1:1 Differential Gearing



harmonic drive gearing Precision Gearing & Motion Scontrol S



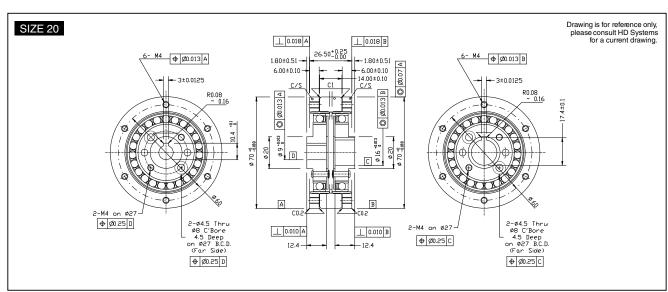
FEATURES: COMPACT DESIGN HIGH POSITIONAL ACCURACY LOW BACKLASH

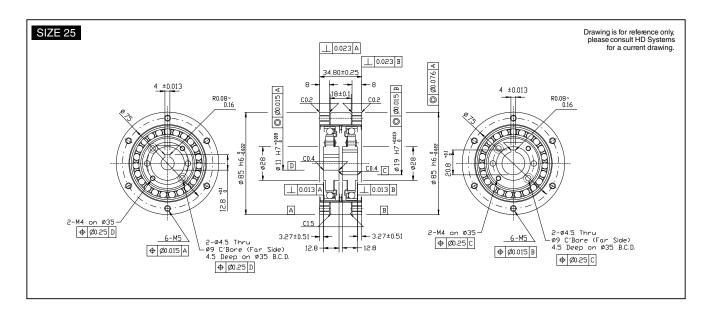
The harmonic drive differential 1:1 transmissions allow dynamic phasing of rotating gearing elements. This series offers high positional accuracy and low backlash in a compact design which make them an excellent choice for web registration or other machinerywhich requires constant monitoring and adjustment. These gearing components can be easily incorporated into roller assemblies. Trim ratios are available from 80:1 to 160:1. Rated torques from 120 in-lb thru 1125 in-lb are available. Other ratios are available as a custom order.

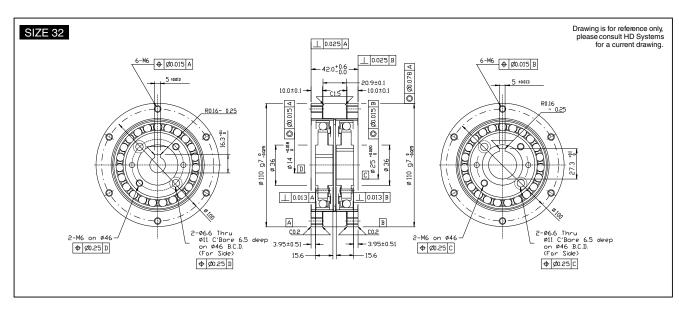
RATING TABLE

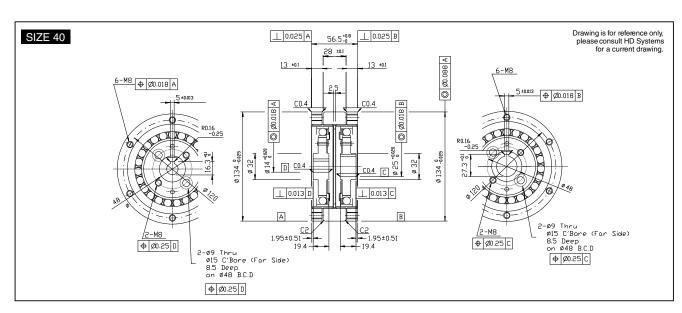
1:1 Differential Transmission	Ratio		TorqueRating*** Inputspeed									Max.** Output Torque		Max. Speedrpm		Wave Generator Inertia		Backlash arc min.***			
Size			Orpm lb-in		0rpm lb-in		0rpm lb-in		0rpm lb-in		0rpm lb-in		rpm lb-in	Nm	lb-in		Grease SK-1		lb- in²		ailable otions
20	80	14	120	14	120	15	130	16	147	20	180	20	180	26	230	6000 360			0.048		
	100	17	156	18	156	20	174	21	190	24	210	24	210	34	300		3600	0 140		6	12 60
	128	20	174	20	174	21	190	23	210	24	210	24	210	43	380		0000	0.110.0	7.0-10	Ü	12 00
	160	20	174	21	174	21	190	23	210	24	210	24	210	50	440						
25	80	26*	230*	26	230	28	250	28	250	29	350	39	350	51	450	5000	3600	0.360.12			
	100	29*	256*	33	295	36	320	36	320	49	430	52	460	68	600				6 12 6	12 60	
	120	29*	256*	33	295	36	320	36	320	49	430	61	540	80	710					12 00	
	160	29*	256*	33	295	36	320	36	320	49	430	61	540	86	760						
32	78	58*	513*	58*	513*	58	510	63	550	75	670	75	670	98	870	4500 3600					
	100	59*	522*	59*	522*	75	670	82	730	98	870	98	870	127	1130		3600	1.3 0.44		6 12 60	
	131	59*	522*	59*	522*	75	670	82	730	98	870	117	1040	186	1650	4300	3000			U	12 00
	157	59*	522*	59*	522*	75	670	82	870	98	870	117	1040	215	1910						
40	80	117*	1040*	117*	1040*	117*	1040*	117	1040	147	1300	147	1300	196	1940						
	100	127*	1125*	127*	1125*	127*	1125*	157	1390	186	1650	186	1650	255	2250	4500 3300		3.4 1.2		6 1	10 60
	128	127*	1125*	127*	1125*	127*	1125*	166	1470	206	1820	235	2080	314	2880						12 00
	160	127*	1125*	127*	1125*	127*	1125*	166	1470	206	1820	274	2430	353	3120						

^{*} Thermallimited—50% duty cycle with on time not exceeding 15 minutes.
** This torque is not to be exceeded under any circumstances. *** Rating at input speed below 500 rpm is same as for 500 rpm. **** Backlash measured at output with the input locked, maximum value.











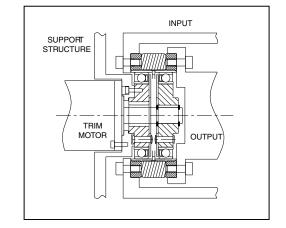
DESIGN CONCEPT

The sketch at the right shows a typical installation of the 1:1 components. This arrangement is similar to that within a roll drive mechanism. With the trim motor shaft stationary the input and output rotate with a gear ratio of 1:1. The relative phasing of the input and output can be changed dynamically by rotating the trim motor shaft.

The following relations can be used for phase adjustment:

Speed:
$$N_{\text{output}} = N_{\text{input}} + \left[\frac{N_{\text{trim}}}{\text{Ratio} + 1}\right]$$

Torque: $T_{trim} = \frac{T_{input (or output)}}{Ratio \times 0.5}$



ORDERING CODE

Harmonic Drive Product Type	Size	Ratio	Backlash Option	Options			
1:1 Differential Transmission Unit	20 25 32 40	80 100 128 160 80 100 120 160 78 100 131 157 80 100 128 160	BL6 BL12 BL60	Our technical team will be pleased to assist you with special options and their ordering code.			
HDUF —	25	— 100 — 2	2 — BL12	— SP			







Gearing
HDUC
SHF
HDUF
HDUR
HDUA
RHS/RFS-CC
CP/HP

Motion Contr ol RH Mini series RHS/RFS RS Mini series RSS/RKS FHA LA HS

HΑ

Cup Type Component Sets
Hollow Shaft Gearheads and Components
Pancake Type Component Set
Heavy Duty Pancake Components
Harmonic Drive Differential Gearing
Precision Close Couple Gearheads
Precision Planetary Gearheads

Miniatur e DC Servo Actuators
High Torque DC Servo Actuators
Miniatur e Brushless Servo Actuators
High Torque Brushless Servo
Hollow Shaft Brushless Servo Actuators
High Precision Linear Servo Actuators
DC Servo Controller
Brushless DC Servo Controller



All products are warranted to be free from design or manufacturing defects for a period of one year from the date of shipment. Such items will be repaired or replaced at the discretion of the HD Systems. The seller makes no warranty, expressed or implied, concerning the material to be furnished other than it shall be of the quality and specifications stated. The seller's liability for any breach is limited to the purchase price of the product. All efforts have been made to assure that the information in this catalog is complete and accurate. However, HD Systems is not liable for any errors, ommisions or inaccuracies in the reported data. HD Systems reserves the right to change the product specifications, for any reason, without prior notice.