

北京华德液压工业 集团有限责任公司 BEIJING HUADE HYDRAULIC INDUSTRIAL GROUP CO.,LTD.	<b>A6VE内藏式变量马达</b> Plug-In Variable Displacement Motor A6VE 弯轴结构轴向锥形柱塞元件 axial tapered piston rotary group of bent axis design 用于安装在机械齿轮箱中 for mounting in mechanical gearboxes		RC91200/12.2004
	规格 Size 55-160	公称压力31.5MPa最高压力35MPa Nominal Pressure Peak press	替代: ReplaceRC91200/09.2003



A6VE内藏式变量马达装有一套弯轴结构的标准轴向锥形柱塞旋转组件。

液压内藏式马达主要用来安装在机械齿轮箱中，例如，履带驱动轮箱。

马达的安装法兰设计在壳体的中间，这种结构允许马达几乎完全装进机械齿轮箱，从而提供一个十分紧凑的部件。

内藏式马达部件的特殊优点是：

- 整个部件，已组装和试验
- 易于组装，仅需“插入”机械齿轮箱
- 不需要考虑安装公差

The variable displacement plug-in motor A6VE is equipped with a standard axial tapered piston rotary group of bent axis design.

Hydrostatic plug-in motors are intended primarily for installation in mechanical gearboxes, e.g. track drive gear boxes.

The design of the motor with the mounting flange in the center of the housing allows it to be almost fully integrated into a mechanical gearbox to give an extremely compact unit.

The particular advantages of the plug-in motor over kit designs are:

- complete unit, ready assembled and tested.
- easy assembly simply plug-in to mechanical gearboxes.
- no installation tolerances to consider.

# A6VE内藏式变量马达 Plug-In Variable Displacement Motor A6VE

## 型号说明 Type Code

A6V E 80 HA1 2 F Z 1 039

### 马达型号 Motor Type

变量马达 Variable displacement motor

A6V

### 安装型式 Mounting Type

内藏式E plug-in E

E

### 规格 Size

排量 /ml/r displacement

1.5-54.8ml/r

55

23-80ml/r

80

30.8-107ml/r

107

46-160ml/r

160

### 变量方式 Control Device

液控变量

控制压差  $\Delta p=1\text{MPa}$

HD1

Hydraulic control, pilot pressure related

Pilot pressure Increase

控制压差  $\Delta p=2.5\text{MPa}$

HD2

Pilot pressure Increase

恒压 Constant pressure

高压自动变量

不带超调 With out override

HA1

Automatic control, high pressure related

升压 Pressure increase

$\Delta p=10\text{MPa}$

HA2

不带超调

With out override

电控双速变量

Electrical 2-speed 12v control(with switching solenoid)24

ES1

Electrical control 12v (with proportional solenoid) 24v

ES2

电控比例变量

Manual control

EP1

(with handwheel)

EP2

手动变量

MA

### 最小排量设定值

Min. Swept Volume Setting

例: Example.

$V_{gmin}=39\text{ml/r}$

039

例: Example.

$V_{gmin}=54\text{ml/r}$

054

### 装配型式 Assembly Type

解释见变量说 For explanation see de

1

明及元件尺寸 scription of control device and unit dimensions

2

### 轴伸

Shaft End

平键 GB 1096-79

Keyed parallel shaft

P

花键 DIN 5480

Splined shaft

Z

花键 GB 3478.1-83

Splined shaft

S

### 油口连接

Pipe Connections

SAE 法兰, 侧面

SAE flange, on side

F

螺纹连接, 侧面

Metric threads, on side

G

### 结构型式 Series

结构 2, 规格

Series 2, sizes

55.80.107.160

2

订货示例: A6V.E.80.HD1.2.F.Z.2.039

Ordering Example A6V.E.80.HD1.2.F.Z.2.039

斜轴变量马达 A6V, 内藏式 E, 规格 80, 液控变量,  $\Delta p=1\text{MPa}$ , 结构 2, 侧面 SAE 法兰连接, 德标花键, 第 2 种装配型式。

最小排量  $V_{gmin}=39\text{ml/r}$

Axial-piston-variable displacement motor A6V, plug-in E size 80, with hydraulic control, pilot pressure related,  $\Delta p=1\text{MPa}$ , series 2. SAE flange connections on side, splined shaft, assembly type 2, min. swept volume setting  $V_{gmin}=39\text{ml/r}$

# A6VE内藏式变量马达 Plug-In Variable Displacement Motor A6VE

## 技术参数 Technical Data

### 工作压力范围: Operating Pressure Range

A或B口压力: Pressure at port A or B

额定压力 Nominal pressure  $P_n=31.5\text{MPa}$

最高压力 Peak pressure  $P_{max}=35\text{MPa}$

A、B油口压力总和不得超过63MPa, 每侧油口压力最高40MPa。

The sum of the pressures at ports A and B should not exceed

63MPa. (Individual pressure at either port max.35MPa)

泄油压力: Leakage oil Pressure:

允许T口最大泄油压力

Maximum permissible leakage oil pressure (at Port T)

$P_{abs} 0.2\text{MPa}$

### 油温范围: Fluid Temperature Range

$t_{min} -25^\circ\text{C}$

$t_{max} +80^\circ\text{C}$

### 粘度范围: Viscosity Range:

$\nu_{min} 10\text{mm}^2/\text{s}$

$\nu_{max}$  (短时)(for short periods)  $1000\text{mm}^2/\text{s}$

### 最佳工作粘度: Optimum Operating Viscosity:

$\nu_{opt} 16-36\text{mm}^2/\text{s}$

### 油液选择: Fluid Recommendation

工作温度 推荐粘度等级符合DIN51519

Operating Recommended Viscosity grade

temperature to DIN51519

range ISO(VG)

30-40°C	VG22=22mm <sup>2</sup> /s	at40°C
40-50°C	VG32=32mm <sup>2</sup> /s	at40°C
50-60°C	VG46=46mm <sup>2</sup> /s	at40°C
60-70°C	VG68=68mm <sup>2</sup> /s	at40°C
70-80°C	VG100=100mm <sup>2</sup> /s	at40°C

### 液压油的过滤:

推荐过滤精度为10μm。

亦可使用25-40μm的,

但使用10μm的可以延长

使用寿命(降低磨损)。

### Filtration of Hydraulic Fluid

Recommended filtration 10 μm.

Coarser filtration of 25 to 40 μm is

possible, however longer service life

is achieved with filtration of 10 μm.

(reduced wear).

### 转速范围:

最低转速没有限制, 在要求十分均匀的转速时,  $n_{min}$  不小于50r/min。

最高转速由来自泵的最大流量和变时马达的最小排量确定。

最小排量则由一个调节螺钉限位, 所以变量马达不会超速运转。

最高允许转速见技术参数表。

### Speed Range

No limitation on minimum Speed  $n_{min}$ . Where very even speeds are required,  $n_{min}$  should not be less than 50r/min.

The maximum flow from the pump and the minimum swept volume of the variable motor together determine the maximum output speed.

The min swept volume is limited mechanically by means of an adjustment screw so that the max. permissible speeds (of the variable motor and the driven unit) cannot be exceeded.

See data table for max. permissible speeds.

### 流量

$$\text{Swept Volume } Q = \frac{V_g \cdot n}{1000 \cdot \eta_v} \quad [\text{L/min}]$$

### 输出转速

$$\text{Output Speed } n = \frac{Q \cdot 1000 \cdot \eta_v}{V_g} \quad [\text{r/min}]$$

### 输出扭矩

$$\text{Output Torque } M = \frac{V_g \cdot \Delta p \cdot \eta_{mh}}{2\pi} = \frac{1.59 V_g \cdot \Delta p \cdot \eta_{mh}}{10} \quad [\text{Nm}]$$

或 or

$$M = \frac{K_M \cdot \Delta p \cdot \eta_{mh}}{10} \quad [\text{Nm}]$$

### 输出功率

$$\text{Output Power } P = \frac{M \cdot n}{9549} = \frac{Q \cdot \Delta p}{60} \cdot \eta_t \quad [\text{KW}]$$

$V_g$ =最大排量(ml/r)

max geometry displacement[ml/r]

$M$ =扭矩(Nm)

torque[Nm]

$\Delta p$ =压差(MPa)

differential pressure[MPa]

$n$ =转速(r/min)

speed[r/min]

$\eta_v$ =容积效率

volumetric efficiency

$\eta_{mh}$ =机械效率

mechanical-hydraulic efficiency

$\eta_t$ =总效率

overall efficiency

## 技术参数表 Technical Data

规格	size		55	80	107	160	
排量	Displacement	$V_{gmax}$	ml/r	54.8	80	107	160
		$V_{gmax}$	ml/r	15.8	23	30.8	46
最大允许流量	Max. Permissible Swept volume	$Q_{gmax}$	l/min	206	268	321	424
最高转速	Max. speeds (在 at $Q_{max}$ 下)	$n_{max}$ 在 at $V_{gmax}$	r/min	3750	3350	3000	2650
		$n_{max}$ 在 at $V_g < V_{gmax}$	r/min	5000	4500	4000	3500
扭矩常数	Torque constants	$M_x$ 在 at $V_{gmax}$	Nm/MPa	8.701	12.75	16.97	25.41
		$M_x$ 在 at $V_{gmin}$	Nm/MPa	2.511	3.73	4.9	7.35
最大扭矩	Max. torque (在 at $\Delta p=35\text{MPa}$ )	$M_{max}$ 在 at $V_{gmax}$	Nm	304	446	594	889
		$M_{max}$ 在 at $V_{gmax}$	Nm	88	130	171	257
最大输出功率(在 35MPa 和 $Q_{max}$ 下)	Max. output power(at 35MPa and $Q_{max}$ )		kW	120	156	187	247
惯性矩	Moment		kgm <sup>2</sup>	0.0042	0.008	0.0127	0.0253
重量	Weight		kg	26	34	45	64

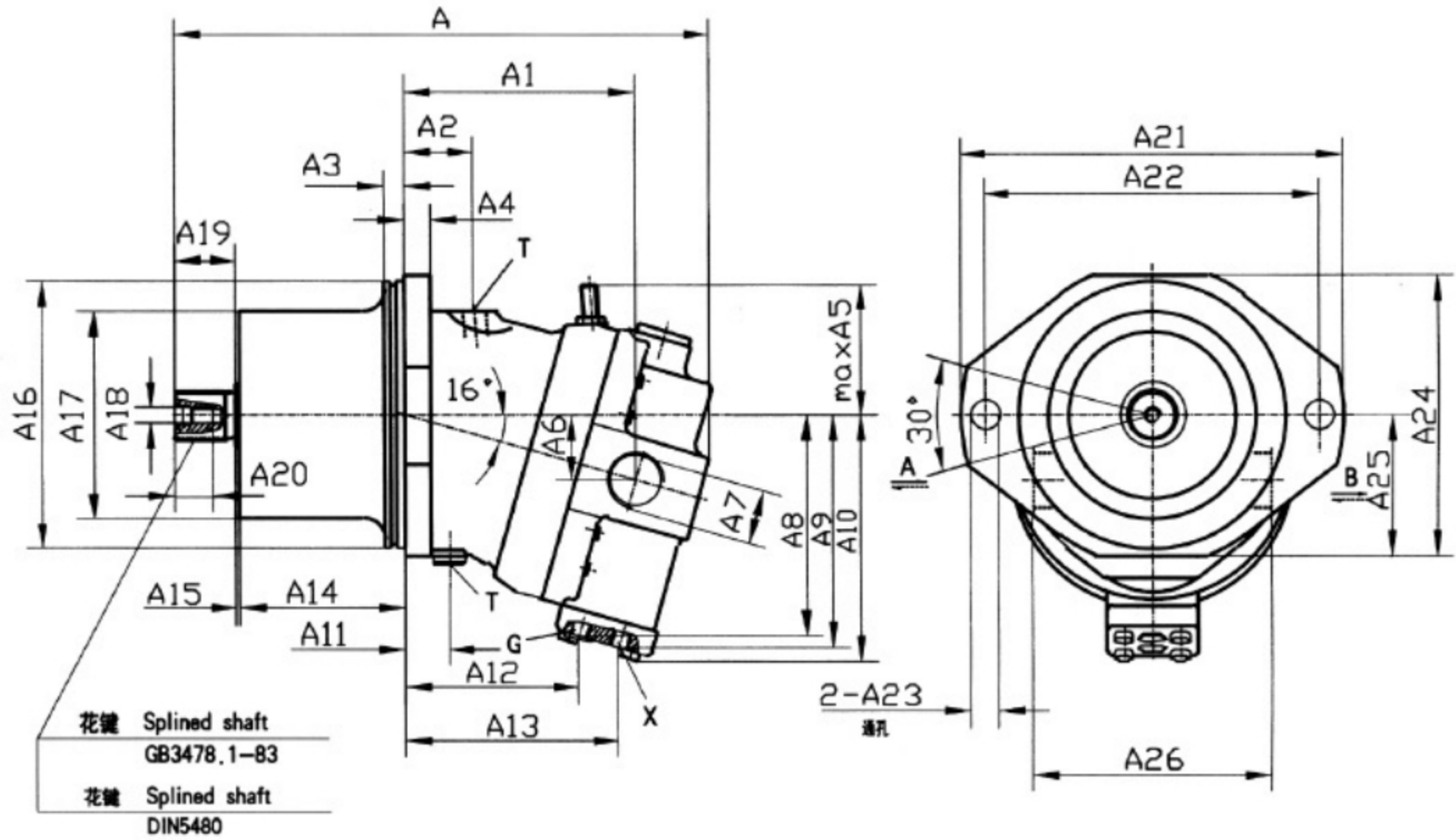
# A6VE内藏式变量马达 Plug-In Variable Displacement Motor A6VE

## 外形尺寸 Unit Dimensions

规格Size 55-160

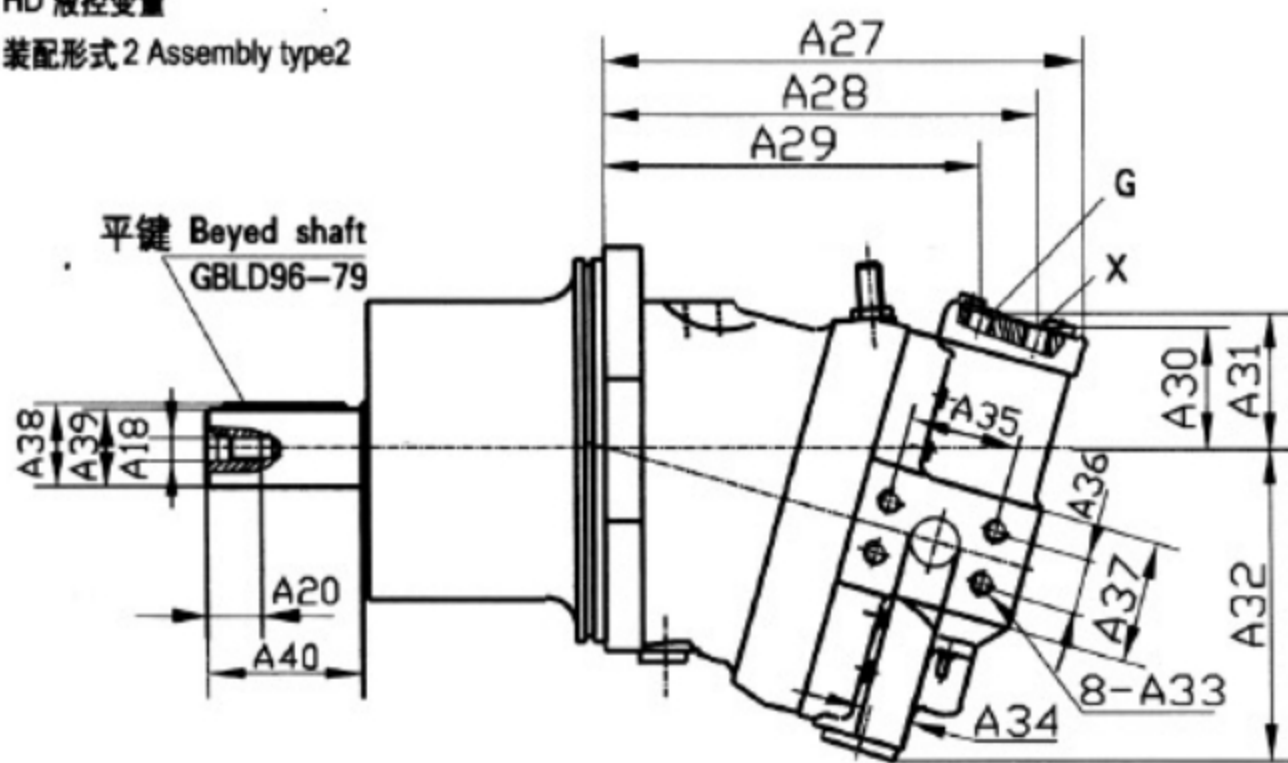
HA 高压自动变量 Control

装配形式1 Assembly type1



HD 液控变量

装配形式2 Assembly type2



- |                                    |   |
|------------------------------------|---|
| A,B 工作油口                           | service port  |
| G 多元件同步控制<br>和遥控压力<br>油口 M14 × 1.5 | port for synchronous<br>control of multiple<br>units and for<br>remote control pressure |
| X 先导油口<br>M22 × 1.5                | pilot pressure  |
| T 壳体、泄油口<br>M14 × 1.5              | case drain  |

# A6VE内藏式变量马达 Plug-In Variable Displacement Motor A6VE

## 规格

Size	A	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18
55	319.1	141	18	15	18	75	40	33	133	141	153	18	100	127	90	1.1	160	120	M12
80	382	160	18	15	20	95	46	42	152	161	177	25	115	145	108	3	190	139.3	M12
107	395	171	20	15	20	98	49	42	164	173	188	20	129	158	121.8	1.2	200	155	M12
160	447.2	200.4	59.4	15	20	108	57	48	182.5	193	201	23.3	148.9	184.4	121.7	3.5	200	170	M16

## 规格

深

size	A19	A20	A21	A22	A23	A24	A25	A26	A27	A28	A29	A30	A31	A32	A33	deep	A34	A35	A36
55	35	28	235	200	18	166	83	142	204	183	156	52	60	132	M10	17	20	50.8	23.8
80	53	28	260	224	22	196	98	172	229.5	208	179	59	68	137	M12	18	25	57.2	27.8
107	45	28	286	250	22	208	104	178	248	226	196	63	71	162	M12	18	25	57.2	27.8
160	55	36	290	250	22	224	120	208	286.4	258.4	223.4	66	77	182	M14	21	32	66.7	31.8

## 规格

平键

花键

花键

Keyed

splined

splined

size	A37	A38	A39	A40	A	B	T	GB1096-79	DIN580	GB3478.1-83
55	53	32.9	30	60	M33×2	M33×2	M18×1.5	键8×50	W30×2×1×9g	EXT14Z×2m×30p×5h
80	64	38	35	70	M42×2	M42×2	M18×1.5	键10×56	W35×2×16×9g	EXT16Z×2m×30p×5h
107	64	43.1	40	80	M42×2	M42×2	M18×1.5	键12×63	W40×2×18×9g	EXT18Z×2m×30p×5h
160	70	53.5	50	100	M48×2	M48×2	M22×1.5	键14×80	w50×2×24×9g	EXT24Z×2m×30R×5h

## 规格

G

X

## size

55	M14×1.5	M14×1.5
80	M14×1.5	M14×1.5
107	M14×1.5	M14×1.5
160	M14×1.5	M14×1.5