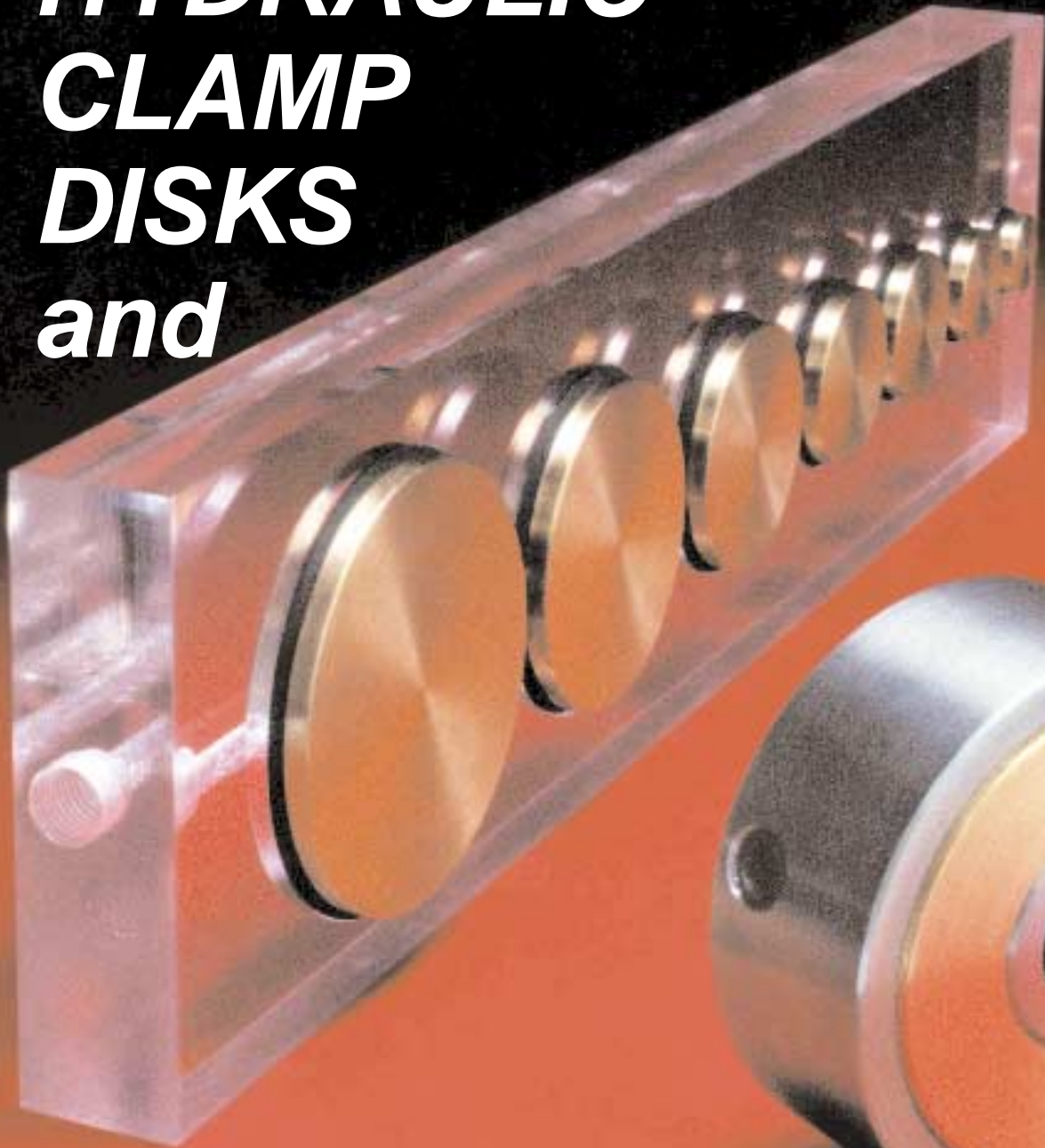


AMDISK

***HYDRAULIC
CLAMP
DISKS
and***



CLAMP RINGS

General: AMDISK® CLAMP DISKS (ACD) and CLAMP RINGS (ACR) have been developed to lock connecting machine components to each other by hydraulic pressure. The simple and compact design allows these components to be used in a variety of applications.

AMDISK® CLAMP DISKS and RINGS are made of a high strength Bronze piston disk on which a

Viton seal is vulcanized, allowing them to be used with any high pressure hydraulic fluid. The AMDISK® components are connected to a pressure port to allow hydraulic pressure up to 4000 psi. The holding force of these units depends on the amount of hydraulic pressure applied. Charts on the adjacent page show holding forces based on 1000 psi for both component types at $\mu_s = .1$.

Description: **AMDISK® CLAMP RINGS:**
 These components are supplied with an alloy steel housing with its own pressure port. The center hole allows for easy application with a draw-bolt or rod to provide direct axial pull or clamping force without twisting the rod. AMDISK® CLAMP RINGS are excellent for fixture applications where high force and short clamping travel are required.

AMDISK® CLAMP DISKS:
 When hydraulic pressure is released (0 psi), the bronze disk of the AMDISK® retracts slightly, due to the elasticity of the lip seal. The lip seal does not slide in the bore, making the AMDISK® CLAMP DISKS virtually wear-free. They have a high efficiency and are almost impervious to leaking.

Mating Conditions for Clamp Disks: The AMDISK® CLAMP DISKS require only a simple bore with a tolerance of I.S.O. H8, and a surface finish of 32 micro-inches. The hole for the AMDISK® CLAMP DISK is usually bored and

hand polished with emery cloth to eliminate tool marks on the sealing surface. The port holes must be deburred and cleaned. The hole depth must be a minimum of 0.400".

Calculations for Clamp Disks: The clamping force (F_c) on the slide must be sufficient to lock the sliding components to the machine ways by means of friction at surface (S)

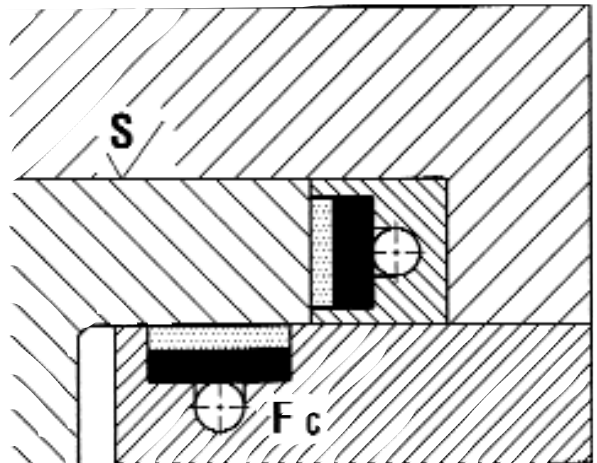
only. The force (F_c), on the Clamping Disks must act in an axial direction only. There should not be any side load on the seal lips and bronze disk.

Calculating The Holding Force:

- $H = (A) \times (p) \times (\mu_s) \times (n) \times .95$
- $= (F_c) \times (\mu_s) \times (n) \times .95$
- $H =$ Total holding force [lbs]
- $F_c =$ Clamping force for a single disk [lbs]
- $n =$ Number of clamp disks
- $A =$ Area of one clamp disk in [in^2]
- $p =$ Hydraulic pressure [psi]
- $\mu_s =$ Static coefficient of friction between lubricated surfaces at S
- $= (.12)$ - steel on steel
- $= (.10)$ - steel on cast iron
- $= (.08)$ - steel on plastic material
- $.95 =$ Efficiency of hydraulic piston

Example:

To find number of clamp disks required:
 Required holding force: 2,000 lbs.
 Available pressure: 1,000 psi.
 Max. disk size: 52 mm ($A = 3.29 in^2$)
 Surfaces: steel on steel ($\mu_s = 0.12$)



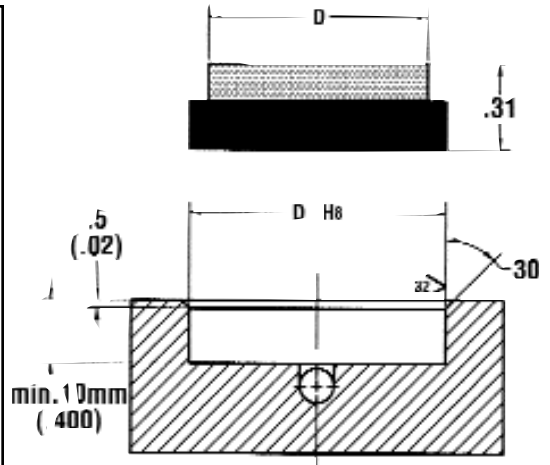
$$n = \frac{H}{A \times p \times \mu_s \times .95}$$

$$= \frac{2,000 \text{ lbs}}{(3.29 \text{ in}^2) \times (1000 \text{ psi}) \times (.12) \times .95} = 5.33$$

Required: (6) Clamp Disks, size ACD-52

AMDISK® CLAMP DISKS - TYPE ACD

SIZE	D mm/In	BORE DØ TOLERANCE (INCHES) H ₈	AREA (A) mm ² (In ²)	ASSEMBLY TOOL NO.*	CLAMP FORCE @ 1000 psi
ACD-16	16/.630	.630/.631	201 (.312)	ACDT-16	300
ACD-22	22/.866	.866/.867	380 (.589)	ACDT-22	560
ACD-28	28/1.102	1.102/1.103	616 (.955)	ACDT-28	910
ACD-32	32/1.260	1.260/1.261	804 (1.25)	ACDT-32	1200
ACD-42	42/1.654	1.654/1.655	1385 (2.15)	ACDT-42	2100
ACD-52	52/2.047	2.047/2.049	2124 (3.29)	ACDT-52	3200
ACD-64	64/2.520	2.520/2.522	3217 (4.99)	ACDT-64	4800
ACD-75	75/2.953	2.953/2.955	4418 (6.85)	ACDT-75	6500

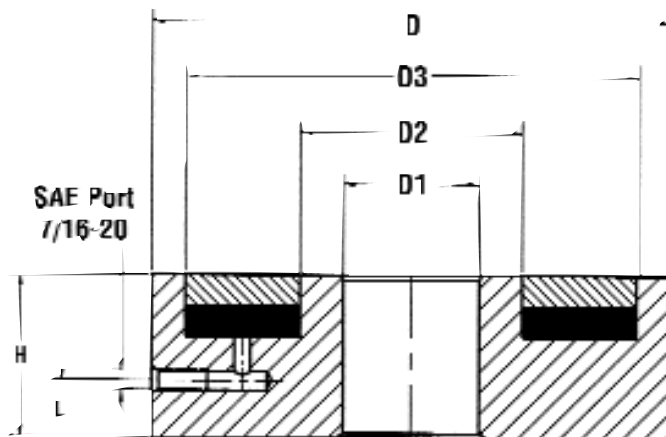


Customer supplied
bore requirements.

Maximum hydraulic pressure not to exceed 4000 psi.

* See Figures 4 and 5.

AMDISK® CLAMP RINGS - TYPE ACR



$$\text{CLAMPING FORCE (Fc)} = A \times p \times 0.9$$

TYPE	D	D1	H	L	D2	D3	AREA (A) mm ² (In ²)	MAX. STROKE mm (In)	CLAMP FORCE @ 1000 psi	CLAMP FORCE @ 4000 psi
ACR-60	60	14.3	30	8	24	50	1512 (2.34)	3 (.118)	2100	8450
ACR-75	75	16.3	30	8	28	62	2403 (3.72)	3 (.118)	3350	13400
ACR-90	90	20.3	32	8	32	75	3614 (5.60)	4 (.157)	5050	20200
ACR-105	105	24.5	34	10	36	92	5630 (8.73)	4 (.157)	7900	31500
ACR-125	125	30.5	36	10	42	112	8467 (13.12)	5 (.197)	11800	47200
ACR-155	155	42.5	40	10	55	140	13018 (20.18)	5 (.197)	18200	72600

Maximum hydraulic pressure not to exceed 4000 PSI.

Dimensions subject to change without notice.

TYPICAL ARRANGEMENTS

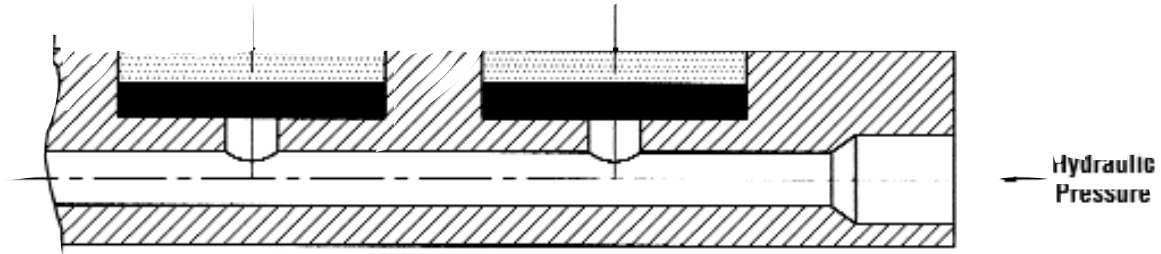


Figure 1

Amlok® CLAMP DISKS in a parallel gib, oil pressure through feeder hole.

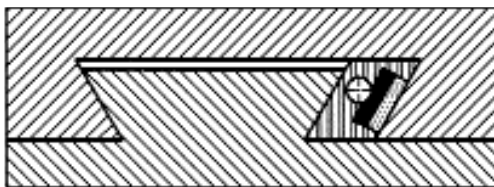


Figure 2

Typical dovetail gib design.

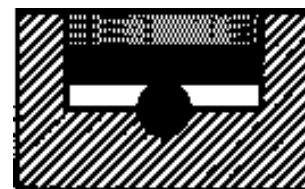


Figure 3

Pressure port feeder hole intersecting Clamp Disk bores.

Assembly Tools and Procedure

ASSEMBLY INSTRUCTIONS: FOR ACD CLAMP DISKS:

NOTE: Assembly Tools consists of a *plunger*, *tapered sleeve*, and *centering disk*.

1. Grease tapered bore of *tapered sleeve* and insert Amlok® CLAMP DISK into *tapered sleeve* with seal lip downward.
2. Center *tapered sleeve* on *centering disk* and push *plunger* downward to partially insert the seal lip of the Amlok® CLAMP DISK into the *centering disk*. Fig. 4
3. Remove tapered sleeve with protruding seal lip and insert into the greased housing bore. Fig. 5
4. Press *plunger* downward to insert Amlok® CLAMP DISK into the housing bore.

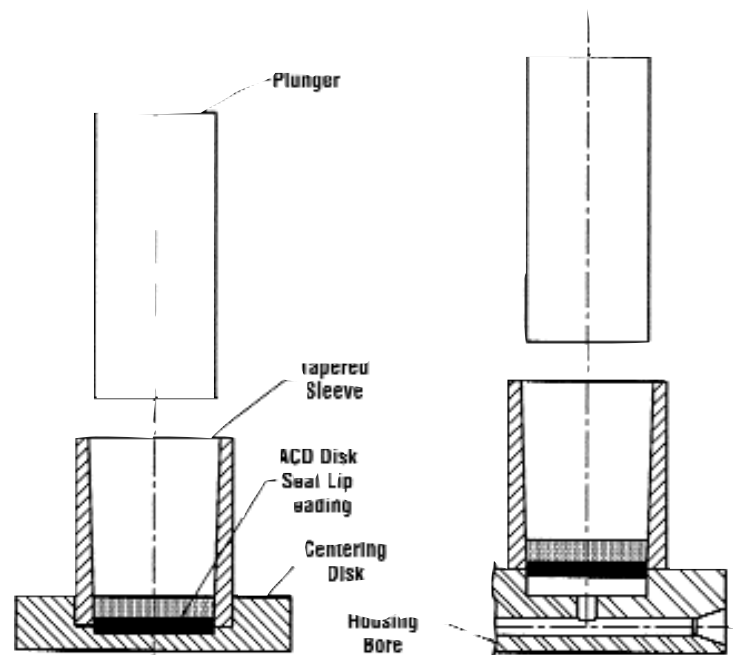


Figure 4

Figure 5



2500 Latham Street Rockford, IL 61103-3963
815/962-6076 Fax 815/963-4703

E-Mail: info @ ame.com • Web Site: www.ame.com

Your Local Advanced Representative is:

TL-LD-9912