MODEL: Pulsar 1991-95. Series: N14
ENGINE: GA16DE, 1.6L

REMOVAL

INTERFERENCE ENGINE. In the event of timing chain failure, it is probable that valve to piston damage has occurred. A compression test should be carried out on all cylinders before removing the cylinder head.

1. Drain engine coolant from radiator and cylinder block.
2. Release fuel pressure.
3. Remove:
- all drive belts,
- PS pump bracket,
- air duct to intake manifold collector,
- front RH wheel,
- front RH splash cover,
- front undercovers,
- front exhaust tube,
- engine front mounting bracket,
- rocker cover,#1
- distributor cap,
- all spark plugs,
- intake manifold support.
4. Turn crankshaft pulley to set No.1 piston at TDC on compression stroke.
- Check TDC position of No.1 cylinder by looking at distributor position.
5. Remove:
- distributor,
- cam sprocket cover,
- water pump pulley,
- thermostat housing,
- lower timing chain tensioner,
- upper timing chain tensioner.
6. Remove camshaft brackets and camshafts.#2
- Each of these parts should be reinstalled in its original position.
- Bolts should be removed in 2 or 3 steps.
7. Remove cylinder head with manifolds.#3.
8. Remove idler sprocket shaft from rear side.
9. Remove:
- upper timing chain,
- centre member,
- oil pan,
- oil strainer,
- crankshaft pulley.
10. Support engine with a suitable jack and remove engine front mounting bracket.
11. Remove:
- front cover,
- idler sprocket,
- lower timing chain,
- oil pump drive spacer,
- timing chain guide,
- crankshaft sprocket.

INSTALLATION

1. Check that No.1 piston at TDC on its compression stroke.
2. Install:
- chain guide,
- crankshaft sprocket,
- and lower timing chain.
- Align mating mark on the chain with the mating mark on the crankshaft sprocket.
- Mating mark on the sprocket must faces engine front.
3. Install the front cover.
- Apply liquid gasket to contact surface of front cover.
- Ensure the alignment of all mating marks on timing chain and crankshaft sprocket.
- Align oil drive spacer with the oil pump.
- Put chain to the side of chain guide so that the chain does not make contact with water seal area of front cover.
- Ensure that two O-rings are present.
- Do not damage oil seal.
4. Install engine front mounting.
5. Install
- oil strainer and oil pan,
- crankshaft pulley,
- centre member.
6. Install idler sprocket. Ensure to align the mating mark on the larger sprocket with the mating mark (silver link) on the lower timing chain.
7. Install upper timing chain. Ensure to align the mating mark on the smaller sprocket with mating mark (silver link) on upper timing chain.
- The sprocket mating mark must face engine front.
8. Install idler sprocket shaft from the rear side.
9. Install cylinder head#3 with a new gasket.
10. Install idler sprocket bolt.
11. Install camshafts.
- Make sure camshafts are aligned as illustrated.
- Check identification marks 'I' and 'E' for intake and exhaust respectively.
12. Install camshaft brackets and distributor bracket.#2
13. Set camshaft sprockets with upper timing chain.
- Align the two silver links with mating marks on the camshafts.
- Align the gold link with smaller idler sprocket.
14. Install:
- upper chain tensioner,
- lower chain tensioner,
- thermostat housing,
- water pump pulley,
- distributor.
15. Install remainder of components in reverse order of removal.

SPECIAL TOOLS

Engine stand assembly ST0501 1000, ST0501 2000
Cylinder head bolt wrench ST10120000
Camshaft sprocket KV10109300
Crankshaft holder KV101056S0
Seal cutter (oil pan remover) KV10111100

RECOMMENDED REPAIR TIME

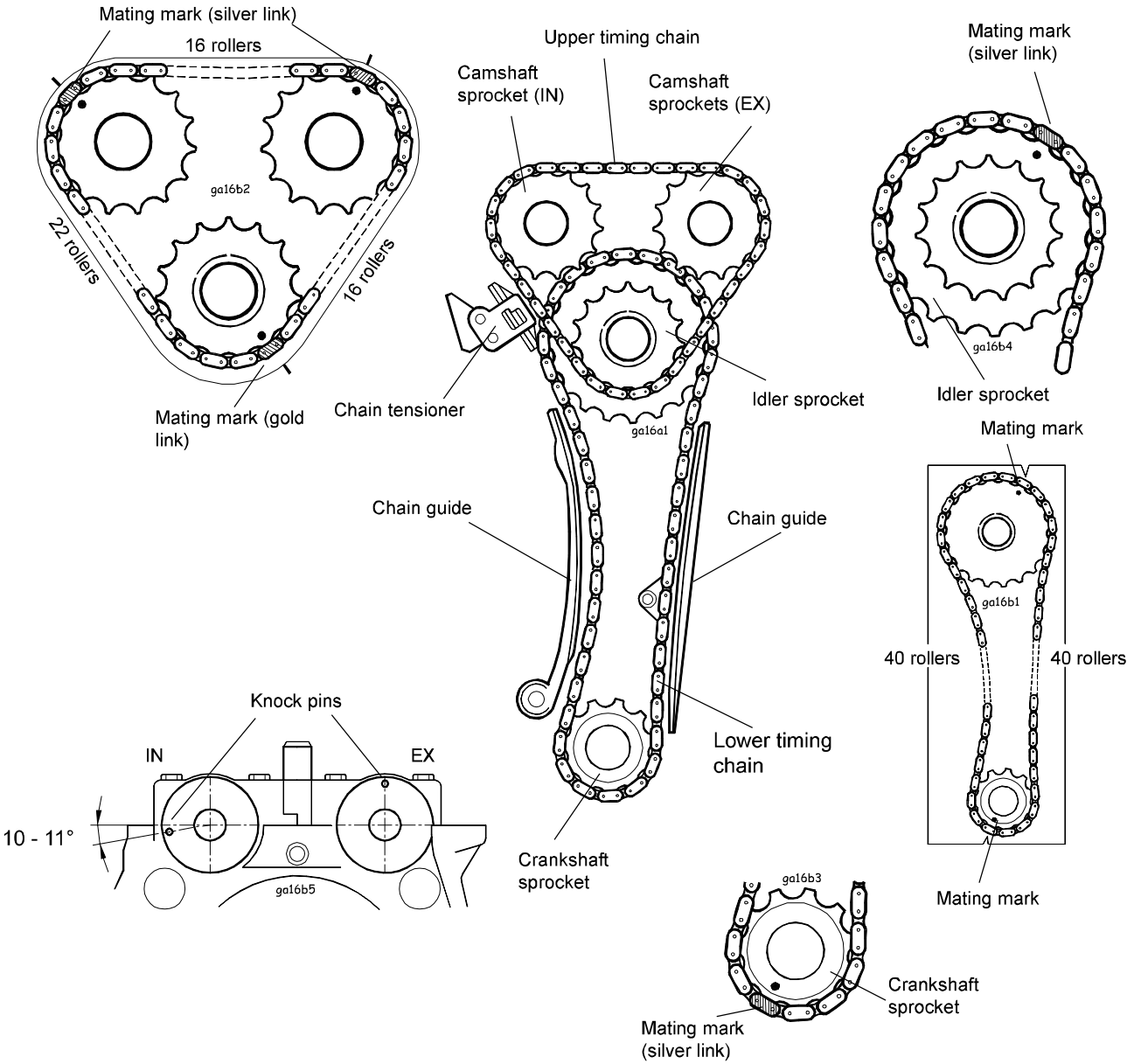
10.5 hours
*May not include time to remove/install associated component(s).

TIGHTENING TORQUE

Chain guide 13-19 Nm
Chain tensioner (upper) 6.3-8.3 Nm
Chain tensioner (lower) 6.0-12.0 Nm
Crankshaft pulley 132-152 Nm
Idler sprocket 43-58 Nm
Camshaft sprocket (IN) 98- 127 Nm
Camshaft sprocket (EX) 98-127 Nm

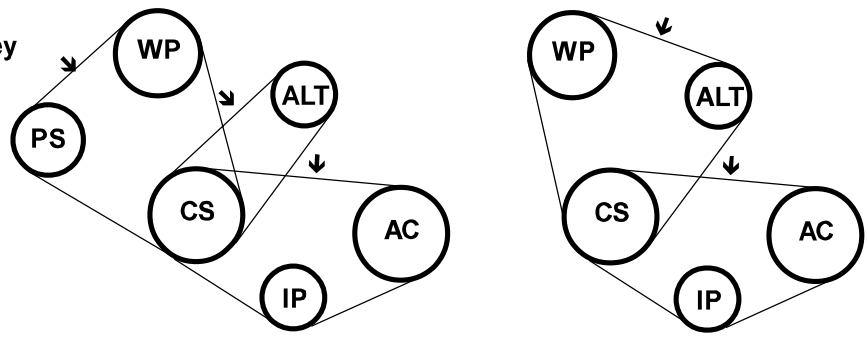
Footnotes
#1 - Refer to Note 1 (N14) on page616
#2 - Refer to Note 2 (N14) on page616
#3 - Refer to Note 3 (N14) on page616

Note: Diagrams are not to scale and for presentation only.
They may not show real shape and size of the components.



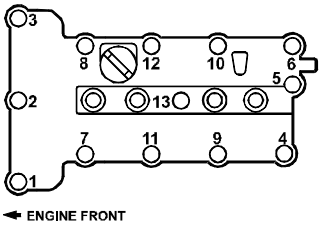
AUXILIARY DRIVE BELTS			
BELT	DEFLECTION (mm) under 10kg (98N) load		SIZE (WxL)(mm)
	NEW	USED	
ALT(w/o PS)	6 - 8	7 - 9	NAM
ALT (w/ PS)	6 - 8	7 - 9	14 x 800
AC	5 - 7	6 - 8	21 x 1035
PS	3 - 5	4 - 6	14 x 815

AC - Air conditioning pulley
ALT - Alternator / generator pulley
CS - Crankshaft pulley
IP - Idler pulley
PS - Power steering pulley
TP - Tension pulley
WP - Water pump

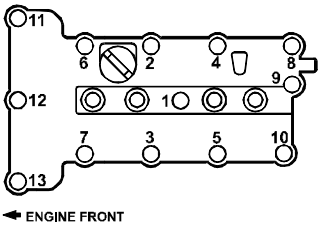


NISSAN

ROCKER COVER
BOLTS LOOSENING ORDER



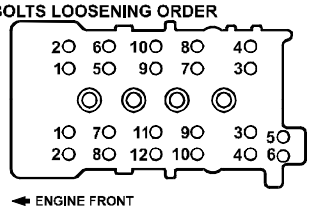
ROCKER COVER
BOLTS TIGHTENING ORDER



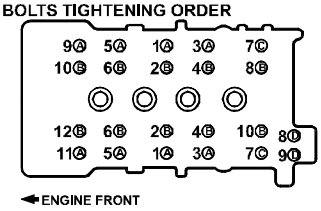
Note 1 **(C23):**
Rocker cover
Loosen bolts in order shown.

Tighen bolts: 1st step tighen 1-10-11-13-8 in that order to 4 Nm, 2nd step tighten 1 to 13 in order shown to 8-10 Nm.

CAMSHAFT BRACKETS AND CAMSHAFTS
BOLTS LOOSENING ORDER



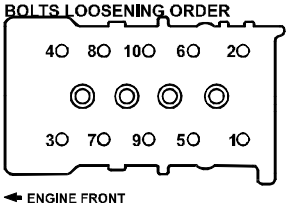
CAMSHAFT BRACKETS AND CAMSHAFTS
BOLTS TIGHTENING ORDER



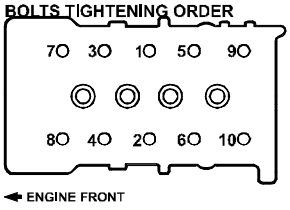
Note 2 **(C23):**
Camshaft bracket bolts
Remove in order shown in 2 or 3 steps.
A, B, C... - bolt types; 1, 2, 3, ... tightening order.

Tighening sequence:
1st step- tighten 10 & 9 (RH) to 2 Nm, 2nd step tighten 11 & 12 (LH) to 2 Nm, 3rd step- tighten all (in order) to 6 Nm, 4th step- tighten bolt type A, B, C to 9-11.8 Nm, 5th step tighten bolt type D to 18 - 25 Nm.

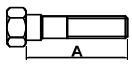
CYLINDER HEAD
BOLTS LOOSENING ORDER



CYLINDER HEAD
BOLTS TIGHTENING ORDER



CYLINDER HEAD BOLT

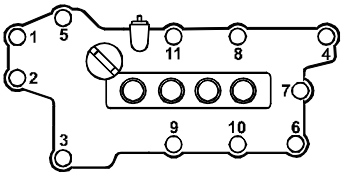


• *Ensure bolt length does not exceed 158.2 mm.*

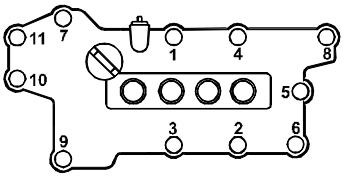
Note 3 **(C23):**
Cylinder head
Remove in order shown in 2 or 3 steps.

Tighening sequence:
1st step- tighten all bolts to 39 Nm, 2nd step 78 Nm, 3rd step loosen completely, 4th step 34-44 Nm, 5th 90-100° clockwise, 6th step 90-100° clockwise.
Do not turn any bolt 180-200° clockwise in one go.

ROCKER COVER
BOLTS LOOSENING ORDER



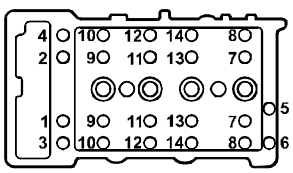
ROCKER COVER
BOLTS TIGHTENING ORDER



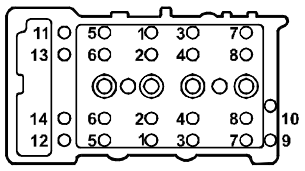
Note 1 **(N14):**
Rocker cover
Remove in order shown.

Tighen bolt in order shown to 2-4 Nm

CAMSHAFT BRACKETS AND CAMSHAFTS
BOLTS LOOSENING ORDER



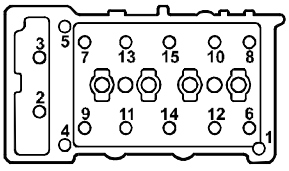
CAMSHAFT BRACKETS AND CAMSHAFTS
BOLTS TIGHTENING ORDER



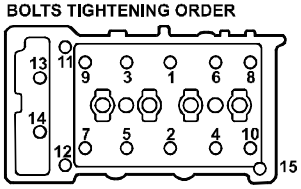
Note 2 **(N14):**
Camshaft bracket and bolts
Remove in order shown (in 2 or 3 steps).

Tighening sequence:
1st step tighten 11-15, then 1 to 10 (in that order) to 2Nm, 2nd step (1 to 15) to 6Nm. 3rd step (1 to 14) 9-11.8 Nm. 4th step (bolt 15) 6.3 - 8.3 Nm.

CYLINDER HEAD
BOLTS LOOSENING ORDER



CYLINDER HEAD
BOLTS TIGHTENING ORDER



Note 3 **(N14):**
Cylinder head bolts
Remove in order shown (in 2 or 3 steps).

Tighening sequence:
1st step 29 Nm, 2nd step 59 Nm, 3rd step loosen completely, 4th step 29 Nm, 5th step 50-55 Nm, 6th step (bolts 11 to 15) to 6.3-8.3 Nm