

4602401

sport

Opel X16XEL small block ecotec (1.4-1.6-1.8L)

I-4cyl 1.6L 16v DOHC (DTH/DTH)



intake

exhaust

camshaft data:

lash ramp	: hydro	hydro
duration @ 0.1mm	: 252°	252°
duration @ 1.0mm	: 215°	215°
valve lift	: 9.50mm	9.50mm
cam lift	:	
lobe angle	: 110°	110°
timing @ 1.0mm	: -3° / 38°	37° / -2°
valve lift @ TDC	: 0.70mm	0.85mm

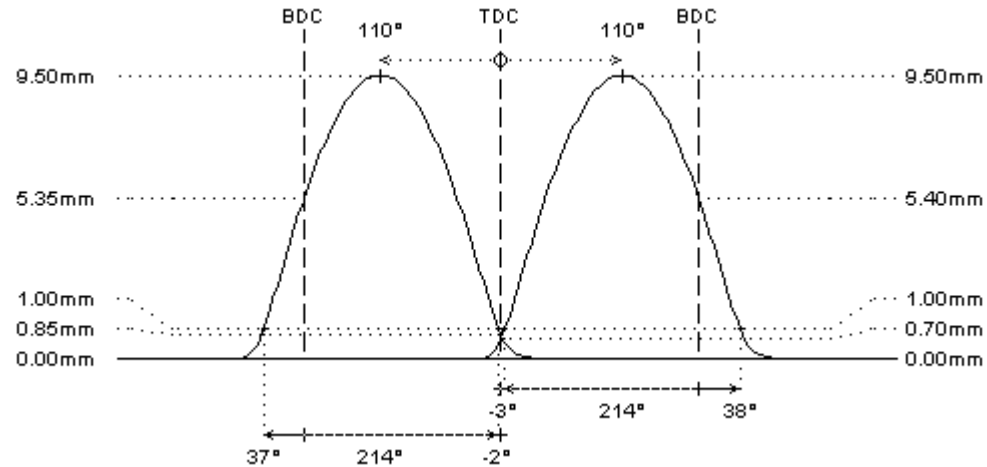
parts setup:

cam wheels :	: CTOP015	: CTOP015
follower	: O.E.M.	: O.E.M.
valve lash	: O.E.M.	: O.E.M.
valve	: O.E.M.	: O.E.M.
valve locks	: O.E.M.	: O.E.M.
upper retainer	: O.E.M.	: O.E.M.
lower retainer	: O.E.M.	: O.E.M.
exterior spring	: O.E.M.	: O.E.M.
interior spring	:	

fitted load / length	: 27kg @ 0.0mm	: 27kg @ 0.0mm
max. load / lift	: 60kg @ 10.0mm	: 60kg @ 10.0mm

REMARKS :

for engines with 6mm valves (not for X18XE1, Z18XE: 5mm valves!)



REMARKS :

- # - camshafts for use in 1.4-1.6-1.8L short block 'ecotec' engines
- CAUTION: Opel has fitted different types of sprockets and camshafts with different dowel pin positions and cam lobes. Therefore it is required to check the std camshafts before ordering for sports applications!
- # Sport version for X1.6XE with std cam lift of 8.5mm (in+ex)
- # Due to different dowel pin references on original cam wheels and camshafts, we advise to use adjustable cam wheels ref. **CTOP015** for all applications. In any way, it is necessary to check the valve lift at TDC and adjust if required

4602416

tarmac rally - race

Opel X16XEL small block ecotec (1.4-1.6-1.8L)

I-4cyl 1.6L 16v DOHC (DTH/DTH)



intake

exhaust

camshaft data:

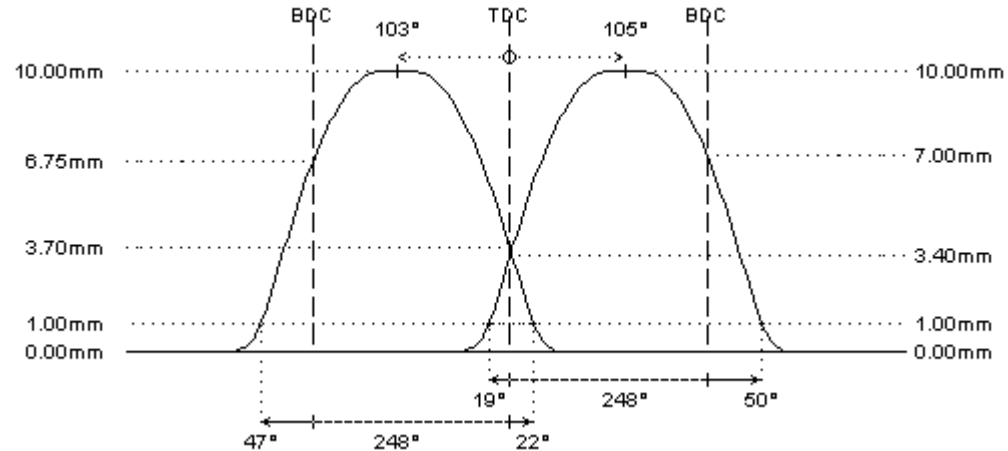
lash ramp	: hydro	hydro
duration @ 0.1mm	: 282°	282°
duration @ 1.0mm	: 249°	249°
valve lift	: 10.00mm	10.00mm
cam lift	:	
lobe angle	: 105°	103°
timing @ 1.0mm	: 19° / 50°	47° / 22°
valve lift @ TDC	: 3.40mm	3.70mm

parts setup:

cam wheels :	: CTOP015	: CTOP015
follower	: O.E.M.	: O.E.M.
valve lash	: O.E.M.	: O.E.M.
valve	: O.E.M.	: O.E.M.
valve locks	: O.E.M.	: O.E.M.
upper retainer	: O.E.M.	: O.E.M.
lower retainer	: O.E.M.	: O.E.M.
exterior spring	: O.E.M.	: O.E.M.
interior spring	:	
fitted load / length	: 27kg @ 0.0mm	: 27kg @ 0.0mm
max. load / lift	: 60kg @ 10.0mm	: 60kg @ 10.0mm

REMARKS :

for engines with 6mm valves (not for X18XE1, Z18XE: 5mm valves!)



REMARKS :

- # - camshafts for use in 1.4-1.6-1.8L short block 'ecotec' engines
- CAUTION: Opel has fitted different types of sprockets and camshafts with different dowel pin positions and cam lobes. Therefore it is required to check the std camshafts before ordering for sports applications!
- # FOR COMPETITION APPLICATIONS ONLY. Following details must be verified:
 - the camshafts must turn smooth in the cylinderhead, provide free travel by machining where needed
 - distance between valve seal and retainer at full lift must be 0.6mm at least
 - minimum valve spring travel of 1.0mm at full lift must be provided
 - distance between valve and piston 1.0mm (pref. 1.5mm). check 5-15° before TDC on exhaust, and after TDC on intake
- # ONLY for use in competition engines with independent engine management (throttle position sensor) or carburetors

4602419

hot street - dirt track

Opel X16XEL small block ecotec (1.4-1.6-1.8L)

I-4cyl 1.6L 16v DOHC (DTH/DTH)



intake **exhaust**

camshaft data:

lash ramp	: hydro	hydro
duration @ 0.1mm	: 272°	272°
duration @ 1.0mm	: 235°	235°
valve lift	: 8.90mm	8.90mm
cam lift	:	
lobe angle	: 108°	108°
timing @ 1.0mm	: 9° / 46°	45° / 10°
valve lift @ TDC	: 1.95mm	2.00mm

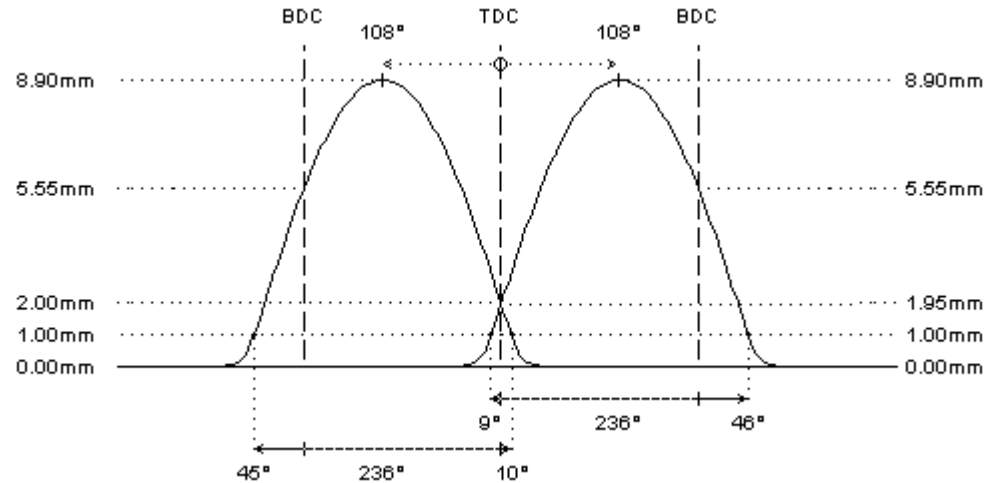
parts setup:

cam wheels :	: CTOP015	: CTOP015
follower	: O.E.M.	: O.E.M.
valve lash	: O.E.M.	: O.E.M.
valve	: O.E.M.	: O.E.M.
valve locks	: O.E.M.	: O.E.M.
upper retainer	: O.E.M.	: O.E.M.
lower retainer	: O.E.M.	: O.E.M.
exterior spring	: O.E.M.	: O.E.M.
interior spring	:	

fitted load / length	: 27kg @ 0.0mm	: 27kg @ 0.0mm
max. load / lift	: 60kg @ 10.0mm	: 60kg @ 10.0mm

REMARKS :

for engines with 6mm valves (not for X18XE1, Z18XE: 5mm valves!)



REMARKS :

- # - camshafts for use in 1.4-1.6-1.8L short block 'ecotec' engines
- CAUTION: Opel has fitted different types of sprockets and camshafts with different dowel pin positions and cam lobes. Therefore it is required to check the std camshafts before ordering for sports applications!
- # ONLY for dirt track applications and pro street use with adjustable engine management or carburetors
- # Due to different dowel pin references on original cam wheels and camshafts, we advise to use adjustable cam wheels ref. **CTOP015** for all applications. In any way, it is necessary to check the valve lift at TDC and adjust if required

4602432

sport

Opel X16XEL small block ecotec (1.4-1.6-1.8L)

I-4cyl 1.6L 16v DOHC (DTH/DTH)



intake **exhaust**

camshaft data:

lash ramp	: hydro	hydro
duration @ 0.1mm	: 247°	240°
duration @ 1.0mm	: 207°	203°
valve lift	: 9.40mm	9.25mm
cam lift	:	
lobe angle	: 114°	96°
timing @ 1.0mm	: -10° / 37°	18° / 5°
valve lift @ TDC	: 0.25mm	1.55mm

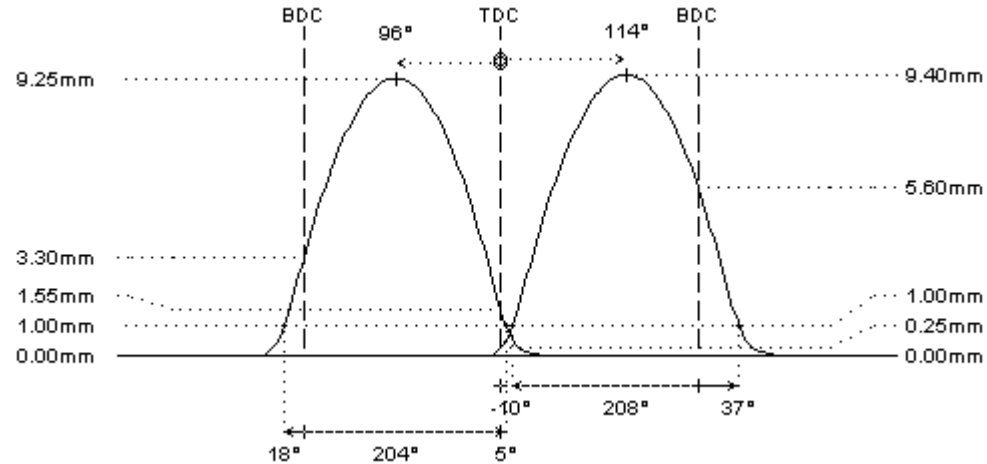
parts setup:

cam wheels :	: CTOP015	: CTOP015
follower	: O.E.M.	: O.E.M.
valve lash	: O.E.M.	: O.E.M.
valve	: O.E.M.	: O.E.M.
valve locks	: O.E.M.	: O.E.M.
upper retainer	: O.E.M.	: O.E.M.
lower retainer	: O.E.M.	: O.E.M.
exterior spring	: O.E.M.	: O.E.M.
interior spring	:	

fitted load / length	: 27kg @ 0.0mm	: 27kg @ 0.0mm
max. load / lift	: 60kg @ 10.0mm	: 60kg @ 10.0mm

REMARKS :

for engines with 6mm valves (not for X18XE1, Z18XE: 5mm valves!)



REMARKS :

- # - camshafts for use in 1.4-1.6-1.8L short block 'ecotec' engines
- CAUTION: Opel has fitted different types of sprockets and camshafts with different dowel pin positions and cam lobes. Therefore it is required to check the std camshafts before ordering for sports applications!
- # Sport version for X1.4XE and X1.8XE with std cam lift of 8.5mm/8.0mm (in/ex)
- # Due to different dowel pin references on original cam wheels and camshafts, we advise to use adjustable cam wheels ref. **CTOP015** for all applications. In any way, it is necessary to check the valve lift at TDC and adjust if required

4602530

hot street - dirt track

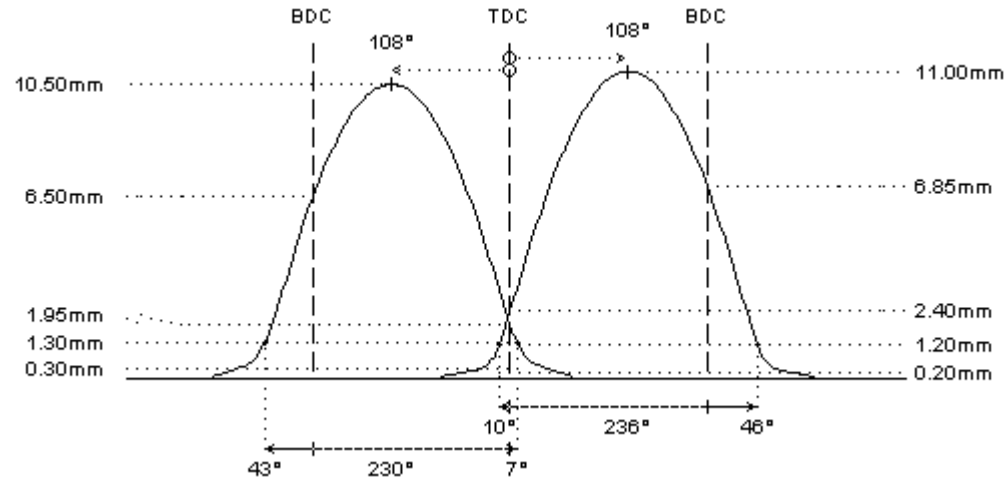
Opel X16XEL small block ecotec (1.4-1.6-1.8L)
I-4cyl 1.6L 16v DOHC (DTH/DTH)



	intake	exhaust
camshaft data:		
lash ramp	: 0.20mm	0.30mm
duration @ 0.1mm	: 274°	273°
duration @ 1.0mm	: 236°	230°
valve lift	: 11.00mm	10.50mm
cam lift	:	
lobe angle	: 108°	108°
timing @ 1.0mm	: 10° / 46°	43° / 7°
valve lift @ TDC	: 2.40mm	1.95mm
parts setup:		
cam wheels :	: CTOP015	: CTOP015
follower	: CC004	: CC004
valve lash	: TS101	: TS101
valve	: O.E.M.	: O.E.M.
valve locks	: O.E.M.	: O.E.M.
upper retainer	: 99245/s	: 99245/s
lower retainer	: remove	: remove
exterior spring	: PAC-E92009	: PAC-E92009
interior spring	: PAC-I92009	: PAC-I92009
fitted load / length	: 33kg @ 34.0mm	: 33kg @ 34.0mm
max. load / lift	: 92kg @ 12.5mm	: 92kg @ 12.5mm

REMARKS :

if required, machine cylinder head and / or use solid shims to adjust spring load #
for engines with 6mm valves (not adapted for X18XE1, Z18XE: 5mm valves!)



REMARKS :

- # - camshafts for use in 1.4-1.6-1.8L short block 'ecotec' engines
- CAUTION: Opel has fitted different types of sprockets and camshafts with different dowel pin positions and cam lobes. Therefore it is required to check the std camshafts before ordering for sports applications!
- # valve clearance is to be adjusted using mechanical lash caps. these can have different shapes according the application:
 - plates available in different diameters and thickness
 - cups for different valve stem diameters. these center on either tappet or valve stem
 - other specific shapes available on request
- # FOR COMPETITION APPLICATIONS ONLY. Following details must be verified:
 - the camshafs must turn smooth in the cylinderhead, provide free travel by machining where needed
 - distance between valve seal and retainer at full lift must be 0.6mm at least
 - minimum valve spring travel of 1.0mm at full lift must be provided
 - distance between valve and piston 1.0mm (pref. 1.5mm). check 5-15° before TDC on exhaust, and after TDC on intake
- # ONLY for use in competition engines with independent engine management (throttle position sensor) or carburettors

4602531

hot street - dirt track

Opel X16XEL small block ecotec (1.4-1.6-1.8L)

I-4cyl 1.6L 16v DOHC (DTH/DTH)



intake **exhaust**

camshaft data:

lash ramp	: 0.20mm	0.20mm
duration @ 0.1mm	: 282°	274°
duration @ 1.0mm	: 244°	236°
valve lift	: 11.50mm	11.00mm
cam lift	:	
lobe angle	: 106°	106°
timing @ 1.0mm	: 16° / 48°	44° / 12°
valve lift @ TDC	: 3.20mm	2.65mm

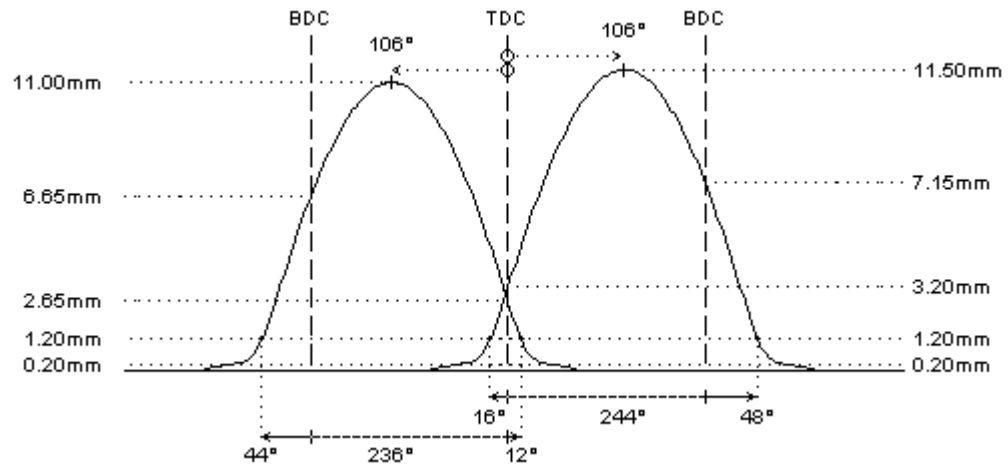
parts setup:

cam wheels :	: CTOP015	: CTOP015
follower	: CC004	: CC004
valve lash	: TS101	: TS101
valve	: O.E.M.	: O.E.M.
valve locks	: O.E.M.	: O.E.M.
upper retainer	: 99245/s	: 99245/s
lower retainer	: remove	: remove
exterior spring	: PAC-E92009	: PAC-E92009
interior spring	: PAC-I92009	: PAC-I92009

fitted load / length	: 33kg @ 34.0mm	: 33kg @ 34.0mm
max. load / lift	: 92kg @ 12.5mm	: 92kg @ 12.5mm

REMARKS :

if required, machine cylinder head and / or use solid shims to adjust spring load #
for engines with 6mm valves (not adapted for X18XE1, Z18XE: 5mm valves!)



REMARKS :

- # - camshafts for use in 1.4-1.6-1.8L short block 'ecotec' engines
- CAUTION: Opel has fitted different types of sprockets and camshafts with different dowel pin positions and cam lobes. Therefore it is required to check the std camshafts before ordering for sports applications!
- # valve clearance is to be adjusted using mechanical lash caps. these can have different shapes according the application:
 - plates available in different diameters and thickness
 - cups for different valve stem diameters. these center on either tappet or valve stem
 - other specific shapes available on request
- # FOR COMPETITION APPLICATIONS ONLY. Following details must be verified:
 - the camshafs must turn smooth in the cylinderhead, provide free travel by machining where needed
 - distance between valve seal and retainer at full lift must be 0.6mm at least
 - minimum valve spring travel of 1.0mm at full lift must be provided
 - distance between valve and piston 1.0mm (pref. 1.5mm). check 5-15° before TDC on exhaust, and after TDC on intake
- # ONLY for use in competition engines with independent engine management (throttle position sensor) or carburettors

4602532

tarmac rally - race

Opel X16XEL small block ecotec (1.4-1.6-1.8L)

I-4cyl 1.6L 16v DOHC (DTH/DTH)



intake **exhaust**

camshaft data:

lash ramp	: 0.20mm	0.20mm
duration @ 0.1mm	: 290°	282°
duration @ 1.0mm	: 252°	244°
valve lift	: 12.00mm	11.50mm
cam lift	:	
lobe angle	: 106°	106°
timing @ 1.0mm	: 20° / 52°	48° / 16°
valve lift @ TDC	: 3.75mm	3.20mm

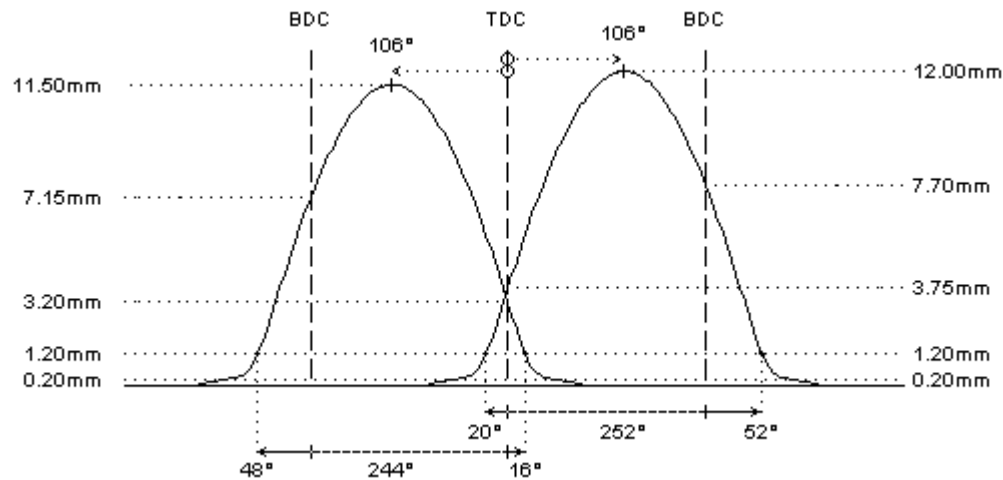
parts setup:

cam wheels :	: CTOP015	: CTOP015
follower	: CC004	: CC004
valve lash	: TS101	: TS101
valve	: O.E.M.	: O.E.M.
valve locks	: O.E.M.	: O.E.M.
upper retainer	: 99245/s	: 99245/s
lower retainer	: remove	: remove
exterior spring	: PAC-E92009	: PAC-E92009
interior spring	: PAC-I92009	: PAC-I92009

fitted load / length	: 33kg @ 34.0mm	: 33kg @ 34.0mm
max. load / lift	: 92kg @ 12.5mm	: 92kg @ 12.5mm

REMARKS :

if required, machine cylinder head and / or use solid shims to adjust spring load #
for engines with 6mm valves (not adapted for X18XE1, Z18XE: 5mm valves!)



REMARKS :

- # - camshafts for use in 1.4-1.6-1.8L short block 'ecotec' engines
- CAUTION: Opel has fitted different types of sprockets and camshafts with different dowel pin positions and cam lobes. Therefore it is required to check the std camshafts before ordering for sports applications!
- # valve clearance is to be adjusted using mechanical lash caps. these can have different shapes according the application:
 - plates available in different diameters and thickness
 - cups for different valve stem diameters. these center on either tappet or valve stem
 - other specific shapes available on request
- # FOR COMPETITION APPLICATIONS ONLY. Following details must be verified:
 - the camshafts must turn smooth in the cylinderhead, provide free travel by machining where needed
 - distance between valve seal and retainer at full lift must be 0.6mm at least
 - minimum valve spring travel of 1.0mm at full lift must be provided
 - distance between valve and piston 1.0mm (pref. 1.5mm). check 5-15° before TDC on exhaust, and after TDC on intake
- # ONLY for use in competition engines with independent engine management (throttle position sensor) or carburettors

4602533

full race

Opel X16XEL small block ecotec (1.4-1.6-1.8L)

I-4cyl 1.6L 16v DOHC (DTH/DTH)



intake

exhaust

camshaft data:

lash ramp	: 0.20mm	0.20mm
duration @ 0.1mm	: 298°	290°
duration @ 1.0mm	: 260°	252°
valve lift	: 12.50mm	12.00mm
cam lift	:	
lobe angle	: 104°	104°
timing @ 1.0mm	: 26° / 54°	50° / 22°
valve lift @ TDC	: 4.55mm	4.00mm

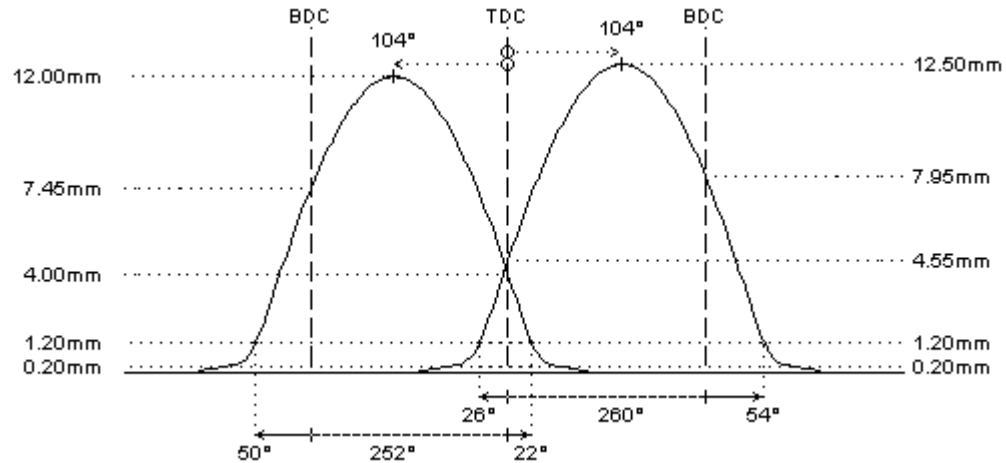
parts setup:

cam wheels :	: CTOP015	: CTOP015
follower	: CC004	: CC004
valve lash	: TS101	: TS101
valve	: O.E.M.	: O.E.M.
valve locks	: O.E.M.	: O.E.M.
upper retainer	: 99245/s	: 99245/s
lower retainer	: remove	: remove
exterior spring	: PAC-E92009	: PAC-E92009
interior spring	: PAC-I92009	: PAC-I92009

fitted load / length	: 33kg @ 34.0mm	: 33kg @ 34.0mm
max. load / lift	: 92kg @ 12.5mm	: 92kg @ 12.5mm

REMARKS :

if required, machine cylinder head and / or use solid shims to adjust spring load #
for engines with 6mm valves (not adapted for X18XE1, Z18XE: 5mm valves!)



REMARKS :

- # - camshafts for use in 1.4-1.6-1.8L short block 'ecotec' engines
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- # FOR COMPETITION APPLICATIONS ONLY. Following details must be verified:
 - the camshafs must turn smooth in the cylinderhead, provide free travel by machining where needed
 - distance between valve seal and retainer at full lift must be 0.6mm at least
 - minimum valve spring travel of 1.0mm at full lift must be provided
 - distance between valve and piston 1.0mm (pref. 1.5mm). check 5-15° before TDC on exhaust, and after TDC on intake
- # ONLY for use in competition engines with independent engine management (throttle position sensor) or carburettors