http://www.power-trax.de info @ power-trax.de Tel.: +49 - (0) 906 / 9999 849 17 Mobil: +49 - (0) 163 / 4321 435 Fax: +49 - (0) 906 / 9999 849 18 Dietrich-Bonhoeffer-Str. 28 D-86609 Donauwoerth



Hydrostatic Gearbox Systems

for custom drivetrains and vehicles





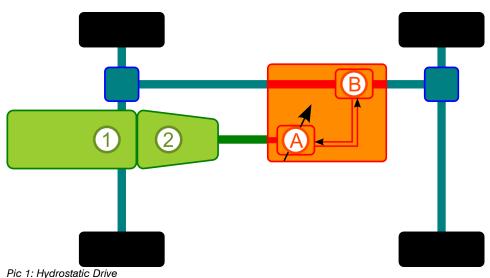
2014 Catalogue

All prices net, excl. VAT - General terms and conditions of business apply power-trax.de Special Duty Vehicles - technical Distribution Y:\Graphs\Power-Trax\Werbung\Kataloge\Hydrostats_en_2014-0.doc http://www.power-trax.de info @ power-trax.de Tel.: +49 - (0) 906 / 9999 849 17 Mobil: +49 - (0) 163 / 4321 435 Fax: +49 - (0) 906 / 9999 849 18 Dietrich-Bonhoeffer-Str. 28 D-86609 Donauwoerth



Basics on Hydrostatic Drivetrains

Here we have some basic introduction in the working principle of a hydrostatic gearbox and drive.



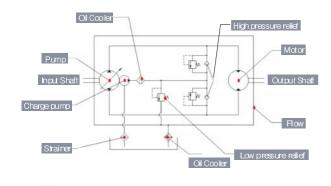
1: Engine - 2: Clutch - 3: Transfer Gearbox - A: variable pump - B: hvdraulic motor. fully reversable

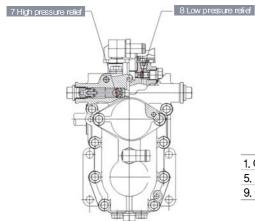
A hydrostatic drive and gearbox consists of these major parts:

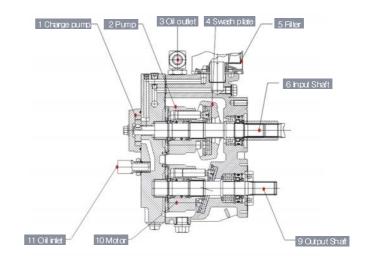
Part	Details			
1	Engine / prime mover: generates mechanical power. The engine can run diesel, petrol, gas or similar. It is even thinkable to have a water wheel or other sources of rotating power to adapt to a hydrostat to generate versatile power.			
2	Clutch to seperate the engine from the hydrostatic gearbox			
Α	The internal hydraulic pump of the Hydrostat. The pump generates an oil flow that is complete variable backwards and forwards by mechanical control			
В	The internal hydraulic motor. This motor is bidirectional and drives the output shaft forward or backward, depending on the oil flow. In total this system gives a fully-reversable, fully variable transmission-ratio gearbox.			

HST Hydro-Static Transmissions









1. Charge pump	2, Pump	3. Oil outlet	4. Swash plate
5. Filter	6. Input Shaft	7.Highpressurerelief	8. Low pressure relief
9. Output Shaft	10. Motor	11. Oil inlet	

:: FEATURES

Hydrostatic transmission is a hydraulic power transfer device composed of HST hydraulic pump and motor in a single house. Pump displacement is varied upon the swash plate degree,

The pump is equipped with varying displacement swash plate type pistonn and the motor is desined as a fixed displacement type.

Motor rotation either for clockwise or counterclockwise direction can be changeable from stop to maximum number of rpm according to the change of swash plate degree of pump.

With HST, forward, reverse and stop mode are performed using simple lever control, velocity proportional to lever handing range makes easy use of transporting system for agricultural and construction machines.

:: ORDERING CODE

DHPVMF	23	L	01
PUMP:VARABLE MOTORFIXED	PUMP DISPLACEMENT	COUNTER CLOCKWISE R CLOCKWISE	SERIES NUMBER

:: SPECIFICATIONE

MODEL	PUMP DISPLACEMENT (cc/rev)	MOT OR DISPLACEMENT (cc/rev)	MAX INPUT SPEED (r · p · m)	MAX OUTPUT SPEED (r · p · m)	MAX PRESSURE (kgf/cm [*])	MAX OUTPUT TORQUE (kgf/m)	CHARGE PUMP DISPLACEMENT (cc/rev)	WEIGHT (kg)
DHPVMF-18-L-01	0~18.3	18,3	3200	0~3200	280~350	10 <u>.</u> 5	6.2	15
DHPVMF-23-L-01	0~23.7	23.7	3200	0~3200	280~350	12,5	62	23
DHPVMF-30-L-01	0~29.3	29 <u>,</u> 3	3000	0~3000	280~350	16 <u>5</u>	6.2	25
DHPVMF-37-L-01	0~37.0	37.0	3000	0~3000	280~350	21,5	7,5	29

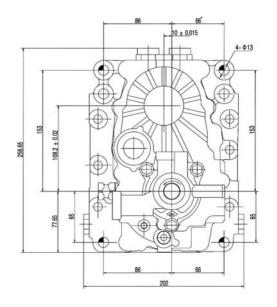
If you would like to know more detailed specifications, please visit our website (www,daihohyd,co,kr)and refer to E-catalogue,

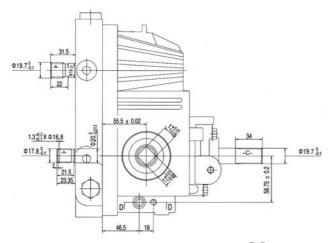
■If there is any further question, please contact us for more information.

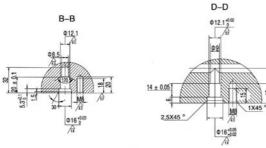
■ Special order can be placed upon reguest



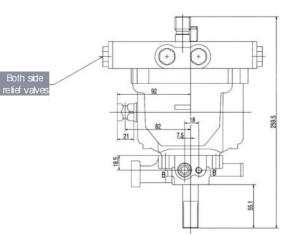


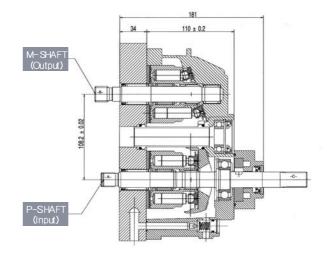






SPLINE SPEC						
Section No.	А	В	С			
Module	1	1,25	1,25			
Number of Teeth	16	14	14			
Pressure Angle	20+	20	20+			
P.C.D.	Ø16	Ø17.5	Ø17.5			
Major DIA	Ø17.8-0,1	Ø 19.7 _{-0,1}	Ø19.7 _{-0.1}			
Minor DIA						
Profile Shift	0.8	0.8	0.8			
Pin DIA	Ø1.8	Ø2 <u>.</u> 25	Ø2 <u>.</u> 25			
O.P.D	Ø19.715 -0.110 -0.181	Ø22.087 -0.107	Ø22.087-0.107			
Span Measurement		10,155	10,155			
(3 Teeth)		-0,062 / -0,100	-0,062/-0,100			

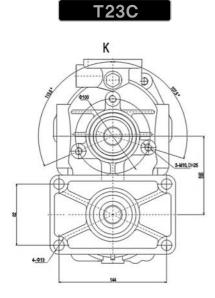


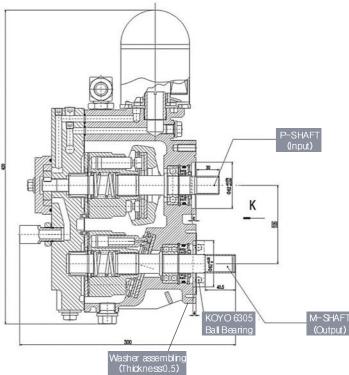


HST18C SPECIFICATION

MO)EL		DHPVMF- 18 - L -	01	NQ.	
	IPANY "DAIHO HYDRAULIC KO		"DAIHO HYDRAULIC KOREA" TYPE AND USE		•	TRACTOR · TRAVELING
		ITE	М	SPECIFICATION		REMARKS
	PISTON PUMP			0 ~ 18	3.3 Cm³/rev	
	DISPLA	DISPLACEMENT PISTON MOTOR		183	Cm ³ /rev	Power≦30HP APPLYING TO DIESEL ENGINE
		-	CHARGE PUMP	6.2	Cm³/rev	
		PUMP L	EVEL ANGLE	0~ ±0.30 rad (0~±17deg)		
		MOTOR	LEVEL ANGLE	0.30 ra	ad (17 deg)	
B			CLOCKWSE	or COUNTER CLOCKV	VISE FROM VIEW OF DIR	ECTION ROTATION
BAS-C	CHARGE CRCUIT RELIEF SETTING PRESSURE 3000 min ⁻ (rpm)			0.49 ± 0.098 Mpa (5±1kgf/am)		HYD,OL VG46 STANDARDIZATION AT 50°C(HYD,OL TEMPERATURE)
SPEC.	. PRESSURE IN CASE LESS THAN 0.098Mpa (1kg/cm)		Max 0.924 Mpa(3kgf/om²)			
				LESS THAN-0.0)196Mpa (-0.2kgf/cm²)	LESS THAN 0.045Mpa(-0.461kg/orr) AT LOW TEMPERATURE
	FLTER			10 <i>µ</i> m	EQIPPED IN CHARGE CIRCUIT	
	STRAINER				0 mesh	
	HYD.CONTAMINATION CLASSES					
0	NPUT SPEED			0 min ¹ (RPM)	STANDARDIZATION AT 50°C(HYD.OL TEMPERATURE)	
CUSTOMER	PRE- SSURE		EF SETTING PRESSURE		19MPa at 20L/min	
T			YD,OL	28.7MPa at 3L/min ISO VG 46		
M	HYD.OIL TEMPERATURE AT CASE DRAIN			$-10^{\circ}\text{C} \sim +90^{\circ}\text{C}$		-10° C \sim + 90 $^{\circ}$ C / WTHIN 5 HOURS
Ŕ	PAINTING		PRIMARY PAINT		COLOR : BLUE	
SPEC.					88.26 m/s² (9G)	
	INSTALLATION POSITION			TRACTOR TRANSMISSION		
	ITEM		SPEC	FICATION	REMARKS	
	EFFI- VOLUMETRIC EFE		92.5%	at N= 3000min ⁻¹ ⊿P=14,7Mpa(150kgf/cm²)	BEST PERFORMANCE 46, 50°C	
	CIENC		OVER EFE.	73.5%	$\theta = 0.30 \text{ rad} (17 \text{ deg})$	BEST PERFORMANCE 40, 50 C
GEN		MiN as st	MAX : TABLE 1. MIN : WHEN STARTING	Min 0.022rad Max 0.052rad (1.3~3.0deg)	at N= 3000min ⁻¹	NEUTRAL ZONE, VG 46, 50°C
GUNURAL	RATE OF NPUT/OUTPUT SPEED			1 ± 0.03	at • ΔP = 0Pa (0kgf/cm²) θ = Max rad	VG 46, 50°C
SPEC.			DRQUE : TABLE, 3 R HOLDING TORQUE)	-7.84~17.65N.m (-0.8~ ± 1.3kgf.m)	at N= 3000 min⁻¹ ⊿ P = Min~19,65Mpa (Min~ 200kgf/m²)	PERFORMANCE AT SHIPPING VG 46, 50°C
			DRQUE : TABLE, 4 R HOLDING TORQUE)	11.76+27.4N.m (1.2~ +2.8kgf.m)	at N= 3000 min ⁻¹ ⊿ P = Min~19.62Mpa (Min~ 200kgt/m²) VG 46, 50℃	CONTROL PERFORMANCE SPEED AT SHIPPING 0.14rad/ sec (8.02°/sec)
	TABLE,1	RANGE,I		TO THE POINT PASSEE		AL VALVE, VALVE IS NOT CLOSED AND NO NEUTRAL ND NEED TO STOP MAIN MACHINERY WITH MOMING
N O	TABLE,2 VOLUMETRIC EFFICIENCY MEANS DECREASING RATE OF OUTPUT SPEED WHICH CHANGED BY PRESSURE RAISE AGAINST OUTPUT S AT ΔP=0kg/cm ⁴ OUT SPEED = NPUT SPEED x RATE OF INPUT/OURPUT SPEED × VOLUMETRIC EFFICIENCY (%)100 (at θ = Max deg) *THE VALUE IS CAUSED BY PRODUCING ERROR OF PUMP/MOTOR LEVEL ANGLE					
T E	TABLE.3	OPERAT	NG SHAFT HOLDING TORQE ING TORQUE TO INCREASE ING TORQUE TO DECREASE	SWASH PLATE ANGLE :		
	OFERATING TORQUE TO DECREASE SWASH PLATE ANGLE : INDICATED BY - TABLE.4 TURNING SHAFT OPERATING TORQE OPERATING TORQUE TO INCREASE SWASH PLATE ANGLE : NECESSARY TORQUE TO MOVE FROM MAX,SWASH PLATE ANGLE TO NEUTRAL (INDICAT OPERATING TORQUE TO DECREASE SWASH PLATE ANGLE : NECESSARY TORQUE TO MOVE FROM NEUTRAL TO MAX,SWASH PLATE ANGLE TO NEUTRAL (INDICAT OPERATING TORQUE TO DECREASE SWASH PLATE ANGLE : NECESSARY TORQUE TO MOVE FROM NEUTRAL TO MAX,SWASH PLATE ANGLE TO NEUTRAL (INDICAT OPERATING TORQUE TO DECREASE SWASH PLATE ANGLE : NECESSARY TORQUE TO MOVE FROM NEUTRAL TO MAX,SWASH PLATE ANGLE INDICATED BY					

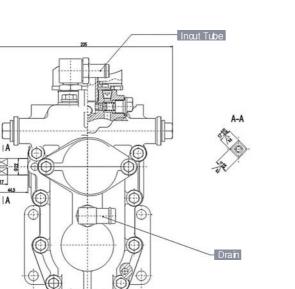






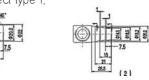
Except assembling measure of T23C attachment, Inlet & Outlet oil hose and electro motion shaft measure are as below.

1. There are two types of Inlet oil hose measure as below. Preferentially select type 1.



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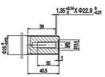
2. There are two types of Outlet oil hose measure as below. Preferentially select type 1.

> R2 (1)

(1)



3. Each spline specification of P-Shaft and M-Shaft is as following.



M-SHAFT (Output Shaft)

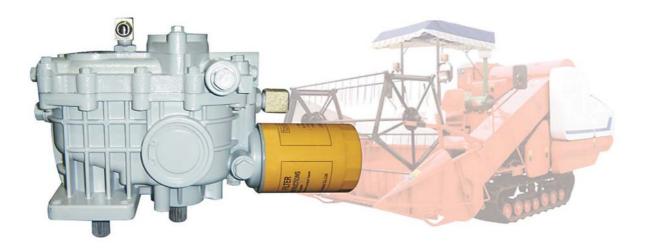


SP LINE SPEC						
Module	1.25					
Number of Teeth	18					
Pressure Angle	20°					
P.C.D.	Ø22 <u>.</u> 5					
MajorDIA	Ø24.5 -0.05					
MinorDIA	Ø21.70					
Profile Shift	0.78					
Span Measurement(3 Teeth)	10.137 ^{-0.06}					

P-SHAFT (Input Shaft)

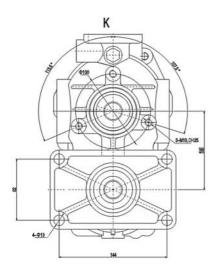
HST23C SPECIFICATION

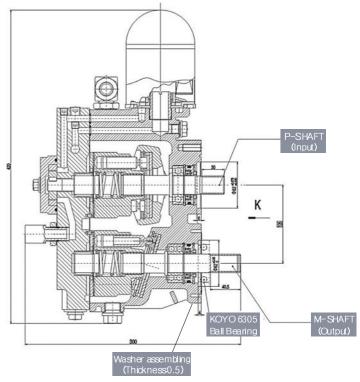
MO	DEL DHPVMF-23 - L - 01 NO.						
COMF	PANY		'DAIHO HYDRAULIC KC	REA"	TYPE AND USE	COMBINE · TRAVELING	
	ITEM			SPECIFICATION		REMARKS	
	PISTON PUMP			$0 \sim 3$	23.7 Cm∛rev		
	DISPL,	DISPLACEMENT PISTON MOTOR CHARGE PUMP		PISTON MOTOR 23.7 Cm ³ /rev		Power≦50HP APPLYING TO DIESEL ENGINE	
				6.2 Cm³/rev			
	PUMP LEVEL ANGLE		$0\sim\pm0.30$ rad ($0\sim\pm17$ deg)		_		
R	MOTOR LEVEL ANGLE 0.30 rad (17 deg)						
A	CLOCKWISE OF COUNTER CLOCKWISE FROM VIEW OF DR				RECTION ROTATION		
BAS-C	3000 min ⁻¹ (rpm)		0.49 ± 0.09	98 Mpa (5±1kgf/cm)	HYD.OL VG46 STANDARDIZATION AT 50°C(HYD.OL TEMPERATURE)		
SPEC.			LESS THAN 0.098Mpa (1kgf/cm²)		Max 0.924 Mpa(3kgt/cm)		
	CHA	ARGE PUMP SUCTION PRESSURE		LESS THAN-0.0196Mpa (-0.2kgf/cm²)		LESS THAN 0.045Mpa(-0.461kg/orf) AT LOW TEMPERATI	
	FILTER STRAINER HYD, CONTAMINATION CLASSES		1 Oµm		EQIPPED IN CHARGE CIRCUIT		
			TRAINER	1	50 mesh		
			VINATION CLASSES	WITHIN NAS 9			
		MF	PUT SPEED	0~3000 min ⁻¹ (RPM)			
С	PRE-			30.9MPa±0	.49MPa at 20L/min	STANDARDIZATION AT 50°C(HYD.OL TEMPERATURE)	
Ŭ	SSURE	CRA	CKING PRESSURE	28.7M	Pa at 3L/min		
Ť			HYD.OL	ISO VG 46			
CUSTOMER	HYD.C		ATURE AT CASE DRAIN	+10℃ ~ +90℃		$-10^{\circ}\text{C} \sim +90^{\circ}\text{C}$ / WITHIN 5 HOURS	
Ŕ			AINTING		1ARY PAINT	COLOR : BLUE	
SPEC.		MAX.	VIBRATION	LESS THA	N 88.26 m/s² (9G)		
	INSTALLATION POSITION		ATION POSITION	COMB	INE MISSION		
GENE	EFFI- CIENC'		OLUMETRIC EFE,	92.5%	at N = 3000 min⁻¹ ⊿P=14.7Mpa(150kgf/cm²)	BEST PERFORMANCE VG46, 50°C	
RAL			OVER EFE.	73.5%	$\theta = 0.30 \text{ rad} (17 \text{ deg})$		
SPEC.			JTPUT TORQUE		100N.m		
		OUTPUT F	ROTATION SPEED	-3000)~3000 r/min		





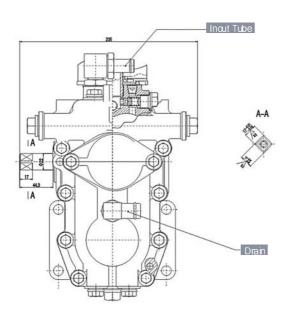


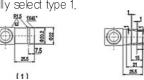




Except assembling measure of T30C attachment, Inlet & Outlet oil hose and electromotion shaft measure are as below.

1. There are two types of Inlet oil hose measure as below. Preferentially select type 1.





2. There are two types of Outlet oil hose measure as below. Preferentially select type 1.

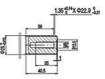
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OILS OIL2

(2)

3. Each spline specification of P-Shaft and M-Shaft is as following.



M-SHAFT (Output Shaft)

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Т		
1	30	246

SP LINE SPEC						
Module	1.25					
Number of Teeth	18					
Pressure Angle	20°					
P.C.D.	Ø22 <u>.</u> 5					
Major DIA	Ø24.5 -0.05					
MinorDIA	Ø21.70					
Profile Shift	0.78					
Span Measuement(3 Teeth)	10.137 ^{-0.06}					

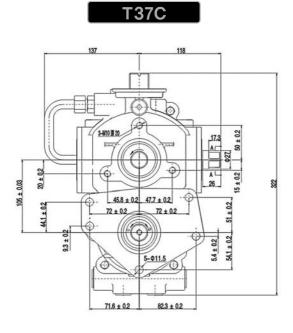
P-SHAFT (Input Shaft)

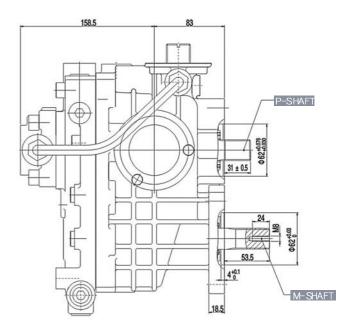
HST30C SPECIFICATION

MO	MODEL		DHPVMF-30 - L - 01		NO.	
COMF	COMPANY "DAIHO HYDRAULIC KC			NREA"	TYPE AND USE	COMBINE · TRAVELING
		ITE	EM	SPECIFICATION		REMARKS
			PISTON PUMP	$0\sim 29.3~{ m Cm^3/rev}$		
	DISPLACEMENT		PISTON MOTOR	2 <u>9</u> .3 Cm ³ /rev		Power≦60HP APPLYING TO DIESEL ENGINE
			CHARGE PUMP	6.2 Cm ³ /rev		
	PUMP LEVEL ANGLE			0~ ±0.30 rad (0~±17deg)		_
в	MOTOR LEVEL ANGLE			0.30 rad (17 deg)		
BASIC				ECTION ROTATION		
	CHARGE CIRCUIT RELIEF SETTING PRESSURE 3000 min⁻(rpm)			0.49 ± 0.098 Mpa (5±1kgf/cm)		HYD.OIL VG46 STANDARDIZATION AT 50°C(HYD.OL TEMPERATURE)
	PRESSURE IN CASE			LESS THAN 0.098Mpa (1kgf/cm)		Max 0.924 Mp <i>a</i> (3kgt/cm²)
	CH/	ARGE PUMP	SUCTION PRESSURE	LESS THAN-0.0196Mpa (-0.2kgf/m²)		LESS THAN 0.045Mpa(-0.461kg/an) AT LOW TEMPERATURE
	ALTER			1 Oµm		EQIPPED IN CHARGE CIRCUIT
	STRANER			150 mesh		
	HYD.CONTAMINATION CLASSES			WITHIN NAS 9		
	MPUT SPEED			0~3000 min ⁻ (RPM)		
ç			IEF SETTING PRESSURE	30.9MPa±0.49MPa at 20L/min		STANDARDIZATION AT 50°C(HYD.OL TEMPERATURE)
O S	SSURE CRACKING PRESSURE			28.7MPa at 3L/min		
COSTOMER	HYD.OL			ISO VG 46		
M E	HYD.OL TEMPERATURE AT CASE DRAIN			-10°C ~ +90°C		-10°C ~ + 90°C / WITHIN 5 HOURS COLOR : BLUE
R						
SPEC.				LESS THAN 88.26 m/s ² (9G)		
	INSTALLATION POSITION			COMBINE MISSION		
GENE			OLUMETRIC EFE.	92.5%	at N = 3000 min⁻¹ ⊿P=14.7Mpa(150kgf/cm)	BEST PERFORMANCE VG46, 50°C
	CIENC	Ύ	OVER EFE,	72.8%	$\theta = 0.30$ rad (17deg)	
SPEC.	MAX.OUTPUT TORQUE			120N.m		
	OUTPUT ROTATION SPEED			-3000~3000 r/min		



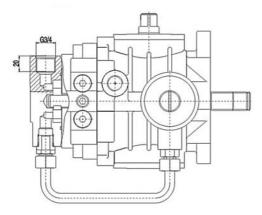


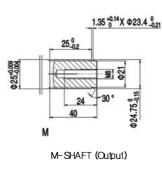




Except assembling measure of T37C attachment, Pump and Motor shaft measure are as below.

1. Each spine specification of P-Shaft and M-Shaft is as following.







TRUNION ARM

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<u> </u> _↓	30	024.75_0.15
Ρ		Ð
D.	CUNET	(Innut)

P-SHAFT(Input)

SP LINE SPEC					
Module	1,25				
Number of Teeth	18				
Pressure Angle	20°				
P.C.D	Ø22 <u>.</u> 5				
Major DIA	Ø24.75 _0_15				
MinorDIA					
Profile Shift	0.8				
Span Measurement(3 Teeth) 10.225 -0.052 -0.100				
Pin DIA.	Ø2 <u>.</u> 25				
P.C.D	27.183 -0.113 -0.189				

HST37C SPECIFICATION

MOE	EL DHPVMF-37-L-01			01	NO.	
COMPANY "E			"DAIHO HYDRAULIC KOREA"		TYPE AND USE	COMBINE · TRAVELING
		ITE	EM	SPECIFICATION		REMARKS
			PISTON PUMP	$0\sim37~{ m Cm^3/rev}$		
	DISPLACEMENT		PISTON MOTOR	37 Cm ³ /rev		Power≦60HP APPLYING TO DIESEL ENGINE
			CHARGE PUMP	7.5 Cm³/rev		
	PUMP LEVEL ANGLE			$0 \sim \pm 0.30 \text{ rad} (0 \sim \pm 17 \text{deg})$		_
в	MOTOR LEVEL ANGLE			0.30 rad (17 deg)		
BASIC				r COUNTER CLOCK	WISE FROM VIEW OF DIF	RECTION ROTATION
	CHARGE CIRCUIT RELIEF SETTING PRESSURE 2600 min⁻(rpm)			0.53 ± 0.098 Mpa (5±1kgf/am²)		HYD.OIL VG46 STANDARDIZATION AT 50°C(HYD.OL TEMPERATURE)
	PRESSURE IN CASE			LESS THAN 0.098Mpa (1kgf/cm³)		Max 0,924 Mpa(3kgt/cm²)
	CHA	ARGE PUMP	SUCTION PRESSURE	LESS THAN-0.0196Mpa (-0.2kgf/cm²)		LESS THAN 0.045Mpa(-0.461kg/cm) AT LOW TEMPERATURE
	ALTER			1 Oµm		EQIPPED IN CHARGE CRCUIT
	STRANER			150 mesh		
	HYD.CONTAMINATION CLASSES			WITHIN NAS 9		
	MPUT SPEED			0~3000 min⁻(RPM)		
С			IEF SETTING PRESSURE	24.5MPa±0.49MPa at 20L/min		STANDARDIZATION AT 50°C(HYD.OL TEMPERATURE)
0 S	SSURE	011	CKING PRESSURE	22,9MPa at 3L/min		
Ť	HYD.OL			ISO VG 46		
COSFOZER	HYD.OL TEMPERATURE AT CASE DRAIN			-10°C ~ +90°C		-10°C ~ +90°C / WITHIN 5 HOURS
Ř	PAINTING			PRIMARY PAINT		COLOR : BLUE
SPEC.	MAX.VIBRATION			LESS THAN 88.26 m/s ² (9G)		
	INSTALLATION POSITION			COMBINE MISSION		
GENE			OLUMETRIC EFE.	92.5%	at N = 3000 min ⁻¹ ΔP =14.7Mpa(150kgf/cm) θ = 0.30 rad (17deg)	BEST PERFORMANCE VG46, 50°C
	CIENC	Y	OVER EFE	73.5%		
SPEC.	MAX.OUTPUT TORQUE			156N.m		
	OUTPUT ROTATION SPEED			-3000~3000 r/min		

