

# FIXTURE PINS



# Tolerance Data & Standard Specifications

MATERIAL	TOLERANCE	HEAT TREAT
HARDENED & GROUND 8620	PIN DIA = .001 BELOW NOMINAL +.0000 -.0005	1/2 DIA OR LESS R"C" 50-52 .025-.035 DEEP  9/16 DIA AND UP R"C" 58-60 .035-.045 DEEP
STAINLESS 300 SERIES	UP TO 5/16" DIA EXCL. +.000/-.001 5/16" — 1/2" DIA EXCL. +.000/-.0015 1/2" DIA — 1" DIA EXCL. +.000/-.002 1" DIA — 1-1/2" DIA EXCL. +.000/-.0025 1-1/2" DIA — 4" DIA INCL. +.000/-.003	N/A
MILD STEEL 8620	UP TO 1-1/2" DIA INCL. +.000 -.002 OVER 1-1/2" DIA — 2-1/2" DIA INCL. +.000 -.003 OVER 2-1/2" DIA — 4" DIA INCL. +.000 -.004	N/A
PREHARDENED A311 G & P	UP TO 1-1/2" DIA INCL. +.000 -.001 1-9/16" DIA — 2-7/16" DIA INCL. +.0000 -.0015 2-1/2" DIA — 3" DIA INCL. +.000 -.002 3-1/16" DIA — 4" DIA INCL. +.000 -.003	R" C" 22-30

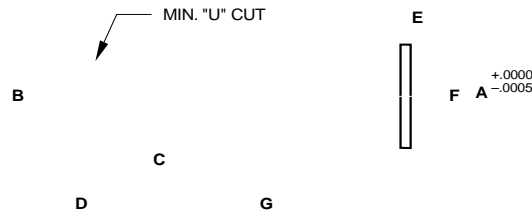
ALL E & E FIXTURES AND CLEVIS PINS ARE MADE TO THE FOLLOWING SPECIFICATIONS:

LENGTH = NOMINAL +.025

KNURL = NOMINAL +.007

LUBE OPTIONS = NOT AVAILABLE ON 1/4" AND 5/16" DIA PINS. 3/8" - 9/16" DIA PINS ARE FURNISHED WITH A 1/4-28-TAPPED HOLE. 3/8" - 9/16" DIA PINS CAN ONLY BE TAPPED ON THE END OPPOSITE THE RETAINER GROOVE. FOR PINS 5/8" DIA OR LARGER A 1/8 NPT IS FURNISHED.

# Head Type Fixture Pin with Snap Ring



## HEAD TYPE FIXTURE PIN WITH SNAP RING

DIMENSIONAL INFORMATION								
CAD FILE NAME	PIN DIA.	A	B	C	D	E	F	*G 1/4" INCR
KSFIXTPIN	1/4	.249	.375	.25	.125	.125	.54	1"-2"
	3/8	.374	.500	.25	.125	.130	.68	1"-3"
	1/2	.499	.625	.25	.125	.139	.82	1"-3"
	5/8	.624	.750	.25	.156	.165	.96	1"-3"
	3/4	.749	.937	.25	.156	.180	1.14	1"-4"
	7/8	.874	1.063	.25	.156	.256	1.32	1"-4"
	1	.999	1.187	.25	.187	.256	1.53	1 1/2"-5"
	1 1/8	1.124	1.375	.25	.187	.256	1.55	1 1/2"-5"
	1 1/4	1.249	1.437	.25	.250	.256	1.69	2"-6"
	1 3/8	1.374	1.625	.25	.250	.256	1.80	2"-6"
1 1/2	1.499	1.750	.25	.250	.256	1.99	2"-6"	

\*G = LENGTH IN 1/4" INCREMENTS, OTHER LENGTHS  
AVAILABLE UPON REQUEST

H = 1/2 G UNLESS OTHERWISE SPECIFIED

H1 = LOCATION OF ADDITIONAL CROSSHOLE IF  
REQUIRED

### LUBE OPTION:

ADD "PT", "PT2" OR "RPT" AFTER PIN TYPE

Type	Description
S	HARDENED AND GROUND, SMOOTH
SS	STAINLESS, SMOOTH
SU	MILD STEEL, SMOOTH
SP	PREHARDENED, SMOOTH
K	HARDENED AND GROUND, KNURLED
KS	STAINLESS, KNURLED
KU	MILD STEEL, KNURLED
KP	PREHARDENED, KNURLED

CAD Directory  
Mach-Tool\FixtPin

## PIPE TAP LUBE OPTION PT



H

## PIPE TAP LUBE OPTION = PT 2



H

H1

## PIPE TAP LUBE OPTION = RPT



H

## ORDERING INFORMATION

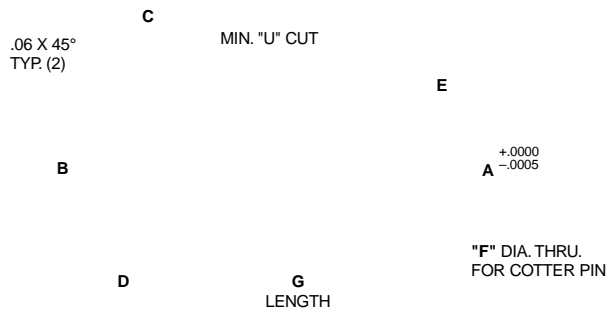
Specify: Pin Dia — Length — Type —  
Lube Option — "H" Dim —  
"H1" Dim

Example: 34-212-S-PT

ALL PIN DIMENSIONS ARE GIVEN AS  
FRACTIONS. 34 = 3/4, 212 = 2-1/2

"Stretch"  
The shortest standard  
component is given. You may  
"Stretch" the unit to the desired length.

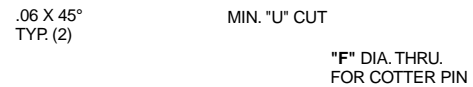
# Clevis Pins



## HEAD TYPE FIXTURE PIN WITH COTTER PIN

DIMENSIONAL INFORMATION								
CAD FILE NAME	PIN DIA.	A	B	C	D	E	F	*G 1/4" INCR
KSCLEVPIN	1/4	.249	.375	.25	.125	.190	.093	1"-2"
	3/8	.374	.500	.25	.125	.190	.093	1"-3"
	1/2	.499	.625	.25	.125	.190	.093	1"-3"
	5/8	.624	.750	.25	.156	.250	.125	1"-3"
	3/4	.749	.937	.25	.156	.250	.125	1"-4"
	7/8	.874	1.063	.25	.156	.250	.125	1"-4"
	1	.999	1.187	.25	.187	.250	.125	1 1/2"-5"
	1 1/8	1.124	1.375	.25	.187	.310	.190	1 1/2"-5"
	1 1/4	1.249	1.437	.25	.250	.310	.190	2"-6"
	1 3/8	1.374	1.625	.25	.250	.375	.250	2"-6"
1 1/2	1.499	1.750	.25	.250	.375	.250	2"-6"	

## HEAD TYPE COTTER PIN SHAFT WITH KNURL



## PIPE TAP LUBE OPTION = PT

\*G = LENGTH IN 1/4" INCREMENTS, OTHER LENGTHS  
AVAILABLE UPON REQUEST

H = 1/2 G UNLESS OTHERWISE SPECIFIED

### LUBE OPTION:

ADD "PT", AFTER PIN TYPE

## ORDERING INFORMATION

Specify: Pin Dia — Length — Type —  
Lube Option — "H" Dim

Example: 12-314-SCP-PT-34

**ALL PIN DIMENSIONS ARE GIVEN AS FRACTIONS.** 12 = 1/2, 314 = 3-1/4, 34 = 3/4

Type	Description
SC	HARDENED AND GROUND, SMOOTH COTTER
SCS	STAINLESS, SMOOTH, COTTER
SCU	MILD STEEL, SMOOTH, COTTER
SCP	PREHARDENED, SMOOTH, COTTER
KC	HARDENED AND GROUND, KNURLED, COTTER
KCS	STAINLESS, KNURLED, COTTER
KCU	MILD STEEL, KNURLED, COTTER
KCP	PREHARDENED, KNURLED, COTTER

"Stretch"  
The shortest standard component is given. You may "Stretch" the unit to the desired length.

# Headless Fixture Pin with Retainer



.06 x 45°  
TYP. (2)



## HEADLESS FIXTURE PIN WITH RETAINER

DIMENSIONAL INFORMATION						
CAD FILE NAME	PIN DIA.	*A	B	C	D	*G 1/4" INCR
HRFIXTPIN	1/4	.250	.375	.12	.25	1"-2"
	5/16	.312	.406	.12	.25	1"-3"
	3/8	.375	.437	.12	.25	1"-3"
	7/16	.438	.469	.12	.25	1"-3"
	1/2	.500	.500	.12	.25	1"-3"
	9/16	.562	.531	.12	.25	1"-3"
	5/8	.625	.562	.12	.25	1"-3"
	11/16	.688	.594	.12	.25	1"-4"
	3/4	.750	.625	.12	.25	1"-4"
	13/16	.812	.656	.12	.25	1"-4"
	7/8	.875	.688	.12	.25	1"-4"
	15/16	.938	.719	.12	.25	1 1/2"-5"
	1	1.000	.750	.12	.25	1 1/2"-5"
	1-1/8	1.125	.813	.25	.50	1 1/2"-5"
	1-1/4	1.250	.875	.25	.50	2"-6"
	1-3/8	1.375	.938	.25	.50	2"-6"
	1-1/2	1.500	1.000	.25	.50	2"-6"
	1-3/4	1.750	1.125	.25	.50	3"-8"
	2	2.000	1.250	.25	.50	3"-8"
	2-1/4	2.250	1.375	.25	.50	3"-8"
2-1/2	2.500	1.500	.25	.50	4"-12"	
3	3.000	1.875	.25	.50	4"-12"	
3-1/2	3.500	2.125	.25	.50	6"-14"	
4	4.000	2.375	.25	.50	6"-14"	

PIPE TAP LUBE OPTION = PT



H

PIPE TAP LUBE OPTION = PT2



H

H1

PIPE TAP LUBE OPTION = RPT



H

\*A = FOR TOLERANCE INFORMATION SEE PAGE D-12

\*G = LENGTH IN 1/4" INCREMENTS, OTHER LENGTHS

AVAILABLE UPON REQUEST

H = 1/2 G UNLESS OTHERWISE SPECIFIED

H1 = LOCATION OF ADDITIONAL CROSSHOLE IF REQUIRED

### LUBE OPTION:

ADD "PT" "PT2" OR "RPT" AFTER PIN TYPE

### \*RETAINER OPTION:

RETAINER #E-2R SUPPLIED ON 1/4" - 1" DIA PINS.

RETAINER #13-RD SUPPLIED ON 1-1/8"-1-3/4" DIA PINS,

RETAINER #7-RD SUPPLIED ON 2"-2-1/2" DIA PINS

RETAINER #8-RD SUPPLIED ON 3"-4" DIA PINS UNLESS

OTHERWISE SPECIFIED. DO NOT SPECIFY WHEN

STANDARD RETAINER IS REQUIRED.

SEE PGE D-23 FOR ADDITIONAL RETAINER OPTIONS.

### Type

### Description

HR	HARDENED AND GROUND
HRS	STAINLESS
HRU	MILD STEEL
HRP	PREHARDENED, GROUND AND POLISHED

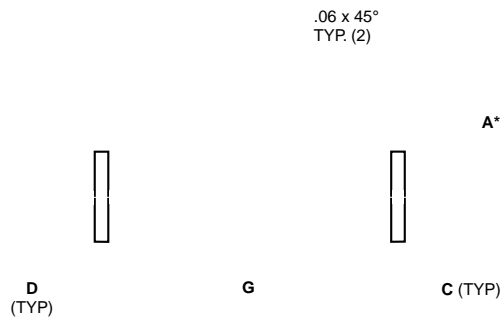
## ORDERING INFORMATION

Specify: Pin Dia — Length — Type —  
Lube Option — "H" Dim —  
"H1" Dim — \*Retainer

Example: 12-212-HR-PT-E1-RD

ALL PIN DIMENSIONS ARE GIVEN AS FRACTIONS. 12 = 1/2, 212 = 2-1/2

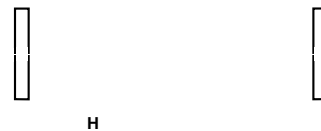
# Headless Fixture Pin with Double Retainer



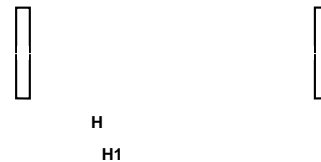
## HEADLESS FIXTURE PIN WITH DOUBLE RETAINER

DIMENSIONAL INFORMATION						
CAD FILE NAME	PIN DIA.	*A	B	C	D	*G 1/4" INCR
HDRFIXTPIN	1/4	.250	.375	.12	.25	1"-2"
	5/16	.312	.406	.12	.25	1"-3"
	3/8	.375	.437	.12	.25	1"-3"
	7/16	.438	.469	.12	.25	1"-3"
	1/2	.500	.500	.12	.25	1"-3"
	9/16	.562	.531	.12	.25	1"-3"
	5/8	.625	.562	.12	.25	1"-3"
	11/16	.688	.594	.12	.25	1"-4"
	3/4	.750	.625	.12	.25	1"-4"
	13/16	.812	.656	.12	.25	1"-4"
	7/8	.875	.688	.12	.25	1"-4"
	15/16	.938	.719	.12	.25	1-1/2"-5"
	1	1.000	.750	.12	.25	1-1/2"-5"
	1-1/8	1.125	.813	.25	.50	1-1/2"-5"
	1-1/4	1.250	.875	.25	.50	2"-6"
	1-3/8	1.375	.938	.25	.50	2"-6"
	1-1/2	1.500	1.000	.25	.50	2"-6"
	1-3/4	1.750	1.125	.25	.50	3"-8"
	2	2.000	1.250	.25	.50	3"-8"
	2-1/4	2.250	1.375	.25	.50	3"-8"
2-1/2	2.500	1.500	.25	.50	4"-12"	
3	3.000	1.875	.25	.50	4"-12"	
3-1/2	3.500	2.125	.25	.50	6"-14"	
4	4.000	2.375	.25	.50	6"-14"	

### PIPE TAP LUBE OPTION = PT



### PIPE TAP LUBE OPTION = PT2



## ORDERING INFORMATION

**Specify:** Pin Dia — Length — Type — Lube Option — "H" Dim — "H1" Dim — \*Retainer Option

**Example:** 34-3-HDR-PT2-114-134

**ALL PIN DIMENSIONS ARE GIVEN AS FRACTIONS.** 34 = 3/4, 3 = 3, 114 = 1-1/4  
134 = 1-3/4

Type	Description
<b>HDR</b>	HARDENED AND GROUND
<b>HDRS</b>	STAINLESS
<b>HDRU</b>	MILD STEEL
<b>HDRP</b>	PREHARDENED, GROUND AND POLISHED

"Stretch"  
The shortest standard component is given.  
You may "Stretch" the unit to the desired length.

\*A = FOR TOLERANCE INFORMATION SEE PAGE D-12

\*G = LENGTH IN 1/4" INCREMENTS, OTHER LENGTHS AVAILABLE UPON REQUEST

H = 1/2 G UNLESS OTHERWISE SPECIFIED

H1 = LOCATION OF ADDITIONAL CROSSHOLE IF REQUIRED

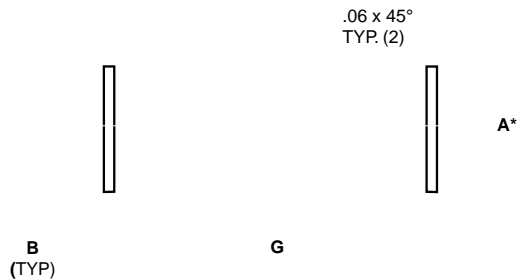
### LUBE OPTION:

ADD "PT" OR "PT2" AFTER PIN TYPE

### \*RETAINER OPTION:

RETAINER #E-2R SUPPLIED ON 1/4" - 1" DIA PINS.  
RETAINER #13-RD SUPPLIED ON 1-1/8"-1-3/4" DIA PINS,  
RETAINER #7-RD SUPPLIED ON 2"-2-1/2" DIA PINS  
RETAINER #8-RD SUPPLIED ON 3"-4" DIA PINS UNLESS OTHERWISE SPECIFIED. DO NOT SPECIFY WHEN STANDARD RETAINER IS REQUIRED.  
SEE PGE D-23 FOR ADDITIONAL RETAINER OPTIONS.

# Headless Fixture Pin with Double Snap Ring



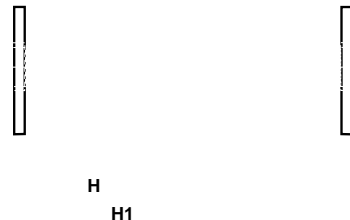
## HEADLESS FIXTURE PIN WITH DOUBLE SNAP RING

DIMENSIONAL INFORMATION					
CAD FILE NAME	PIN DIA.	A	B	C	*G 1/4" INCR
SXFIXTPIN	1/4	.250	.125	.54	1"-2"
	3/8	.375	.130	.68	1"-3"
	1/2	.500	.139	.82	1"-3"
	5/8	.625	.165	.96	1"-3"
	3/4	.750	.180	1.14	1"-4"
	7/8	.875	.256	1.32	1"-4"
	1	1.000	.256	1.53	1-1/2"-5"
	1-1/8	1.125	.256	1.55	1-1/2"-5"
	1-1/4	1.250	.256	1.69	2"-6"
	1-3/8	1.375	.256	1.80	2"-6"
	1-1/2	1.500	.256	1.99	2"-6"
	1-3/4	1.750	.256	2.21	3"-8"
	2	2.000	.256	2.44	3"-8"
	2-1/4	2.250	.281	2.87	3"-8"
2-1/2	2.500	.296	3.12	4"-12"	

### PIPE TAP LUBE OPTION = PT



### PIPE TAP LUBE OPTION = PT2



\*A = FOR TOLERANCE DATA SEE PAGE D-12

\*G = LENGTH IN 1/4" INCREMENTS, OTHER LENGTHS AVAILABLE UPON REQUEST

H = 1/2 G UNLESS OTHERWISE SPECIFIED

H1 = LOCATION OF ADDITIONAL CROSSHOLE IF REQUIRED

#### LUBE OPTION:

ADD "PT" OR "PT2" AFTER PIN TYPE

Type	Description
SX	HARDENED AND GROUND, DOUBLE SNAP RING
SXS	STAINLESS, DOUBLE SNAP RING
SXU	MILD STEEL, DOUBLE SNAP RING
SXP	PREHARDENED, GROUND AND POLISHED, DOUBLE SNAP RING

## ORDERING INFORMATION

Specify: Pin Dia — Length — Type —  
Lube Option — "H" Dim —  
"H1" Dim

Example: 38-114-SXP-PT

ALL PIN DIMENSIONS ARE GIVEN AS FRACTIONS. 38 = 3/8, 114 = 1-1/4

# Headless Fixture Pin with Set Screw

.06 x 45°  
TYP. (2)

## SET SCREW FIXTURE PIN

DIMENSIONAL INFORMATION					
CAD FILE NAME	PIN DIA.	*A	B	C	*G 1/4" INCR
HSFIXTPIN	1/4	.250	*	.250	1"-2"
	5/16	.312	*	.250	1"-3"
	3/8	.375	*	.375	1"-3"
	7/16	.438	*	.375	1"-3"
	1/2	.500	*	.375	1"-3"
	9/16	.562	*	.375	1"-3"
	5/8	.625	*	.500	1"-3"
	11/16	.688	*	.500	1"-4"
	3/4	.750	*	.500	1"-4"
	13/16	.812	*	.500	1"-4"
	7/8	.875	*	.500	1"-4"
	15/16	.938	*	.500	1 1/2"-5"
	1	1.000	*	.500	1 1/2"-5"
	1-1/8	1.125	*	.500	1 1/2"-5"
	1-1/4	1.250	*	.500	2"-6"
	1-3/8	1.375	*	.500	2"-6"
	1-1/2	1.500	*	.500	2"-6"
	1-3/4	1.750	*	.500	3"-8"
	2	2.000	*	.500	3"-8"
	2-1/4	2.250	*	.500	3"-8"
2-1/2	2.500	*	.500	4"-12"	
3	3.000	*	.500	4"-12"	
3-1/2	3.500	*	.500	6"-14"	
4	4.000	*	.500	6"-14"	

\*A = FOR TOLERANCE INFORMATION SEE PAGE D-12

\*B = SPECIFY LOCATION

\*G = LENGTH IN 1/4" INCREMENTS, OTHER LENGTHS

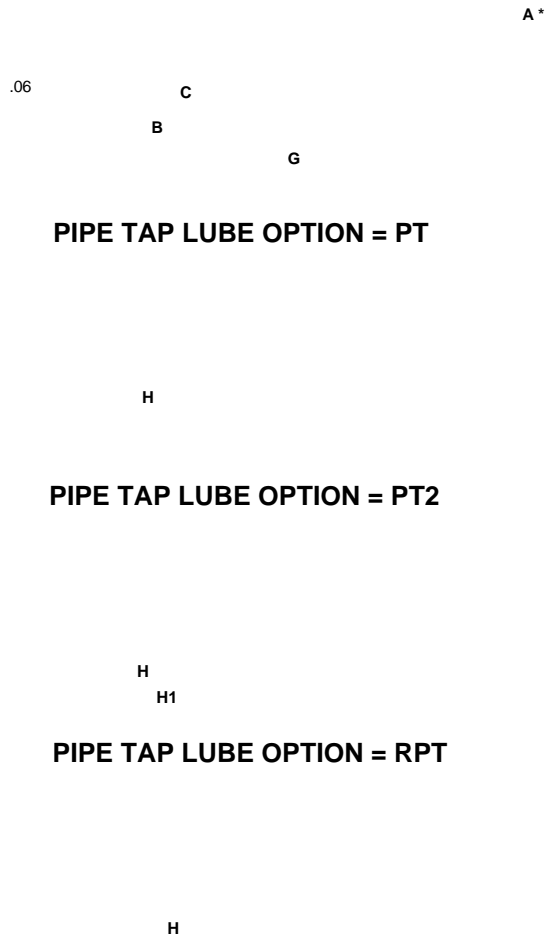
AVAILABLE UPON REQUEST

H = 1/2 G UNLESS OTHERWISE SPECIFIED

H1 = LOCATION OF ADDITIONAL CROSSHOLE IF REQUIRED

### LUBE OPTION:

ADD "PT", "PT2" OR "RPT" AFTER PIN TYPE



## ORDERING INFORMATION

Specify: Pin Dia — Length — Type — Lube Option — "B" Dim — "H" Dim — "H1" Dim

Example: 12-212-HS-PT-12-134

**ALL PIN DIMENSIONS ARE GIVEN AS FRACTIONS.** 12 = 1/2, 212 = 2-1/2, 12 = 1/2, 134 = 1-3/4

Type	Description
HS	HARDENED AND GROUND
HSS	STAINLESS
HSU	MILD STEEL
HSP	PREHARDENED, GROUND AND POLISHED

"Stretch"

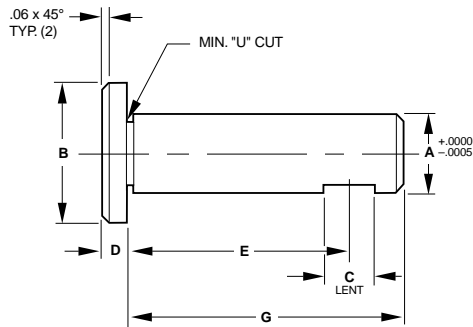
The shortest standard component is given. You may "Stretch" the unit to the desired length.



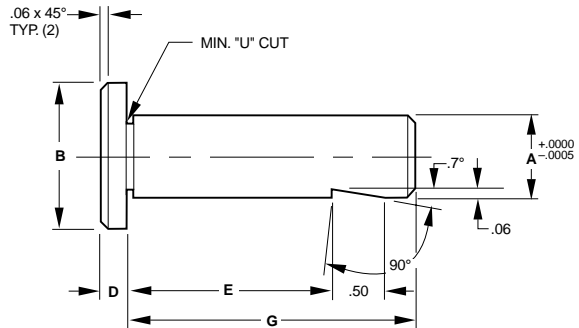
# Head Type Fixture Pin with Set Screw Flat & Whistle Notch



## HEAD TYPE SHAFT WITH SET SCREW FLAT



## HEAD TYPE SHAFT WITH WHISTLE NOTCH



## HEAD TYPE FIXTURE PIN WITH SET SCREW FLAT OR WHISTLE NOTCH

DIMENSIONAL INFORMATION						
CAD FILE NAME	PIN DIA	A	B	C	D	*G 1/4" INCR
SFFIXTPIN OR SWFIXTPIN	1/4	.249	.375	.250	.125	1"-2"
	3/8	.374	.500	.375	.125	1"-3"
	1/2	.499	.625	.375	.125	1"-3"
	5/8	.624	.750	.500	.125	1"-3"
	3/4	.749	.937	.500	.125	1"-4"
	7/8	.874	1.063	.500	.125	1"-4"
	1	.999	1.187	.500	.187	1-1/2"-5"
	1 1/8	1.124	1.375	.500	.187	1-1/2"-5"
	1 1/4	1.249	1.437	.500	.250	2"-6"
	1 3/8	1.374	1.625	.500	.250	2"-6"
1 1/2	1.499	1.750	.500	.250	2"-6"	

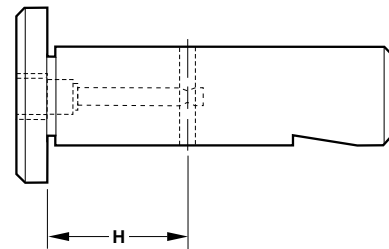
E = LOCATION OF FLAT OR WHISTLE NOTCH  
 \*G = LENGTH IN 1/4" INCREMENTS, OTHER LENGTHS AVAILABLE UPON REQUEST

H = 1/2 G UNLESS OTHERWISE SPECIFIED  
 H1 = LOCATION OF ADDITIONAL CROSSHOLE IF REQUIRED

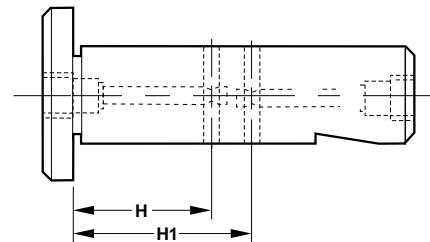
**LUBE OPTION:**  
 ADD "PT", "PT2" OR "RPT" AFTER PIN TYPE

Type	Description
SF	HARDENED AND GROUND, SET SCREW
SFS	STAINLESS, SET SCREW
SFU	MILD STEEL, SET SCREW
SFP	PREHARDENED, SET SCREW
SW	HARDENED AND GROUND, WHISTLE NOTCH
SWS	STAINLESS, WHISTLE NOTCH
SWU	MILD STEEL, WHISTLE NOTCH
SWP	PREHARDENED, WHISTLE NOTCH

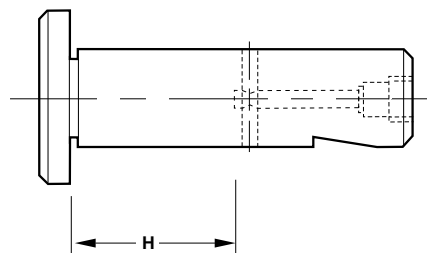
## PIPE TAP LUBE OPTION = PT



## PIPE TAP LUBE OPTION = PT2



## PIPE TAP LUBE OPTION = RPT



## ORDERING INFORMATION

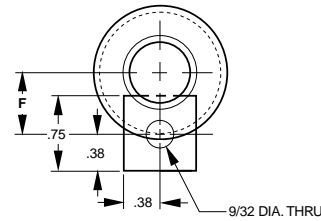
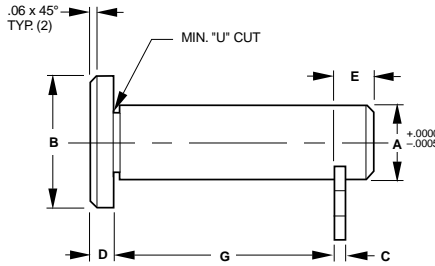
**Specify:** Pin Dia. — Length — Type  
 Lube Option — "E" Dim  
 "H" Dim — "H1" Dim

**Example:** 34-212-SWP-PT-2

### "Stretch"

The shortest standard component is given.  
 You may "Stretch" the unit to the desired length.

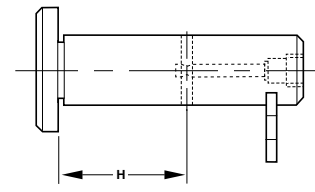
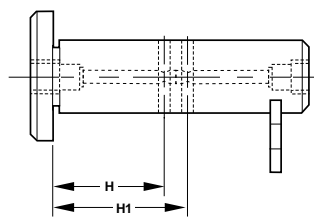
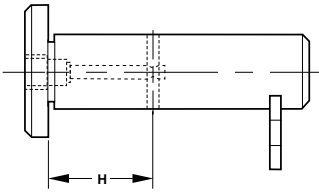
# Head Type Fixture Pin with Retainer



PIPE TAP LUBE OPTION = PT

PIPE TAP LUBE OPTION = PT2

PIPE TAP LUBE OPTION = RPT



## HEAD TYPE FIXTURE PIN WITH RETAINER

DIMENSIONAL INFORMATION								
CAD FILE NAME	PIN DIA.	A	B	C	D	E	F	*G 1/4" INCR
SRFIXTPIN	1/4	.249	.375	.125	.125	.25	.375	1"-2"
	3/8	.374	.500	.125	.125	.25	.437	1"-3"
	1/2	.499	.625	.125	.125	.25	.500	1"-3"
	5/8	.624	.750	.125	.125	.25	.562	1"-3"
	3/4	.749	.937	.125	.125	.25	.625	1"-4"
	7/8	.874	1.063	.125	.125	.25	.688	1"-4"
	1	.999	1.187	.125	.187	.25	.750	1-1/2"-5"
	1 1/8	1.124	1.375	.250	.187	.38	.812	1-1/2"-5"
	1 1/4	1.249	1.437	.250	.250	.38	.875	2"-6"
	1 3/8	1.374	1.625	.250	.250	.38	.938	2"-6"
1 1/2	1.499	1.750	.250	.250	.38	1.000	2"-6"	

\*G = LENGTH IN 1/4" INCREMENTS, OTHER LENGTHS AVAILABLE UPON REQUEST

H = 1/2 G UNLESS OTHERWISE SPECIFIED

H1 = LOCATION OF ADDITIONAL CROSSHOLE IF REQUIRED

### LUBE OPTION:

ADD "PT", "PT2" OR "RPT" AFTER PIN TYPE

### RETAINER OPTION:

RETAINER #E2-R SUPPLIED ON 1/4"-1" DIA PINS AND #E4-R SUPPLIED ON 1-1/8" - 1-1/2" DIA PINS UNLESS OTHERWISE SPECIFIED. SEE PAGE D-23 FOR ADDITIONAL RETAINER OPTIONS.

## ORDERING INFORMATION

Specify: Pin Dia. — Length — Type  
Lube Option — "E" Dim  
"H" Dim — "H1" Dim —  
Retainer Option

Example: 34-212-SR-PT

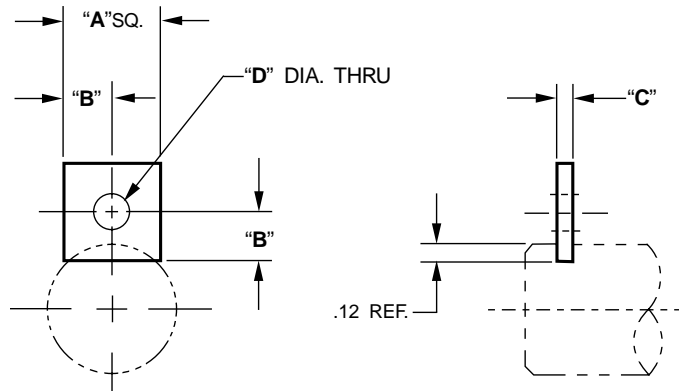
Type	Description
SR	HARDENED AND GROUND, SMOOTH, RETAINER
SRS	STAINLESS, SMOOTH, RETAINER
SRU	MILD STEEL, SMOOTH, RETAINER
SRP	PREHARDENED, SMOOTH, RETAINER

CAD Directory  
Mach-Tool\FixtPin

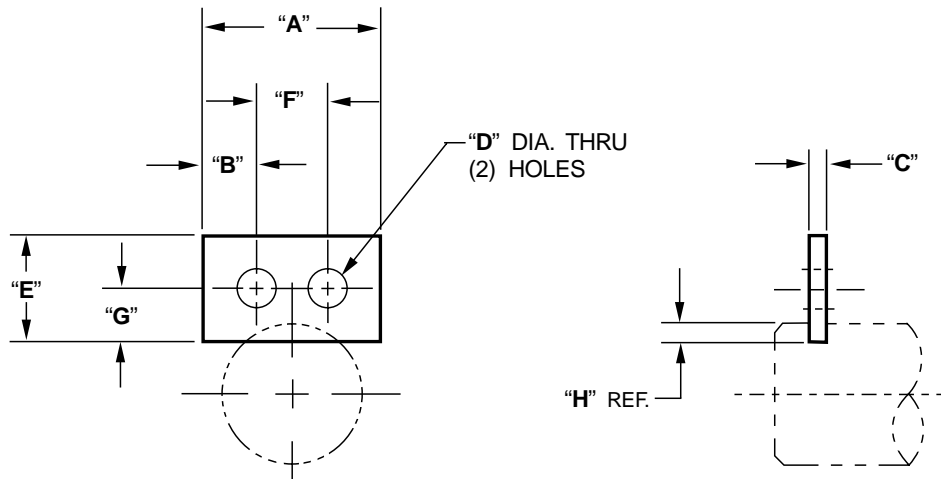
### "Stretch"

The shortest standard component is given. You may "Stretch" the unit to the desired length.

# Fixture Pin Retainers (Inch)



CAD FILE NAME	RETAINER NUMBER	"A" DIM	"B" DIM	"C" DIM	"D" DIM
E-RET	E1-R	.62	.31	.12	9/32
	E2-R	.75	.38	.12	9/32
	E3-R	1.00	.50	.12	9/32
	E4-R	.75	.38	.25	9/32
	E5-R	.75	.38	.12	11/32
	E6-R	.75	.38	.25	11/32
	E7-R	1.00	.50	.25	11/32
	E8-R	1.00	.50	.25	13/32
	E9-R	1.25	.62	.25	13/32
	E10-R	1.50	.75	.25	17/32



CAD FILE NAME	RETAINER NUMBER	"A" DIM	"B" DIM	"C" DIM	"D" DIM	"E" DIM	"F" DIM	"G" DIM	"H" DIM
E-RET	E1-RD	1.25	.25	.12	9/32	.62	.75	.31	.12
	E2-RD	1.25	.38	.12	9/32	.75	.50	.38	.12
	E3-RD	1.50	.50	.12	9/32	1.00	.50	.50	.12
	E4-RD	1.25	.38	.25	9/32	.75	.50	.38	.12
	E5-RD	1.25	.32	.12	11/32	.75	.62	.44	.12
	E6-RD	1.50	.38	.12	11/32	.75	.75	.38	.12
	E7-RD	1.50	.38	.25	11/32	1.00	.75	.50	.25
	E8-RD	2.00	.44	.25	11/32	1.25	1.12	.82	.25
	E9-RD	1.75	.50	.25	13/32	1.00	.75	.50	.12
	E10-RD	2.00	.62	.25	13/32	1.25	.75	.62	.12
	E11-RD	2.50	.50	.25	13/32	1.50	1.50	1.00	.38
	E12-RD	2.50	.75	.25	17/32	1.50	1.00	.75	.12