

130678/2024/HEP-SWM20900

FOR PROCUREMENT ONLY

ASSY DRG.: -15211001543

NOTES: -

1. MAKE OF GEARBOX TO BE APPROVED BY BHEL PRIOR TO BULK SUPPLY.
2. ACCEPTANCE CRITERION OF GEARBOX AS PER SG12705.
3. ALL THE NOTES OF PAWL & LEVER OF ITEM-003 ARE TO BE ENSURED.
4. ALL DIMENSIONS & PARALLEL SURFACES AS MARKED IN THE DRG. OF ITEM-012 ARE TO BE MAINTAINED.
5. ALL THE NOTES OF ITEMS-036 ARE TO BE ENSURED
6. VENDORS MUST HAVE EXPERIENCE OF SIMILAR ASSY. MANUFACTURING & SUPPLY FOR MV SWITCHGEAR APPLICATION.
7. VENDOR SHALL FOLLOW & SUBMIT RECORD OF DOCUMENTS IN LINE WITH QUALITY ASSURANCE PLAN AS PER SG15211

001	001			014	SPINDLE		45211001527	001	BP9099430914	NA	Kg	0.086					
												001					
001	001			013	LEVER 2.5TKX54.5X90 H R S SHEET		25211001509	001	BP9099431295	NA	Kg	0.077					
									AA10113			001					
001	001			012	PLATE 4TKX176X192HRS SHEET		25211001543	001	BP9099431627	NA	Kg	1.061					
									AA10113			001					
002	002			011	CIRCLIP 000		45211001639	001	BP9099433328	NA	Kg	0.002					
												001					
001	001			010	PIN BEARING PIN		45211001623	001	BP9099432577	NA	Kg	0.007					
												001					
001	001			009	SUPPORT ROLLER.		45211001622	001	BP9029432560	NA	Kg	0.022					
									SG12720			001					
002	002			008	BUSH DIA25X6LG HT BRASS ROD		45211001528	001	BP9099430922	NA	Kg	0.050					
									AA12117			001					
001	001			007	D-LEVER 4TKX130X147.5HRS SHEET		25211001508	001	BP9099430400	NA	Kg	0.602					
									AA10113			001					
001	001			006	SUPPORT ROLLER		45211001621	001	BP9029432551	NA	Kg	0.022					
												001					
002	002			005	WASHER MCD STEEL 13-ST				AA7161001072	NA	Kg	0.012					
									AA7161001			001					
001	001			004	NEEDLE BEARING WITH INNER BUSH		45211001620	001	BP9029432543	NA	Kg	0.014					
												001					
001	001			003	CLOSING LATCH		25211001559			NA	Kg	0.455					
								00				001					
001	001			002	CLIP		25211001588	002	BP9099432313	NA	Kg	0.001					
												001					
001	001			001	GEAR BOX		05211001502	002	BP9099433310	NA	Kg	0.303					
												001					
VAR01	VAR00	65	75	78 79	25 27 29	58 59 60	77	29 31	34	MATL. CODE	45	55 56	58	UNIT WT.	65	72	ZONE
		REMARKS	VAR. NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	IT.ND.	VAR.	MATL. SPCN.	54	UNIT	QTY.	71	GS		
28 → CARD TYPE-3					28 → CARD TYPE-1					28 → CARD TYPE-2							

ADDITIONAL INFORMATION

STATUS OF DRAWING

B


DISTRIBUTION OF PRINTS

O.COPY-----1
SWM-----3
TCX-----1mRikn dk i-dkj ;k
xk-gd@fj;kstuk dk uke
TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT

VCB

HAKjr gsoh bysfDV&dYl fyfeVsm
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

uke@NAME	gLrk@SIGN	fnaukd@ATE	osfj... dh
MKN	Sd/-	16.11.11	la@j;k NO. OF VAR
AKHIL	Sd/-	16.11.11	01
MAK	Sd/-	16.11.11	

REV.	DATE	ALTERED	SKG	REV.	DATE	ALTERED	SKG	foHAKx DEPT SWE	vu_ Vky_ uki dh Js.kh UNTIL.DIMS. GR.		vugjkr SCALE	HAKj fd_xk- WEIGHT (K.G.)	vis_ M&kbZax dk lanHAZ REF. TO ASSY. DRG.	en d- ITEM NO.	en_ la@j;k NO. OF ITEM	
02	12.07.19	CHECKED	AKHIL	01	16.01.16	CHECKED	AKHIL	dkM CODE 409	C/M/F		1:1		—	—	037	
— NOTE 7 ADDED.				— VAR. 01 ADDED — NOTE-6 ADDED				'kh"AZ@OLE			B.O.M. FOR CLOSING MECH.			vkjs[A d-@DRAWING NO. 35211001919		lqu_@REV 02
(DCA NO. 36043)				(DCA NO. 33714)							i="B d-@. No. 01			i="Bksa dh la@j;k NO. OF SHT. 03		

130678/2024/HEP-SWM20900

28 → CARD TYPE-2

i="Bksa dh Ia": NO. OF SHT.	0.3
-----------------------------	-----

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130678/2024/HEP-SWM20900

001	—			037	MOTOR 220 V (DC)		25211001582	009	—		NA	Kg	001		
001	001			036	LEVER		25211001506	001	—		NA	Kg	0.220		
001	001			035	INNER RING		45211001620	002	BP9029437952		NA	Kg	0.007		
001	001			034	WASHER MCD. 8.4-ST.				AA7161001048		NA	Kg	0.001		
001	001			033	WASHER		25211001586	006	BP9099432380		NA	Kg	0.004		
001	001			032	WASHER		25211001586	005	BP9099432259		NA	Kg	0.001		
002	002			031	SCRU HEX. P M6X16-8.8/R16				AA7121123045		NA	Kg	0.010		
002	002			030	WASHER		25211001586	004	BP9099432240		NA	Kg	0.001		
001	001			029	SPACER 16 O/DX2.3TKX26LG.CDSC STEEL		25211001585	004	BP9099433107		NA	Kg	0.008		
VAR01	VAR00	65	75	78 79	25 27	29	58 59 60	77	29 31 34	45	55 56 58	65 72			
		REMARKS	VAR. NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	IT.ND.	MATL. CODE		UNIT WT.				
								VAR.	MATL. SPCN.		QTY.				
28 → CARD TYPE-3						28 → CARD TYPE-1						28 → CARD TYPE-2			

ADDITIONAL INFORMATION

STATUS OF DRAWING

B

DISTRIBUTION OF PRINTS

O.COPY-----1
SWM-----3
TCX-----1

mRikn dk i—dkj ;k
xk—gd@fj;kstuk dk uke
TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT

VCB



HAKjr gsoh bysfDV&dYl fyfeVsM
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

ukc@NAME	gLrk@SIGN	fnaukd@ATE	osfj_ dh
MKN	Sd/—	16.11.11	la;j,k NO. OF VAR
tWpk ckd	AKHIL	Sd/—	16.11.11
vugcksfr APPD	MAK	Sd/—	16.11.11

foHAKx
DEPT SWE

vu_ Vky_ uki dh Js.kh
UNTIL.DIMS. GR.



vugjkr
SCALE

1:1

HAKj fd_xk—
WEIGHT (K.G.)

vis_ M&kbZax dk lanHAZ
REF. TO ASSY. DRG.

en d—
ITEM NO.

en_ la;j,k
NO. OF
ITEM

dkm
CODE 409

C/M/F

'kh"AZ@OLE

B.O.M. FOR
CLOSING MECH.

vkjs[A d—DRAWING NO.

35211001919

i="B d—SHT. No. 03

i="Bksa dh la;j,k NO. OF SHT. 03

REV.	DATE	ALTERED	SKG
02	12.07.19	CHECKED	AKHIL
		APPROVED	AD

— NOTE 7 ADDED.

(DCA NO. 36043)

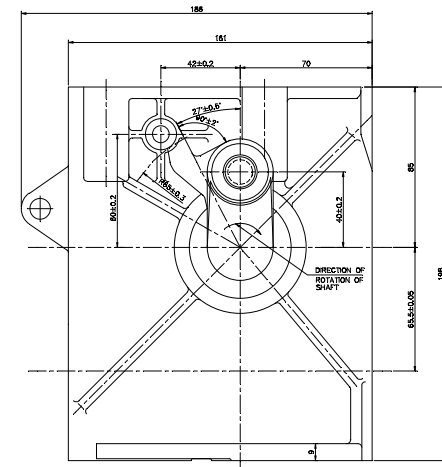
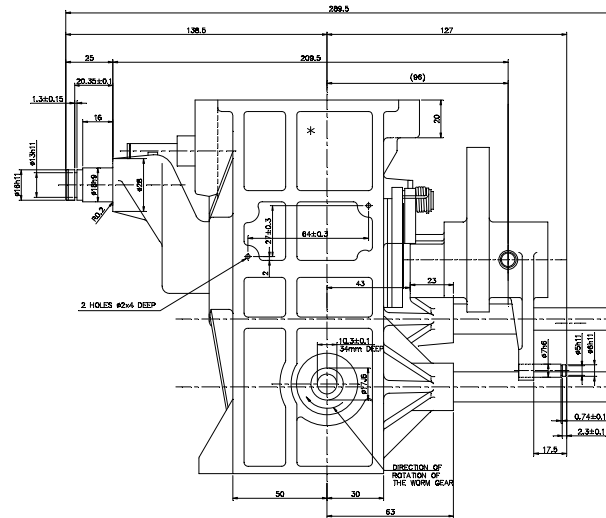
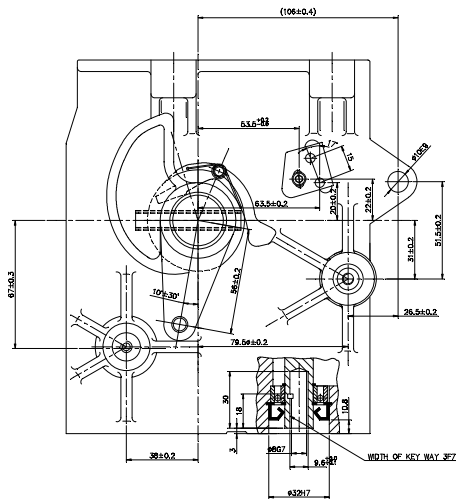
REV.	DATE	ALTERED	SKG
01	16.01.16	CHECKED	AKHIL
		APPROVED	MAK

— VAR. 01 ADDED
— NOTE-6 ADDED

(DCA NO. 33714)

INVENTORY NO. SIGN. & DATE REF. DRG. NO.

DRG NO. 0 521 10 01502



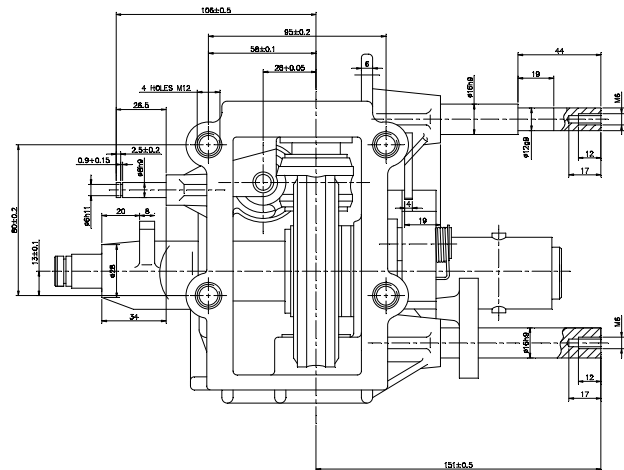
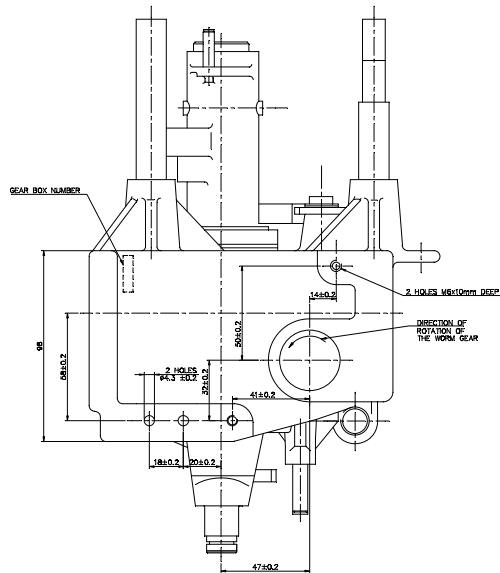
SPECIAL NOTES FOR GEAR BOX

1. EACH GEAR BOX MUST BE TESTED AT SUPPLIERS WORKS FOR 50 OPERATIONS WITH SPRING TO DROG. 32611001558 AND ELECTRICAL MOTOR MOUNTED ON OPERATING FIXTURE.
2. FROM DROPPING SHOULD BE RECORDED FOR THE LAST FIVE OPERATIONS.
- (3) SPRING CHARGING TIME.
- (4) MOTOR CURRENT.
3. THE GEAR BOX MUST BE FREE FROM ABNORMAL SOUND OR EXCESSIVE FRICTION DURING THE SPECIFIED OPERATIONS.
4. EACH GEAR BOX DURING BULK SUPPLY MUST BE ACCOMPANIED WITH A TEST CERTIFICATE FOR TESTS AND OBSERVATIONS AS SPECIFIED UNDER (1) (2) & (3) ABOVE.
5. SERIAL NO. & MANUFACTURE NAME MUST BE ENGRAVED ON GEAR BOX CASTING.
6. EACH GEAR BOX MUST BE PLACED IN SEPARATE CARD BOARD CARTONS BEFORE PLACING THE LOT IN MODULAR CRATE FOR BULK SUPPLY.
7. EACH ITEM OF BULK SUPPLY MUST BE ACCOMPANIED WITH:-
- A) A TEST CERTIFICATE FOR TESTS AND OBSERVATIONS AS SPECIFIED IN REPORTS FOR THE FOLLOWING ITEMS (1) CAM (2) FORGED SHAF (3) ALUMINIUM CASTING (4) WORK GEAR (5) WORK V. PINION.
- B) MATERIAL AND SHORE HARDNESS TEST REPORTS FOR RUBBER SLEGS AND GASKETS.
- C) HAND CHARGING DIRECTIONS (NEAR HAND CHARGING POCKET) i.e. CLOCKWISE TO BE MARKED, (FOR EXCLUSIVE HAND CHARGING GEAR BOX ONLY).
- D) HAND CHARGING GEAR BOX SHALL BE PLANT HAVING POSITIVE LEVELS. SHALL BE MARKED AT LOCATION MARKED *. (FOR EXCLUSIVE HAND CHARGING GEAR BOX ONLY.)
10. SUPPLIER NAME, LOGO, PG. NO., SERIAL NO., SUPPLY DATE & BATCH NO. IS TO BE ENGRAVED/LASER PRINTED ON EACH MARKED AND UNMARKED GEAR BOX. BATCH NO. SHALL BE 58/7/XXXX WHERE YY IS THE YEAR OF MANUFACTURE AND XXXX IS A 4 DIGIT RUNNING SERIAL NUMBER.

NOTES: –

1. THIS GEAR BOX ASSY. IS EQUIVALENT OF DRG. 1 HG 40900700
"GATRIEBE" OF M/S SIEMENS WEST GERMANY.
FOR ITEM 002 SIEMENS "GATRIEBE 1 HG 40900700-002"
2. FOR SECTIONAL ARRGT. REF. DRG. O 521 10 01505.
3. FOR TEST REQUIREMENT & ACCEPTANCE CRITERION
REFER PRODUCT STANDARD SG 12705.

FOR B.O.M. REFER DRG. 3 521 10 01592.



VIEW-X

SP0080106475		003	GEAR BOX (HAND CHARGING)		3 521 10 1592	01			003		
SP009643310		002	GEAR BOX		3 521 10 1582	00			002		
SP0432101		-001	GEAR BOX								
1	2	3	4	5	6	7	8	9	10	11	12
VAR 043	REMARKS	VAR 043	ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	UNIT, CODE	QTY	UNIT	VAR 043	QTY
						UNIT, CODE					
						UNIT, CODE					
DB - CHRG TYPE-C		DB - CHRG TYPE-C		DB - CHRG TYPE-C							

ADDITIONAL INFORMATION

STATUS OF DRAWING

DISTRIBUTION OF PRINTS

O/C - 1 SWM - 3

T/C - 1

mrtén de t-déj ki
 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 67

A2

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IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

52110\25211001507-R07-S01

SIGN AND DATE
REF. DRG. NO.

INVENTORY NO.

FIRST ANGLE PROJECTION

DRG. NO.2 521 10 01 507

2

3

4

5

6

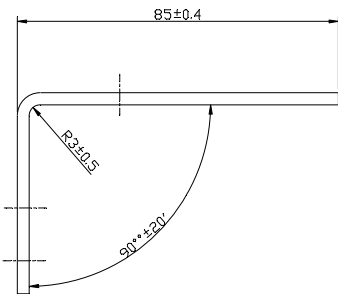
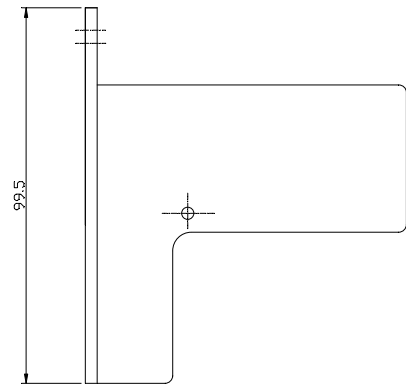
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8

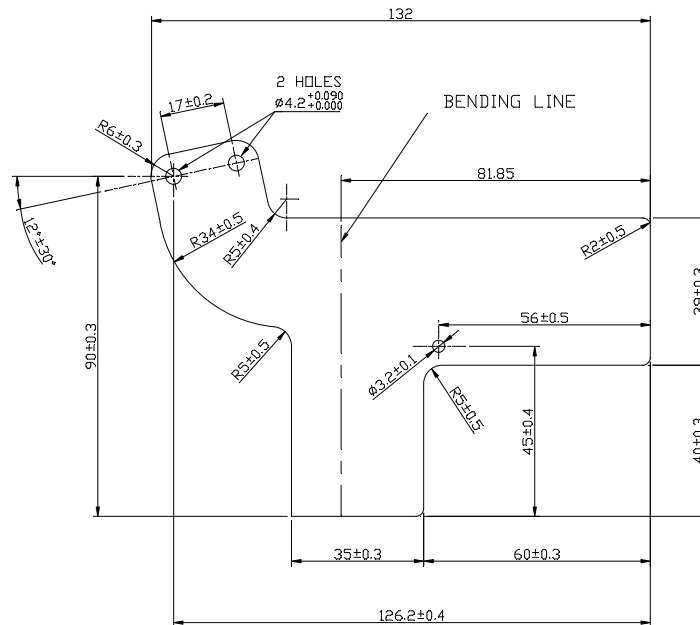
ALL DIMENSIONS ARE IN mm

13/64

130



001 002



3.15 THICK
DEVELOPMENT OF IT. 002

TOOL LIST :-

1492786-BLANKING TOOL
1492787-DRILL JIG
1498846-BENDING TOOL

NITRIDING IN BATH AS PER SV727 FOR IT. 001

FINISH:- PARKERISE TO PROCESS SPEC. 7609 FOR IT. 001

NOTE :-

1. ANNEAL IN NITROGEN GAS AFTER BENDING AS PER PR-SPEC. 7104
NITROGEN SUPPLY SHOULD BE INTRODUCED AT 400°C AND SHOULD
BE MAINTAINED DURING HEATING, SOAKING AND DURING COOLING .
NITROGEN SUPPLY TO BE DISCONNECTED WHEN JOB COOLED TO 400°C.
2. NITRIDING SURFACE HARDNESS 325 HV (MIN.) NITRIDING DEPTH 6 μ (MIN.)

| | | | | | | | | | | | |
|--------|----------|----------|---------|----------------------------------|------|-------------|--------------|----------------------------|--------|------|-------------------|
| | ST943429 | | 002 | 3.15Tk.x99.5x132
H.R.S. SHEET | | | AA1011713136 | | | | |
| | ST943428 | | 001 | LEVER | | 25211001507 | 002 | AA10113 | | | |
| VAR 00 | REMARKS | VAR. NO. | ITEM NO | DESCRIPTION | STD. | DRAWING NO. | IT.NO
VAR | MATL. CODE
MATL. SPECN. | A
C | UNIT | UNIT W.T.
QTY. |

ADDITIONAL INFORMATION

STATUS OF DRAWING B

DISTRIBUTION OF PRINTS
D/C -1 TCX -1
SWM -3

mRikn dk i-dkj ;k
xk-gd@fj;kstuk dk uke
TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT

V.C.B.



HAKjr gsoh bysDV&dYI fyfeVsm
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

| | | | |
|----------|----------|-------------|---------|
| uke@NAME | gUrK_IGN | fmuaka@DATE | oofj_dh |
| T.S.E. | | 09.08.82 | NO. OF |
| M.Z.G. | Sd/- | 12.08.82 | VAR. |
| R.K.G. | Sd/- | | 01 |

foHAKk
DEPT. W/E
UNTL. DIMS. GR.
M
CODE AA 0230208



SCALE
1:1

HAQf id_xk
WEIGHT (KG.)

ds_M&kbZox dk lonHAZ
REF. TO ASSY. DRG.

en d--
ITEM NO.

iqu--
REV.

en la:k
NO. OF

ITEM
002

LEVER

M&kbZox DRAWING NO.

2 521 10 01 507

im"B d_GHT. NO.01 im"Bsoo dh la:k NO OF SHT.01

| | | | | |
|------|----------|---------|---------|----------|
| REV. | DATE | ALTERED | CHECKED | APPROVED |
| 07 | 14.10.03 | | | |

SURFACE HARDNESS WAS
325-375 HV & CASE DEPTH
WAS 6-10 μ

(DCA NO.)

| | | | | |
|------|----------|---------|---------|----------|
| REV. | DATE | ALTERED | CHECKED | APPROVED |
| 06 | 21.12.01 | | | |

DRG REDRAWN.

(DCA NO. 11141)

| | | | | |
|------|----------|---------|---------|----------|
| REV. | DATE | ALTERED | CHECKED | APPROVED |
| 05 | 26.02.88 | | | |

NOTE 2 ADDED.

| | | | | |
|------|----------|---------|---------|----------|
| REV. | DATE | ALTERED | CHECKED | APPROVED |
| 04 | 20.03.86 | | | |

NOTE CHANGED.



BENDING RADIOUS 4±0.2

NOTE :-

1. SUPPLIERS IDENTIFICATION MARKS & PO NO. TO BE PUT AT # MARKED LOCATION BEFORE BENDING, VISIBLE OUTSIDE.



FINISH : - MANGANESE PHOSPHATING TO
PR. S AA0673616

| TOOL LIST | | |
|-----------|---------|--|
| ITEM | TOOL | DESCRIPTION |
| - | 1492675 | PIERCINGS & BLANKING TOOL
(FOR 300/500 T PRESS) |
| - | 1492676 | BENDING TOOL |
| - | 1492677 | DRILL JIG |
| - | 1492611 | 12 E 9 REAMER |
| - | 1492612 | 12 E 9 PLUG GAUGE |
| - | 1498740 | 14 E 9 REAMER |
| - | 1498741 | 14 E 9 PLUG GAUGE |
| - | 1498742 | 20 H 9 REAMER |
| - | 1498743 | 20 H 9 PLUG GAUGE |
| - | 1498785 | MILLING FIXTURE |
| - | 1498856 | HARDENED BLOCK FOR 16.2
DIMENSION |
| - | 1564224 | SNAP GAUGE |

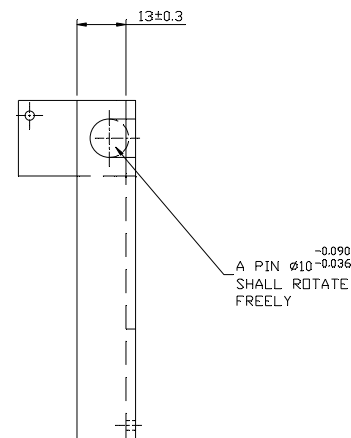
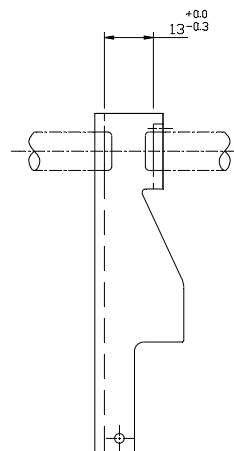


VIEW OF STRIP FOR PUNCHING

| | | | | | | | | | | | | |
|--------|--------------|---------|---------|--|-----|-------------|--------------|--------------|-----|-------|----------|------|
| | BP9099434170 | | 002 | 4TK. x 130 x 147.5 LG.
H.R.C.S. SHEET | | | AA1011713160 | | | 0.605 | | |
| | | | | | | | AA10113 | | | 001 | | |
| | BP9099430400 | | 001 | 4TK. x 130 x 147.5 LG.
H.R.C.S. SHEET | 2 | | AA1011713160 | | | 0.605 | | |
| | | | | | | | AA10113 | | | 001 | | |
| VAR 00 | REMARKS | VAR NO. | ITEM NO | DESCRIPTION | QTY | DRAWING NO. | IT.NO | MATL. CODE | QTY | UNIT | UNIT WT. | QTY |
| | | | | | | | VAR | MATL. SPECN. | | | QTY. | UNIT |

| | | | | | | | | |
|---|------|------------------------------------|--|--|--|---|--|--|
| ADDITIONAL INFORMATION | | | mRikn dk i-dkj ;k
xk-gd@ff;kstuk dk uke
TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT | | | <u>V.C.B.</u> | | |
| STATUS OF DRAWING | | |  HAKry gsoh bysIDV&dYI fyfeVsM
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL. | | | uke@NAME gLrk_IGN (muak@ATE osfj_chn
B.D.V. Sd/- 18.09.82 laj;_k
M.Z.G. Sd/- 22.09.82 NO. OF
B.P.M./R.K.G. Sd/- 26.09.82 VAR. - | | |
| DISTRIBUTION OF PRINTS
D/C -1 TCX -1
SWM -3 | | | foHAKs_yl
DEPT/VL
UNTL. D.JMS. GR.
dksM409
CODE AA 0230208 | | |  vu_ylky_dk js;_k
M
vuglr SCALE 1:1
HAKg fd_xk
vs_M&kBz&x dk lanH&z
REF. TO ASSY. DRG.
35211001543 | | |
| REV. | DATE | ALTERED
CHECKED
Sd/-
Sd/- | dksM409
CODE AA 0230208
"k"AZB&LE | | | en d_...
ITEM NO.
009
047
en laj;_k
ITEM
001
Igo_...
REV.
07 | | |
| 04 | | APPROVED | DRG. RETRACED.
TOOL NO. '564224' &
VOF STR APPLIED.
(DCA NO. 5159) | | | M&kBz&x DRAWING NO.
2 521 10 01508
"B" d_...HT. NO.01
"B"soh dk laj;_k NO. OF SH&T.01 | | |
| | | | <u>LEVER</u> | | | | | |

INVENTORY NO. _____



BENDING RADIUS = 2.5 ± 0.3 mm.

DEVELOPED VIEW

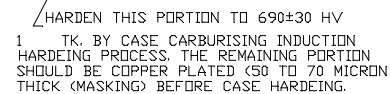
A2



| INVENTORY NO. | SIGN. & DATE |
|---------------|--------------|
|---------------|--------------|



NOTE: —

1. FOR HARDENING ALTERNATIVELY CASE HARDENING PROCESS CAN BE USED.
2. AFTER CASE HARDENING AND GRINDING THE PAWL SHOULD BE PHOSPHATED TO PR. SPEC. AA 0673616
3. GRINDING ALLOWANCE AFTER HEAT TREATMENT SHALL NOT BE MORE THAN 0.15mm.
4. HARDNESS AFTER GRINDING SHALL NOT BE LESS THAN 650 H.V.
5. SUPPLIER SHALL PROVIDE IDENTIFICATION AT LOCATION MARKED * AS UNDER
 - MANUFACTURE'S TRADE MARK.
 - DATE OF MANUFACTURE/BATCH NO.
 - PD NO.
6. FOR MORE INFORMATION REFER SG 12728

[illegible]

| | | | | | | | | | | |
|--|--------------------------------------|--------------------|---|-----------------------|---|--------------------------------|--------------------|--|------------------------------|---------------------------|
| ADDITIONAL INFORMATION | | | TYPE OF PRODUCT
OR
NAME OF CUSTOMER / PROJECT | | | V.C.B. | | | | |
| STATUS OF DRAWING
B | | | | | | | | | | |
| DISTRIBUTION OF PRINTS
D/C -1
SWM -3
TCX -1 | | |  BHARAT HEAVY ELECTRICALS LTD.
BHOPAL | | | DRN. | NAME
B.D.V. | SIGN
Sd/- | DATE
25.09.82 | NO. OF
VAR |
| | | | | | | CKD. | M.Z.G. | Sd/- | 28.09.82 | |
| | | | | | | APPD. | R.K.G. | Sd/- | 07.10.82 | - |
| REV. | DATE | ALTERED
CHECKED | DEPT
SWE | UNTIL. DIMS. GR.
M |  | SCALE
2:1 | WEIGHT
(K.G.) | REF. TO ASSY. DRG.
35211001530
25211001539 | ITEM
NO.
007 TO
001 | ITEM
NO.
002
REV |
| 14 | 05.10.01 | APPROVED | CODE
409 | AA 0230208 | | | | | | |
| ZONE | DRAWING REDRAWN.
DETAIL 'B' ADDED | | TITLE

PAWL | | | DRAWING NO.

25211001541 | | SHEET NO. 01 | | NO. OF SHEETS 02 |

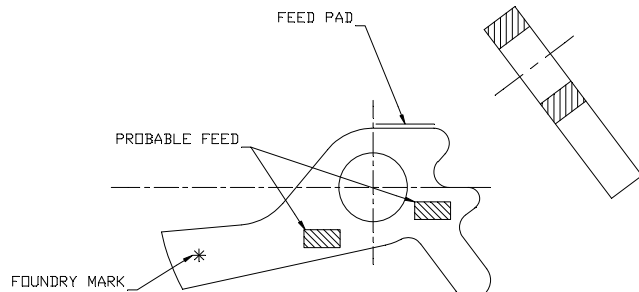
25211001541

DRAWING NO.

25211001541-R14-S02 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

REF. DRG. NO. UD/10577/01/01/87

INVENTORY NO. SIGN. & DATE



SCALE 1:1

FEED PAD 0.5mm. THICK MAY BE LEFT ON THE CASTING.
FOUNDRY MARK '*' SHALL BE PROVIDED.(DEPRESSED TYPE)

NOTE: -

1. BREAK SHARP CORNERS (B.S.C.)
2. UNSPECIFIED RADII TO BE 1.00 RMAX.
3. UNSPECIFIED TOL. ON ANGLES TO BE $\pm 0^\circ 30'$

INVESTMENT CASTING TO MAT.



IS:10343-1989 GR. 3A

HT. TR. NORMALISED

(ALSO REFER SG 12728)

ALTERNATIVE TO IT. 002

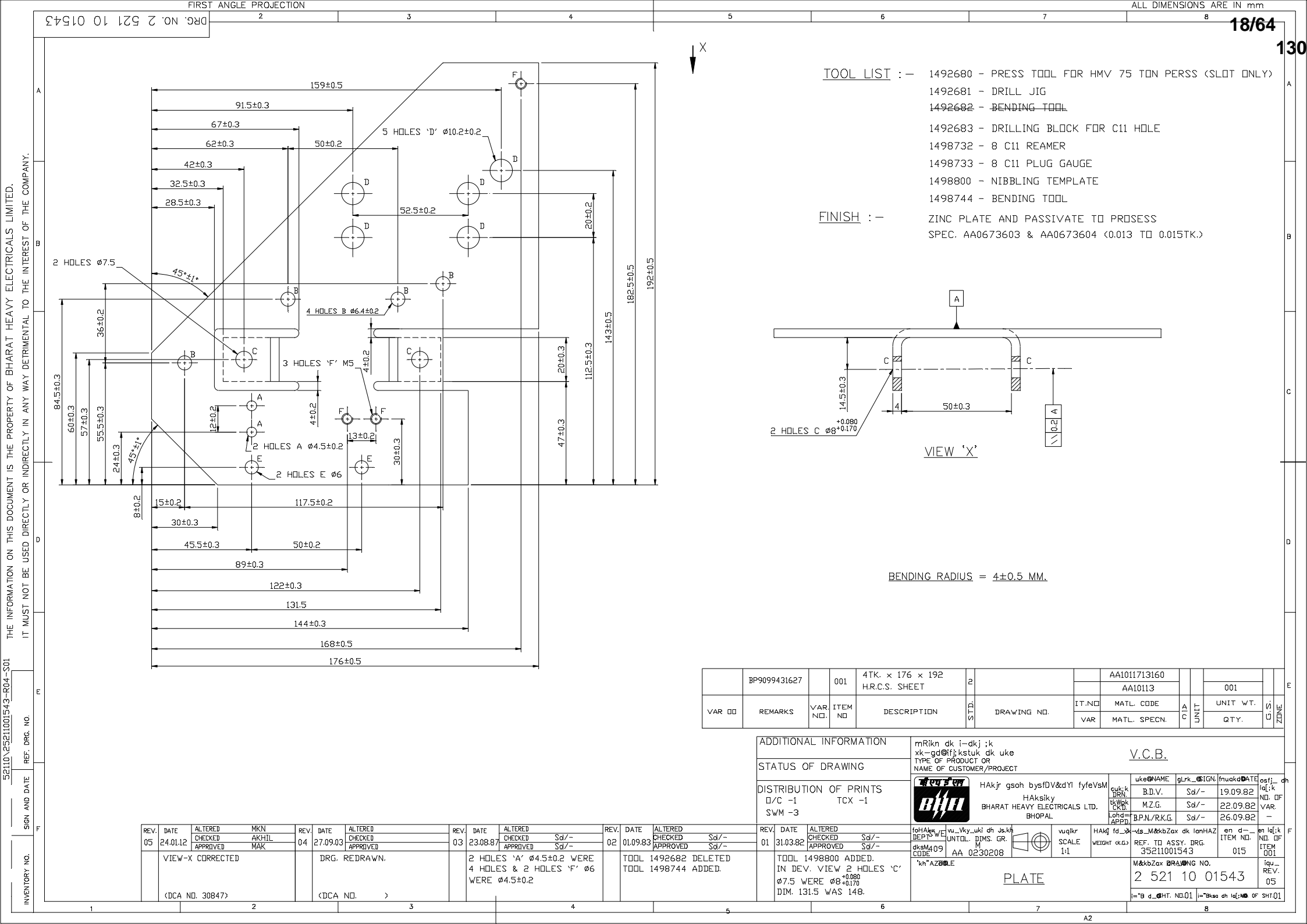
| VAR 00 | REMARKS | VAR NO | ITEM NO | DESCRIPTION | STD | DRAWING NO. | IT.NO. | MATL CODE | UNIT | UNIT WT | ZONE |
|--------|---------|--------|---------|-------------|-----|-------------|--------|-----------|------|---------|------|
| | | | | | | | VAR | MATL SPCN | | QTY. | GS |

| | | | | | | | | | | | | | |
|--|----------|---------------------|------|---|--------|-------|---------|---|---------------------|--------------------|--------------------|---------------|----------------|
| ADDITIONAL INFORMATION | | | | TYPE OF PRODUCT
OR
NAME OF CUSTOMER / PROJECT | | | | V.C.B. | | | | | |
| STATUS OF DRAWING
B | | | | | | | | | | | | | |
| DISTRIBUTION OF PRINTS
D/C -1
SWM -3
TCX -1 | | | |  BHARAT HEAVY ELECTRICALS LTD.
BHOPAL | | | | DRN. | NAME
B.K.TOTAWAR | SIGN
Sd/- | DATE
01.09.95 | NO. OF
VAR | |
| | | | | | | | | CKD. | M.C.BHUI | Sd/- | 01.09.95 | | |
| | | | | | | | | APPD. | S.M.MITTAL | Sd/- | 01.09.95 | - | |
| REV. | DATE | ALTERED | ZONE | DEPT
SWE | UNTOL. | DIMS. | GR. |  | SCALE | WEIGHT
(K.G.) | REF. TO ASSY. DRG. | ITEM
NO. | NO. OF
ITEM |
| 14 | 05.10.01 | CHECKED
APPROVED | | CODE
409 | M | AA | 0230208 | 1:1 & 2:1 | | | - | - | 002 |
| DRAWING REDRAWN.
REFER SHEET 01. | | | | TITLE

PAWL | | | | DRAWING NO.

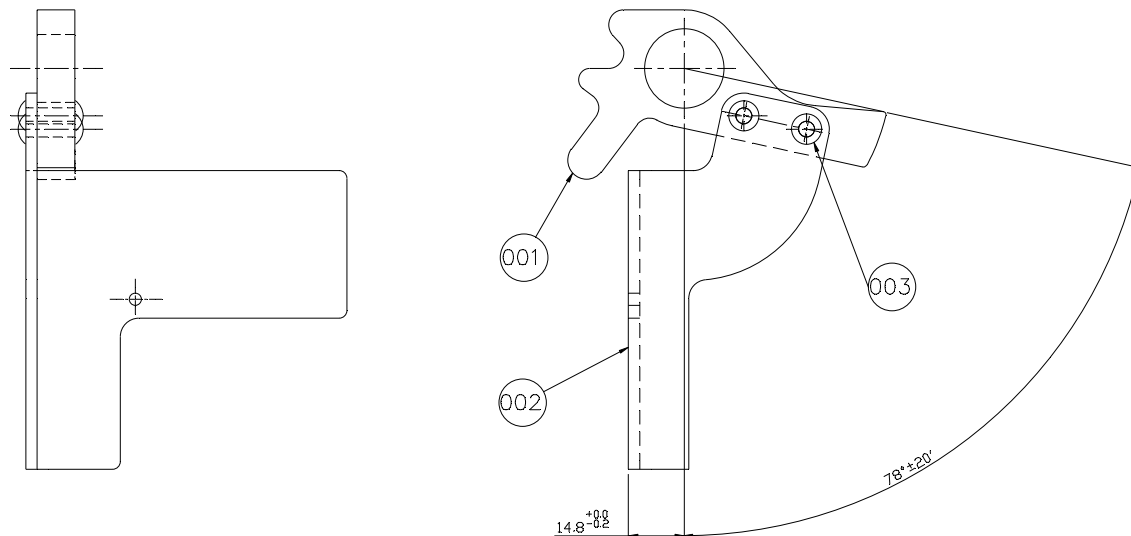
25211001541 | | | | REV



15 | |
| | | | | | | | | SHEET NO. 02 | | NO. OF SHEETS 02 | | | |



1. IDENTIFICATION MARK OF SUPPLIER & PO NO. TO BE PROVIDED AS MARKED IN RESPECTIVE DRAWINGS.

| TOOL LIST | | |
|-----------|---------|---|
| ITEM/VAR. | TOOL | DESCRIPTION |
| 00 | 1498864 | REVETTING FIXTURE
FOR HAND REVETTING |

[illegible]

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------------|------------|-----------|---|---------------------|---|-------|---|----------------------|----------|----------|----------|------------|------------|-----------|--------|------|----------|------|----------|------|----------|------|------------|---------------|------|----------|
| ADDITIONAL INFORMATION | | | | mRikn dk i-dkj ;k
xk-gd@fjkstuk dk uke
TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT | | | | V.C.B. | | | | | | | | | | | | | | | | | | | |
| STATUS OF DRAWING | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DISTRIBUTION OF PRINTS
0/C -1 TCX -1
SWM -3 | | | |  HAKjr gsoh bysfDV&dYl fyfeVsM
Haksiky
BHARAT HEVAP ELECTRICALS LTD.
BHOPAL | | | | <table><tr><td>uke@NAME</td><td>glrk_@SIGN</td><td>fnuak@DATE</td><td>osfj_@f.k</td></tr><tr><td>B.D.V.</td><td>Sd/-</td><td>25.09.82</td><td>nd.R</td></tr><tr><td>tkWk CKD</td><td>Sd/-</td><td>28.09.82</td><td>VAR.</td></tr><tr><td>Lohd=APPD.</td><td>M.Z.N./R.K.G.</td><td>Sd/-</td><td>18.10.82</td></tr></table> | | | | uke@NAME | glrk_@SIGN | fnuak@DATE | osfj_@f.k | B.D.V. | Sd/- | 25.09.82 | nd.R | tkWk CKD | Sd/- | 28.09.82 | VAR. | Lohd=APPD. | M.Z.N./R.K.G. | Sd/- | 18.10.82 |
| uke@NAME | glrk_@SIGN | fnuak@DATE | osfj_@f.k | | | | | | | | | | | | | | | | | | | | | | | | |
| B.D.V. | Sd/- | 25.09.82 | nd.R | | | | | | | | | | | | | | | | | | | | | | | | |
| tkWk CKD | Sd/- | 28.09.82 | VAR. | | | | | | | | | | | | | | | | | | | | | | | | |
| Lohd=APPD. | M.Z.N./R.K.G. | Sd/- | 18.10.82 | | | | | | | | | | | | | | | | | | | | | | | | |
| REV. | DATE | ALTERED | Sd/- | foHAlax | vu_Vky_uhi dk js.kh |  | vuqkr | HAKjr fd_xk | vs_M&kbZax dk lanH&Z | en d= | en la | | | | | | | | | | | | | | | | |
| 01 | 29.05.84 | CHECKED | Sd/- | BEPTVS | UNTL. DIMS. GR. | | SCALE | WEIGHT (KG.) | REF. TO ASSY. DRG. | ITEM NO. | ITEM NO. | | | | | | | | | | | | | | | | |
| | | APPROVED | Sd/- | dkxM409 | AA 0230208 | | 1:1 | 35211001543 | 35211001543 | 005 | 003 | | | | | | | | | | | | | | | | |
| TQOL 1498864 ADDED. | | | | 'kh'AZ@BLE
0230208 | | | | M&kbZax DRAWING NO.
2 521 10 01559 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | 'B d_@HT. NO.01
i="Bkso dh la;nd OF SHIT | | | | | | | | | | | | | | | | | | | |

| | | | | | | |
|-----------------|---------------|--------------------------|----------------|----------------------------|------|--------------------------|
| REV. 03 | DATE 26.12.13 | ALTERED CHECKED APPROVED | AKN SDNALI MAK | REV. 02 | DATE | ALTERED CHECKED APPROVED |
| NDTE-1 ADDED. | | | | DRG. REDRAWN. | | |
| | | | | DIM. 14.8-0.2 WAS 14.5±0.2 | | |
| <DCA NO. 32329> | | | | <DCA NO. > | | |

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| | |
|---------------------------|-----------------|
| 52110\25211001559-R02-S01 | 3HG 409 00573/b |
| | REF. DRG. NO. |

INVENTORY NO. _____ SIGN AND DATE _____

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THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED.
IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN mm

DRG. NO. 2 521 10 01585

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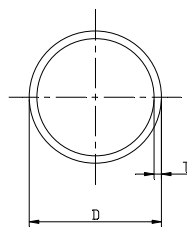
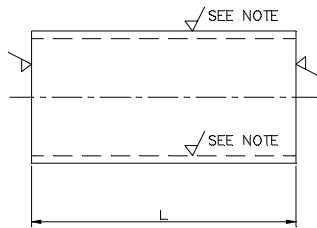
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20/64

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NOTE :-

1) INTERNAL & EXTERNAL DIA. TO BE MACHINED IF REQUIRED.

FINISH :-

ZINC PLATE & PASSIVATE TO AA0673603 & AA0673604 (0.013 TK. MIN.)

INDEX

| ITEM NO. | LENGTH L. | O/D D. | THICKNESS T. | STYLE NO. | ASSY. REF. DRG. NO. | SIEMENS REF. | REMARKS |
|----------|-----------|--|--------------|--------------|-----------------------------|------------------------------------|---|
| 001 | 10 | 16 | 1.5 | BP9099433077 | 35211001530
ITEM NO. 010 | SWT. 680
16x1.5x10 FEUZN | |
| 002 | 16 | 16 | 1.5 | BP9099433085 | 35211001530
ITEM NO. 011 | SWT. 680
16x1.5x16 | |
| 003 | 54 | 20 | 1.5 | BP9099433093 | 35211001543
ITEM NO. 039 | SWT. 680
20x1.5x54 | |
| 004 | 26 | 16 | 1.5 | BP9099433107 | 35211001543
ITEM NO. 040 | SWT. 680
16x1.5x26 | |
| 005 | 15 | 20 ^{+0.041} _{+0.028} | 1.0 | BP9099433115 | 35211001556
ITEM NO. 012 | SN60844
18x20x15 | I/D SHOULD BE
18 ^{+0.033} _{-0.000} |
| 006 | 14 | 20 | 1.5 | BP9099433123 | 35211001533
ITEM NO. 024 | SWT. 680
ABSTROHR.
20x1.5x14 | |
| 007 | 70 | 35 | 2.0 | BP9099433506 | 15210130501
ITEM NO. 056 | SWT. 680
35x2x70 | |
| 008 | 8 | 16 | 2.5 | BP9099433514 | 05210130501
ITEM NO. 110 | SWT. 680
16x2.5x8 | |
| 009 | 10 | 20 | 1.5 | BP9099433522 | 35211001533
ITEM NO. 023 | SWT. 680
20x1.5x10 | |
| 010 | 12 | 20 | 1.5 | BP9099437072 | 05213030512
ITEM NO. 025 | - | |

| | | | | | | | | | | | | | |
|--|--------|---------|---------|---|-------------|------|--------------|-------|--------------|-----|------|----------|------|
| | | | 010 | CDSC. STEEL TUBE
21.3 O/D x 3.6TK. x 12LG. | | | AA1041045093 | | 0.0072 | | | | |
| | | | | | | | AA10445 | | 001 | | | | |
| | | | 009 | CDSC. STEEL TUBE
21.3 O/D x 3.6TK. x 10LG. | | | AA1041045093 | | 0.006 | | | | |
| | | | | | | | AA10445 | | 001 | | | | |
| | | | 008 | CDSC. STEEL TUBE
16 O/D x 3.2TK. x 8LG. | | | AA1041045050 | | 0.0023 | | | | |
| | | | | | | | AA10445 | | 001 | | | | |
| | | | 007 | CDSC. STEEL TUBE
38 O/D x 5TK. x 70LG. | | | AA1041046715 | | 0.104 | | | | |
| | | | | | | | AA10446 | | 001 | | | | |
| | | | 006 | CDSC. STEEL TUBE
21.3 O/D x 3.6TK. x 14LG. | | | AA1041045093 | | 0.0084 | | | | |
| | | | | | | | AA10445 | | 001 | | | | |
| | | | 005 | CDSC. STEEL TUBE
21.3 O/D x 3.6TK. x 15LG. | | | AA1041045093 | | 0.009 | | | | |
| | | | | | | | AA10445 | | 001 | | | | |
| | | | 004 | CDSC. STEEL TUBE
16 O/D x 2.3TK. x 26LG. | | | AA1041045050 | | 0.0075 | | | | |
| | | | | | | | AA10445 | | 001 | | | | |
| | | | 003 | CDSC. STEEL TUBE
21.3 O/D x 3.6TK. x 54LG. | | | AA1041045093 | | 0.032 | | | | |
| | | | | | | | AA10445 | | 001 | | | | |
| | | | 002 | CDSC. STEEL TUBE
16 O/D x 2.3TK. x 16LG. | | | AA1041045050 | | 0.0046 | | | | |
| | | | | | | | AA10445 | | 001 | | | | |
| | | | 001 | CDSC. STEEL TUBE
16 O/D x 2.3TK. x 10LG. | 2 | | AA1041045050 | | 0.0029 | | | | |
| | | | | | | | AA10445 | | 001 | | | | |
| | VAR 00 | REMARKS | VAR NO. | ITEM NO | DESCRIPTION | STD. | DRAWING NO. | IT.NO | MATL. CODE | QTY | UNIT | UNIT WT. | G.S. |
| | | | | | | | | VAR | MATL. SPECN. | | | | ZONE |

ADDITIONAL INFORMATION

STATUS OF DRAWING

DISTRIBUTION OF PRINTS

O/C -1 TCX -1
SWM -3

mRikn dk i-dkj ;k
xk-gd@fj;ktuk dk uke
TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT

V.C.B.



HAKjr gsoh bysDV&dYI fyfeVsm
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

uke@NAME gLrk_IGN muakaDATE osfj_ dh
B.D.V. Sd/-
M.Z.G. Sd/- 02-01-83
B.P.N./R.K.G. Sd/- 05-01-83

| REV. | DATE | ALTERED | CHKD/- |
|------|----------|------------------------|--------|
| 05 | 20.10.05 | CHECKED
APPROVED RM | Sd/- |
| | | DRG. REDRAWN. | |
| | | (DCA NO. 24155) | |

| REV. | DATE | ALTERED | CHKD/- |
|------|---------|--|--------|
| 04 | 24.2.96 | CHECKED
APPROVED | Sd/- |
| | | DRG. RETRACED FINISH
WAS TO PR. S7608A
MAT. CODE FOR ITS. 001 TO
006 ADDED. | |
| | | (DCA NO. 07497) | |

| | | | | | | |
|--|--|-----------------------|---------------------------|---------------------------------------|-------------------------|-----------------------------------|
| foHAKs
DEPT. W/E
M
CODE
AA 0230208 | ku_Vky_uki dh jskk
UNTO. DIMS. GR.
M
AA 0230208 | vuqkr
SCALE
1:1 | HAKg fd_ks
WEIGHT (KG) | REF. TO ASSY. DRG.
SEE INDEX | en d--
ITEM NO.
- | en la; k
NO. OF
ITEM
010 |
| SPACER | | | | M&kbZax DRAWING NO.
2 521 10 01585 | | iqu_ REV.
05 |
| | | | | REF. TO ASSY. DRG.
SEE INDEX | | en la; k
NO. OF
ITEM
010 |

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A2

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98910011586

DRAWING NO.

2

3

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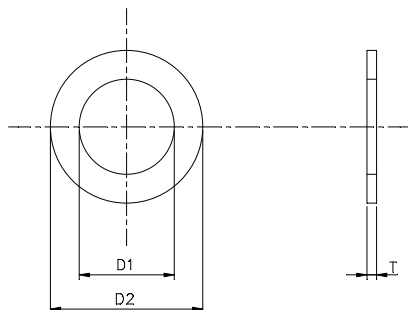
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FINISH : -

ZINC PLATE AND PASSIVATE TO AA0673603 &
AA0673604 (0.013 TK MIN.) FOR IT. 001 TO 011, 013 & 014

INDEX

| ITEM NO. | Ø/D D2 | I/D D1 | THICKNESS T | STYLE NO. | REF. TO ASSY. DRG. NO. | SIEMENS REF. |
|----------|--------|--------|-------------|--------------|--|--------------------------|
| 001 | 22 | 13 | 0.5 | BP9099432216 | 35211001530 IT.022 | SWT 671 SHB 13x22x0.5ST |
| 002 | 16 | 8.4 | 1.0 | BP9099432222 | 35211001543 IT.002 | SWT 671 SHB 8.4x16x1ST |
| 003 | 20 | 13 | 1.0 | BP9099432232 | 35211001543 IT.035 | SWT 671 SHB 13x20x1ST |
| 004 | 25 | 17 | 0.5 | BP9099432240 | 35211001543 IT.041 | SWT 671 SHB 17x25x0.75ST |
| 005 | 14 | 6.4 | 0.5 | BP9099432259 | 35211001543 IT.045 | SWT 671 SHB 6.4x14x0.5ST |
| 006 | 18 | 6.4 | 1.6 | BP9099432380 | 35211001543 IT.044
35211001560 IT.057 | DIN 9021 SHB A6.4ST |
| 007 | 45 | 31 | 1.0 | BP9099433239 | 35211001556 IT.005 | SWT 671 SHB 31x45x1ST |
| 008 | 38 | 17 | 4.0 | 943471 | 35211001500 IT.095 | SWT 671 SHB 17x38x4ST |
| 009 | 80 | 17 | 3.15 | BP9099434723 | 35211001500 IT.081 | SWT 671 SHB 17x80x3ST |
| 010 | 20 | 15 | 4.8 | 943641 | 35211001644 IT.004 | SWT 671 SHB 15x20x0.8ST |
| 011 | 16 | 6.4 | 1.6 | 943642 | 35211001644 IT.006 | SWT 671 SHB 6.4x16x1.5ST |
| 012 | 20 | 15 | 0.2 | 943643 | 35211001644 IT.019 | SWT 671 SHB 15x20x0.2ST |
| 013 | 35 | 13 | 4.0 | 943644 | 35211001645 IT.018 | SWT 671 SHB 13x35x4ST |
| 014 | 30 | 20 | 1.0 | | 05212001512 IT.056 | |

| | | | | | | | | | | |
|--------|---------|--------|---------|--------------------------|-----|-------------|-----------------------|--------------|----|------|
| | | | 014 | 1 TKx30x30 CRS SHEET | | | AA1011715074 AA 10115 | 0.007 001 | | |
| | | | 013 | 4 TKx35x35 HRS SHEET | | | AA1011713136 AA 10113 | 0.030 001 | | |
| | | | 012 | 0.2 TKx20x20 BRASS SHEET | | | | 0.001 001 | | |
| | | | 011 | 1.6 TKx16x16 CRS SHEET | | | AA1011715090 AA 10115 | 0.003 001 | | |
| | | | 010 | 0.8 TKx20x20 CRS SHEET | | | AA 10115 | 0.002 001 | | |
| | | | 009 | 3.15 TKx80x80 HRS SHEET | | | AA1011713136 AA 10113 | 0.15 001 | | |
| | | | 008 | 4 TKx38x38 HRS SHEET | | | AA1011713160 AA 10113 | 0.045 001 | | |
| | | | 007 | 1 TKx45x45 CRS SHEET | | | AA1011715074 AA 10115 | 0.015 001 | | |
| | | | 006 | 1.6 TKx18x18 CRS SHEET | | | AA1011715090 AA 10115 | 0.0041 001 | | |
| | | | 005 | 0.5 TKx14x14 CRS SHEET | | | AA 10115 | 0.001 001 | | |
| | | | 004 | 0.5 TKx25x25 CRS SHEET | | | AA 10115 | 0.001 001 | | |
| | | | 003 | 1 TKx20x20 CRS SHEET | | | AA1011715074 AA 10115 | 0.0031 001 | | |
| | | | 002 | 1 TKx16x16 CRS SHEET | | | AA1011715074 AA 10115 | 0.002 001 | | |
| | | | 001 | 0.5 TKx22x22 CRS SHEET | | | AA 10115 | 0.001 001 | | |
| VAR 00 | REMARKS | VAR NO | ITEM NO | DESCRIPTION | STD | DRAWING NO. | IT.NO. MATL CODE | UNIT UNIT WT | GS | ZONE |
| | | | | | | | VAR MATL SPCN | QTY. | | |

| | | | | | | | | | | | |
|------------------------|--|---|--|--------------------|--|--------|--|-----------------|--|--------------------|--|
| ADDITIONAL INFORMATION | | TYPE OF PRODUCT OR NAME OF CUSTOMER / PROJECT | | | | | | | | | |
| STATUS OF DRAWING | | VCB | | | | | | | | | |
| DISTRIBUTION OF PRINTS | | DRN. | | NAME B.D.V. | | SIGN | | DATE | | NO. OF VAR | |
| □/C - 1 | | CKD. | | M.Z.G. | | Sd/- | | | | - | |
| SWM - 3 | | APPD. | | B.P.N. | | Sd/- | | | | | |
| TCX - 1 | | | | | | | | | | | |
| REV. DATE | | DEPT | | UNTOL. DIMS. GR. | | SCALE | | WEIGHT (K.G.) | | REF. TO ASSY. DRG. | |
| 05 23.12.10 | | SWE | | | | NTS | | - | | - | |
| ALTERED | | CODE | | | | | | | | ITEM NO. | |
| CHECKED | | 409 | | | | | | | | 014 | |
| APPROVED | | | | | | | | | | REV | |
| | | | | | | | | | | 05 | |
| ZONE | | | | DRG. REDRAWN. | | TITLE | | DRAWING NO. | | SHEET NO. 01 | |
| | | | | <DCA-10053> | | WASHER | | 25211001586 | | NO. OF SHEETS 01 | |
| | | | | <DCA/CN NO. 30112> | | | | | | | |

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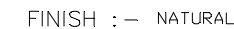
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INVENTORY NO.



| INDEX | | | | | | | | | | | | | | | | |
|----------|-----|-----|---------|------|------|---------|------------------------------------|------|-----------------------------------|--------------|----------------------|-------------------------|----------------------|-------------|----------------|----------------------|
| ITEM NO. | d | Ln | Fn (Kg) | Do | Lo | Fo (Kg) | SHEAR STRESS (Kg/mm ²) | LH | NO. OF ACTIVE TURNS $\frac{1}{2}$ | STYLE NO. | DIRECTION OF WINDING | MODULUS OF RIGIDITY | WINDING RATIO = Dm/d | SCALE N/mm* | SIEMENS REF. | REF. TO ASSY DRG. |
| 001 | 1.0 | 50 | 1.765 | 10 | 32.5 | 0.608 | 46.48 | 6.4 | 18 $\frac{1}{2}$ | BP9099432267 | R.H.S. | 7160 Kg/mm ² | 9 | 0.661 | SV 660 1.0 B50 | 35211001530 ITEM 015 |
| 002 | 0.8 | 40 | 1.226 | 8 | 25 | 0.382 | 50.50 | 5.1 | 17 $\frac{1}{2}$ | BP9099432275 | R.H.S. | 7160 Kg/mm ² | 9 | 0.563 | SV 660 0.8 B40 | 35211001543 ITEM 024 |
| 003 | 1.0 | 63 | 1.079 | 15 | 34.5 | 0.333 | 41.87 | 10.4 | 12 $\frac{1}{2}$ | BP9099432283 | R.H.S. | 7160 Kg/mm ² | 14 | 0.262 | SV 660 1.0 C63 | 35211001543 ITEM 029 |
| 004 | 0.6 | 50 | 0.735 | 5.6 | 31 | 0.275 | 49.72 | 3.5 | 38 $\frac{1}{2}$ | BP9099432291 | R.H.S. | 7160 Kg/mm ² | 9 | 0.242 | SV 660 0.6 B50 | 35211001556 ITEM 034 |
| 005 | 0.5 | 50 | 0.49 | 5 | 28.5 | 0.177 | 51.583 | 3.2 | 42 $\frac{1}{2}$ | BP9099434197 | R.H.S. | 7160 Kg/mm ² | 9 | 0.146 | SV 660 0.5 B50 | 35211001549 ITEM 004 |
| 006 | 1.0 | 100 | 1.079 | 15 | 49.5 | 0.363 | 41.874 | 10.4 | 24 $\frac{1}{2}$ | BP9099460139 | R.H.S. | 7160 Kg/mm ² | 14 | 0.134 | SV 660 1C 100 | 35211001531 ITEM 027 |
| 007 | 1.2 | 100 | 1.864 | 15.2 | 51 | 0.627 | 41.874 | 10.4 | 24 $\frac{1}{2}$ | - | R.H.S. | 7160 Kg/mm ² | 11.6 | 0.231 | - | 35212001622 ITEM 009 |

1. PERMISSIBLE DEVIATION AS PER DIN 2097 GR2
2. TOLERANCE ON $F_n \pm 10\%$ $L_H \pm 10\%$
3. CHARACTERISTICS TO BE MAINTAINED
 F_n , L_n BY VARYING PARAMETERS L_o, D_o, F_o .
4. F_o - IS THE INTIAL TENSION
AS SPECIFIED IN FIG. 20 & CLAUSE NO. 5.2 OF DIN 2097
5. SCALE IN N/mm IS ONLY FOR REFERENCE PURPOSE.

| | | | | | | | | | | | | | |
|--|--------|---------|---------|---------|-----------------------------------|-----|-------------|-------|----------------|-------|------|----------|-----|
| | | | | 007 | Ø1.2x1135 LG STAINLESS STEEL WIRE | | | | BP 10540678208 | | | 0.005 | |
| | | | | | | | | | BP 10568 | | | 001 | |
| | | | | 006 | Ø1x1135 LG STAINLESS STEEL WIRE | | | | | | | 0.0035 | |
| | | | | | | | | | BP 10568 | | | 001 | |
| | | | | 005 | Ø0.5x600 LG STAINLESS STEEL WIRE | | | | BP 1054068143 | | | 0.0005 | |
| | | | | | | | | | BP 10568 | | | 001 | |
| | | | | 004 | Ø0.6x550 LG STAINLESS STEEL WIRE | | | | | | | 0.0006 | |
| | | | | | | | | | BP 10568 | | | 001 | |
| | | | | 003 | Ø1x615 LG STAINLESS STEEL WIRE | | | | | | | 0.0003 | |
| | | | | | | | | | BP 10568 | | | 001 | |
| | | | | 002 | Ø0.8x415 LG STAINLESS STEEL WIRE | | | | BP 1054068178 | | | 0.0008 | |
| | | | | | | | | | BP 10568 | | | 001 | |
| | | | | 001 | Ø1x560 LG STAINLESS STEEL WIRE | 2 | | | | | | 0.003 | |
| | | | | | | | | | BP 10568 | | | 001 | |
| | VAR 00 | REMARKS | VAR NO. | ITEM NO | DESCRIPTION | STD | DRAWING NO. | IT.NO | MATL. CODE | A 01A | UNIT | UNIT WT. | QTY |
| | | | | | | | | VAR | MATL. SPECN. | | | QTY. | |

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| | | 30 |
| i="B d. SHT. NO.01 | i="Bkso dh laf: NO. OF SHT.02 | |

TENSION SPRING

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| i="B d_8HT. NO.01 | i="Bksa dh la[;N |
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[illegible]

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IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

5210.2521001587-R06-S02

INVENTORY NO.

SIGN AND DATE

REF. DRG. NO.

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INVENTORY NO.

SIGN AND DATE

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INVENTORY NO.

SIGN AND DATE

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FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN mm

25211001588

DRG. NO.

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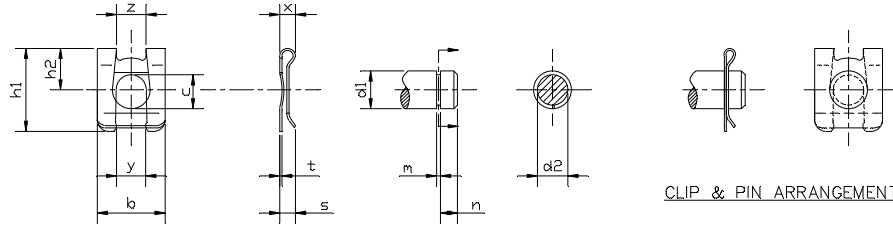
6

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24/64

130



CLIP & PIN ARRANGEMENT

FINISH :-

BLACK PHOSPHATING TO PR. S. AA 0673616

HARDNESS SHALL BE 430-475 HVS

NOTE :-

- 1> THE CLIP SHALL COMPLY WITH TOLERANCES AS PER DIN 7168
- 2> PRODUCT STD. SWGR. SG 11701 SHALL BE REFERED FOR QUALITY CHECKS & OTHER ASPECTS.
- 3> DIM d1 AND d2 ARE PIN DIMENSIONS, THEREFORE CORRESPONDING DIMENSION ON CLIP SHALL HAVE CLOSE CLEARANCE FIT & PROVIDE AXIAL LOAD CAPACITY.

| ITEM NO. | d1
h11 | b | h1 | h2 | s | d2 | m | n | TYPE ITEM NO. | REF. TO ASSY. DRG. NO. | SIMEN'S REF. | PERMISSIBLE AXIAL LOAD IN KG. | C | X | Y | Z | T |
|----------|-----------|------|------|----|-----|-----|------|-----|---------------|--|--------------------------|-------------------------------|------|------|------|------|------|
| 001 | 4 | 7 | 8.5 | 4 | 2.2 | 3.2 | 0-64 | 1.5 | BP9099432305 | 35211001556 (098) | SN 60075
4SxND 8-002 | 100 | 4.16 | 2.00 | 3.2 | 3.04 | 0.34 |
| 002 | 6 | 11.2 | 13.7 | 6 | 3.6 | 5 | 0.74 | 2.3 | BP9099432313 | 35211001543 (004)
35211001556 (076) | SN 60075
6SxND 8-002 | 150 | 5.9 | 3 | 5.0 | 4.9 | 0.44 |
| 003 | 8 | 14 | 17 | 8 | 4 | 6 | 0.94 | 2.5 | BP9099432321 | 35211001530 (035)
35211001560 (039)
35211001556 (022)
35211001533 (018) | SN 60075
8SxND 8-002 | 360 | 7.54 | 3.6 | 6.0 | 5.8 | 0.48 |
| 004 | 12 | 22 | 26 | 12 | 5 | 9 | 1.15 | 3.8 | BP9099432330 | 35211001530 (013)
35211001556 (011) | SN 60075
12SxND 8-002 | 960 | 11.2 | 5 | 8.2 | 9.3 | 0.60 |
| 005 | 16 | 28 | 34.5 | 16 | 7.5 | 12 | 1.25 | 4.7 | BP9099432348 | 35211001556 (014)
35211001533 (013) | SN 60075
16SxND 8-002 | 1350 | 14.7 | 4.74 | 11.3 | 12.0 | 0.64 |
| 006 | 10 | 18 | 22 | 10 | 5 | 8 | 1.05 | 3.5 | BP9099432356 | 35211001560 (035) | SN 60075
10SxND 8-002 | 640 | 8.3 | 4.2 | 7.7 | 7.8 | 0.58 |

| | | | | | | | | | | | | |
|--------|---------------------|------------|------------|--------------------------------------|------|-------------|--------------|----------------------------|--------------|-------------------|------------|---|
| | SG 11701
IT. 006 | | 006 | C.R. SPRING STEEL
STRIP ANNEALLED | | | AA10304 | | 0.003
001 | | | |
| | SG 11701
IT. 005 | | 005 | C.R. SPRING STEEL
STRIP ANNEALLED | | | AA10304 | | 0.01
001 | | | |
| | SG 11701
IT. 004 | | 004 | C.R. SPRING STEEL
STRIP ANNEALLED | | | AA10304 | | 0.002
001 | | | |
| | SG 11701
IT. 003 | | 003 | C.R. SPRING STEEL
STRIP ANNEALLED | | | AA10304 | | 0.001
001 | | | |
| | SG 11701
IT. 002 | | 002 | C.R. SPRING STEEL
STRIP ANNEALLED | | | AA10304 | | 0.001
001 | | | |
| | SG 11701
IT. 001 | | 001 | C.R. SPRING STEEL
STRIP ANNEALLED | 2 | | AA10304 | | 0.001
001 | | | E |
| VAR 00 | REMARKS | VAR
NO. | ITEM
NO | DESCRIPTION | STD. | DRAWING NO. | IT.NO
VAR | MATL. CODE
MATL. SPECN. | QTY
UNIT | UNIT W.T.
QTY. | CS
ZONE | |

ADDITIONAL INFORMATION

STATUS OF DRAWING

DISTRIBUTION OF PRINTS

| | | |
|-----|-----|-----|
| SWE | SWM | TCX |
| 1 | 3 | 1 |

| | | | | | |
|-----------|-----------------|-----------|-----------------|-----------|-----------------|
| REV. DATE | ALTERED CHECKED | REV. DATE | ALTERED CHECKED | REV. DATE | ALTERED CHECKED |
| 04 | APPROVED | | | | |

DRG. REDRAWN.

(DCA NO. 7340)

mRikn dk i-dkj ;k
xk-gd@fj;kstuk dk uke
TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT

VCB



HAkjr gsoh bysfDV&dYl fyfeVsM
HAKSIKY
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

| | | | |
|---------------|------------|-----------|--------|
| uke@NAME | gUrK_@SIGN | frua@DATE | osfj_ |
| B.D.V. | Sd/- | | NO. OF |
| M.Z.G. | Sd/- | 02-01-83 | VAR. |
| B.P.N./R.K.G. | Sd/- | 07-01-83 | |

foHAKjr DEPT'S W/UTOL. DIMS. GR. CODE

vu_Vky_uki dh js.kh M AA0230208



HAkjr fd_@ds_M&kbZax dk lonHAZ REF. TO ASSY. DRG.

en d-@ITEM NO.

on l@k_@REV. NO. OF

006

kh"AZ@E

CLIP

M&kbZax DRAWING NO.

25211001588

im"B d_@HT. NO.01 im"Bsoo dh l@k_@OF SHT.01

INVENTORY NO.

25211001588-R04-S01

REF. DRG. NO.

SIGN AND DATE

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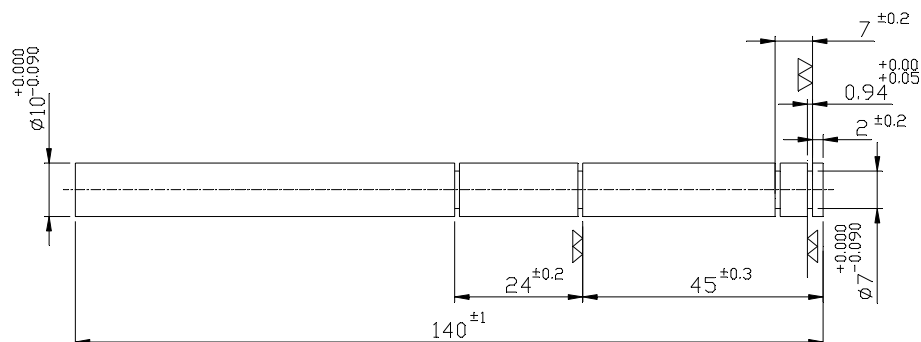
A2

(ALL DIMENSIONS ARE IN mm)

| | | | | | | |
|---|---------------|---|---|---------------|---|--|
| REV. 02 | DATE 30.08.86 | ALTERED Sd/-
CHECKED Sd/-
APPROVED Sd/- | REV. 01 | DATE 25.02.83 | ALTERED Sd/-
CHECKED Sd/-
APPROVED Sd/- | ADDITIONAL INFORMATION |
| FINISH WAS PARKERISE. | | | DIM $\phi 10^{-0.00}_{-0.09}$ WAS $\phi 10^{-0.00}_{-0.90}$ | | | STATUS OF DRAWING B |
| | | | | | | DISTRIBUTION OF PRINTS □.C.-1 SWM-3
TCX-1 |
| REV. 03 | DATE 02.06.94 | ALTERED Sd/-
CHECKED Sd/-
APPROVED Sd/- | REV. 04 | DATE 27.09.03 | ALTERED <input type="checkbox"/>
CHECKED <input type="checkbox"/>
APPROVED <input type="checkbox"/> | |
| MAT. SPECN/CODE WAS TO BP 10172/BP 1010272047. FINISH UPDATED.
(DCA NO. 05952) | | | DRG. REDRAWN.
(DCA NO. 12844) | | | |

TOOL LIST :-

1492654-GROOVING TOOL



FINISH :- ZINC PLATE & PASSIVATE TO PR.S. AA 0673603 & AA 0673604
(0.013 TO 0.015 TK.)

| | | | | | | | | | |
|--------------|-------------|----------------------------------|------|----|--------------|----|----|------|----------|
| BP9099430914 | 001 | Ø10X140 L.G. BRIGHT
STEEL BAR | | | AA1010212044 | | | KG. | 0.087 |
| | | | | | AA10112 | | | | 001 |
| REMARKS | ITEM
NO. | DESCRIPTION | STD. | 46 | MATL. CODE | 54 | 56 | UNIT | UNIT WT. |
| | | | | | MATL. SPCN. | | | | QTY. |

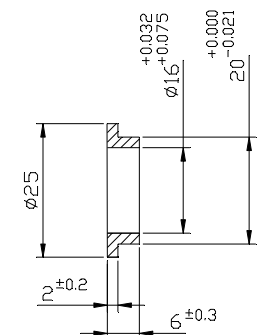

| | | | | | | | |
|--|--|---|------------------------|------------------------------|--|-------------------------------|-------------------------------------|
| 28 → CARD TYPE-3 | | 28 → CARD TYPE-1 | | 28 → CARD TYPE-2 | | | |
| <div><div>बीएसईएल</div><div>BHEL</div></div> | | HAKjr gsoh bysDV&hdYl fyfeVsM
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
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NAME | dlrk
SIGN | frugkd
DATE | osfj_ dh
la; k
ND, OF
VAR. |
| | | | | culk
DIN | T.S.E. | Sd/- | - |
| | | | | tkapk
ORD | M.Z.G. | Sd/- | 27.08.82 |
| | | | | vugeksfr
APPD | B.P.N. | Sd/- | 29.08.82 |
| foHAKx
DEPT SWE | vu_ Vky_ uki dh Js.kh
UNTEL-DIMS. GR.
DIM/M/F
AA0230206 | | vuglkr
SCALE
1:1 | HAKj fd_xk—
WEIGHT (K.G.) | vis_M&k&bZax dck lanHAZ
REF. TO ASSY. DRG.
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ITEM NO.
020 | en la; k
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ITEM
001 |
| 'AH"AZBOLE
<div>SPINDLE</div> | | | | | vkjs[A d—DRAWING NO.
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| | | | | | i="B d—SOT. No. 01 | i="Bkso dh la; kND OF SHT. 01 | |

52110\45211001528-R01-S01

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FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

| | | | | | | | | |
|---|------|----------|---|-------------------------|---------------------------|--|--------------------------------|-------------------------------------|
| REV. | DATE | ALTERED | REV. | DATE | ALTERED | ADDITIONAL INFORMATION | | |
| | | CHECKED | 01 | 27.09.03 | CHECKED | | | |
| | | APPROVED | | | APPROVED | | | |
| | | | DRG. REDRAWN. | | | STATUS OF DRAWING B | | |
| | | | DCA NO.12842 | | | DISTRIBUTION OF PRINTS D.C.-1 SWM-3 TCX-1 | | |
| <div>TOOL LIST :-
1492655-16 E₉ REAMER
1492655-16 E₉ PLUG GAUGE</div> <div></div> <div>FINISH :-
NATURAL</div> | | | | | | | | |
| BP9099430922 | | | 001 | Ø25×6 LG. HT BRASS ROD. | | AA 1210217058 | | - |
| | | | | | | AA 12117 | | - |
| REMARKS | | | ITEM NO. | DESCRIPTION | | MATL. CODE | UNIT | UNIT WT. |
| | | | | | | MATL. SPCN. | | QTY. |
| 28 → CARD TYPE-3 | | | 28 → CARD TYPE-1 | | 28 → CARD TYPE-2 | | | |
|  | | | HAKjr gsoh bysDV&hdYl fyfeVsM
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL | | uke NAME | qLrk SIGN | fnuakd DATE | osfj. dh
lqj;k
NO. OF
VAR. |
| | | | | | cuk;k DRN | T.S.E. | Sd/- | |
| | | | | | tkap;k CKD | M.Z.G. | Sd/- | 27.08.82 |
| | | | | | vugeksfmr APPD | B.P.N. | Sd/- | 29.08.82 |
| foHAKx DEPT SWE | | | vu_ Vky_ uki dh js.kh
UNITLE.DIMS. GR.
M
AA0230208 | vuglkr SCALE
1:1 | HAKj fd_xk_ WEIGHT (K.G.) | vis_M&kbZax dk lanHAZ
REF. TO ASSY. DRG.
35211001543 | | en d_ ITEM NO.
010 |
| dksM CODE 409 | | | | | | | en la;k
NO. OF
ITEM
- | |
| INVENTORY NO. | | | TABLE | | DRAWING NO. | | REV. | |
| | | | BUSH | | 45211001528 | | 01 | |
| | | | | | B d- SHT. No. 01 | | Bksa dh la[NO OF SHT. 01 | |

52110\45211001532-R07-S01

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REV. 08
DATE 11.04.17
ALTERED
CHECKED
APPROVED

SKG
AKHIL
AD

REV. 07
DATE 27.09.03
ALTERED
CHECKED
APPROVED

ADDITIONAL INFORMATION

IT. 003 ADDED
(DCA. NO.-34728)

DRG. REDRAWN.
SHEET 02 ADDED.
(DCA. NO.12839)

STATUS OF DRAWING B
DISTRIBUTION OF PRINTS D.C.-1 SWM-3 TCX-1

TOOL LIST :-
1492657 - GROOVING TOOL

HOLE Ø3

130

67.5±0.3

21

14±0.5

17±0.5

0.74

Ø6^{+0.00/-0.075}

Ø8^{+0.00/-0.09}

M5

FINISH :-
ZINC PLATED & PASSIVATED TO AA 0673603 & AA 0673604 (0.013 TK MIN.)

ITEM 001

| ITEM NO. | DESCRIPTION | MATL. CODE | UNIT | UNIT WT. | QTY. |
|----------|-------------------------------|---------------------------|------|----------|------|
| 003 | Ø8 × 162 LG. BRIGHT STEEL BAR | AA 1010212036
AA 10112 | | 0.070 | 001 |
| 002 | Ø8 × 152 LG. BRIGHT STEEL BAR | AA 1010212036
AA 10112 | KG. | 0.060 | 001 |
| 001 | Ø8 × 130 LG. BRIGHT STEEL BAR | AA 1010212036
AA 10112 | KG. | 0.050 | 001 |

28 → CARD TYPE-3

28 → CARD TYPE-1

28 → CARD TYPE-2

for HAKx DEPT SWE

dkm CODE 409

vu Vky_ uki dh js.kh
UNTEL.DMS. GR.

vuqkr SCALE 1.1

HAKj fd_xk_ WEIGHT (KG.)

vis_M&kbZax dk lanHAZ
REF. TO ASSY. DRG.
35211001530
35211001537

en d_ ITEM NO. 018 003

en la;k NO. OF ITEM 003

'Ah"AZD

ROD

vkjs[A d-DRAWING NO. 45211001532

iquREV. 08

l="B d-SHT. No. 01

l="Bksa dh la;k NO. OF SHT. 02

27/64

130

(ALL DIMENSIONS ARE IN mm)

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| | |
|--------|------------------------------|
| & DATE | 4HT40900587
REF. DRG. NO. |
|--------|------------------------------|

SIGN. & DATE

INVENTORY NO.

| | | | | | | | | | |
|------------------|---------------|---|----------------------------------|---------------|--------------------------------|--|--|--|--|
| REV. 08 | DATE 11.04.17 | ALTERED SKG
CHECKED AKHIL
APPROVED AD | REV. 07 | DATE 27.09.03 | ALTERED
CHECKED
APPROVED | ADDITIONAL INFORMATION | | | |
| IT. 003 ADDED | | | DRG. REDRAWN.
SHEET 02 ADDED. | | | STATUS OF DRAWING B | | | |
| (DCA. NO.-34728) | | | (DCA. NO.12839) | | | DISTRIBUTION □.C.-1 SWM-3
OF PRINTS TCX-1 | | | |

TOOL LIST :-

1492657 - GROOVING TOOL

ITEM 002

ITEM 003

| | | | | | | | |
|------------------|---|------------------|-----|---|--------------------------------------|-------------------------------------|---|
| REMARKS | ITEM NO. | DESCRIPTION | STD | MATL. CODE | | UNIT | UNIT WT. |
| | | | | MATL. SPCN. | | | |
| 28 → CARD TYPE-3 | | 28 → CARD TYPE-1 | | 28 → CARD TYPE-2 | | | |
| | HAKjr gsoh bysDV&hdYl fyfeVsM
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL | | | uke NAME
B.D.V.
Sol/-
M.Z.G.
BPN/RKG | glrk SIGN
Sol/-
Sol/-
Sol/- | fmgukd DATE
27.08.82
27.08.82 | osfj dh
la; k
NO. OF
VAR.
- |
| | | | | vls_M&kbZax dk lonHAZ
REF. TO ASSY. DRG.
35211001530
35211001537 | | en d-
ITEM NO.
018
003 | en la; k
NO. OF
ITEM
003 |
| | | | | vks[A d-DRG. NO.
45211001532 | | 08 | |
| | | | | i="B d- SGT. No. 02 | | i="Bksa dh la; k OF SHT. 02 | |

Ah"AZOLE

ROD

INVENTORY NO.

| | | | | | | | | | | |
|--|---------------|--------------|--------------|---------------|---------|---------------|--------------|--------------|---------------|--|
| REV. 02 | DATE 09.02.99 | ALTERED Sd/- | CHECKED Sd/- | APPROVED Sd/- | REV. 01 | DATE 03.05.95 | ALTERED Sd/- | CHECKED Sd/- | APPROVED Sd/- | COLOUR FOR IT. 003 WAS BLACK
(DCA NO. 09356)
MATL. SPECN FOR ITS.002, 003 WAS TYPE 'GX'
(DCA NO. 06749)
STATUS OF DRAWING B
DISTRIBUTION OF PRINTS □.C.-1 SWM-3 TCX-1 |
| DATE 03 27.09.03
CHECKED
APPROVED
DRG. REDRAWN.
(DCA NO.) | | | | | | | | | | |

VARIANT 00&01

NOTE :-

1. ITEM 001 TO BE MOULDED WITH ITEM 002 AND 003.
2. THE COMPONENTS SHALL HAVE A DEFECT FREE GLOSSY FINISH.

| | | | | | | |
|---------|---------|----------|---------------------------|---------------|---------------------|-----------|
| 001 | - | 003 | BAKELITE MOULDING (GREEN) | - | BS 771 TYPE'PF 2A1' | - |
| - | 001 | 002 | BAKELITE MOULDING (RED) | - | BS 771 TYPE'PF 2A1' | - |
| 001 | 001 | 001 | SCRU SLT CSK M5x20-4.8 | AA 7122101126 | - | - |
| VER. 01 | VER. 00 | ITEM NO. | DESCRIPTION | STD | MATL. CODE | UNIT W.T. |
| | | | | | MATL. SPCN. | QTY. |

28 → CARD TYPE-3

28 → CARD TYPE-1

28 → CARD TYPE-2

HAKjr gsoh bysDV&hdYl fyfeVsM
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

| | | | | |
|--------------|---------|-----------|-------------|--------------------------------------|
| uKE NAME | T.S.E. | gLRk SIGN | fngukd DATE | osfj... d...
la; k
NO. OF VAR. |
| ouk; k DRN | M.Z.G. | Sd/- | 27.08.82 | - |
| tkopk CKD | BPN/RKG | Sd/- | 29.08.82 | - |
| vugaksr APPD | | | | |

| | | | | | | | |
|-----------------|---|--|--------------------|------------------------------|--|---------------------------------|--------------------------------|
| fohAxx DEPT SWE | vu_ Vky_ uki dh js.kh
UNIT/L.DIMS. GR. | | vuqkr SCALE
1:1 | HAKj fd_xk-
WEIGHT (K.G.) | vis_M&k&b2ox dk lanHAZ
REF. TO ASSY. DRG.
35211001530
35211001537 | en d-
ITEM NO.
019
004 | en la; k
NO. OF ITEM
003 |
|-----------------|---|--|--------------------|------------------------------|--|---------------------------------|--------------------------------|

'Ah"AZHLE
 PUSH BUTTON

vkjs[A d-DRG. NO.
 45211001599

i="B d-SHT. No. 01
 i="Bksa dh la; k NO. OF SHT. 01

30/64
130

REV. 03
DATE 26.09.08
ALTERED CHECKED

REV. 01
DATE 6.4.00
ALTERED CHECKED

ADDITIONAL INFORMATION
STATUS OF DRAWING
DISTRIBUTION OF PRINTS

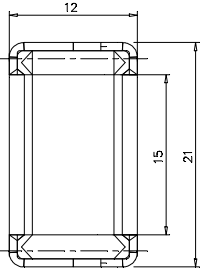
□/C-1
TCX-1

SWGR PROD.4

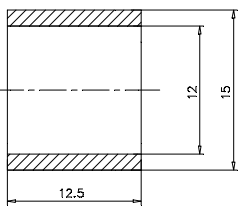
SKF MAKE TYPES ADDED
(CN-28022)

ITEM 002 ADDED NOTE 1
MODIFIED & NOTE 2 ADDED.

001



002



LOAD RATING:-
DYN. C -7.5KN
STATIC Co -9.8KN

BEARING TYPE:-
DL 1512 OF M/s NRB MAKE.
DHK 1512 OF M/s FAG MAKE.
HK 1512 OF M/s SKF MAKE.

INNER RING TYPE:-
IM 121512 4R6 OF M/s NRB MAKE.
JR 12X15X12.5 OF M/s FAG MAKE.
IR 12X15X12.5 OF M/s SKF MAKE.

NOTE:-1. SIEMEN'S CONSIDERED BEARING IN ORGINAL DRG ARE.
1) DHK 1512 OF M/s DURKOPP BIEFIELD.
2) HK 1512 OF M/s INA NADELLAGER.
2. SIEMEN'S CONSIDERED INNER RING IN ORIGINAL DRG ARE-
1) JR 12X15X12.5 FOR DHK 1512 OF M/s DURKOPP BIEFIELD.
2) LR 12X15X12.5 FOR HK 1512 OF M/s INA NADELLAGER.

45211001620-R02-S01

REF. DRG. No.

SIGN & DATE

INVENTORY No.

002

INNER RING
(12X15X12.5)

BP9029437952
SG12720

7.6 g

001

NEEDLE BEARING/
BUSH.

BP9029432543
SG12720

14 g

REMARKS

ITEM NO.

DESCRIPTION

STD.

MATL. CODE

A
C

UNITS

UNIT WT.

QTY.

DEPT. SWE


UN. TOL.DIM.GR.

SCALE

WEIGHT (Kg)

CODE 409

DIM. C/M/F.



NTS

NAME

SIGN.

DATE

NO.OF VAR

DRN C.H.U.

-sd-

CHD MZG.

-sd-

5.12.82

-

APPD BPN RKG.

-sd-

15.12.82

REF. TO ASSY. DRG.

ITEM NO.

NO.OF ITEMS

35211001530

008

TITLE

DRAWING No.

REV.

NEEDLE BEARING.

45211001620

03

SHEET NO. 01

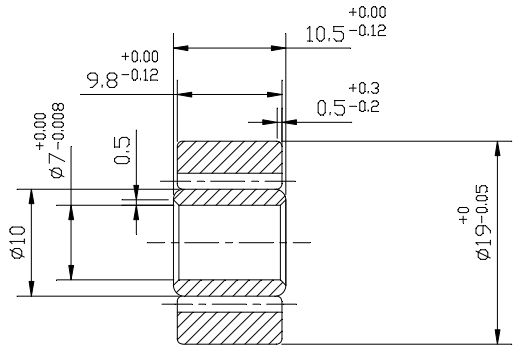
NO.OF SHEETS 01

35211001620

SIZE A4

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm)

| | | | | | | | | | | | |
|------------------------------------|------------------|----------|----------|--------------------------------------|------------------|----------|------|---------------------------|-----|-----|-----|
| REV.
04 | DATE
13.03.13 | ALTERED | ABHISHEK | REV.
03 | DATE
27.09.12 | ALTERED | PARE | ADDITIONAL
INFORMATION | | | |
| | | CHECKED | RG | | | CHECKED | RG | | | | |
| | | APPROVED | MAK | | | APPROVED | MAK | | | | |
| CHAMFERING REMOVED FROM
DIM Ø19 | | | | MODEL & MAKE UPDATED
WEIGH ADDED. | | | | STATUS OF
DRAWING | | | |
| (DCA NO. 31755) | | | | (DCA NO. 31347) | | | | B | | | |
| | | | | | | | | DISTRIBUTION
OF PRINTS | SWE | SWM | TCX |
| | | | | | | | | | 1 | 3 | 1 |



LOAD CAPACITY :- STATIC LOAD C = 700 KG.
DYNAMIC LOAD CD = 730 KG.


RADIAL LOAD :- CW = 510 KG.
CDW = 610 KG.

RADIAL CLEARANCE :- 0.005 TO 0.024

NOTE :-

1. THE BEARING CONTAINS 24 NEEDLE ROLLERS OF Ø1.5×9.8LG. TYPE G2.
2. THE BEARING SHALL BE GREASED WITH ROLLER BEARING GREASE (NLGI2)
AS PER DIN 51825
3. THE BEARING IS EQUIVALENT OF NEEDLE ROLLER BEARING TYPE
1) STUTZROLLE F87773-1 ST7×19×10.5 WITH INNER RING 7×10×10.5 OF M/S INA.
2) STUTZROLLE F237522 A00 ST7×19×10.5 OF M/S INA.

| | | | | | | |
|--------------|-------------|--------------------------|-------------|------|----------|-------|
| BP9029432551 | 001 | NEEDLE
ROLLER BEARING | | | | 0.018 |
| | | | SG 12720 | | | 001 |
| REMARKS | ITEM
NO. | DESCRIPTION | MATL. CODE | UNIT | UNIT WT. | |
| | | | MATL. SPCN. | | QTY. | |

| | | | | | | |
|------------------------|---|--|---|-----------------------------|--|----------------------------------|
| SIGN. & DATE | 28 → CARD TYPE-3 | | 28 → CARD TYPE-1 | | 28 → CARD TYPE-2 | |
| |  | | HAKjr gsoh bysDV&hdYl fyfeVsM
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL | | uke
NAME
C.H.U. | qlrk
SIGN
Sd/- |
| INVENTORY NO. | foHAKx
DEPT SWE | vu_ Vky_ uki dh js.kh
UNIT/DIMS. GR.
M
AA 0230208 | vuglkr
SCALE
1:1 | HAKj fd_xk_
WEIGHT (KG.) | vis_M&kbZax dk lanHAZ
REF. TO ASSY. DRG.
35211001556 | en d_
ITEM NO.
074 |
| | dkm
CODE
409 | | | | | en la;k
NO. OF
ITEM
001 |
| 'Ah"AZB | | | | | vkjs[A d-DR | iquREV.
04 |
| BEARING SUPPORT ROLLER | | | | | 45211001621 | |
| | | | | | i="B d-S | i="Bksa dh la[NO OF SHT. 01 |

(ALL DIMENSIONS ARE IN mm)

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| | | | | | | | | | |
|---|---------------|---|------------------------------------|---------------|---|---|--|--|--|
| REV. 03 | DATE 30.05.96 | ALTERED Sd/-
CHECKED Sd/-
APPROVED Sd/- | REV. 01 | DATE 31.08.83 | ALTERED Sd/-
CHECKED Sd/-
APPROVED Sd/- | ADDITIONAL INFORMATION
STATUS OF DRAWING B
DISTRIBUTION OF PRINTS □.C.-1 SWM-3
TCX-1 | | | |
| MATL. SPECN ADDED.

(DCA NO. 07766) | | | LOAD CAPACITY & NOTES
MODIFIED. | | | | | | |
| REV. 03 | DATE 27.09.03 | ALTERED
CHECKED
APPROVED | | | | | | | |
| DRG. REDRAWN.

(DCA NO. 12846) | | | | | | | | | |

LOAD CAPACITY :-
 STATIC LOAD Cr = 1520 TO 1980 Kg.
 DYNAMIC LOAD CDr = 1680 TO 1840 Kg.

RADIAL LOAD FOR SUPPORT ROLLER :-
 Crw = 1250 TO 1470 Kg.
 CDrw = 1520 TO 1620 Kg.

NOTE :-

1. THE BEARING CONTAINS 23 NEEDLE ROLLERS OF Ø2.2x15.8 LG. TYPE G-2 OR 14 NEEDLES OF Ø4x15.8 LG. TYPE G-2.
2. THE BEARING SHALL BE GREASED WITH ROLLER BEARING GREASE AS PER DIN 51825.
3. THE BEARING IS EQUIVALENT OF NEEDLE ROLLER BEARING TYPE STUTZROLLE F-93747 RSTD 14x30x16 OF M/S INA. AND TYPE FAG 110-6217 OF M/S FAG KUGEL FISCHER.

| | | | | | |
|--------------|----------|-----------------------|-----|-------------|-----------|
| BP9029432560 | 001 | NEEDLE ROLLER BEARING | - | SG 12720 | - |
| REMARKS | ITEM NO. | DESCRIPTION | STD | MATL. CODE | UNIT W.T. |
| | | | | MATL. SPEN. | QTY. |

28 → CARD TYPE-3 28 → CARD TYPE-1 28 → CARD TYPE-2

BHEL

HAKjr gsoh bysDV&hdYl fyfeVsM
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

| | | | | | | | |
|-----------------|---|--|--------------------|------------------------------|--|--------------------------|----------------------------------|
| foHAKx DEPT SWE | vu Vky_ uki dh Js.kh
UNTIL DIMS. GR.
M
AA0230208 | | vuqkr SCALE
2:1 | HAKjr fd_xk-
WEIGHT (KG.) | vis_M&kbZax dk lanHAZ
REF. TO ASSY. DRG.
35211001543 | en d-
ITEM NO.
012 | en la;k
NO. OF
ITEM
001 |
|-----------------|---|--|--------------------|------------------------------|--|--------------------------|----------------------------------|

'Ah"AZDLE

SUPPORT ROLLER

| | |
|---------------------------------------|---------------|
| vkjs[A d-DRG. WING NO.
45211001622 | iquREV.
03 |
|---------------------------------------|---------------|

i="B d-Ser. No. 01 i="Bksa dh la;k OF SHT. 01

REV. 02

DATE 11.03.00

ALTERED
CHECKED
APPROVED

Sd/-
Sd/-
Sd/-

REV. 01

DATE 30.11.99

ALTERED
CHECKED
APPROVED

Sd/-
Sd/-
Sd/-

ADDITIONAL
INFORMATION

DIM. 29.7 WAS 297 &
IN BOM 29.7 WAS 297 LG.
<DCA. NO. 9902>

MATERIAL WAS BEARING
PIN.
<DCA. NO. 9755>

STATUS OF
DRAWING B
DISTRIBUTION □.C.-1 SWM-3
OF PRINTS TCX-1

REV. 03

DATE 20.10.01

ALTERED
CHECKED
APPROVED

Sd/-
Sd/-
Sd/-

REV. 04

DATE 27.09.03

IT.002 ADDED
<DCA NO. 11083>

DRG. REDRAWN.
<DCA NO. 12841>

FINISH :- BROWNING ANTIRUST TREATMENT

NOTES :- 1) THE PIN SHALL BE HARDENED
TO 58-65 HRC.
2) THIS IS EQUIVALENT OF BOLZEN
ACHSE 14 X 29.7 OFM/S INA.
3) THE BEARING PIN IS TO BE USED
WITH NEEDLE ROLLER BEARING TYPE F 93747 RS
TO 14X30X16 OF M/S INS.

| | | | | | |
|--------------------|------------------|---|---------------------------|-----------------------------|-----------------------------|
| BP9099107919 | 002 | Ø20 x 29.7 LG.
HIGH CARBON HIGH CHROM.
TOOL STEELBAR ANNEALED | AA1080222103
AA10822 | KG. | 0.047
001 |
| BP9099432577 | 001 | Ø16X29.7 LG. CARBON
TOOL AND DIE. S. BAR | AA1080241086
AA10841 | KG. | 0.047
001 |
| REMARKS | ITEM
NO. | DESCRIPTION | MATL. CODE
MATL. SPCN. | UNIT | UNIT WT.
QTY. |
| 28 → CARD TYPE-3 | 28 → CARD TYPE-1 | 28 → CARD TYPE-2 | | | |
| | | HAKjr gsoh bysDV&hdYl fyfeVsM
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL | | | |
| foHAKx
DEPT SWE | | vu_ Vky_ uki dh js.kh
UNTEL.DIMS. GR.
DIM/M/F
AA0230206 | | vuqikr
SCALE
2:1 | HAKj fd_xk_
WEIGHT (KG.) |
| dk&m
CODE 409 | | vis_M&kbZax dk lanHAZ
REF. TO ASSY. DRG.
35211001543 | | en d_
ITEM NO. | en la;k
NO. OF
ITEM |
| *Ah"AZ00E | | vkjs[A d-DR
DRAWING NO.
45211001623 | | iquREV.
04 | |
| | | i="B d-SHT. No. 01 | | i="Bksa dh la[NO OF SHT. 01 | |

33/64

130

52110\45211001624-R01-S01

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REV. 02

DATE 19.07.07

ALTERED CHECKED

BKT RKB

APPROVED S.K.

REV. 01

DATE 27.09.03

ALTERED CHECKED

APPROVED

ADDITIONAL INFORMATION

DRG TITLE WAS BUSH

DRG. REDRAWN.

STATUS OF DRAWING

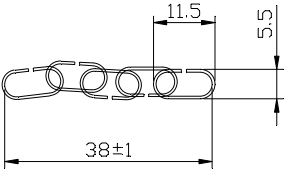
DISTRIBUTION OF PRINTS

B

□.C.-1 SWM-3 TCX-1

〈DCA 26874〉

〈DCA NO. 20129〉



FINISH : -

DIAMETER OF WIRE = 1.8 MM

NO. OF LINKS = 5

MATERIAL OF WIRE = ZINC COATED STEEL

WIRE AS PER IS 280.

BP9099432585

001

STEEL CHAIN

REMARKS

ITEM NO.

DESCRIPTION

STD

MATL. CODE

MATL. SPCN.


UNIT WT.

QTY.

28 → CARD TYPE-3

28 → CARD TYPE-1

28 → CARD TYPE-2



HAKjr gsoh bysDV&hdYl fyfeVsM

HAKsiky

BHARAT HEAVY ELECTRICALS LTD.

BHOPAL

uke NAME

gLnk SIGN

fnuakd DATE

osfj. dh

cuk;k DRN

tkap;k CKD

vugakstfnr APPD

C.H.U.

M.Z.G.

BPN/RKG

Sd/-

Sd/-

05.12.82

12.12.82

NO. OF VAR.


foHAKx DEPT SWE

vu_ Vky_ uki dh js.kh

UNTIL DIMS. GR.

M

AA0230208



vugikr SCALE

1:1

HAKj fd_xk_ WEIGHT (KG.)

vis_M&k;bZax dk lanHAZ

REF. TO ASSY. DRG.

35211001543

en d_ ITEM NO.

023

en laq;k

NO. OF ITEM

'Ah"AZ

CHAIN

vkjs[A d-DRAWING NO.

45211001624

iquREV.

02

i="B d-SHT. No. 01

i="Bksa dh la[NO. OF SHT. 01

D9286026

DRG. NO.

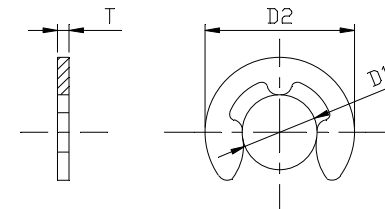
| ITEM NO. | D1-DIA. | D2-DIA. | THICKNESS 'T' | SUITABLE FOR AXLE DIA. | REF. TO ASSY. | MATERIAL | STYLE NO. |
|----------|---------|---------|---------------|------------------------|---|--|--------------|
| 1 | 7 | 14 | 0.93/0.87 | 8-10 | F 9136024 <2> | SPRING STEEL Gr. 70C6
DR Gr. 75 C6 TO IS 2507 | BP9019100920 |
| 2 | 9 | 18.5 | 1.13/1.07 | 10-13 | F 9136002 <12> F 9136003 <57> F 9136004 <13> | SPRING STEEL Gr. 70C6
DR Gr. 75 C6 TO IS 2507 | BP9019100939 |
| 3 | 12 | 23 | 1.33/1.27 | 13-16 | F 9136002 <57> | SPRING STEEL Gr. 70C6
DR Gr. 75 C6 TO IS 2507 | BP9019100947 |
| 4 | 15 | 29 | 1.53/1.47 | 16-20 | F 9136004 <28> F 9136005 <53> | SPRING STEEL Gr. 70C6
DR Gr. 75 C6 TO IS 2507 | BP9019100955 |
| 5 | 19 | 37 | 1.78/1.72 | 20-25 | F 9136002 <8> | SPRING STEEL Gr. 70C6
DR Gr. 75 C6 TO IS 2507 | BP9019100963 |
| 6 | 4 | 9 | 0.72/0.68 | 5-6 | F 9136003 <42> F 9136004 <6> G 9026270 <70> | SPRING STEEL Gr. 70C6
DR Gr. 75 C6 TO IS 2507 | BP9019100971 |
| 7 | 3.2 | 7 | 0.58/0.62 | 4.8-5 | G 9026256 <39> G 9026271 <29> F 9136275 <18> E 9211295 <11> | SPRING STEEL Gr. 70C6
DR Gr. 75 C6 TO IS 2507 | BP9019181440 |
| 8 | 5 | 11 | 0.68/0.72 | 7-8 | G 9026271 <28> E 9211277 <9> | SPRING STEEL Gr. 70C6
DR Gr. 75 C6 TO IS 2507 | BP9019181459 |
| 9 | 8 | 16 | 0.97/1.03 | 10-12 | G 9026270 <94> | SPRING STEEL Gr. 70C6
DR Gr. 75 C6 TO IS 2507 | BP9019181467 |
| 10 | 6 | 12 | 0.7±0.02 | 7-9 | 35211001530 <20> 35211001543 <34> | SPRING STEEL Gr. 70C6
DR Gr. 75 C6 TO IS 2507 | BP9019433474 |
| 11 | 7 | 14 | 0.9±0.02 | 8-11 | 35211001543 <22> | SPRING STEEL Gr. 70C6
DR Gr. 75 C6 TO IS 2507 | BP9019433482 |

HARDNESS : - 480 TO 590 HV

ITEM 006 : -

INTERLOCK ASSY. OR ISOLATING TRACK.
<DRG. NO. - 15090102504-023>

ITEM 007 : -

INTERLOCK MAGNET
<DRG. NO. - 35090101516-005>

| | | | | | | | | | | | | | |
|--------|---------|---------|---------|-------------|-----|-------------|-------|--------------|---|------|----------|-----|------|
| VAR 00 | REMARKS | VAR NO. | ITEM NO | DESCRIPTION | STD | DRAWING NO. | IT.NO | MATL. CODE | A | UNIT | UNIT WT. | G.S | ZONE |
| | | | 001 | | 2 | | | | | | | | |
| | | | | | | | VAR | MATL. SPECN. | C | | QTY. | | |

| | | | | | | | |
|------|----------|----------|--|------|----------|----------|------|
| REV. | DATE | ALTERED | | REV. | DATE | ALTERED | Sd/- |
| 05 | 27.09.03 | CHECKED | | 04 | 04.10.00 | CHECKED | Sd/- |
| | | APPROVED | | | | APPROVED | Sd/- |

| | |
|------------------|--------------------------|
| DRG. REDRAWN. | MATL. COL. GRADE & |
| SHEET 02 ADDED | IS 2507 REFERENCE ADDED. |
| <DCA NO.- 20128> | <DCA NO. > |

| | | | | | | | |
|------|----------|----------|------|------|----------|----------|------|
| REV. | DATE | ALTERED | Sd/- | REV. | DATE | ALTERED | Sd/- |
| 03 | 03.03.83 | CHECKED | Sd/- | 02 | 24.07.82 | CHECKED | Sd/- |
| | | APPROVED | Sd/- | | | APPROVED | Sd/- |

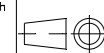
| | |
|----------------------|--------------------------|
| ITEMS 10 & 11 ADDED. | REF. TO ASSY. |
| | DRG. 35090101516 <005> & |
| | DRG. 15090102604 <023> |
| | ADDED. |

ADDITIONAL INFORMATION

STATUS OF DRAWING

DISTRIBUTION OF PRINTS

| | | |
|-----|-----|-----|
| D/C | SWM | TCX |
| 1 | 3 | 1 |

mRikn dk i-dkj ;k
xk-gd@fj;kstuk dk uke
TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECTHAKjr gsoh bysfDV&dYl fyfeVsM
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPALfahA
DEPT. SWE
409
dksM
CODEvu_ Vky_ uki dh js.kh
UNTL.DIMS. GR.vuqjkr
SCALE
1:1HAKj fd_xk-
WEIGHT (K.G.)vis_ M&kbZax dk lanHAZ
REF. TO ASSY. DRG.en d-
ITEM NO.en_ laj;k
NO. OF
ITEM
011

'kh"AZ@LE

EXTRANAL CIRCLIPS

vkjs[A d-DRG. NO.

D9286026

iqu_@EV

05

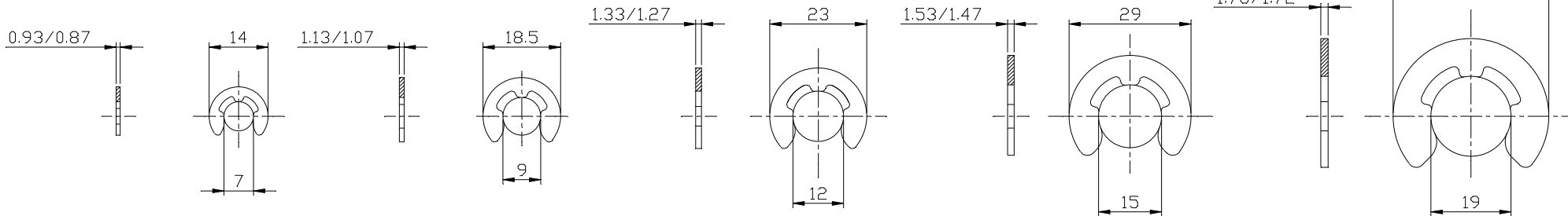
i="B d-S@. No. 01

i="Bksa dh laj;k NO. OF SHT. 02

A3

D9286026

DRG. NO.



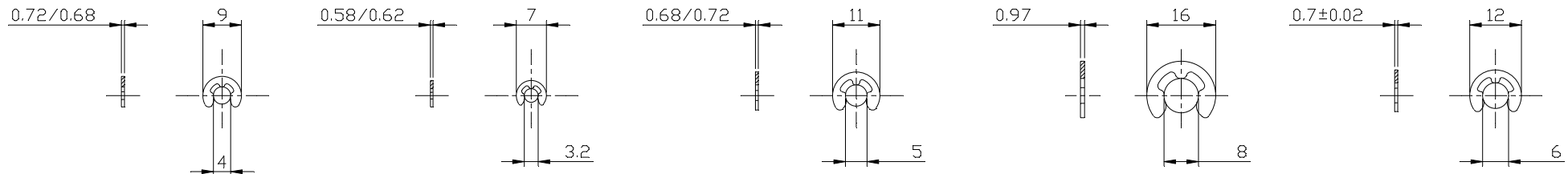
ITEM 001

ITEM 002

ITEM 003

ITEM 004

ITEM 005



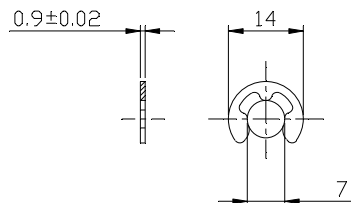
ITEM 006

ITEM 007

ITEM 008

ITEM 009

ITEM 010



ITEM 011

| VAR NO | REMARKS | VAR NO. | ITEM NO | DESCRIPTION | STD. | DRAWING NO. | IT.NO | MATL. CODE | C/A | UNIT | UNIT WT. | G.S. | ZONE |
|--------|---------|---------|---------|-------------|------|-------------|-------|--------------|-----|------|----------|------|------|
| | | | | | | | VAR | MATL. SPECN. | | | QTY. | | |

| REV. | DATE | ALTERED | Sd/- |
|------|----------|----------|------|
| 05 | 27.09.03 | CHECKED | Sd/- |
| | | APPROVED | Sd/- |

DRG. REDRAWN.
SHEET 02 ADDED

<DCA NO. 20128>

| REV. | DATE | ALTERED | Sd/- |
|------|----------|----------|------|
| 04 | 04.10.00 | CHECKED | Sd/- |
| | | APPROVED | Sd/- |

MATL. COL. GRADE &
IS 2507 REFERENCE ADDED.

<DCA NO. >

ADDITIONAL INFORMATION

STATUS OF DRAWING

DISTRIBUTION OF PRINTS

| D/C | SWM | TCX |
|-----|-----|-----|
| 1 | 3 | 1 |

mRikn dk i-dkj ;k
xk-gd@ifj;kstuk dk uke
TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECTHAKjr gsoh bysfDV&dYl fyfeVsM
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

| uke@NAME | gLrk@SGN | fnaukd@ATE | osfj_ dh |
|----------|----------|------------|------------------------|
| B.D.K. | Sd/- | 03.09.73 | la[jk
NO. OF
VAR |

| B.SING | Sd/- | 03.09.73 | - |
|--------|------|----------|---|
|--------|------|----------|---|

| REV. | DATE | ALTERED | Sd/- |
|------|----------|----------|------|
| 03 | 03.03.83 | CHECKED | Sd/- |
| | | APPROVED | Sd/- |

ITEMS 10 & 11 ADDED.

| REV. | DATE | ALTERED | Sd/- |
|------|----------|----------|------|
| 02 | 24.07.82 | CHECKED | Sd/- |
| | | APPROVED | Sd/- |

REF. TO ASSY.
DRG. 35090101516 <005> &
DRG. 15090102604 <023>
ADDED.

| REV. | DATE | ALTERED | Sd/- |
|------|----------|----------|------|
| 01 | 30.04.75 | CHECKED | Sd/- |
| | | APPROVED | Sd/- |

DRG. RETRACTED
ITS 7 TO 9 ADDED.fahAke
DEPT SWE
dksM
CODE 409vu_ Vky_ uki dh js.kh
UNTL.DIMS. GR.vuqjkr
SCALE

1:1

HAKj fd_xk-
WEIGHT (K.G.)vis_ M&kbZax dk lanHAZ
REF. TO ASSY. DRG.en d-
ITEM NO.en_ la[jk
NO. OF
ITEM

011

'kh"AZ@OLE

EXTRANAL CIRCLIPS

vkjs[A d-DRG. NO.

D9286026

iqu_@EV

05

i="B d-SHT. No. 02

i="Bksa dh la[jk; NO. OF SHT. 02

A3