vapour line of another DME vessel/tank truck
0	Leakage test performed
0	If applicable, safety check performed on venting/flaring
0	Installation filled with DME
0	Installation handed over to company representative
	Signature of contractor representative :
	Signature of company representative :

Appendix V Procedure for depressurisation and degassing of DME-installations

1. The work shall only be performed, by a qualified DME contractor, after having obtained a work-permit from the relevant authority.
   Throughout duration of the work one of the contractor's employees shall have ultimate responsibility for the correct execution of procedural and safety regulations. Unless the DME service station is equipped with more than one completely self-sustained facility the DME deliveries shall be stopped completely.
   Sales from temporary installed skid-mounted vessels are prohibited.

2. The work shall only be performed in the open air on an enclosed space.
   No burnable materials, open fire, heated objects with a surface temperature in excess of the auto-ignition temperature (zone 1 or 2) respectively 80% of the auto-ignition temperature (zone 0) or other possible sources of ignition shall be present within a distance of 15 metres from the storage vessel.

3. Prior to commencing the work the responsible person shall ascertain whether:
   - The weather allows job execution; e.g. not during misty or calm weather.
   - Procedures and safety regulations are available at the site. Procedures may differ, depending on the manner of execution. The procedures, a different one for each possible method of execution, and safety regulations shall be drawn up by the operating company concerned, within the framework of instructions given in this procedure.
   - The local or regional fire-brigade has been informed of the kind of activity and job procedure planned.
   - The jobsite is demarcated with warning signs stating that work is being executed and smoking and open fires are prohibited.
   - At least two portable powder extinguishers, with a charge of 7 kg. powder each are present at the site and available for immediate use.
   - The checklist (see attachment of Appendix IV) has been filled in as far as possible and has been signed. This list shall be completed as work progresses.

4. Liquid DME shall be removed from the vessel, with an DME pump or compressor, under the surveillance of the person in charge. The DME shall be discharged into another storage vessel, which could be the vessel of a DME road tank truck. If the latter is the case the truck driver shall be present.

5. When the vessel is empty, but still containing DME vapours, the electrical installation of the vessel shall be switched-off and de-energised. If it concerns the vessel of a tank truck, the truck engine shall be stopped first, unless required for compressor drive.

6. If the storage vessel of a service station is connected to an installation part that remains under pressure, the storage vessel shall be separated from the other part by the disconnection of all relevant piping. Closure of block valves is not sufficient.

7. Removal of liquid product remnants and subsequent depressurisation shall take place by means of (in order of preference):
   - Suction with a DME compressor.
   - Flaring. The flare shall be provided with a waterlock. The diameter of the piping between vessel and flare shall be DN 50 (2 inch) at a maximum.
   - Controlled venting from the vapour phase, at a height of at least 5 metres. The diameter of the ventpipe shall be DN 50 (2 inch) at a maximum. Venting may only be applied if, to the judgement of the person in charge, the environmental situation allows this.

Attention !:

Depending on the circumstances the gas concentration in the surroundings of the vessel shall be measured continuously, or at short intervals, if the possibility exists of gas leakages while work progresses.

Flaring shall take place at a safe place in the open air, at least 15 metres away from the storage vessel and other burnable objects.
A continuous surveillance during flaring is required.

During the removal of DME-liquids from the vessel special attention is required for the phenomenon of undercooling of the liquid ("coldcooking") . If this occurs the formation of ice on cold parts of the installation may become visible. As a consequence of the reduced temperature the pressure in the vessel may have become atmospheric while liquid DME is still present.

When "coldcooking" occurs one should wait until a pressure has built-up again or alternatively the vessel could be partly filled with water to heat up the cold liquids and thus evaporize them.

8. After execution of the above activities all connected piping and hoses shall be disconnected and subsequently purged with nitrogen or another suitable inert gas. Usage of oxygen or air is prohibited.

9. The depressurised vessel shall now be degassed either by:
   - further action by the DME-compressor until a pressure slightly below atmospheric has been achieved followed by purging with nitrogen or another inert gas, or:
   - filling with water, while at the same time venting or flaring.

   If the vessel has to be entered, the latter method is preferred.

10. The manhole may be opened after establishing that either the vessel is filled with nitrogen to atmospheric pressure or the vessel has been filled with water completely.

11. Before entering the vessel the required measurements shall be performed and a permit to work inside an enclosed space shall be obtained.

    A checklist in accordance with the attachment of Appendix IV may serve for the latter purpose.

Appendix VI Procedure for the installation/dismounting of submerged pumps

1. Switch-off the electrical power to the pump; remove the fuse.

2. Install the pressure gauge on the pumpwell.

3. Connect the nitrogen bottle with the pumpwell, set the pressure reducing valve at a pressure of approximately 300 kPa (3 bar) above the pressure of the vessel. The setpressure of the safety valve of the vessel however, shall never be exceeded.

4. If necessary the DME-liquid has to be pushed (forced) back into the vessel:
   - Close the pump discharge (valve located next to the well cover plate).
   - Open the DME-inlet valve of the pumpwell allowing DME from the vessel to enter.
   - Admit nitrogen to the pumpwell. By doing so, the liquid DME is forced-out of the well. Check the increase of the pressure at the pressure gauge.
   - As soon as the pumpwell is emptied of DME (the pressure in the well suddenly decreases to a value equal to the pressure of the DME in the vessel and the noise of nitrogen flowing into the vessel can be heard) the valve is closed and secured in this position (padlock).
   - Shut-off the supply of nitrogen as soon as the pressure in the pumpwell has reached again a value of approximately 300 kPa (3 bar) above the pressure in the vessel (however the total value should be less than the set pressure of the safety valve of the vessel).
   - Check whether the pressure in the well remains constant during 15 minutes (check on tightness of inlet valve and well). In case the pressure drops, either the valve is not tight or the pumpwell is leaking; the entire DME storage vessel has to be made gasfree in such a case prior to the pump being dismounted or installed.
   - Open the vent valve and vent until the pressure has dropped to approximately. 200 kPa (2 bar).
   - Check whether the pressure in the well keeps constant during 15 minutes; (check on the presence of DME-liquid in the pumpwell) in case the pressure raises, the DME inlet valve probably leaks in which case the vessel has to be degassed.

5. Decreasing of the concentration of DME in the pumpwell.
   - Supply nitrogen to the well until the pressure is equal to the set pressure of the reducing valve at the nitrogen bottle. Close the supply of nitrogen.
   - Open the vent valve and vent up to a remaining pressure of approximately 200 kPa (2 bar).
   - Repeat twice the supply of nitrogen and the venting.
   - Keep the vent valve in the open position.

6. Remove the pump well cover plate after having checked that there is no pressure inside the well.

7. Dismantle/install the submerged pump.

8. Preparation for operation (commissioning)
   - Install the pump, fasten the cover plate of the pumpwell, connect the discharge piping of the pump.
   - Check whether the electrical power supply to the pump has been interrupted by removal of the fuse.
   - Close the pump discharge valve, which is located next to the well cover.
   - Close the well's pressure gauge.
   - Close the vent valve.

9. Reduce the oxygen content in the well by supplying nitrogen and venting in accordance with item 5 (see above) for three times.
   When supplying nitrogen for the first time, check whether the pressure in the well remains constant for 15 minutes while the DME-inlet and outlet valves are closed.
   If this is not the case, the leakage (cover and/or valves) has to be determined and repaired before DME may be supplied to the well.

10. Taking into operation
    - Open the DME inlet valve of the well and secure its open position.
    - Open the valve in the pump discharge, located next to the cover plate.
    - Check whether the pressure gauges on the well and on the vessel show the-same pressure.
    - Connect the electric power to the pump and check for proper operation.
    - Remove the source of nitrogen supply and the pressure gauge on the well if present.

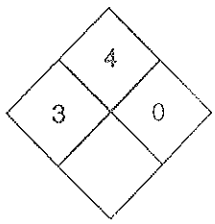
Appendix VII ADR-product card (transport emergency group card)

Formel: $(CH_3)_2O$ | Summen-Formel: C2–H6–O | UN-Nr. 1033 | Merkblatt 391

Stoffname

Deutsch	*Englisch*	*Französisch*	*Spanisch*
Dimethyläther	**Dimethyl ether**	**Ether diméthylique**	**Eter dimetílico**
Dimethylether	Methyl ether	Ether méthylique	Eter metílico
Holzäther	Methoxy methane	Diméthyléther	Oxido de metilo
Holzether	Methyl oxide	Oxyde de méthyle	Eter de madera
Methyläther	Methylic oxide		Dimetil éter
Methylether	Wood ether		
Methylenhydrat	Oxybismethane		
Methyloxid			
Methoxymethan			
Oxybismethan			

Gefahren-Diamant



Hazchem-Code: 2 WE

Technische Daten		**Feuerbekämpfungsdaten**	
Siedepunkt	–25 °C	Flammpunkt	–42,2 °C c.c.
Dampfdruck in bar bei 20 °C	5,1	Zündfähiges Gemisch, Vol.-%	3,4–26 *
Dampfdichteverhältnis, Luft = 1	1.59	Zündtemperatur	235 °C
Schmelzpunkt	–141 °C	Kritische Temperatur	128,8 °C
Mischbarkeit mit Wasser	**		
Spez. Gewicht, Wasser = 1	0,724 g/ml als Flüssigkeit		
Molare Masse	46,07		

* Laut IMDG-Code 2,0–50.
** Gut löslich, bei 18 °C lösen sich 37 Liter Gas =7 Gew.-% in einem Liter Wasser.

Gefahrgut **Klassifizierung**

IMDG-Code (D-GGVSee): Kl. 2.1
Page: 2133; EmS: 2-07; MFAG: 330
ICAO-IATA-DGR: Kl. 2.1; UN-Nr. 1033
USA CFR 49: § 172.101 Cl. 2.1 UN-Nr. 1033

RID (D-GGVE):	Kl. 2	Rn 201	Ziff. 2F
ADR (D-GGVS):	Kl. 2	Rn 2201	Ziff. 2F
ADNR (D-GGBinSch):	Kl. 2	Rn 6201	Ziff. 2F
Gefahrzettel (Label):	Nr. 3		

Gefahrstoff

CAS-Nr.:115-10-6 RTECS-Nr.: PM 4780000
EG-Nr.: 204-065-8 Index-Nr.: 603-019-00-8
EG-Kennzeichnung: ja
Symbol: F+
R-Sätze: 12
S-Sätze: (2)-9-16-33
D-VbF-Klasse: D-Lager-Klasse (VCI) Nr.: 2A

Erscheinungsbild: Farbloses Gas; kräftiger etherartiger Geruch.

Verhalten bei Freiwerden und Vermischen mit Luft: Brennbares, verdichtetes bzw. verflüssigtes Gas. Freiwerdende Flüssigkeit geht sehr schnell in den Gaszustand über. Beim Entspannen des Gases bilden sich kalte Nebel und explosionsfähige Gemische, die sich weithin ausbreiten. Die Nebel sind schwerer als Luft und bleiben am Boden. Entzündung durch heiße Oberflächen, Funken oder offene Flammen. Achtung, das Gas ist schwerer als Luft. Die Gemische mit Luft kriechen am Boden entlang und können bei Zündung über weite Strecken zurückschlagen.

Verhalten bei Freiwerden und Vermischen mit Wasser: Löst sich gut in Wasser. Es können sich über der Wasseroberfläche explosionsfähige Gemische mit Luft bilden.

Gesundheitsgefährdung: Dimethylether wirkt narkotisch und reizt die Augen sowie die Atemwege. Bei Schneller Verdampfung kann die Luft verdrängt werden (Erstickungsgefahr!). Intensiverer Kontakt mit der Flüssikeit ruft Erfrierungen hervor.
Symptome: Brennen der Agen, der Nasen- und Rachenschleimhäute, Husten, Rausch, Schwindel, Übelkeit, Schläfrigkeit, Bewusstlosigkeit, Atemstillstand. Weisverfärbung erfronerer Körperstellen.

Geruchsschwelle = Luftgrenzwert = 1000 ppm; Kat. IV

Bemerkungen: Versand in der Regel in Niedrigdruckbehältern. Das Gas reagiert heftig bei Kontakt mit starken Oxidationsmitteln. Die Substanz reagiert bei Kontakt oder Mischung mit Halogenwasserstoffen, Stickstoffoxiden und Sauerstoff.

Sicherheitsmaßnahmen für Fahrzeugbesatzung, Polizei und Rettungskräfte:
Polizei und Feuerwehr alarmieren.
Im Gefahrenbereich Maschine stoppen. Zündung abstellen, nicht rauchen, offenes Feuer löschen, kein elektrisches Gerät, keinen Schalter mit Funkenbildung betätigen. Umluftunabhängiges (schweres) Atemschutzgerät und Schutzkleidung tragen.
Wasserschutzpolizei und Feuerwehr: Kein Boot mit Ottomotor einsetzen. Bei Dieselantrieb Sicherheitsschaltung veranlassen. Radar- und Kommandorufanlage nicht betätigen. Kein Boot in die unmittelbare Gefahrenzone mit hohen Gaskonzentrationen einfahren lassen.

Schutz- und Einsatzmaßnahmen: Alle unbeteiligten Personen nach Luv (gegen den Wind) entfernen. Achtung, falls freiwerdendes Gut in die Kanalisation oder in Abwasserleitungen von Schiffen gerät, entstehen schädliche Mischungen und Explosionsgefahr. Experten hinzuziehen. Auf Wasserstraßen Schiffahrtssperre. An Land gefährdetes Gebiet absperren. Große Sicherheitszone bilden. In Wohn- und Industriegebieten Anwohner warnen. Bei größeren Mengen ausgelaufenen Gutes Katastrophenalarm prüfen.

Konzentrationsmessung explosionsfähiger, giftiger oder ätzender Gase bzw. Dämpfe siehe Tabelle (Anhang 6 der Erläuterungen).

Zuständige Behörden unterrichten.

Bekämpfung der Unfallfolgen:
Feuer: Flammennicht löschen, bevor das Leck geschlossen werden kann, da sonst Gefahr der Entstehung einer explosionsfähigen Wolke. Bei kleinem und grossem Brandherd Löschpulver oder Kohlensäure, notfalls Wassersprühstrahl kühlen und nach Möglichkeit aus der Gefaherenzobe ziehen. Wegen der Gefahr des Berstens der Behälter sollte die Kühlung aus grosser Entfernung oder von unbemannten Monitoren erfolgen.
Leckage: Leck schliessen, wenn ohne Risiko möglich. Die eingesetzen Kräfte dabei nach Möglichkeit mit Wassersprühstrahl schützen und die an der Leckstelle entstehende Dämpfe mit Wassersprühstrahl niederschlagen.
Fliessendes Gewässer: Trink-, Brauch und Kühlwasserentnehemer verständigen.
Stehendes Gewässer: Alle Zündquellen beseitigen. Absperren. Fahrzeuge im gefährdeten Gebiet räumen.
An land: Kanalisation abdichten. Alle Zündquellen beseitigen.In Wohn- und Industriegebieten alle tiefliegenden Räume abdichten. Sofern sich da Gas in Wasser gelöst hat, ist es mit nicht brennbarem, saughäftigen Material wie trockenen Erde, Sand, gemahlenem Kalkstein, Kieselguhr, Universalverbinder oder Vermiculit aufzusaugen und in geschlossen Behälter an sicheren Depnieort zu transportieren.

Gewässerverunreinigung:
Gesamtbewertung nach Unfall: Gruppe II, in stehenden Gewässern mittlere bis hohe, in fließenden Gewässern mittlere toxische Wirkung (siehe auch Erläuterungen Abschnitt 16.4/5).
Einzelwerte siehe Anhang 9 der Erläuterungen.
Einstufung des Stoffes nach Beirat Lagerung und Transport wassergefährdender Stoffe:
Wassergefährdungsklasse: 1 – schwach wassergefährdender Stoff.

Erste Hilfe:
Verletzte an die frische Luft bringen, bequem lagern, beengende Kleidingsstücke lockern. Bei Atemstillstand sofort Atemspende oder Gerätebeatmung, gegebenfalls Sauerstoffzufuhr. Erfronere Körperstellen nicht reiben, sondern mit sterilem Verbandmaterial abdecken. Bei Erbrechen oder Gefahr der Bewusstlosigkeit Lagerung und Transport in stablier Seitenlage.

Hinweise der Arzt:
Bei Bewusstlosigkeit Atmung überwachen. Wegen des Erbrechens Aspirationsgefahr. Erfrierungen in typischer Weise behandeln.

Appendix VIII Medical first aid

1. General

DME is only slightly toxic. However, due to the rapid evaporation of liquid DME and subsequent volume expansion, large clouds of gaseous DME could be formed, displacing the air. This would result in a reduction of the oxygen-in-air concentration and cause danger of asphyxiation.

Other personal hazards are the occurrence of eye-injuries and/or frost-bite from contact with liquid DME and skinburns in case of fire.

In the subsequent paragraphs emergency measures are given for each of the mentioned accidents.

Possible hazards, protective devices and emergency actions are also listed on the 'Transport Emergency Group Card
(Road). This card (see Appendix VII) , prepared by the European Council of Chemical Manufacturers federations"
shall be available at every DME Service Station and Road Tank Truck.

2. Asphyxiation

If a person is in danger of asphyxiation the following actions shall be taken:

- Get the victim out of the danger zone into the fresh air; use if required a respiratory mask and/or other protective cloth. Consider fire and explosion hazard.
- Lay the victim down and loosen his/her cloth. Don't try to make the victim walk or talk.
- Warn a doctor or take the victim to a hospital. If unconscious, position the victim on his/her side.
- Apply oxygen or artificial respiration. This shall be done only by a doctor or a trained person.

3 Bye injuries due to contact with liquid DME

Actions to be taken:

- Pour water over the eyes.
- Open the eyes carefully.
- Rinse the eyes with water during 15 minutes.
- Take victim to an eye-doctor. The cornea may be damaged.

4. Frost bite

After contact of skin with liquid DME:
- Do not remove clothing that has been in contact with liquid DME !
- Pour immediately water over the skin and with ample water for at least 15 minutes.
- If necessary, take the victim to the hospital.

5. Burns

- Burns caused by fire shall be immediately rinsed with water for 5 to 10 minutes.
- Apply aseptic bandages which do not stick to the wounds. (Be certain to have these available in the emergency aid kit at all times). Do not apply any ointments !
- Seek medical treatment. When a person is seriously burned, take him/her to a hospital.
  If a person does not feel the burns, he/she may be burnt to a high degree !
- Don't remove any clothing from a seriously burnt person but wrap his body in a clean sheet.

Note: If a person's clothing is set on fire, prevent him from running and get him down on the ground. Extinguish the flames with water if directly available. Otherwise wrap him/her in a blanket, coat or similar clothing, or make the victim roll over until the flames are extinguished.

Appendix IX Example of an emergency plan

Measures in case of fire or serious leakage of the DME installation:

- Shut-off all remote-controlled block valves of the storage vessel by usage of the emergency push-button.
- Switch off the main switch of the electrical installation.
- Extinguish all flames, also pilot-flames in buildings.
- Stop motors, refrigerators etc.
- Activate sprinkler installation if present.
- Call fire-brigade; tel.: .....
- Warn customers to stop motor engines.
- Inform the gas supplying company; tel.: .....
- Keep spectators at distance.
- Close all other block valves, also those of the dispensing columns.

Appendix X Installation book for DME service stations

The installation book shall contain the chapters mentioned in the following table of contents:

A. **Operations manual**

1. Operation instructions, containing:
   - procedure for start-up, normal operation and shutdown of the installation;
   - general safety measures;
   - prevention of spillage;
   - handling in case of leakages, technical failures, and/or operation disturbances.

2. Instructions for emergencies, containing:
   - emergency shut-down of the installation;
   - execution of the emergency plan;
   - location and usage of safety equipment e.g. fire-fighting apparatus;
   - reporting of accidents;
   - medical first-aid.

3. Instructions for inspections, containing:
   - inspection time-table;
   - regular inspections by operating staff;
   - periodic inspections by a qualified contractor;
   - periodic inspections by the Inspection Agency.

4. Instructions for maintenance, containing:
   - maintenance time-table;
   - regular maintenance by operating staff;
   - periodic maintenance by a qualified contractor.

5. Instructions for (re)commissioning and degassing of the installation, containing:
   - procedure for the commissioning of new or degassed DME installations;
   - procedure for depressurisation and degassing of DME installations.

6. DME product information

7. Installation drawings "as-built" containing:
   - installation flow scheme;
   - service station plot plan;
   - storage vessel(s);
   - piping systems;
   - filling point assembly;
   - dispensing column(s);
   - cathodic protection system;
   - scheme of the electrical installation.

8. Description of the working of the installation containing:
   - general description;

- operation control and safety systems;
- storage vessel filling procedure;
- procedure for DME dispensing to motorcars.

B. Installation logbook

1. Official documents (or copies there-of), containing:
   - examination and test certificates of individual parts of the installation, e.g. storage vessel, remote-control valves, safety valves, materials;
   - certificates of the most recent periodic inspections of storage vessel and appurtenances, by the Inspection Agency;
   - certificate of acceptance of the storage vessel (fabrication report) and of the complete installation, by the inspection Agency;
   - licences and permits.

2. Inspection, maintenance and repair reports, containing from the date of the most recent inspection by the Inspection Agency onwards:
   - reports regarding inspections and maintenance by the Operating staff and/or qualified contractor;
   - reports regarding repairs by aqualified contractor.

   All inspection, maintenance and repair reports shall be dated, signed and numbered. In case the Principal maintains a central filing system for these reports, a register of report numbers, dated and signed, shall be kept in the logbook.

3. Particularities, e.g.:
   - deviations from normal procedures;
   - dangerous occurrences as leakages etc.;
   - accident reports.

Note:
Except for the certificates of acceptance of the new built facilities only the latest certificates should be kept for record.

Appendix XI Installation book for DME tank truck drivers

Installation book for DME tank truck drivers and for truck owners

A. Installation book for truck drivers

An installation book shall be kept in the cab of the truck, which shall contain the following documentation:

1. Driver's instructions
   - an instruction manual (The Driver's Handbook) containing e.g.: product information, general instructions, procedures for loading, transport and discharge, emergency procedures and fire-fighting instructions;
   - instructions for inspection and maintenance by the driver.

2. Technical information
   - description of the truck and DME facilities including an as-built engineering flow scheme of the complete installation;
   - transport emergency group card.

3. Documents
   - truck registration certificate;
   - truck test certificate;
   - other certificates or. permits which may be of relevance for the operation of the truck;
   - loading documents.

4. Installation Logbook
   - inspection and maintenance reports;
   - repair reports.

   All inspection, maintenance and repair reports shall be dated, signed and numbered. In case the transport company maintains a central filing system for these reports, a register of report numbers, dated and signed, shall be kept in the logbook.

B. Installation book for truck owners

The transport company or truck owner shall keep the following documentation:
- instructions and procedures for regular periodic inspections by a qualified contractor and by the Inspection Agency;
- ingassing and degassing procedures;
- a complete file of the truck's DME facilities, including as-built engineering flow scheme, electrical schemes, documentation on the various components. This file shall be kept up to date;

- certificate of acceptance of the installation by the Inspection Agency;
- certificates of periodic inspections;
- inspection, maintenance and repair reports if these are not kept in the truck's file.

Appendix XII Applicable articles of the ADR (1997 edition) concerning DME road tank trucks

European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) (1997 edition) Applicable Articles for DME Road Tank Trucks

1. General arrangement of the ADR (1997 edition)

The ADR consists of:

- The agreement between the contracting parties; articles 1 to 17, inclusive the Protocol of Signature.
- Annex A: Provisions concerning dangerous substances and articles.
- Annex B: Provisions concerning transport equipment and transport operations.
- Supplements: Index of substances (ISBN 901208444 X) and legislation (ISBN 90 12 08 5578).

These supplement are not official documents and as such are not part of the agreement between contracting parties. As it bears no relevance to the regulations for DME road tank trucks it will not be referred to any further.

Annex A consists of:

Part I: Definitions and general provisions.
Part II: List of substances and special provisions for the various classes; classes 1 to 9 inclusive.
Part III: Appendices to Annex A; appendices A.1 to A.9 inclusive.

Annex B consists of:

Part I : General provisions applicable to the carriage of dangerous substances for all classes.
Part II : Special provisions applicable to the carriage of dangerous substances of classes 1 to 9 inclusive.
Part III: Appendices to annex B; appendices B.1a to B-1d and B.2 to B.7 inclusive.

All the articles of annexes A and B have been provided with reference numbers, named "marginals".

2. Articles of relevance to DME road tank trucks

2.1 General, annex A

- Part 11, marginals 2200 and 2201: DME defined as being of: class 2F (inflammable gases).
- Appendix A.9 marginals 3900 to 3902: format of danger labels.

All other articles of annex A, including the appendices, are of no relevance to road tank trucks provided with fixed mounted, steel DME transport vessels.

2.2 General, annex B

- Part I, marginals 10.010 to 10.606: General provisions applicable to the carriage of all classes of dangerous goods.
- Part II, marginals 21.000 to 21.600: Specific provisions applicable to the carriage of class 2 dangerous goods.
- Appendix B.1a, part I, marginals 211.100 to 211.188: provisions concerning fixed tanks of all classes.
- Appendix B.1a, part II, marginals 211.200 to 211.280: Special requirements for class 2 supplementing or modifying part I
- Appendix B.1d, marginals 214.250 to 214.279: Requirements concerning materials and construction of welded fixed tanks.
- Appendix B.2, marginals 220.000 to 221.000: electrical requirements.
- Appendix B.3, marginal 230.000: Certificate of approval for vehicles carrying certain dangerous goods.
- Appendix B.5, marginals 250.000 to 250.001: List of substances and identification numbers.
- Appendix B.6, marginal 260.000: Example of ADR-driver certificate.

2.3 Specific articles concerning the vehicle and its driver

Marginals no.	Subject
10.014, 10.015	Definitions
10.500, 21.500, 3.900, 3.902, 250.000, 250.001	Marking and labelling of vehicles.
10.204	Types of vehicles
10.220	Rear protection of vehicles
10.240, 10.340	Fire-fighting appliances
10.251, 220.510- 220.519	Electrical equipment.
10.260, 10.261	Miscellaneous equipment
10.281, 10.282, 230.000	Approval of vehicles
10.311	Vehicle crew
10.315, 260.000	Driver training
10.321, 21.321	Supervision of vehicles
10.325	Transport of passengers
10.353	Portable lightning apparatus
10.416	Smoking prohibition
10.381	Documents to be carried
10.385	Driver instructions
10.415 (2)	Cleaning after unloading
10.417	Vehicle earthing
10.431	Running of engine during unloading
10.503, 10.505, 10.507	Stoppage

2.4 Specific articles concerning the DME facilities on the truck

Marginals no.	Subject
Vessel constructions	
211.102	Definitions
211.120 (1), (2), (3), (4)	Design code, material, mechanical and chemical properties
211.121	Stress/external forces
211.122	Calculation criteria for wall thickness
211.123 (4)	Establishing of design pressure
211.125 (1), (2)	Allowable stresses during (hydr.) testing
211.126	Earthing
211.127 (1), (2), (3), (4), (5)	Design criteria; forces, wall thickness
211.127 (6),(7)	Partitions, surge plates
211.127 (8)	Welding qualification / weld coefficient
211.127 (9)	Underpressure
211.127 (10)	Safety equipment
211.128	Stability of loaden road tank trucks
211.129	Protection of fittings
211.220	construction of vessels, materials and properties
211.221	requirements for materials and construction as listed under appendix B.1d
214.250 (1), (3), (4)	Vessel material, steel
214.251 (a)	Material requirements
214.252 (1)	Welded construction
214.253	Attachment of fitting to shell
214.254	Transmission of low temperature to vehicle
214.265	Required impact strength values
214.275	Impact test pieces
214.276, 214.277	Impact test procedure
Items of equipment	
211.130	protection against leakage due to damage
211.131	protection of shell openings by valves and covers
211.230	Closures of discharge piping
211.231	Additional shell connections
211.232 (1), (2)	Requirements of safety devices
211.233 (1)	Safety valves
211.234 (1)	Thermal insulation

Marginals no.	Subject
Type Approval	
211.140	Approval of vessel prototype
Tests	
211.150	Initial inspection
211.151	Periodical inspection
211.152	Leakproofness tests
211.153	Exceptional test in case of repair
211.154	Inspection body
211.250	Determination vessel capacity
211.251	Checking of welds
211.255	Periodic testing
211.258	Tightness testing at 4 bar min.
Marking	
211.160	Name plate
211.161	Inscribed particulars
211.260, 211.261, 211.262	Marking of vessels and trucks
Operation	
211.170	Wall thickness
211.171	Substances allowed to transport
211.172 (1), (2), 211.251	Degree of filling
211.174, 211.175, 211.177	Closures
211.178	Empty status of piping/hoses
211.270, 211.272, 211.273	Carriage of different liquids

Appendix XIII Checklists for inspection of DME service stations

Checklists for first inspection and approval of new-built DME-facilities and for subsequent periodic inspections have recently been prepared in the Netherlands and will be officially put into use in the Netherlands in the near future. A complete set of checklists has been included in this appendix.
The extent of involvement of parties concerned in the inspection of DME service stations as well as the related procedures, have been summarised for better understanding when using the checklists.

1. General procedure

The Inspection Agency shall be involved in the new-building of DME facilities throughout all stages of design, construction, testing and commissioning. The inspections preceding the final inspection for acceptance of the complete facilities, are described in the 'Regulations for the design and construction of DME service stations' and comprise:
- Design supervision;
- Fabrication supervision;
- Shop testing of vessel and vessel acceptance;
- Testing and acceptance of piping components and appurtenances prior to incorporation in the DME system.

Upon completion of the construction of the DME facilities, a final inspection in accordance with the checklists (code 'A') shall be carried out.
Although the Inspection Agency will inspect and approve the facilities, a major part of the final inspection activities is delegated to the qualified contractor who shall be made fully responsible for the quality of the work performed by duly signing the document filled-out by him.

The Inspection Agency will check those items as covered in their checklists (code 'A') and in addition carry-out some checks at random on the items covered by the qualified contractor. Upon satisfactory result of the inspection, the Inspection Agency shall issue a certificate of acceptance for the facilities. This certificate serves as official notification to the principal that the station is released for operation.

Once released for operation, the installation shall be periodically re-inspected until final closure. Periodic inspections shall be performed by qualified contractors and by the Inspection Agency, in a sequence and to an extent as described more in detail herinafter (see also table 1).
The inspection procedure as described above for new-built DME-facilities, is in principle the same for the periodic (6-year) inspection. Also these inspection/ check activities are carried-out by the Inspection Agency and the qualified contractor in accordance with the checklists concerned. In this case, however, only items designated with code 'B' shall be checked.

Table 1

Item to be inspected	Inspection sequence	Inspecting body
Dispensing column hoses, inclusive break-away couplings	Every 6 months	Qualified contractor
LPG system in its entirety	Every 6 months	Qualified contractor
Cathodic protection system	Once a year	Insp. Agency
LPG storage vessel		Insp. Agency
Vessel coating	At least every 6 years	Insp. Agency
Appurtenances	and/or in case of	Insp. Agency
Piping system	modification, repairs	Insp. Agency
LPG system in its entirety	or earthquakes	Insp. Agency

2. Inspection and approval of new-built facilities

The testing and inspection of the facilities includes, but is not limited to the following:

- Check whether the vessel has been inspected/accepted at the manufacturers' shop and conform to the fabrication report;
- Check whether the vessel, appurtenances and piping have been properly installed in accordance with the construction drawings as previously approved by the Inspection Agency;
- Check set pressure, required capacity and the proper installation of safety valves and pressure relief valves;
- Check whether all other appurtenances are of an officially accepted make, type and size;
- Check on welding of the piping materials;
- Check the external coating of vessel and of buried piping by spark-testing at the site;
- Check whether all connections are gastight;
- Check on the proper functioning of all safety systems;
- Check whether the installation in its entirety conforms to the regulations.

3. Periodic inspection by a qualified contractor

The DME service station facilities shall be inspected at least every six months by a qualified contractor.
The inspection, of which the results shall be recorded in the installation logbook, comprises:

- Visual external inspection for corrosion, location and support of above-ground piping;
- Visual external inspection and checking of the proper functioning of the appurtenances;
- Checking the fire-fighting equipment;
- Checking the installation for gastightness, for instance by applying a soap solution at the prevailing DME pressure.

The delivery hoses and break-away couplings at the dispensing units shall either be renewed at least once every six months or be hydraulically tested at a pressure of [HOLD] barg.
If the test proves the hose to be deficient, the hose shall be replaced. The test shall be recorded in the logbook. A copy of the test record shall be sent to the Inspection Agency.
A set of checklists for half-yearly inspections and maintenance as described above, has been included in this appendix.

4. Periodic inspection by the Inspection Agency

4.1 Cathodic-protection system

If the storage vessels and/or the piping system are provided with a cathodic protection system, this system is subjected to an inspection by the Inspection Agency once a year.

4.2 Inspection of the DME systems and individual system components

As often as circumstances give rise to this, such as in case of modifications or repairs, but at most six years after the last inspection took place, the vessel(s), vessel coating and DME piping systems shall be re-inspected by the Inspection Agency.

Vessel, vessel coating and related appurtenances

The periodic inspection of the vessel and vessel appurtenances will comprise at least the following:
- Check whether the vessel's condition is such that it can be considered as safe for the storage of DME. This includes an internal inspection;
- Check whether all appurtenances are installed as required and whether they meet the regulations;
- Check on the set pressures and capacity of safety valves and pressure relief valves;
- Check on the proper functioning of all ancillaries and especially on the proper functioning of the safety systems, overfill protection and remote controlled valves;
- Check whether the connections are gastight;
- Check the external coating of the vessel by means of an impressed current test. If no damage is found, the vessel needs not be dug out. Vessels which are provided with cathodic protection need not be re-inspected by means of an impressed current test, since the performance of the cathodic protection is identical with this.

If neither cathodic protection nor an impressed current test are applicable, the vessel needs to be excavated for visual inspection every six years.
The checklists at present do not include items in this respect and therefore need amending if such a situation arises.

As a sign of approval, the data of re-inspection shall be stamped on the nameplates of the vessel, together with the mark of the Inspection Agency.

DME piping systems

The protective coating against corrosion of buried piping shall be re-inspected by means of an impressed current test. Piping provided with cathodic protection need not be re-inspected by means of an impressed-current test, since the performance of cathodic protection is identical with that of the test.
When re-inspecting buried piping, special attention shall be given to the location of the piping: it shall be ascertained whether the piping has been displaced, for instance on account of buoyancy.

Checklist for First and six-yearly inspection of DME Service Stations

To be completed by Inspection Agency

To be completed by : Inspection Agency

Checklist for inspection of DME service stations

DME service station (name) : .....

Full address : .....

.....Tel.: .....

Registration number of location: .....

Licensee of service station (name): .....

Full address: .....

.....Tel.: .....

Operator of service station (name): .....

Full address: .....

.....Tel.: .....

Responsible district office

of Inspection Agency: .....

Code A= New installation / modification	0 (mark the applicable)
Code B = Periodic inspection	0

Date of building permit	: .....
Date of exploitation license	: .....
Date of latest inspection by Agency	: .....

Installation inspected and approved for operation by:

Name inspector	: .....
Date	: .....
Signature/stamp	: .....

To be completed by: Inspection Agency

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	2	3
	1.	General				
	1.1	Following documents are availableat the Inspection Agency's offices:	-			
AB		– Installation flow schemes	-	0	0	
AB		– Installation plot plan	-	0	0	
AB		– Installation list of appurtenances	-	0	0	
AB		– Building permit for installation	-	0	0	0
AB		– Test certificates of individual parts of the installation	-	0	0	0
AB		– Fabrication report of storage vessel (certificate of acceptance, including coating at shop)	-	0	0	0
AB		– Fabrication report of pumpwell (certificate of acceptance)	-	0	0	0
AB		– Valid installation certificate Expiring date:	-	0	0	0
AB	1.2	Checklist of main operator filled in completely by contractor	--	0	0	
AB	1.3	Construction and installation work of contractor inspected and accepted (this work to be spot-checked, including full test of ESD-systems)	--	0	0	
AB	1.4	External distances are conform the application documents for the installation	-	0	0	0
AB	1.5	Cathodic protection required	10.7	0	0	
AB	1.6	Cathodic protection properly installed	10.7	0	0	0
B	1.7	Vessel coating inspected by means of impressed current test (if no C.P.)	-	0	0	0
AB	1.8	Installation book available at DME service	APP.X	0	0	

To be completed by: Inspection Agency

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	Check 2
		station containing a.o. the required certificates and inspection reports			
	2.	Safety requirements			
AB	2.1	Portable powder extinguisher (charge 7 kg) present in salesroom Date latest check:	11.2	0	0
AB	2.2	Portable powder extinguisher (charge 7 kg) present near dispensers Date latest check:	11.2	0	0
AB	2.3	No temporarily installed skid-mounted DME vessels on the installation area	II, 6.1	0	0
AB	2.4	Adequate illumination during opening hours, especially near reservoir,filling point and dispensing area	II, 6.4	0	0
AB	2.5	Emergency plan in salesroom at readibly accessible place	II, 5.3	0	0
AB	2.6	Telephone in salesroom	II, 5.1	0	0
AB	2.7	Gullies within 15 m. radius around reservoir, filling point or dispensersprovided wth a waterlock	6.3.2	0	0
AB	2.8	No cellar openings nor ventilation suctions at less than 1.5 m. above grade present within 15 m. radius from reservoir, filling point or dispensers	6.3.2	0	0
A	2.9	Fire-resistance requirements of buildings including doors, hatches, ventilation openings and windows are adhered to	12.45	0	0
AB	2.10	Fence around reservoir min. 2 m height	6.2.5	0	0
AB	2.11	Distance from foot of mound or projection of underground vessel to fence min. 1 m	6.2.5	0	0

To be completed by: Inspection Agency

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	2	3
AB	2.12	Fence made of metal meshwork with two opposing doors, opening to outside	6.2.5	0	0	
AB	2.13	Storage area inside fence paved, easily accessible and not used for storage of any goods	6.2.5	0	0	
AB	2.14.	No vegetation in the surroundings of the vessel mount	6.2.5	0	0	
AB	2.15	Notices 'No smoking or open fire' on each side of the fence	11.1	0	0	
AB	2.16	Storage location protected against collision by crashbarriers or concrete filled steel poles	6.2.4	0	0	
AB	2.17	DME dispensers placed on islands and protected by crashbarriers or poles	6.2.4	0	0	
AB	2.18	DME deliveries exclusivley by dispensers	II, 6.1	0	0	
AB	2.19	Each dispenser provided with notice: 'Stop motor, no smoking or open fire, maximum filling 80%'	II, 6.3	0	0	
AB	2.20	Dispensing area provided with notice: 'Filling of gas bottles with DME strictly prohibited' In case of supervised self-filling by customers:	II, 6.3	0	0	
AB	2.21	Unobstructed view on dispensing area from the places where the ESD system can be activated	II, 6.3	0	0	0
AB	2.22	Deliveries only possible after 'release' of dispensers by supervision	II, 6.3	0	0	0
AB	2.23	Provisions of legible instrctions for self-filling	II, 6.3	0	0	0

To be completed by: Inspection Agency

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	Check 2
AB	2.24	Provisions available in salesroom to give verbal instructions to customers (e.g. loudspeakers)	II, 6.3	0	0
AB	2.25	Loaction of unloading tank truck designated and marked	6.2.1	0	0
AB	2.26	Unloading tank truck facing direction of departure	6.3.6	0	0
AB	2.27	In case station is situated along a road with speed limit 50 km/hr: tank truck location not on the hard shoulder or lay-by alongside this road. Nor on access road to the station	6.3.6	0	0
B	2.28	No simultaneous unloading of DME and other fuels from tank trucks unless the mutual distance between the tank trucks is more than 25 m	II, 7.1	0	0
AB	2.29	Fuilling point assembly suitably supported and installed in lockable enclosure	8.7	0	0
AB	2.30	Filling point and cabinet protected by crashbarriers or concrete filled steel poles	6.2.4	0	0
AB	2.31	Vessel filling impossible without connection of truck's ESD and earthing cable with receptacle in cabinet	II, 7.5	0	0
B	2.32	Procedures during truck unloading adhered to:	II, 7.7	0	0
		– Discharge into storage vessel carried out by truckdriver	II, 7.7	0	0
		– Driver stays near the truck during unloading	II, 7.7	0	0
		– Maximum filling grade tank truck 80%	II, 7.7	0	0

To be completed by: Inspection Agency

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code Nr.	Installation item	'Article of Regulations'	Check 1	2	3
	– Connection of truck's ESD/earthing cable with cabinet before connection of hose with filling point	II, 7.7	0	0	
	– Disconnection of cable after disconnection of of filling hose	II, 7.7	0	0	
	– Only spark-free tools used for (dis)connection	II, 7.7	0	0	
	– Truck engine not running during (dis)connection of hose and filling nozzle	II, 7.7	0	0	
	– No smoking or open fire during unloading	II, 7.7	0	0	
	– Filling nozzle protected by cap or flange when not in use	II, 7.7	0	0	
	– Truck's hoses of approved type		0	0	
	– Truck hose test certificates present in truck's installation book Latest test:		0	0	
	– Filling hose maximum length 7.5 m	II, 7.6	0	0	

Checklist for First and six-yearly inspection of DME Service Stations

To be completed by Main contractor

To be completed by: Main Contractor

Checklist for inspection of DME service stations

LPG service station (Name): .....

Full address: .....

..... Tel.: .....

Code A = New installation/modification	0 (mark the applicable)
Code B = Periodic inspection	0

Main contractor (Name): .....

Full address:

.....

..... Tel.: .....

I, the undersigned, declare that all activities on above mentioned DME-station have been executed in accordance with the applicable regulations as published in .....

Place : .....

Date : .....

Name : ..... (contractor representative)

Signature : .....

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	Check 2
	1.	General			
AB	1.1	Registration number of storage vessel conform installation documents	-	0	0
AB	1.2	Installation schemes, lay-out drawings and list of appurtenances approved by Inspection Agency	-	0	0
AB	1.3	Installation is built conform these schemes, drawings and list of appurtenances	-	0	0
	2.	Storage vessel			
AB	2.1	Maximum two vessels installed (not interconnected !)	7.2	0	0
AB	2.2	Vessels installed above grade in a mound of sand	7.1	0	0
AB	2.3	Vessels installed underground	7.1	0	0
AB	2.4	Watercontents each vessel as marked on name plate min. 20 m^3, max. 50 m^3	7.2	0	0
AB	2.5	All flanged vessel connections protrude the sand cover of the vessel	7.6.2	0	-
AB	2.6	All nozzles provided with welding neck flanges of pressure rating PN 40	7.6.3	0	0
A	2.7	Manhole and ventopening provided with welding neck flanges PN 25	7.6.3	0	0
AB	2.8	Flanges supplied with suitable facing	7.6.3	0	0
AB	2.9	Suitable gasket material applied	7.6.5	0	0
AB	2.10	All flanges completely bolted	7.6.4	0	0
AB	2.11	Bolts and nuts protected against corrosion	7.6.4	0	0
A	2.12	External vessel coating visually checked and repaired where damaged	7.11	0	0

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	2	3
A	2.13	Coating applied at manholes, lifting lugs and name plate	7.11	0	0	
A	2.14.	Entire coated surface spark-tested and approved	7.11	0	0	
A	2.15	Mound of material surrounding underground vessel consisting of clean sand with sharp objects and stones removed	12.2 12.3	0	0	
A	2.16	Minimum sandlayer underneath vessel 0.3 m.	12.2	0	0	
A	2.17	Sand cover of vessel 0.3 m minimum	12.2 12.3	0	0	
A	2.18	Bottom vessel stabilised	12.2	0	0	
AB	2.19	All vegetation adjacent vessel removed	12.2	0	0	
A	2.20	Foundation adequate to avoid excessive settling of vessel	12.1	0	0	
A	2.21	Concrete slab installed on top of underground vessel	12.3	0	0	0
	3.	Vessel appurtenances				
A	3.1	Each vessel connection with an opening of > 1.8 mm^2 provided, inside the storage vessel, with excess flow valves or checkvalves (except connections for safety valves valves and level instruments)	8.2.4	0	0	
A	3.2	Filling connection provided with check valve	8.2.4	0	0	
AB	3.3	Spring loaded safety valves sealed and stamped by inspection agency	8.2.5	0	0	
AB	3.4	Safety valves provide with blow-off pipe extending min. 2 m. above vessel	8.2.5	0	0	

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	2
AB	3.5	Blow-off pipe(s) provided with drainhole and plastic cap(s)	8.2.5	0	0
AB	3.6	Flanged hand-operated valves installed on each vessel nozzle except in piping for safety valves and level instruments	8.2.2	0	0
AB	3.7	Remote-controlled valves installed in filling, discharge, vapour return and pump return lines at closest possible distance from hand-operated valves	8.2.3	0	0
AB	3.8	Remote-controlled valves provided with open/closed position indicator	8.2.3	0	0
AB	3.9	Manual operation of remote-controlled valves only possible with special tools (not applicable to operating personnel of station and tank truck)	8.2.3	0	0
AB	3.10	Measuring range of pressure gauge min.0 - 15 bar; max. 0 - 25 bar; accuracy 2.5%	8.4	0	0
	4.	Above ground dispersion pumps (not to be filled-in for submerged pumps)			
AB	4.1	Overflow valve installed in pump return line	8.5	0	0
AB	4.2	Set pressure overflow valve (approximately equal to pump pressure at zero capacity minus one bar)	8.5	0	0
AB	4.3	Flexible steel connections between pump and piping, pressure rating at PN 40	8.5	0	0
AB	4.4	Pump and motor effectively earthed	8.5	0	0
AB	4.5	Pump in open air, under sunshed	8.5	0	0
AB	4.6	Insulation joints rated PN 40 in pump suction, discharge and overflow line	Figure I	0	0

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	2	3
	5.	Submerged dispensing pumps				
AB	5.1	Piping connections (no obstructions when dismounting pumps)	8.5.2	0	0	
AB	5.2	Equalising connection between pump well and vessel (max. opening 1.8 mm^2)	8.2.5	0	0	
AB	5.3	Connections on pumpwell for nitrogen supply and pressure gauge.	8.2.5	0	0	
AB	5.4	Location of excess flow valves at the inside of the pumpwell cover (on all connections > 1.8 mm^2)	8.2.5	0	0	
AB	5.5	Overflow valve installed in pump return line	8.2.5	0	0	
AB	5.6	Setpressure overflow valve (approximately equal to pump pressures at zero capacity minus one bar)	8.2.5	0	0	
	6.	DME dispensing columns				
AB	6.1	Insulation joints with pressure rating PN 40 in dispensing and vapour return lines	8.6	0	0	0
AB	6.2	Length of dispensing hose between 3 and 5 m.	8.6	0	0	
AB	6.3	Hose provided with break-coupling of type approved by Inspection Agency	8.6	0	0	
AB	6.4	Dispensing line provide with excess flow valves with capacity of *[hold]* l/min max.	8.6	0	0	
AB	6.5	Vapour return line provided with check valve or excess flow valve with capacity of *[hold]* kg vapour/min max.	8.6	0	0	
AB	6.6	Hose provided with nozzle of type which is approved by Inspection Agency.	8.6	0	0	
AB	6.7	Latest inspection/renewal of hose	App. XIII 3	0	0	

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	Check 2
		Date:			
	7.	Filling point assembly			
AB	7.1	Hose coupling provide with cap or blind flange	8.7	0	0
AB	7.2	Blow-off valve provided with blow-off pipe extending 3 m. above grade and protected against ingress of water	8.7	0	0
AB	7.3	Filling nozzle assembly suitably supported	8.7	0	0
AB	7.4	Filling nozzle assembly installed in a lockable enclosure	8.7	0	0
AB	7.5	Filling point earthed and insulated from buried piping; insulator pressure rating PN 40	10.6	0	0
AB	7.6	Weatherproof control cabinet installed at 5 m. distance from filling point	8.7	0	0
AB	7.7	Cabinet contains level indicator and pre-alarm, receptacle for truck bonding cable and key-operated switch	8.7	0	0
AB	7.8	Earthing lug of filling point connected with tank truck cable receptacle in cabinet	8.7	0	
AB	7.9	Electrical resistance between cable receptacle and earthing lug filling point less than 5 m.	8.7	0	0
	8.	Level indication/overfill protection of vessel			
AB	8.1	Level indicator (e.g. float type) provided at vessel (gauge glasses or dip-tubes prohibited)	8.3	0	0
AB	8.2	Overfill protection device of electronic type	8.3	0	0

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	2	3
AB	8.3	Device is fail safe, failure causes closure of remote-controlled filling valve	8.3	0	0	
AB	8.4	Device provides for level indication in weatherproof cabinet near filling point	8.3	0	0	
AB	8.5	Device provides pre-alarm at 85% level	8.3	0	0	
AB	8.6	Device causes closure of filling valve when 90% liquid level has been reached	8.3	0	0	
AB	8.7	Precautions taken against surge at closure (e.g. 15 seconds closing time)	8.3	0	0	
AB	8.8	Device causes closure of remote-controlled valves and stops dispensing pumps at predetermined min. liquid level	8.3	0	0	
AB	8.9	Execution of max. level switch (fixed or sealed)	-	0	0	
AB	8.10	Simulation of max. liquid level with overfill protection device is possible	-	0	0	
	9.	Piping and piping appurtenances				
AB	9.1	Material of pipe and pipe fittings accepted by Inspection Agency	9.4 ½			
AB	9.2	Flanges are of welded neck type with pressure rating PN 40	9.4.3	0	0	
AB	9.3	Facing of flanges: male/female or raised face	9.4.3	0	0	
AB	9.4	Suitable gasket materials	9.4.5	0	0	
AB	9.5	Flanges completely bolted	9.4.4	0	0	
AB	9.6	Bolts protected against corrosion	9.4.4	0	0	
AB	9.7	Joints of piping and appurtenances: NPT thread applied only up to diameters of 50 mm	9.5	0	0	
AB	9.8	Above grade piping and appurtenances	9.5	0	0	

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	Check 2
		protected against corrosion			
A	9.9	Buried piping exclusively welded	9.5	0	0
A	9.10	Liquid contents of filling and dispensing lines: *[hold]* l max.	9.5	0	0
A	9.11	Coating material of buried piping of approved type	9.11.1	0	0
A	9.12	Coated materials for welded joints and repairs of approved type	9.11.1	0	
A	9.13	Coating correctly applied (visual inspection)	9.11.1	0	0
A	9.14	Entire coated surface spark tested and approved	-	0	0
A	9.15	Buried piping installed at minimum 0.6 m depth an embedded by clean sand layer of 0.1 m min.	9.5	0	0
A	9.16	Piping not laid under buildings	9.5	0	0
AB	9.17	Location of piping indicated by tape and markers	9.5	0	0
AB	9.18	Pressure relief valves located in all piping sections which may be blocked in	8.2.6	0	
AB	9.19	Set pressure of pressure relief vales is *[hold]* bar	8.2.6	0	0
AB	9.20	Blow-down piping of pressure relief valves in the open and at safe locations	8.2.6	0	0
AB	9.21	Blow-down piping protected against ingress of rainwater (e.g. caps)	8.2.6	0	0
	10.	Pressure testing of piping system			
AB	10.1	Relief valves removed before testing	9.9	0	0
AB	10.2	Pressure test of piping system with nitrogen at [hold] barg	9.9	0	0

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	2	3
AB	10.3	Relief valve re-installed	9.9	0	0	
AB	10.4	All connections 'swabbed' during start-up	9.9	0	0	
	11.	Emergency shut-down system				
AB	11.1	Easily accessible ESD push-button in salesroom	8.2.3	0	0	
AB	11.2	Easily accessible ESD push-button(s) at dispensing area	8.2.3	0	0	
AB	11.3	Facilities installed to enable connection of the truck's ESD (and earthing) cable with service station ESD system	8.2.3	0	0	
AB	11.4	Remote-controlled valve in filling line closed when ESD systems not connected	8.2.3	0	0	
AB	11.5	All remote-controlled valves close when pressing push-button in salesroom	8.2.3	0	0	
AB	11.6	All remote-controlled valves close when pressing push-button(s) at dispensing area	8.2.3	0	0	
AB	11.7	All remote-controlled valves close when pressing push-button from tank truck	8.2.3	0	0	
AB	11.8	Fail-safe execution of ESD-system (valves should close when system is de-energised)	8.2.3	0	0	
AB	11.9	Closing time of valves: within 15 seconds	8.2.3	0	0	
AB	11.10	Dispensing pumps cannot start when ESD-system is activated	8.2.3	0	0	
	12.	Cathodic protection				
A	12.1	Cathodic protection required (to be established by expert in this field)	10.7	0	0	0
A	12.2	C.P. wiring properly connected at tank, piping and measuring box	10.7	0	0	0
A	12.3	Anode of type approved by Inspection Agency	-	0	0	0

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	2
A	12.4	Location and soil-coverage of anode	-	0	0
A	12.5	Measuring point of C.P. system in above ground measuring box or at measuring post	10.7	0	0
A	12.6	C.P. wiring protected (by e.g. plastic tube)	-	0	0
A	12.7	Electrical resistance of insulators (min. 100 k.Ohm)	10.7	0	0
A	12.8	DME pump assembly effectively insulated	8.5	0	0
	13.	Electrical installation			
A	13.1	Qualification of electrical contractor	-	0	0
A	13.2	Construction and installation of electrical facilities in compliance with standard IEC HD 384	10.4	0	0
A	13.3	Installation of 'zenerbarrier' at entrance of level indicator in filling point cabinet, (zenerbarrier located in main control panel)	-	0	0
A	13.4	Possibility to switch-off electrical installation located in hazardous area zoning in al poles and phases (circuit breaker in non-hazardous area)	10.4	0	0
A	13.5	Electrical material applied inside/ on the storage vessel (ex.proof material suitable for zone 0, Eex-i-IIA-T2)	10.2	0	0
A	13.6	Electrical material applied within 5 meters, horizontally and vertically, of the storage vessel (ex.proof material suitable for zone 2, Eex-i-IIA-T2)	10.2	0	0
A	13.7	Electrical material applied within 5 meters, horizontally and vertically, of the	10.2	0	0

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	2	3
		filling point (ex.proof material suitable for zone 2, Eex-i-IIA-T2)				
	13.8	Electrical material applied inside enclosure of dispensing columns (ex.proof material suitable for zone 1, Eex-d-IIA-T2)	10.2	0	0	
	13.9	Electrical material applied within 7 meters, horizontally of the dispensing column and 2 meters vertically, as well as 1 meter above the dispenser (ex.proof material at least suitable for zone 2, Eex-e-IIA-T2)	10.2	0	0	
	13.10	Electrical material applied within 7 meters of a dispenser (ex.proof material at least suitable for zone 2, Eex-e-IIA-T2)	10.2	0	0	
	13.11	Electrical material generally in compliance with celenec standards 50014 up to 50020	10.3	0	0	
	13.12	Contractor-starters installed near all pump motors, with switching positions clearly indicated	10.3	0	0	
	13.13	Pump motors provided with thermal protection device	10.3	0	0	
	13.14	No sodium lightning in hazardous areas	10.5	0	0	
	14.	Internal distances				
A	14.1	Distances from horizontal projection of storage vessel to:	-	0	0	
		– Cellar openings > 15 m	-	0	0	
		– Suction of vent systems situated at less than 1.5 m above grade > 15 m	-	0	0	
		– Gullies (unless provided with a waterlock) > 15 m	-	0	0	

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code	Nr.	Installation item	'Article of Regulations'	Check 1	2
		– Sales room > 5 m	-	0	0
		– Site boundary > 5 m	-	0	0
		– Dispensers DME > 5 m	-	0	0
		– Dispensers LPG, diesel , gasoline > 5 m	-	0	0
		– Fuelling motor vehicles > 5 m	-	0	0
		– Filling point > 15 m	-	0	
		– Tank truck area > 15 m	-	0	0
		– Above grade storage of dangerous goods (> 100 l) > 15 m	-	0	0
		– Storage of dangerous goods if fire resistance min. 60 minutes > 7.5 m	-	0	0
		– Buildings and dwellings on site > 15 m	-	0	0
		– Buildings and dwellings on site if fire resistance min. 30 minutes > 7.5 m	-	0	0
		– Other mounded or buried storage vessels > 1 m	-	0	0
A	14.2	Distances from filling point to:			
		– Cellar openings > 15 m	-	0	0
		– Suction of vent systems situated at less than 1.5 m above grade > 15 m	-	0	0
		– Buildings and dwelling on site > 5 m	-	0	0
		– Gullies (unless provided with a waterlock) > 15 m	-	0	0
		– Sales room > 5 m	-	0	0
		– Site boundary > 5 m	-	0	0
		– Dispensers DME > 5 m	-	0	0
		– Dispensers LPG, diesel , gasoline > 5 m	-	0	0

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code Nr.	Installation item	'Article of Regulations'	Check 1	2	3
	– Fuelling motor vehicles > 5 m	-	0	0	
	– Above grade storage of dangerous goods (> 100 l) > 15 m	-	0	0	
	– Storage of dangerous goods if fire resistance min. 60 minutes > 7.5 m	-	0	0	
	– Tank truck area (maximum distance !) < 5 m	-	0	0	
	– Buildings and dwellings on site if fire resistance min. 30 minutes > 7.5 m	-	0	0	
14.3	Distances from tank truck area to:				
	– Sales room > 5 m	-	0	0	
	– Buildings and dwellings on site > 15 m	-	0	0	
	– Dispensers DME > 5 m	-	0	0	
	– Dispensers LPG, diesel , gasoline > 5 m	-	0	0	
	– Above grade storage of dangerous goods (> 100 l) > 15 m	-	0	0	
	– Storage of dangerous goods if fire resistance min. 60 minutes > 7.5 m	-	0	0	
14.4	Distances from DME dispenser to:				
	– Cellar openings > 15 m	-	0	0	
	– Suction of vent systems situated at less than 1.5 m above grade > 15 m	-	0	0	
	– Gullies (unless provided with a waterlock) > 15 m	-	0	0	
	– Sales room > 5 m	-	0	0	
	– Buildings and dwellings on site > 7 m	-	0	0	
	– Site boundary > 5 m	-	0	0	
14.5	Distance between fence around storage	-	0	0	

To be completed by: Main Contractor

Checklist for inspection of DME service stations

1 = Correct, 2 = Incorrect, 3 = Not applicable (mark the applicable)

Code Nr.	Installation item	'Article of Regulations'	Check 1	2
	area and floor of the mound > 1 m			

Remarks .....

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Check performed by : .....

:Company name : .....

Inspector name : .....

Date : .....

Signature: .....

Checklist for half-yearly inspection and maintenance of DME service stations

To be completed by Main contractor

To be completed by: Main Contractor

Checklist for inspection of DME service stations

DME service station (Name): .....

Full address: .....

..... Tel.: .....

Main contractor (Name): .....

Full address:

.....

..... Tel.: .....

Check performed by : .....

Signature contractor representative : .....

Signature service station representative : .....

Note:

For items on the checklist market with * the half-yearly inspection is optional.

These items however need to be inspected at least once a year

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To be completed by: Main Contractor

Checklist for half-yearly inspection/maintenance of the DME service stations

1 = Checked and O.K., 2 = Repaired, 3 = Still to be carried out

Nr.	Installation item	Check		
		1	2	3
1.	Fence around storage vessel			
1.1	Condition of metal meshwork	0	0	0
1.2	Conditions of doors including door locks and hinges	0	0	0
1.3*	Warning signs 'No smoking or open fire' well readable and properly fastened to the fence	0	0	0
1.4	Storage area easily accessible, paved inside the fence and no goods stored	0	0	0
1.5	No vegetation in the surroundings of the vessel mound	0	0	0
1.6	No storage of dangerous goods within 15 m distance of the mounded or underground vessel	0	0	0
2.	Storage vessel			
2.1*	Vessel appurtenances and related equipment well painted; no visible rust	0	0	
2.2	No excessive settlement of vessel (mound), paving or fence	0	0	0
2.3	All flanged and threaded joins are gastight	0	0	0
2.4	Hand operated valves can be easily opened and closed	0	0	0
2.5	Stem of hand operated valves gastight (all paint removed)	0	0	0
2.6	Level indicator operates well, indication given on dial conform electronic overfill protection/level indicator at filling point	0	0	0
2.7	Rain cap present on safety relief valve blow-off pipe	0	0	0
2.8	Drainhole in safety relief valve not plugged	0	0	0
2.9	Condition of bolts and nuts of any flanged connection	0	0	0
2.10	Pressure gauge operates well	0	0	0
2.11	86% ullage valve operates well	0	0	0
2.12	Mound inclusive stairs in good condition	0	0	0
3.	Pump and related piping			
3.1*	All piping, piping components and equipment well painted; no visible rust	0	0	
3.2*	Condition of sunshed	0	0	

To be completed by: Main Contractor

Checklist for half-yearly inspection/maintenance of the DME service stations

1 = Checked and O.K., 2 = Repaired, 3 = Still to be carried out

Nr.	Installation item	Check		
		1	2	3
3.3	No visible settlement of pump foundation (above ground pump only) and piping support	0	0	
3.4	All flanged and threaded joints are gastight	0	0	0
3.5*	Condition of bolts and nuts	0	0	0
3.6	Pressure relief valves gastight	0	0	0
3.7	Pressure relief valves provided with caps	0	0	0
3.8	Stem on manual operated valves gastight (all paint removed from stem)	0	0	0
3.9	Hand operated valves can be easily opened and closed	0	0	0
3.10	Inlet valve of submerged pump (at pumpwell) locked open	0	0	0
3.11*	Condition of pre-filters; clean filter element	0	0	0
3.12*	Pressure gauge in good condition	0	0	0
3.13	Mechanical seal of pump(s) gastight (above ground pump only)	0	0	0
3.14	Set pressure of pump overflow/relief valve correct (P = …bar)	0	0	0
3.15*	Cable entrance and junction box cover of electric pump motors in good condition	0	0	0
3.16*	Condition of local electric pump on-off switch	0	0	0
3.17*	Earthing well connected	0	0	0
3.18*	No contact between piping and other metal parts inclusive sun shields	0	0	0
4.	Filling point			
4.1	Condition of filling point enclosure, incl. lock and hinges	0	0	
4.2	Hand operated valve can be easily opened and closed	0	0	
4.3	Valve stem gastight (paint completely removed from stem)	0	0	0
4.4	Flanged and threaded joints gastight	0	0	0
4.5	Cap/flange on filling nozzle present	0	0	0
4.6	Earthing well connected	0	0	0
4.7*	Blow-off provided with 2 m pipe and plastic cap	0	0	0
4.8*	Isolating joint well above grade	0	0	0
4.9*	Condition of piping support	0	0	0

To be completed by: Main Contractor

Checklist for half-yearly inspection/maintenance of the DME service stations

1 = Checked and O.K., 2 = Repaired, 3 = Still to be carried out

Nr.	Installation item	Check		
		1	2	3
4.10	Weatherproof control cabinet: condition control cabinet, incl. lock and hinges	0	0	0
4.11	Key-operated switch activates remote controlled valve in filling line	0	0	0
4.12	Level indicator in good condition	0	0	0
4.13	Pre-alarm indicating 81% level in storage vessel	0	0	0
4.14	Receptacle for earthing and ESD-control cable from road tank truck in good condition	0	0	0
4.15*	Protection against collision (crash barrier/poles)	0	0	0
4.16*	Illumination	0	0	0
5.	Dispensing column			
5.1*	Operation and visibly of counter	0	0	0
5.2*	Condition of enclosure	0	0	0
5.3	Earthing of enclosure	0	0	0
5.4*	Condition of pressure gauge	0	0	0
5.5	Differential valve operates well	0	0	0
5.6	Valve stem gastight (paint completely removed from stem)	0	0	0
5.7	Flanged and threaded joints gastight	0	0	0
5.8*	Connections of electrical cables watertight	0	0	0
5.9	Visual check on hose and hose coupling	0	0	0
5.10	Hose-pressure tested at 30 barg	0	0	0
5.11	Condition of break-away coupling (check also retention cable. No. on coupling: .....)	0	0	0
5.12	Warning notices 'No smoking or open fire present'	0	0	0
5.13	Notice for ESD push-button	0	0	0
5.14	Protection against collision in good condition (crash barrier/concrete filled poles)	0	0	0
5.15*	Condition of pavement	0	0	0
5.16	Fire extinguisher present	0	0	0
	Date of latest check:			

To be completed by: Main Contractor

Checklist for half-yearly inspection/maintenance of the DME service stations

1 = Checked and O.K., 2 = Repaired, 3 = Still to be carried out

Nr.	Installation item	Check		
		1	2	3
5.17	Communication system	0	0	0
5.18*	Illumination	0	0	0
6.	Salesroom			
6.1	Telephone readily accessible	0	0	0
6.2	Emergency plan present	0	0	0
6.3	Installation book present	0	0	0
6.4	ESD push-button readily accessible	0	0	0
6.5	Visibility of DME facilities not obstructed	0	0	0
6.6	Condition of electrical installation	0	0	0
6.7	Fire extinguisher present	0	0	0
	Check date:			
7.	Emergency shutdown system			
7.1	Operating of each individual ESD-button activates remote controlled valves and stops pump(s)	0	0	
7.2	Closing time of any remote controlled valve: 15 sec.	0	0	
7.3	Remote controlled valve in filing line closes automatically when overfill protection device is out of order	0	0	
7.4	DME-pump is stopped at low-level in storage vessel	0	0	

Remarks: .....

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