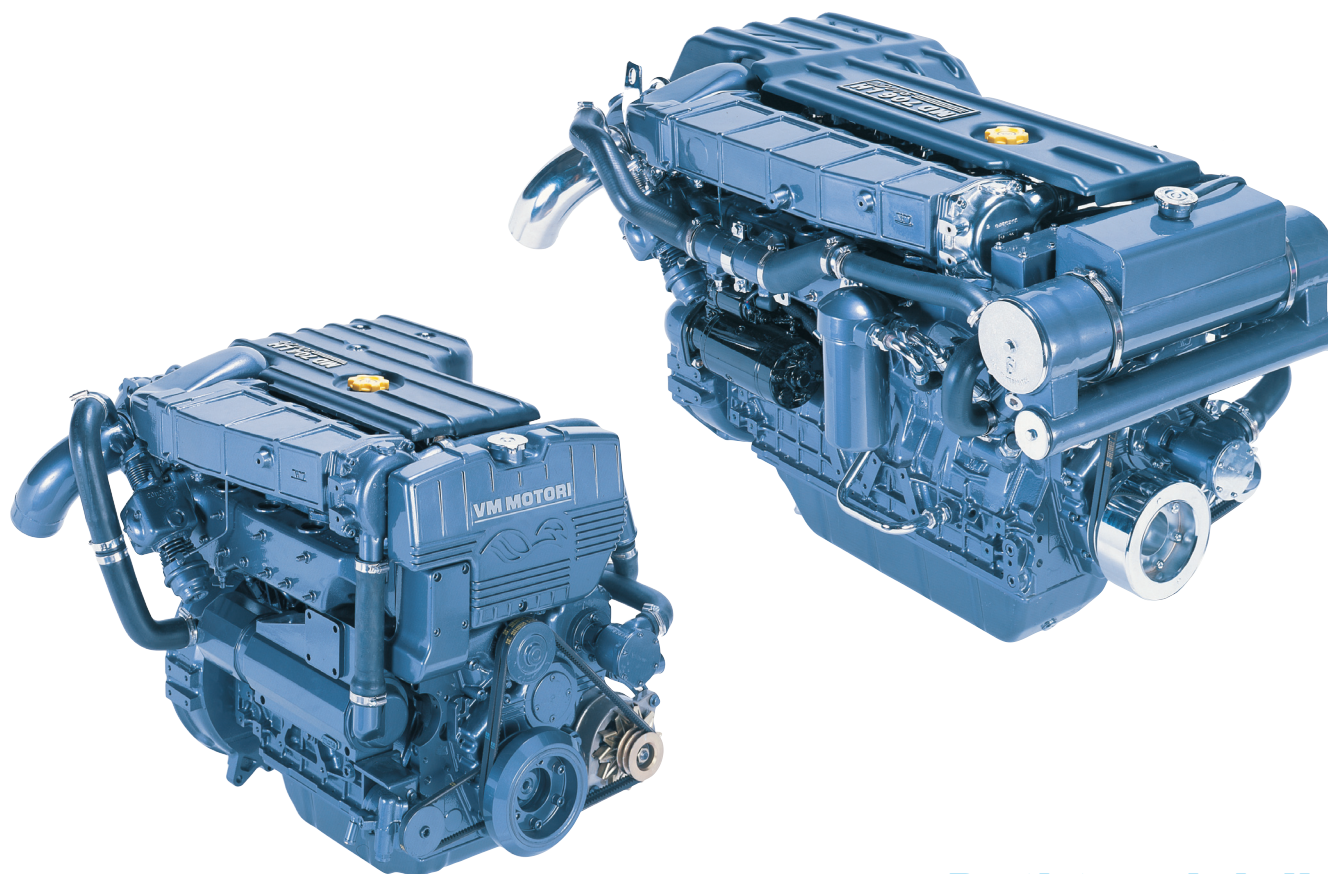




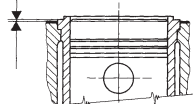
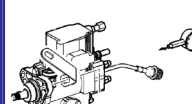
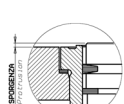
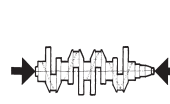
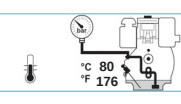
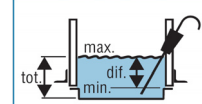
VM MOTORI S.p.A.



Aggiornato a Gennaio 2005
Updated to January 2005

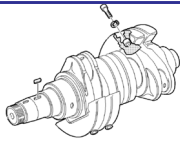
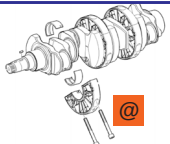
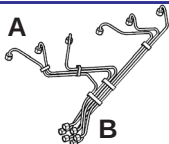
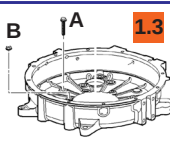
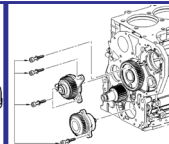
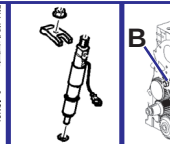
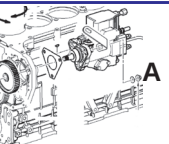
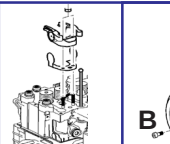
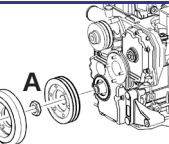
Dati tecnici di revisione
Motori Marini serie MD700
Workshop data
Marine Engines serie MD700



N. DI MATRICOLA - ENGINE S/N								
4 8 B 0 2 5 6 9 COD. MOTORE - ENGINE CODE		SPORGENZA PISTONE DAL BASAMENTO PISTON PROTRUSIONS FROM CRANKCASE SPESSORE GUARNIZIONE CYL.HEAD THICKNESS	FASATURA POMPA INIEZIONE INJECTION PUMP TIMING	PRESSIONE TARATURA INIETTORI OPENING INJECTOR PRESSURE	SPORGENZA CANNE LINERS PROTRUSION	GIOCO ALBERO MOTORE CRANKSHAFT CLEARANCE	PRESSIONE OLIO OIL PRESSURE	CAPACITA' COPPA OLIO OIL SUMP CAPACITY
ORDINE DI SCOPPIO - FIRING ORDER		mm	mm ^b	bar	mm	mm supporto posteriore / rear support (Ø)	bar minimo regime	Kg (l)
2.cyl. (1-2) - 3.cyl. (1-3-2) - 4.cyl. (1-3-4-2) 5.cyl. (1-2-4-5-3) - 6.cyl. (1-5-3-6-2-4)								
TIPO MOTORE ENGINE TYPE	CODICE CODE						at idle max. rating	TOT MAX MIN
MD 704 LI	48 B	0,60÷0,72 guarn. lgasket 1.42	0.60 ÷ 0.65	250 ÷ 264	0 ÷ 0.05	Ø80 0,080÷0,280	1.2÷3 3.5÷6	6.8 (8) 6.2 (7.3) 4.8(5.6)
MD 706 LI	49 B		1.74 ÷ 1.76	250 ÷ 264				10.8 (12.7) 10.4(12.3) 7.6 (9)
MD 706 MI	93 B		1.70 ÷ 1.72 IMO 1.60	250 ÷ 264				10.8 (12.7) 10.4(12.3) 7.6 (9)
MD 706 MH	97 B		1.70	250 ÷ 264				10.8 (12.7) 10.4(12.3) 7.6 (9)
MD 706 LH	08 C		1.68	190 ÷ 200				10.8 (12.7) 10.4(12.3) 7.6 (9)
MD 706 LS	35 C	0,83÷0,95 guarn. lgasket 1.62	1.68	190 ÷ 200				10.8 (12.7) 10.4(12.3) 7.6 (9)
MD 704 LH	36 C	differenza max tra i cilindri max difference between cylinders 0,12	0.48 ÷ 0.51	190 ÷ 200				6.8 (8) 6.2 (7.3) 4.8(5.6)
MD 704 LS	37 C		0.48 ÷ 0.51	190 ÷ 200				6.8 (8) 6.2 (7.3) 4.8(5.6)
MD 706 LB	42 C		1.68	190 ÷ 200				10.8 (12.7) 10.4(12.3) 7.6 (9)
MD 706 LX	41 C		1.68	190 ÷ 200				10.8 (12.7) 10.4(12.3) 7.6 (9)
MD 706 MX	44 C		1.70	250 ÷ 264				10.8 (12.7) 10.4(12.3) 7.6 (9)
MD 706 MS	43 C		1.60	250 ÷ 264				10.8 (12.7) 10.4(12.3) 7.6 (9)



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		Nm-Kgm	Nm-Kgm	Nm-Kgm	Nm-Kgm	Nm-Kgm	Nm-Kgm	Nm-Kgm	Nm-Kgm	(filettatura thread)
TIPO MOTORE ENGINE TYPE	CODICE CODE			A B	A B			A B		DADO/NUT
MD 704 LI	48 B	CONTRAPPESO ALBERO MOTORE BALANCE WEIGHT CRANKSHAFT	SUPPORTO BANCO ALBERO MOTORE MAIN SUPPORT CRANKSHAFT	TUBI INIEZIONE DA POMPA A INIETTORI INJECTION PIPES FROM PUMP TO INJECTORS	CAMPANA VOLANO FLYWHEEL HOUSING	DEPRESSORE, POMPA OLIO, INGR. ALBERO A CAMME VACUUM PUMP, OIL PUMP, CAMSHAFT GEAR	DADO INIETTORE INJECTOR NUT	DADI POMPA INIEZIO- NE INJECTION PUMP NUTS	DADO BILANCIERE ROCKER ARM NUT	1.1 DESTRO RIGHT
MD 706 LI	49 B									1.1 DESTRO RIGHT
MD 706 MI	93 B									1.1 DESTRO RIGHT
MD 706 MH	97 B									1.1 DESTRO RIGHT
MD 706 LH	08 C									1.1 SINISTRO LEFT
MD 706 LS	35C									1.1 SINISTRO LEFT
MD 704 LH	36C									1.2 SINISTRO LEFT
MD 704 LS	37C									1.2 SINISTRO LEFT
MD 706 LB	42C									1.1 SINISTRO LEFT
MD 706 LX	41C									1.1 SINISTRO LEFT
MD 706 MX	44C									1.1 SINISTRO LEFT
MD 706 MS	43C									1.1 SINISTRO LEFT

1.1

- 1-Portare la chiave albero motore a ore 12 - Take crankshaft key at 12 hour.
- 2-Applicare loctite 222 sul filetto del dado. Apply loctite 222 on nut thread.
- 3-Serrare a Nm 108 - 11 Kgm e poi svitare.
Torque at Nm 108 - 11 Kgm and then to unscrew.
- 4-Riserrare a Nm 235 - 24 Kgm (per MD706LH/LS/LB/LX/MX/MS Nm 274 - 28 Kgm).
Retorque at Nm 235-24 Kgm (For MD706LH/LS/LB/LX Nm 274 - 28 Kgm).
- 5-Serrare le viti B a Nm 83.4 - 8.5 Kgm con loctite 510. Torque bolts B at Nm 83.4 - 8.5 Kgm with loctite 510.

@ Lubrificare con grasso filetto e sottotesta. Lubricate with grease thread and bolt.

1.2

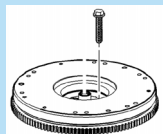
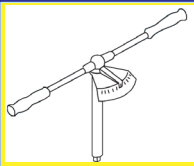
- 1-Pulire filetto del dado e dell' albero motore e zona di contatto tra dado e puleggia.
Clean nut and crankshaft thread, contact area between nut and pulley A.
- 2-Mettere sul filetto del dado e sulla zona di contatto tra dado e puleggia A, grasso Molycote.
Put grease Molycote on thread nut and contact area between nut and pulley A.
- 3-Serrare a 400 Nm - 40 Kgm. Torque at 400 nm - 40 Kgm.
- 4-Serrare le viti B a Nm 32.4 - 3.3 Kgm - Torque screws B at Nm 32.4 - 3.3 Kgm

1.3

Per viti in classe 10.9 serrare a Nm 68.6 - 7 kgm. Torque at Nm 68.6 - 7 kgm screws in 10.9 class
Per viti in classe 8.8 serrare al valore indicato in tabella. Screws in 8.8 class torque at value in table



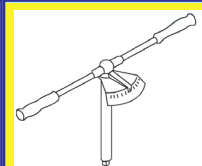
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VITI VOLANO - FLYWHEEL BOLTS

- 1-Serrare a croce le viti a 50 Nm-5.01 Kgm. *Torque crosswise bolts at 50 Nm - 5.01 Kgm.*
- 2- Allentare una vite per volta e serrare a 20 Nm - 2.05 Kgm + 75° seguendo la procedura 1. *Loosen one bolt at a time and following 1st procedure torque at 20 Nm - 2.05 Kgm + 75°.*

Le viti vengono sostituite solamente nel caso di smontaggi precedenti (danni all'esagono, sottotesta, allungamento del filetto). Se riutilizzate, le viti, il filetto ed il sottotesta devono essere lubrificate con olio motore. Le viti nuove non devono essere lubrificate. *Replace bolts only in case of damaged bolts or stretch thread. If reuse bolts, lubricate them with engine oil. New bolts must not be lubricated.*



VITI BIELLA -CONNECTING ROD BOLTS

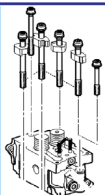
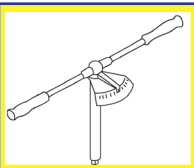
fratturata - fractured

tradizionale - traditional

- 1-Serrare una vite per volta a 30 Nm-3.06 Kgm + 60°. *Torque one bolts at a time at 30Nm - 3.06 Kgm + 60°.*
- 2- Eseguire un controllo con chiave tarata a 88 Nm - 9 kgm. *Perform a check with key set at 88 Nm - 9 kgm*

Le viti normalmente vengono sostituite. Se riutilizzate lubrificare con olio motore le viti, il filetto ed il sottotesta. Le viti nuove non devono essere lubrificate. *Usually replace bolts. If reuse bolts, lubricate them with engine oil. New bolts must not be lubricated.*

- 1-Serrare le viti a battuta a 10 Nm - 1 Kgm. *Approach bolts and torque at 10 Nm - 1 Kgm .*
- 2- Serrare una vite per volta a 30 Nm - 3.06 Kgm. *Torque one bolt at a time at 30 Nm - 3.06 kgm.*
- 3- Serrare una vite per volta con angolo di 40°. *Torque one bolt at a time with 40°.*
- 4- Eseguire un controllo con chiave tarata a 88 Nm - 9 kgm. *Perform a check with key set at 88 Nm - 9 kgm*



VITI TESTA - CYLINDER HEAD BOLTS

Le viti vengono sostituite solamente nel caso di smontaggi precedenti (danni all'esagono, sottotesta, allungamento del filetto). Se riutilizzate, le viti, il filetto ed il sottotesta devono essere lubrificate con pasta Molycote tipo G Rapid Plus. Le viti nuove non devono essere lubrificate. *Replace bolts only in case of damaged bolts or thread stretch. If reuse bolts, lubricate them with Molycote type G Rapid Plus paste. New bolts must not be lubricated.*

Viti Centrali-Central bolts

- A) serrare a 30 Nm con la seguente sequenza
ex. 4 cil.: 3, 2, 1, 4, 5, 8, 9, 10, 7, 6
tighten all bolts to 30 Nm following below sequences
ex. 4 cil.: 3, 2, 1, 4, 5, 8, 9, 10, 7, 6
- B) eseguire rotazione di 65° iniziando dalla vite n° 1 seguendo l'ordine crescente ex. 4 cil.: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
perform a rotation of 65° starting from n° 1 and following below increasing sequences ex. 4 cil.: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
- C) ripetere l'operazione "B" con le stesse modalità
repeat the procedure described at point "B"

Viti Lateral (M1, M2)-Side bolts (M1, M2)

- D) serrare tutte le viti M1a 30 Nm e poi eseguire una rotazione di 85°
tighten all bolts M1 to 30 Nm and then perform a rotation of 85°
- E) serrare tutte le viti M2 a 30 Nm e poi eseguire una rotazione di 85°
tighten all bolts M2 to 30 Nm and then perform a rotation of 85°

Prova motore (20 min.)-Engine test (20 min.)

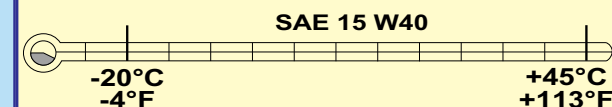
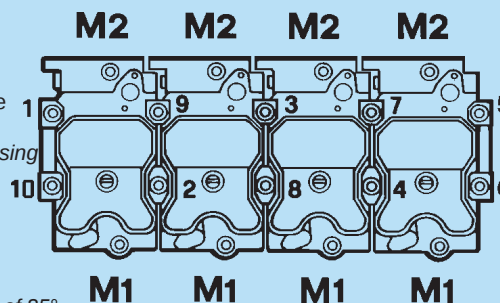
Risserraggio viti a motore freddo (T= ~ 40°C - 104°F)-Bolts retorque with cold engine (T= ~ 40°C - 104°F)

Viti Centrali-Central bolts

- F) Seguendo la sequenza 1,2,3,---8 ex. 3cil., allentare una vite per volta scaricandola completamente, quindi serrarla a 30Nm più una rotazione 120°.
Completely back off bolts (one-by-one) following the sequence ex.3cil. 1,2,3- -8, and then retighten to 30 Nm plus 120°

Viti Lateral (M1, M2)-Side bolts (M1,M2)

- G) Riprendere le viti M1 e M2 senza allentarle, con chiave dinamometrica tarata a 90 Nm
(without slackening) torque bolts M1 and M2 to 90 Nm



API CI-4/CH-4/CG-4/CF-4/CF/SL/SJ
ACEA E5/E3/B4/B3/A2

DETROIT DIESEL DDC 7SE 270
DAIMLER CHRYSLER MB 228.3/229.1
MAN M 3275
VOLVO VDS-3; VDS-2
RENAULT RVI RDL
MACK EO-M PLUS
CUMMINS CES 20078/77176/75172/71
MTU TYPE 1
ALLISON C-4

Mobil DELVAC MX 15W-40