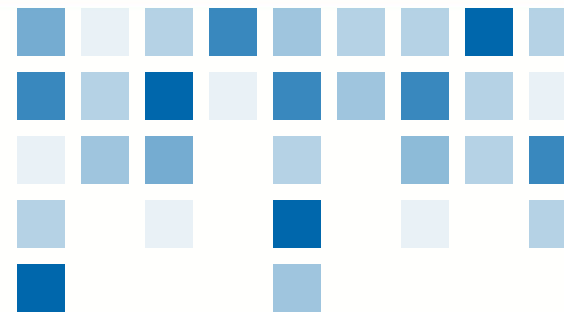
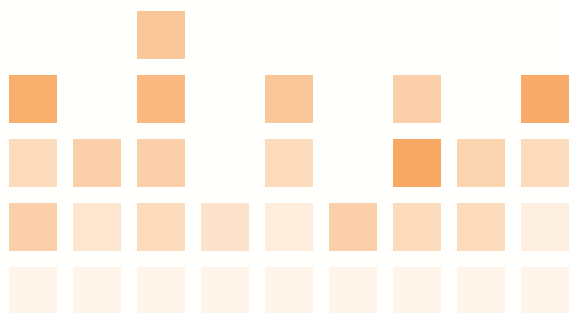




SHACMAN 汽车电器知识培训

F2000-F3000

陕汽进出口公司服务部培训科



第二十二课 车速里程表详解



1、车速里程表工作原理：

车速信号来自变速箱输出法兰附近的车速传感器，通过行驶记录仪底盘线束，驾驶室线束传递给车速里程表。传感器输出信号为脉冲信号，车速表根据单位时间内的脉冲数、速比信息计算出当前车速并显示出来。

The speed signal originates from a speed sensor located near the output flange of the transmission. It is transmitted to the speedometer through the chassis wiring harness and then to the cabin wiring harness via the vehicle's driving recorder. The output signal of the sensor is in the form of pulses. The speedometer calculates the current vehicle speed based on the number of pulses received within a unit of time and the speed ratio information, and then displays it.



组合仪表有分体式和整体式两种，车速里程表在组合仪表右侧，显示车速范围 0~140 公里/小时。

（WP 国三车型的车速表还向发动机ECU传递信号，16500线束也给ECU传递车速信号。）通常车速表的背面有拨码开关，用于调节车速表的速比（因轮胎直径和桥速比的不同，变速箱输出轴每转一圈车辆行驶距离不同，所以需要调节速比）。在车速表后都贴有标签，标明此车的拨码位置及 K 值。假设车速调节错误，K 值高于实际值，会导致车速表指示车速偏低，反之 K 值低于实际值，会导致车速指示偏高，车速和行驶里程不准确。

The instrument cluster comes in two types: separated and integrated. The speedometer is located on the right side of the instrument cluster and displays a speed range of 0 to 140 kilometers per hour. (For WP Euro Standard III models, the speedometer also transmits signals to the engine ECU, and the 16500 wiring harness also transmits speed signals to the ECU.) Typically, the back of the speedometer has a dip switch used to adjust the speed ratio. This adjustment is necessary because differences in tire diameter and axle speed ratio affect the distance traveled per revolution of the transmission output shaft. A label is usually affixed to the back of the speedometer, indicating the dip switch position and K value for the vehicle. If the speed adjustment is incorrect, with the K value higher than the actual value, it will result in the speedometer indicating a lower speed. Conversely, if the K value is lower than the actual value, it will result in the speedometer indicating a higher speed, leading to inaccuracies in both speed and distance traveled.





2、车速里程表K值计算和查询：

① 车速里程表K值计算公式：The formula for calculating the K value of the speedometer is:

$$K = \frac{8 \times 10^6 \times \text{后桥速比}}{\text{变速器一级传动比} \times \pi \times \text{轮胎直径}}$$



② 根据上述公式计算所得的K值，在拨码表格中查询其值区间，根据其区间值选择拨码（表格中的数字表示需将该位拨到ON档，其余为OFF），注意拨码时需要完全断电操作。

- ③ 其中：
- 1) 对于电子式（新式）车速传感器，一级传动比=1；
 - 2) 对于机械式（老式）车速传感器，一级传动比=1.33；
 - 3) 对于军车带分动器的车型：

ZQC1200和ZQC1C120系列：一级传动比=1；

ZQC1600和ZQC2000系列：一级传动比=0.899。

According to the formula, calculate the K value and then refer to the dip switch table to find the corresponding value range. Based on this range, select the appropriate dip switch settings (the numbers in the table indicate which switches should be turned to the ON position, with the rest remaining OFF). Make sure to perform the dip switch operation with the power completely disconnected.

Specifically:

For electronic (new type) speed sensors, the primary drive ratio = 1.

For mechanical (old type) speed sensors, the primary drive ratio = 1.33.

For military vehicles with transfer cases:

ZQC1200 and ZQC1C120 series: Primary drive ratio = 1.

ZQC1600 and ZQC2000 series: Primary drive ratio = 0.899

轮胎型号	桥速比	K值	七位	八位	轮胎型号	桥速比	K值	七位	八位
10.00-20/ 10.00R20	3.08	5577	13467	24578	12.00-24/ 12.00R24	3.08	4803	12367	23478
	3.7	6700	167	278		3.7	5770	1356	2467
	3.866	7000	23456	34567		3.866	6029	13	24
	4.11	7442	23567	34678		4.11	6409	14	25
	4.111	7444	23567	34678		4.111	6411	14	25
	4.262	7717	2367	3478		4.262	6646	15	26
	4.266	7725	2367	3478		4.266	6653	15	26
	4.42	8003	24567	35678		4.42	6893	234567	345678
	4.625	8375	246	357		4.625	7212	2346	3457
	4.769	8635	2567	3678		4.769	7437	23567	34678
	4.8	8692	2567	3678		4.8	7485	2356	3467
	5.262	9528	3456	4567		5.262	8206	245	356
	5.73	10376	3567	4678		5.73	8936	25	36
	5.92	10720	357	468		5.92	9232	27	38
	6.72	12168	45	56		6.72	10480	3567	4678
	6.733	12192	45	56		6.733	10500	3567	4678



3、里程表车速拨码参数设置说明列表：

仪表	车型	参数设置	设置操作
分体式	EGR/国二/天然气	K 值	车速拨码在车速里程表端盖上的 7 位拨码开关设置
步进电机仪表	德龙共轨发动机车型仪表 (非 CAN 仪表、非牵引车)	K 值	车速拨码在 8 位车速信号设置器上设置
SZ958000751/DZ91189582124 DZ91189582123 /DZ91189582122	新奥龙组合仪表	K 值	车速拨码在组合仪表背面的 8 位拨码开关上设置
DZ93189584130	德龙 EGR/国二 CAN 仪表	K 值、发动机速比	车速拨码在组合仪表背面的 8 位拨码开关设置； 转速拨码在组合仪表背面的 6 位拨码开关设置
DZ93189584140	德龙电控发动机 (潍柴、康明斯、LNG、CNG) CAN 仪表	K 值、发动机类型	车速拨码在组合仪表背面的 8 位拨码开关设置； 发动机类型在仪表液晶上设置
DZ96189584110	新 M3000 左置车型组合仪表	K 值、发动	车速表 K 值和发动机速比在仪

	(不带 CAN)	机速比	表液晶上设置
DZ96189584130	新 M3000 左置 EGR/国二车型 CAN 组合仪表	K 值、发动机速比	车速表 K 值和发动机速比在仪表液晶上设置
DZ96189584140	新 M3000 左置电控发动机车型 (潍柴、康明斯、LNG、CNG) CAN 仪表	K 值、发动机类型	发动机类型、K 值在仪表液晶上设置
DZ97189584100 /DZ97189584200	HX 电控发动机仪表 (带车身控制器)	K 值、发动机类型	发动机类型、K 值在仪表液晶上设置
DZ97189584120 /DZ97189584130	HX 车型组合仪表 (不带车身控制器)	发动机类型、K 值、发动机速比	发动机类型、K 值、发动机速比在仪表液晶上设置
DZ96189584120	新 M3000 右置、LE 车型仪表	K 值、发动机类型	发动机类型、K 值在仪表液晶上设置
DZ95189582210 /DZ95189582220 DZ95189582230 /SZ958000730	德龙共轨牵引车	K 值	K 值通过车身控制器 (CBCU/CUFU) 刷写



以下是常见里程表拨码参数设置详细说明：

① 分体式仪表：车速拨码在车速里程表端盖上的7位拨码开关进行设置（见图1）：

操作步骤： 断钥匙电 断开车速里程表底盖上的三个插接器 按正确拨码号进行拨码 接上车速里程表底盖上的三个插接器
上钥匙电完成

Below are detailed instructions for common odometer dip switch parameter settings:

Separated instrument cluster: The speed dip switch is set using the 7-position dip switch on the end cover of the speedometer (see Figure 1).

Operation Steps:

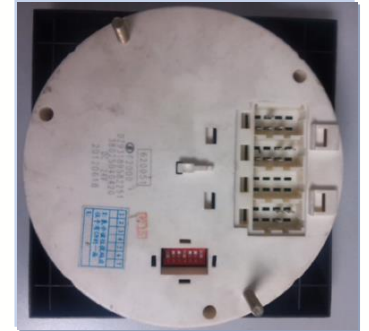
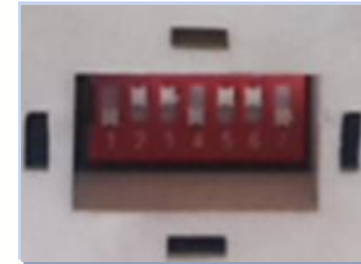
Turn off the ignition.

Disconnect the three connectors on the bottom cover of the speedometer.

Set the dip switches according to the correct dip switch number.

Reconnect the three connectors on the bottom cover of the speedometer.

Turn on the ignition to complete the process.sssssss



② 对于共轨发动机车型仪表（非CAN仪表、非牵引车）：车速拨码在8位车速信号设置器上进行设置（见图2、图3）：

For common rail engine models (non-CAN instruments, non-tractor vehicles), the speed dip switch is set using the 8-position speed signal setter (see Figures 2 and 3):



图2：车速信号设置器



图3：拨码示意图（拨码为36）

断钥匙电 打开车速信号设置器盖子 按正确拨码号进行拨码 扣上盖子 上钥匙电完成

Turn off the ignition. Open the cover of the speed signal setter. Set the dip switches according to the correct dip switch number. Close the cover. Turn on the ignition to complete the process.



③ 新奥龙组合仪表：车速拨码在组合仪表背面的8位拨码开关（见图4）进行设置。

New Aolong instrument cluster: The speed dip switch is set using the 8-position dip switch on the back of the instrument cluster (see Figure 4)



图4 车速拨码

- 零件号： SZ958000751， 名称：组合仪表（S2000、步进电机）；
零件号： DZ91189582124， 名称：组合仪表（S2000、步进电机、4:1）；
零件号： DZ91189582123， 名称：组合仪表（S2000、步进电机、3.39:1）。
零件号： DZ91189582122， 名称：组合仪表（S2000、步进电机、3:1）。

Part numbers and names:

Part number: SZ958000751, Name: Instrument Cluster (S2000, Stepper Motor)

Part number: DZ91189582124, Name: Instrument Cluster (S2000, Stepper Motor, 4:1)

Part number: DZ91189582123, Name: Instrument Cluster (S2000, Stepper Motor, 3.39:1)

Part number: DZ91189582122, Name: Instrument Cluster (S2000, Stepper Motor, 3:1)



④ 德龙EGR发动机CAN仪表：车速拨码在组合仪表背面的8位拨码开关（见图5）进行设置，转速拨码在组合仪表背面的6位拨码开关（见图6）进行设置。

零件号：DZ93189584130，名称：组合仪表（机械泵、CAN）。

Delong EGR Engine CAN Instrument Cluster: The speed dip switch is set using the 8-position dip switch on the back of the instrument cluster (see Figure 5). The tachometer dip switch is set using the 6-position dip switch on the back of the instrument cluster (see Figure 6).

Part number: DZ93189584130, Name: Instrument Cluster (Mechanical Pump, CAN).



图 5 车速拨码

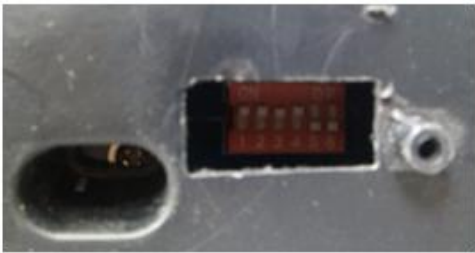


图 6 转速拨码

转速拨码表：

仪表参数	拨盘位置						适用发动机
	1	2	3	4	5	6	
4:1, 6对极	X	X	X	X	X	X	WP12EGR/WD12
3. 793:1, 6对极	X	X	X	X	X		
3. 63:1, 6对极	X	X	X	X		X	
3. 39:1, 6对极	X	X	X	X			WP10EGR/WD615
3. 365:1, 6对极	X	X	X		X	X	
3. 228:1, 6对极	X	X	X		X		
3. 15:1, 6对极	X	X	X			X	
3:1, 6对极	X	X	X				WP7-EGR

表中常用的转速表拨码是，WP10EGR/WD615 发动机拨1234，WP12EGR/WD12 发动机拨123456。

In the table, the commonly used tachometer dip switch settings are as follows:

For WP10EGR / WD615 engines, set dip switches 1, 2, 3, and 4 to ON.

For WP12EGR / WD12 engines, set dip switches 1, 2, 3, 4, 5, and 6 to ON.



⑤ 德龙电控CAN仪表：车速拨码在组合仪表背面的8位拨码开关（见图7）进行设置，发动机模式在仪表液晶上进行设置。

零件号：DZ93189584140，名称：组合仪表（电控发动机、CAN）。

Delong Electronic Control CAN Instrument Cluster: The speed dip switch is set using the 8-position dip switch on the back of the instrument cluster (see Figure 7). The engine mode is set on the instrument cluster's LCD screen.

Part number: DZ93189584140, Name: Instrument Cluster (Electronic Control Engine, CAN).



图7 车速拨码

