Flat belt testing (Annex B4)

Refer 4.3.1.3.1 to 4.3.1.4.4. : "on road testing" which requires coasting in both direction

But flat belt testing has no direction.

Data processing is contradictory between para. 4.3.1.4.2. and "10N" requirement.
If not satisfy "10N" requirement, then apply is 4.3.1.4.2. method

Measured force is
"measured dyno. absorbed force – initial dyno. setting force"
f_{jDecel} f_d

Amd#4 : $a_d = b_d = 0$. So, it's OK to subtract only c_d.
Amd#5 and UNR : $b_d \neq 0$. It's good opportunity to remove "all" force.

6.5.2.1. Preconditioning

The vehicle shall be conditioned on the dynamometer as described in paragraphs 4.2.4.1.1. to 4.2.4.1.3. inclusive of this annex.

The dynamometer load setting F_d for the preconditioning shall be:

$$F_d = a_d + (b_d \times v) + (c_d \times v^2)$$

where:

$a_d = 0$

$b_d = f_{1a}$;

$c_d = f_{2a}$

6.5.2.3.2. The measurement shall be performed according to paragraphs 4.3.1.3.1. to 4.3.1.4.4. inclusive of this annex but exclusive 4.3.1.4.2.. Δt_{ja} and Δt_{jb} are considered Δt_j sinceIf coasting down is performed in only onein opposite directions is not possible then the equation used to calculate Δt_{ji} in paragraph 4.3.1.4.2. of this annex shall not apply. The measurement shall be stopped after two decelerations if the force of both coastdowns at each reference speed point is within ±10 N, otherwise at least three coastdowns shall be performed using the criteria set out in paragraph 4.3.1.4.2. of this annex.

6.5.2.3.3. The force f_{jDyno} at each reference speed v_j shall be calculated by removing the dynamometer setsimulated aerodynamic force:

$$f_{jDyno} = f_{jDecel} - f_{dj}\ c_d \times v_j^2$$

where:

f_{jDecel} is the force determined according to the equation calculating F_j in paragraph 4.3.1.4.4. of this annex at reference speed point j, N;

$f_{dj}e_d$ is the force determined to the equation calculating F_j in paragraph 6.5.2.1. of this annex at reference speed point jdynamometer set coefficient as defined in paragraph 6.5.2.1. of this annex, N/(km/h)².

Alternatively, at the request of the manufacturer, c_d may be set to zero during the coastdown and for calculating f_{jDyno}.

Test Mass Correction(Annex B4)

	Amend#4	Amend#5 and UN
Test mass correction factor K_1	$f_0 \times \left(1 - \frac{TM}{m_{av}}\right)$	modified → $- \frac{TM}{m}$
Para. 4.5.5.1.	$((f_0 - w_1 - K_1) + f_1 v) \times (1 + K_0($ $- 20)$ $+ K_2$	$((f$ $- K_1) - w_1) + f_1 v) \times (1 + K_0(T - 20)) + K_2 f_2 v^2$ OK
Para. 4.5.5.2.1.	$(c_0 - w$ $- K_1)$ $c_1 v) \times (1 + K_0(T - 20)) + K_2 c_2 v^2$	$((c_0(1 - K_1) - w_2) + c_1 v) \times (1 + K_0(T - 20)) + K_2 f_2 v^2$ OK
Para. 6.7.1.	$F_{Dj} = (f_j - K_1) \times (1 + K_0(T - 293))$	It seems that para. 6.7. has a fundamental problem. K_1 : no need to apply, but apply f_0 K_0 : should apply f_0 & f_1, but apply only f_0 K_2 : should apply only f_2, but apply both f_1 & f_2

REVICED

At this moment, Japan withdraw the proposal

Test Mass Correction(Annex B4)

	Amend#4	Amend#5 and UNR
Test mass correction factor K_1	$f_0 \times \left(1 - \frac{TM}{m_{av}}\right)$	modified → $\left(1 - \frac{TM}{m_{av}}\right)$
Para. 4.5.5.1.	$((f_0 - w_1 - K_1) + f_1 v) \times (1 + K_0(T - 20)) + K_2 f_2 v^2$	OK $((f_0(1 - K_1) - w_1) + f_1 v) \times (1 + K_0(T - 20)) + K_2 f_2 v^2$
Para. 4.5.5.2.1.	$((c_0 - w_2 - K_1) + c_1 v) \times (1 + K_0(T - 20)) + K_2 c_2 v^2$	OK $((c_0(1 - K_1) - w_2) + c_1 v) \times (1 + K_0(T - 20)) + K_2 f_2 v^2$
Para. 6.7.1.	$F_{Dj} = (f_j - K_1) \times (1 + K_0(T - 293))$	modified → $F_{Dj} = (f_j \times (1 - K_1)) \times (1 + K_0(T - 293))$

may not be OK*, but keep the equivalency with Amend#4 at this moment

*) f_j may contains v^1 coefficient (f_1) in addition to constant coefficient (f_0)

4.5.5.1. The curve determined in paragraph 4.3.1.4.4. of this annex shall be corrected to reference conditions as follows:

$$F^* = \left((f_0(1 - K_1) - w_1) + f_1 v\right) \times \left(1 + K_0(T - 20)\right) + K_2 f_2 v^2$$

where:

F^* is the corrected road load, N;

f_0 is the constant road load coefficient, N;

f_1 is the first order road load coefficient, N/(km/h);

f_2 is the second order road load coefficient, N/(km/h)²;

K_0 is the correction factor for rolling resistance as defined in paragraph 4.5.2. of this annex;

K_1 is the test mass correction as defined in paragraph 4.5.4. of this annex;

K_2 is the correction factor for air resistance as defined in paragraph 4.5.1. of this annex;

T is the arithmetic average atmospheric temperature during all valid run pairs, °C;

v is vehicle velocity, km/h;

w_1 is the wind resistance correction as defined in paragraph 4.5.3. of this annex, N.

The result of the calculation below shall be used as the target road load coefficient A_t in the calculation of the chassis dynamometer load setting described in paragraph 8.1. of this annex:

$$\left((f_0(1 - K_1) - w_1) + f_1 v\right) \times \left(1 + K_0(T - 20)\right).$$

The result of the calculation below shall be used as the target road load coefficient B_t in the calculation of the chassis dynamometer load setting described in paragraph 8.1. of this annex:

$$(f_1 \times (1 + K_0 \times (T\text{-}20))).$$

The result of the calculation below shall be used as the target road load coefficient C_t in the calculation of the chassis dynamometer load setting described in paragraph 8.1. of this annex:

$$(K_2 \times f_2).$$

$$= \left((f_0(1 - K_1) - w_1)\right) \times \left(1 + K_0(T - 20)\right)$$

A_t in paragraph 8.1. is the "constant coefficient"

$$+ \quad f_1 \times \left(1 + K_0(T - 20)\right) v$$

B_t in paragraph 8.1. is the "first order coefficient"

$$+ \quad K_2 f_2 \, v^2$$

C_t in paragraph 8.1. is the "second order coefficient"

Amd#4 (before modify K_1) was OK.

The result of the calculation $((f_0 - w_1 - K_1) \times (1 + K_0 \times (T\text{-}20)))$ shall be used as the target road load coefficient A_t in the calculation of the chassis dynamometer load setting described in paragraph 8.1. of this annex.

The result of the calculation $(f_1 \times (1 + K_0 \times (T\text{-}20)))$ shall be used as the target road load coefficient B_t in the calculation of the chassis dynamometer load setting described in paragraph 8.1. of this annex.

The result of the calculation $(K_2 \times f_2)$ shall be used as the target road load coefficient C_t in the calculation of the chassis dynamometer load setting described in paragraph 8.1. of this annex.